

FULL HANDBOOK

Corporate Power Purchase Agreements

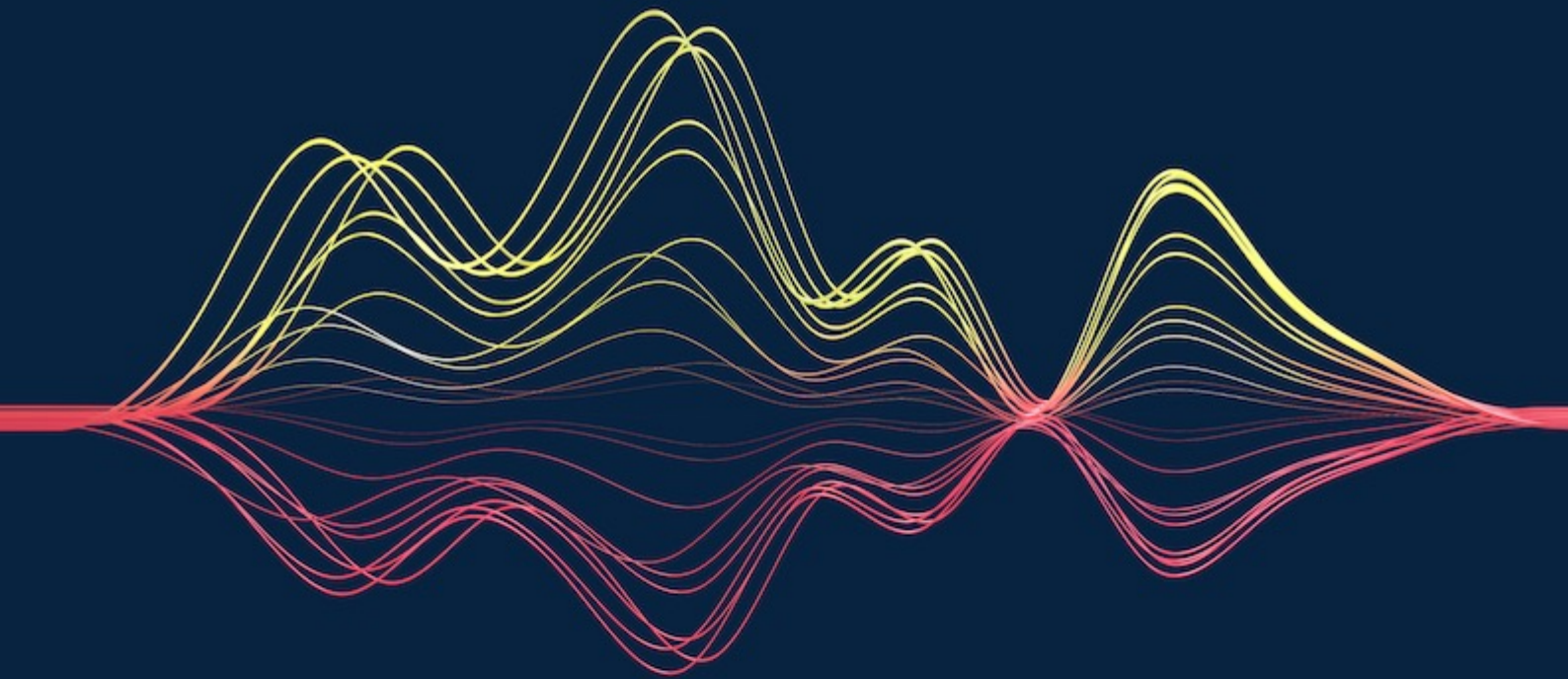


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Angola

Last modified 09 February 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs remain uncommon in Angola.

Article 48 of the Electricity General Law provides that outside the scope of the public electric system, the conditions of sale of electric energy will be established by the parties.

Article 15 of the Executive Decree No. 122/19 of May 24 (electric energy sales tariffs) provides special arrangements for the sale of electricity by means of special or bilateral contracts between producers and distributors and those with final customers, under the terms set out in the Tariff Regulations (Presidential Decree No. 4/11 of January 6) shall be authorized by an order of the Minister of Energy and Waters, after hearing the regulatory authority.

All the contracts with National Transportation Network ("RNT" as a sole buyer must comply with certain requirements specified in Article 11 of the Presidential Decree No. 4/11 of January 6 as amended by Article 11 of the Presidential Decree 178/20 of June 25, in order to their prices are allocated to tariffs.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

In accordance with Article 11 of the General Electricity Law, the use of the facilities and networks that incorporate the Public Electricity System is allowed under the conditions provided for in the aforementioned regulation or agreed between the interested parties and their holders, as long as the supervisory body approves it after prior validation by the regulatory authority.

Hence, corporate owners are allowed to purchase directly from a facility or a choice of suppliers, as long as it has been approved by the supervisory body and has effectively gone through a prior validation from the regulatory authority.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

In addition to the electrical energy provided by the Company ENDE E.P (National Electricity Distribution Company) that comes from hydraulic dams and private generators, so far, there are no other third parties as a common party to the cPPA structure.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

As previously stated, Article 48 of the Electricity General Law provides that outside the scope of the public electric system, the conditions of sale of electric energy will be established by the parties.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

More incentives and benefits need to be created for companies that want to implement green energy systems. Facilitating the process of importing and accessing currencies to pay for equipment to implement the projects related to renewable energy is necessary. Governments should create incentives for companies that are implemented across the country, thereby creating employment and facilitating greater acceptance of new technologies in rural areas.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

International development partners are providing technical support to the Angolan government to establish a regulatory framework which includes negotiating power purchase agreements with independent power producers (IPPs) and design of a feed-in-tariff scheme for renewables.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Even though national and international companies have been showing interest to develop green energy structures in Angola, this is still something that has to be well studied and thought through it. However, there are already small dimensions of solar energy structures being developed, for example, but only for particular purposes.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The key local advantage of the corporate PPA model in Angola is energy security and easier access to financing having the corporate PPA as collateral.

What subsidies are applicable to the generation and sale of renewable energy?

This information has not been made public.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Not yet, as green energy has not yet been implemented.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	According to Article 26 of the Presidential Decree 178/20 of June 25, the tariff structure is applied by the RNT concessionaire and by the distribution companies to users connected to their networks. Along these lines, this same diploma, on its article 27, establishes that the tariff structure

	<p>reflects the costs to which users give rise, according to the characteristics of consumption and the level of tension to which they are connected, regardless of their social or legal character and the final destination give to the energy consumed.</p> <p>Hence, the prices are fixed considering the elements above mentioned.</p>
What term is typically agreed for the PPAs?	There is not a fixed-term for cPPAs it all depends on the activity to be exercised. However, it is important to mention that the tariff regime is, in general terms, in force in a four-year tariff regime. Alongside with that, the tariff period is defined by a specific diploma by the Sector Regulatory Entity, which must be multiannual, as established on Article 28-A of the Presidential Decree 178/20 of June 25.
Are the PPAs take-or-pay or limited volume?	Not applicable
Are there any other typical risks?	Not applicable

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	The risk is born by those who not comply with rule applicable to the specific situation.
Change in law	Usually, when changing legislation, users and distributors are given a period to prepare and adapt to this mentioned change of legislation. Hence, when there is a change in law non complied with, the risk is born by those who have not complied with the rule in place.
Increase / reduction of benefits	Again, similar to the change in law, the risk is born by those who not comply with rule applicable to the specific situation.
Market liberalisation (if applicable)	Not applicable
Credit risk	The risk is born by those who not comply with rule applicable to the specific situation.
Imbalance power risk	The risk is born by those who not comply with rule applicable to the specific situation.
Production profile risk	The risk is born by those who not comply with rule applicable to the specific situation.

Balancing

Does your country operate a balancing responsibility scheme?

Not applicable.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

Laúca Hydroelectric Power Plant

According to the Government, Laúca Hydroelectric Power Plant ("AH Laúca") is the largest work in the country today. The Project was commissioned by the Angolan Executive, represented by the Ministry of Energy and Water, and is carried out by ODEBRECHT. COBA and LA MAYER carry out the supervision of the implementation of the project. When AH Laúca is 100% operational, it will produce more than twice as much energy as the other two dams already operating on the Kwanza River. This energy potential will serve 8 million people. AH Laúca will produce 8,643 GWh (gigawatts) of electricity, representing an installed capacity of 2,070 MW (megawatts).

The realization of the project demands great infrastructure support. Because of this, AH Laúca is today a city that is composed by: Leisure area; Sports area; Accommodations; Kitchen and Cafeterias and Medical Center.

AH Laúca is a pole of job and income generation. The project is also committed to providing opportunities for national talent. Today, the enterprise has 8,458 Members. Of these, 8,035 are national, which represents 95% of the entire productive force involved in the execution of the work. The remaining 423 are expatriates, a number that represents 5% of total members.

Through the Acreditar Program, the project offers basic and specific training to AH Laúca Members and also to the residents of the communities surrounding the construction site.

AH Laúca is 86% ahead of Civil Works, 72% ahead of Electromechanical Assembly and 14% in the Energy Transport System. Always overcoming challenges and fulfilling all the goals set with safety, quality and productivity.

2nd Hydroelectric Power Plant of Cambambe and Dam Alignment

With the conclusion of the Cambambe 2nd Power Station and the Dam Raising, it was possible to obtain an additional power of 780MW. This power is helping to reduce the energy supply deficit in the Provinces of Luanda, Kwanza Sul, Malanje, Uíge, Kwanza Norte and Bengo.

It will also allow the interconnection of the North-Central Systems with the Benguela Province link, thus reducing production costs and the consumption of diesel for energy production.

More than 10,000 construction posts have been created as part of the temporary work in the rehabilitation, modernization and extension of the hydroelectric complex. The construction owner was GAMEK (*Gabinete de Aproveitamento do Médio Kwanza*) and the contractor was ODEBRECHT.

Solar village program

The main objective of the Solar Village Programme is electrification, through the installation of autonomous solar photovoltaic systems (isolated) in infrastructures Social, including: Schools; Medical Posts; Police Posts; Administrative Buildings; and, Social Jangos, including Public Lighting Posts.

In the 1st phase of the Programme, awarded to the company Elektra Electricidade e Águas, Lda, 11 localities were selected from 4 Provinces in the country: Bié, Kuando Kubango, Malange and Moxico. This phase has been completed since 2011, with a total of 156,660 Wp of 42 systems and 70 public lighting posts implemented.

In some cases, a system provides electricity to more than one infrastructure. So far, 50 infrastructures have benefited from the electricity supply, namely: 15 schools, 18 medical posts, 1 maternity ward, 1 police station, 1 police station, 9 administrative residences, 1 nurse's residence, 3 administrations.

In the 2nd phase of the Solar Village Programme, four companies were selected for the installation of a total of 75 systems and 160 streetlights.

As part of the 3rd phase of the Solar Village Programme, the project has already started after the Auto de Consignation signed with the Company LTP Energias S.A. The project will benefit the provinces of Kwanza Sul, Cuando Cubango and Lunda Sul, whose aim is to supply electricity to the communities with Solar Photovoltaic Systems of Auto-consumption Kits and Public Photovoltaic Lighting.

It is part of the energy and water sector action plan 2018-2002, to continue the Solar Village Programme and to ensure adequate maintenance of its infrastructure and test a new concept of a 100% solar mini network, based on batteries, to electrify the most isolated municipality headquarters, avoiding fuel logistics.



Australia

Last modified 12 October 2022

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Demand for renewable corporate PPAs within Australia has surged in recent years, following the first deal concluded on behalf of the Victorian Government in 2016. Since 2017, Australian corporate PPAs have supported renewable energy projects with a combined capacity of approximately 10 GWh.

2020 was the biggest year yet for corporate PPAs in Australia, following subdued levels of activity in 2019. Numerous corporate and public entities (including Amazon, ALDI, CSIRO and Transurban) entered into significant long-term PPAs during this period.

2021 saw a consolidation of the demand for corporate PPAs marked by 2020's record numbers. While the overall estimated offtake size dipped slightly, 2021 was the second-best year on record and featured the return of notable buyers such as Sun Metals in respect of its PPA for the McIntyre Wind Farm in Queensland, BHP (Olympic Dam) PPA with Port August Renewable Energy Park in South Australia and Woolworths first PPA with CWP Renewables in NSW, as well as the entry of public companies such as Nestlé and PepsiCo.¹ By the end of 2021, returning buyers Telstra and Dexus had both concluded three PPAs and ISPT had concluded two.²

Strong demand for PPAs has continued through 2022 to date. Energetics reported that, as at 8 September 2022, PPAs totalling 1650GWh per annum had been announced.³

Local government and university providers maintain a large appetite for PPAs. A notable market entrant is the Hunter Council Buyers Group, consisting of six local councils in New South Wales. Joining the growing ranks of university purchasers are the University of Sydney, Victoria University, Flinders University and Charles Sturt University, which all signed PPAs in 2021 to 2022.⁴

Energetics' Corporate Renewable PPA Deal Tracker reveals that at the time of writing, New South Wales is again the preferred host state in which to conclude PPAs in Australia. The data shows that the uptake of PPAs in the 2021 calendar year was greatest in Queensland, where Sun Metals, Dexus and Gregory Crinum Coal concluded deals for a combined capacity in excess of 1000 MW. During this period, Queensland remained reliant on a small number of very large PPA transactions though, whereas PPAs concluded in the New South Wales and Victorian jurisdictions are far more varied in size and capacity.

Corporate PPAs in Australia tend to be either sleeved or financial. 'Behind the meter' or direct wire PPAs for direct supply are also possible with the appropriate tenure and approvals (accounting for 11% of PPA deal types in 2020-21), however the resilience of the corporate PPA market is largely driven by the emergence of retail PPAs (accounting for 72% of PPA deal types in 2020-21) and wholesale PPAs (accounting for 17% of PPA deal types in 2020-21).⁵ The prevalence of behind the meter or direct wire PPAs is still limited due to the nature of the distribution infrastructure and energy market system in Australia.

As at 15 June 2022, Australia's renewable corporate PPAs are almost exclusively underpinned by projects employing solar (37%) and wind technology (55%).⁶ By industry, resources and heavy industry comprise the largest share of purchasers at 38%, followed by built environment (including finance and universities) at 18% and information and communication technology at 12%.⁷ Transactions are facilitated by initiatives such as the Business Renewables Centre Australia (**BRC-A**). This platform has been a successful market-based initiative to coordinate local appetite for PPAs. It provides an online information hub to streamline the deal process and a marketplace for

corporate purchasing of large-scale wind, solar energy and storage. Based on data collected from its annual survey of market participants, BRC-A estimates that the range of demand for buyers 'pursuing' a PPA is 420MW, while the range of demand for buyers 'interested' in a PPA is estimated to peak at 60MW.⁸

BRC-A is based on a previous platform led by the World Wildlife Fund-Australia's 'Renewable Energy Buyers Forum', which boasted over 250 member organisations.

Footnotes

[1] [Corporate Renewable PPA Deal Tracker](#), [Energetics Deal Tracker](#)

[2] Ibid.

[3] Ibid.

[4] [Energetics Deal Tracker](#) (n 1).

[5] The Business Renewable Centre — Australia, Corporate Renewable Power Purchase Agreements in Australia: [State of the Market 2021 \(Report, 2021\)](#) 16 ('BRC-A State of the Market Report 2021')

[6] [Energetics Deal Tracker](#) (n 1).

[7] Ibid.

[8] BRC-A State of the Market Report 2021 (n 5) 13.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

In Australia, both financial and sleeved PPAs are able to be concluded directly between energy producers (vendors) and buyers (offtakers). Examples of such notable PPAs during 2021 are those concluded by Victorian Energy Collaboration wherein a council buyers group negotiated an 80MW deal with Dundonell Wind Farm, Woolworths entered into a PPA for 65MW in respect of Bango Wind Farm in New South Wales and Telstra entered into a PPA for 56MW in respect of Crookwell 3 Wind Farm in New South Wales.¹ Corporate entities can alternatively seek out retail PPA arrangements whereby organisations purchase power from an intermediate supplier (retailer), who then contracts directly with a vendor to facilitate the supply of electricity. Retail PPAs have been secured in recent years by the Port of Newcastle² and the Blue Mountains City Council³ among others.

Typically, retail PPAs are preferred by small-scale buyers with less commercial expertise as the PPA itself is able to be concluded between the retailer and vendor without the buyer's direct involvement.

Footnotes

[1] BRC-A State of the Market Report 2021 (n 5) 8.

[2] David Carroll, 'World's largest coal port flicks switch to 100% renewable energy', PV Magazine (Web Page, 14 January 2022)

[3] 'Council to be powered by 100% renewable energy', Blue Mountains City Council (Web Page, 6 December 2021)

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Aside from retail PPAs, agreements involving other third parties are possible, although such PPA structures remain novel at present and less commonly used. In third party PPAs an insurer may be engaged to hedge electricity by taking on the risk associated with the spot price and the volume generated by the vendor, and then entering into a fixed-volume/fixed-price derivative arrangement with the corporate offtaker.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Direct selling is permitted in Australia if the corporate entity registers as a Market Customer. Once registered, the corporate stakeholder is able to purchase electricity directly from the grid at spot prices which are then hedged as part of a Corporate PPA arrangement in place with the electricity provider. This framework is not commonly used though because there are extra costs and regulatory steps involved with obtaining Market Customer certification.

It is important to note that the structure of the National Electricity Market (**NEM**) in Australia is such that all physical power has to be bought and sold via the Australian Energy Market Operator (**AEMO**), regardless of how any individual power purchase agreement is structured. With this in mind AEMO must still maintain background involvement in any "direct selling" which occurs involving generators and corporate entities.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Australia is a party to the Paris Agreement, however it is yet to enshrine its commitments into law. As a result, and given little policy guidance from the Federal Government, interested parties are left with little policy certainty on emissions reduction. That said, most of the Australian States have committed to carbon emission targets.

Energy and climate policy uncertainty has been a feature of Federal politics for well-over a decade, but this uncertainty is likely to subside in the wake of the recent 2022 federal election. Despite the uncertainty which comes with a change in government, the newly-elected Albanese Government brings with it a commitment to loftier carbon emission reduction targets and a comprehensive 'Powering Australia' plan set to reform the Australian electricity market. Since the election, the Australian Government has passed the *Climate Change Act 2022* (Cth), enshrining in legislation a 43% carbon emission reduction target¹ and laying the foundation for the Powering Australia plan.² Under that plan, 'Commonwealth PPAs' are touted as a key driver for supporting renewable energy and job creation in the public sector.³ This commitment by the Australian Government demonstrates a growing appetite for renewable energy and, specifically, PPAs.

The strong business led growth of PPA uptake since 2020 indicates that the challenge posed by this uncertainty can be overcome, even as the national debate on the role of coal generation continues to make headlines and divide political parties.

The primary barriers to corporate PPA uptake in the Australian market are procedural difficulties and transaction costs. BRC-A's State of the Market 2021 Report found that buyer organisations experienced internal challenges such as understanding PPAs and their internal processes and building organisational support. Data drawn from BRC-A's national survey identified that the key challenges faced by buyers and developers are difficulty in the execution process (rated 'high' or 'very high' difficulty), transaction costs (rated 'moderate-to-high') and the duration of the PPA execution process (60% of buyers reported that the process was longer than 18 months).⁴ On a more general level, Australia continues to feature a complex regime for renewable energy, with a range of Federal and State Government laws and policy mechanisms that apply. Regulatory challenges therefore place some limitations on the implementation of PPAs without using a retailer.

Footnotes

[1] Climate Change Act 2022 (Cth) s 10.

[2] See, eg, Explanatory Memorandum, Climate Change Bill 2022 (Cth), 8 [13].

[3] RepuTex Energy, 'The economic impact of the ALP's Powering Australia Plan' (Report, December 2021) 17

[4] BRC-A State of the Market Report 2021 (n 5) 18-20.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Proposed regulatory changes have stalled in recent times as a result of lack of Government buy-in and competing priorities (ie the COVID-19 pandemic).

At the time of writing there are no imminent regulatory changes proposed that would have an adverse impact on Corporate PPAs.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The Australian market for corporate PPAs is poised to continue its significant growth.

Solar and wind prices continue to fall, whilst wholesale electricity and gas prices continue to trend higher, so there is a base financial incentive for business to take up PPAs, however there is also a broader reputational element with companies wanting to 'go green'.

The key Federal Government policy in respect of renewable energy, the Renewable Energy Target (**RET**), has contributed to demand. The policy was originally designed to ensure that at least 33,000 GWh of Australia's electricity came from renewable energy sources by 2020. The RET is comprised two separate schemes relating to large-scale and small-scale generation.

The large-scale RET (**LRET**) requires major electricity users to acquire a fixed proportion of their electricity requirements from renewable sources. This is achieved through a certificate trading scheme, where renewable energy generators receive certificates which are then sold to major energy purchasers (mainly electricity retailers). These certificates must then be surrendered annually as evidence that the liable parties' LRET obligations have been met. Failure to do so can lead to financial penalties and shortfall fees. The second part of the scheme is concerned with small scale generation by individuals and businesses.

The Small-scale Renewable Energy Scheme (**SRES**) offers financial incentives for individuals and businesses to encourage the installation of rooftop solar and solar water heating systems. It operates using a certificate system similar to that administered under the LRET.

In September 2019, the Clean Energy Regulator announced that Australia had reached its RET target more than a year ahead of schedule. Notwithstanding this, both components of the RET are slated to continue to operate until 2030, with users still required to meet their obligations under the policy. It is expected that after 2030, compliance demand for renewable energy certificates will be replaced by voluntary demand.

The Clean Energy Finance Corporate¹ (**CEFC**) and the Australian Renewable Energy Agency² (**ARENA**) are two Federal-led support agencies encouraging renewable energy investment in Australia by providing information and finance. Their programs enable and provide various incentives in the renewables space which may encourage corporates to adopt green energy.

The Australian Government has continued to develop its support through these agencies by expanding their respective mandates and funding pools. Through the *Australian Renewable Energy Agency (Implementing the Technology Investment Roadmap) Regulations 2021* (Cth), ARENA's mandate has been expanded to encompass new 'Priority low emissions technologies' objectives, including the provision of financial assistance and development of 'technologies relating to energy storage'.³ As part of the 2021-22 Budget, the establishment of a new \$1 billion 'Low Emissions Technology Commercialised Fund' (**LETCF**) to be administered by the CEFC. The LETCF is to receive \$500 million in funding, to be matched by a further \$500 million from private sector investors.⁴

Footnotes

[1] [CEFC](#) is a specialist clean energy financier, investing to increase the flow of finance into renewable energy, energy efficiency and low emissions technologies.

[2] [ARENA](#) is an independent authority that aims to improve the competitiveness of renewable energy technologies and increase the supply of renewable energy in Australia.

[3] Australian Renewable Energy Agency (Implementing the Technology Investment Roadmap) Regulations 2021 (Cth) reg 7.

[4] The Commonwealth of Australia, 'Budget 2021-22 | Mid-Year Economic and Fiscal Outlook 2021-22' (Report, 2021) 264

What are the key local advantages of the corporate PPA model which can benefit our clients?

In observations drawn from its 2021 Industry Survey data, BRC-A identified significant demand for corporate PPAs and notable resilience in the Australian market throughout the past two years, despite an anticipated downturn as a result of COVID-19. BRC-A ascribe the resilience of the Australian market to sustainability drivers, as almost two-thirds of respondents indicated non-price drivers as motivating their interest in PPAs.¹

Further, renewables can deliver cheaper energy and help businesses to manage the volatility associated with electricity prices and supply in Australia, giving them more control over their energy supply.

Corporate PPAs can also help in supporting carbon reduction commitments.

Major energy users can arrange to acquire renewable energy certificates under the RET as a part of a PPA arrangement. Liable parties (primarily electricity retailers) are required to surrender these certificates each year or risk facing financial penalties and shortfall charges. While not exclusive to the corporate PPA model, the scheme will add value to a PPA deal (provided the client is a liable party).

Footnotes

[1] BRC-A State of the Market Report 2021 (n 5) 1.

What subsidies are applicable to the generation and sale of renewable energy?

Under the Commonwealth's RET, the generation and sale of renewable energy will be subsidised by an annual amount of \$2.8 billion up to the year 2030. Subsidies comprise attractive feed-in tariffs as well as other incentive mechanisms.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

As mentioned above, the RET is predicated upon a system of tradable green certificates which incentivise renewable electricity generation. Individual certificates are issued and tracked through the Renewable Energy Certificate (REC) Registry, which is administered by the Clean Energy Regulator.

Certificates are created by renewable energy producers for each megawatt hour of renewable energy generated and then sold to wholesale purchasers to satisfy their renewable energy obligations. Certificates are surrendered by purchasers to the Clean Energy Regulator yearly, as is required under *The Renewable Energy (Electricity) Act 2000* (Cth).

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Prices are generally fixed, but we are seeing some corporates push for cap and collar mechanisms in an attempt to more evenly distribute and balance risk between corporate entities and electricity generators.
What term is typically agreed for the PPAs?	Recent corporate PPAs in Australia have had terms ranging from 7 to 15 years, with the majority being for 10 years. The term is largely linked to the current regulatory regime which provides certainty of green credit only to 2030, as such many corporate PPAs expire in 2030.
Are the PPAs take-or-pay or limited volume?	<p>Usually the PPA will set out the maximum annual quantity mechanism, with payment based on an output basis.</p> <p>Corporates don't always take all the capacity from a renewable facility, and often prefer not to due to the risk of asset transfer pursuant to lease accounting, therefore sharing of off-take is likely to become more common.</p>
Are there any other typical risks?	In Australia, the risk of a change in law remains relevant for parties seeking to contract in this space, however despite the fierce public debate, on-the-ground regulatory change is slower to be implemented, allowing developers with an opportunity to adapt their projects as required.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
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Volume risk	Customer
Change in law	Customer or shared
Increase / reduction of benefits	Customer
Market liberalisation (if applicable)	Customer or shared
Credit risk	Customer
Imbalance power risk	Customer or shared
Production profile risk	Generally generator

Balancing

Does your country operate a balancing responsibility scheme?

No.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

Headlining Australia's PPA market in 2022 is the Woolworths Group, which announced a PPA for 100GWh as leading its transition to 100% renewable electricity in its South Australian operations.¹

Following suit, Charter Hall announced a seven-year 151GWh per annum PPA as part of its goal to achieve net zero carbon emissions by 2030. The PPA is slated to reduce Charter Hall's emissions by 70%.²

In April 2022, Fujitsu Australia announced its entry into a 10-year PPA to provide renewable electricity equivalent to approximately 30% of its annual Australian electricity consumption.³ Fujitsu's PPA marked the first of such agreements by the Fujitsu group globally and the first PPA inked by a data centre service provider in Australia.⁴

Footnotes

[1] 'Woolworths Group set to flip the switch on 100% green energy in South Australia for a better tomorrow', Woolworths Group (Web Page, 17 May 2022)

[2] 'Charter Hall signs long-term renewable energy supply agreement with ENGIE', Charter Hall (Web Page, 3 August 2022)

[3] 'Fujitsu Australia signs its first power purchase agreement in a key step towards decarbonising its operations and providing lower-emissions services', Fujitsu (Web Page, 7 April 2022)

[4] Energetics Deal Tracker (n 1).



Bahrain

Last modified 12 February 2025

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Independent electricity plants owned and controlled by private sector companies produce approximately two-thirds of electricity in Bahrain, and their overall output is connected to the national grid under PPAs between the Electricity and Water Authority (EWA) and the independent provider.

Long-term power purchase agreements are seen as an incentive by a competitive procurement mechanism to attract private investors to develop renewable energy projects in Bahrain.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Pursuant to article 2 of the Electricity and Water Law No. 1 of 1996 (Electricity Law) in the Kingdom of Bahrain (Bahrain), with the exception of personal use, no natural or legal person or any entity not affiliated with the Ministry of Water and Electricity can produce or distribute electricity except with a written license issued by the Minister of Water and Electricity, in such cases and under the conditions issued by a decision of the Council of Ministers. [\[1\]](#)

[1] Electricity and Water Law No. 1 of 1996

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Information not publicly available.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

The [Electricity and Water Authority](#) (EWA) is the sole body responsible for electricity transmission, distribution and grid operations. Please see [Third parties](#).

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Private production of electricity in Bahrain requires authorization from the relevant government authorities in Bahrain (either through legislation or concessions).

The current Electricity Law allows for the private generation of power. But each IPP scheme requires written authorization from the relevant minister and approval from the Cabinet. As the law was drafted at a time when renewable energy wasn't considered a viable alternative source of energy, this scheme isn't suitable to stimulate private investment in renewable energy as it's geared towards large-scale conventional power plants, where fuel input is an important consideration.

Renewable energy technologies have matured significantly, the costs have declined, and the options have improved.

To stimulate investment in renewable energy, the current law needs to loosen its requirements and allow private deployment of renewable energy plants without an extensive prior authorization process from the government.

The laws in Bahrain don't authorize exporting onsite generated energy to the main grid. To stimulate investments in renewable energy, especially by households and commercial users, it's important to allow renewable energy plants to export the excess power to the grid.

Under the current legal framework and market structure, EWA is the sole buyer and distributor of electricity in Bahrain. To motivate private developers to invest in renewable energy, there needs to be a mechanism whereby private investors can sell the power produced from renewable sources and generate income. The key components of this mechanism are price and guarantee of purchase of electricity from renewable sources. So it's important to create a policy that will define a purchase price for electricity from renewable sources and guarantee the purchase of electricity. This can be either a feed-in tariff policy, or auctions or public competitive tenders.

Electricity in Bahrain is mainly produced from natural gas, and, as a result, the cost of power generation depends highly on the gas price. According to estimated planned gas price increases, the cost of electricity supply will increase even more with time.

Another technical and financial challenge Bahrain faces is the inefficient electricity production system, and the reinjection of a relatively large quantity of gas to support enhanced oil recovery. As a result, Bahrain uses almost three-quarters of its primary energy for electricity production, energy industry own use and non-energy use.

Although Bahrain has attempted to subsidize electricity tariffs, that in itself is not efficient. As a way to overcome this, EWA has introduced, and is implementing, the Government Action Plan 2023-2026 (GAP 2023-2026). The plan is to move towards using less energy for the same output or service, cutting costs in the long-run. ^[1]

[1] Government Action Plan 2023-2026 issued by Electricity and Water Authority

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Bahrain's [GAP 2023-2026 was finalized in December 2022](#). The GAP 2023-2026 identifies feasible renewable energy options for Bahrain, sets targets, and proposes policies and initiatives to achieve these targets. The target is to use less energy for the same output or service.

To achieve these targets, decree No. 9 of 2023 was issued to regulate the Ministry of Sustainable Development ^[1] to further enhance Bahrain's sustainable development efforts.

[1] Decree No. 9 of 2023 regulating the Ministry of Sustainable Development

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

For residential, commercial and industrial electricity customers, the GAP 2023-2026’s objective of enabling its consumers to generate onsite, grid-connected, renewable energy power is incentivized by reducing the electricity bill through onsite power generation and the ability to credit the excess electricity fed back to the grid.

The Building Energy Labeling initiative was introduced to enable prospective tenants and buyers to consider energy performance in their rental or purchase decision. By doing so, buildings can command a premium when being rented or sold. This encourages building owners to implement energy efficiency measures to improve their [energy efficiency rating](#).

For new building and real estate developers, the GAP 2023-2026’s objective of requiring integration of renewable energy technologies in the building design is also incentivized by reducing the electricity bill.

Regarding renewable energy developers and large electricity customers, GAP 2023-2026’s objective to attract private investors to develop renewable energy projects through a competitive procurement process is incentivized by long-term power purchase agreements.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Generally speaking, PPAs make brands more sustainable and greener, provides energy and price security, reduces the risks associated with electricity sales and purchases and creates better market opportunities.

What subsidies are applicable to the generation and sale of renewable energy?

Bahraini nationals holding an EWA single account pay [electricity tariffs](#) of 3 fils for the first 3000 kWh, 9 fils for consumption between 3001 kWh and 5000 kWh and 16 fils for consumption above 5000 kWh.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Tamkeen, a semi-autonomous government agency in Bahrain, provides a [financing plan](#) to enable institutions wishing to obtain financing for purchasing and installing solar panels to generate energy, in addition to subsidizing the cost of auditing solar energy accounts.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Information not publicly available.
What term is typically agreed for the PPAs?	A contract shall be drawn up according to the model form of contracts approved by EWA.
Are the PPAs take-or-pay or limited volume?	Information not publicly available.
Are there any other typical risks?	Information not publicly available.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Information not publicly available

Change in law	Information not publicly available
Increase / reduction of benefits	Information not publicly available
Market liberalisation (if applicable)	Information not publicly available
Credit risk	Information not publicly available
Imbalance power risk	Information not publicly available
Production profile risk	Information not publicly available

Balancing

Does your country operate a balancing responsibility scheme?

Information not publicly available.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Information not publicly available.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

EWA has accepted nine qualified bids in a tender for the [construction of a 44-MWp solar photovoltaic \(PV\) park](#) on the campus of the University of Bahrain.

The PV project will be implemented on a turnkey basis. The selected contractor will be in charge of its engineering, design, manufacturing, supply of materials, installation, testing and commissioning. And it will take care of all civil and electromechanical works.

The solar farm will consist of ground-mounted arrays and several carport systems. Once in operation, the plant is expected to generate about 75 GWh of electricity annually.



Belgium

Last modified 25 February 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs are relatively new phenomena in the Belgian market, but there is clearly a growing interest in them. The potential for corporate PPAs is now fully recognised because they allow undertakings to become more environmentally friendly while being supplied with electricity at stable and competitive prices. The project developer also benefits from concluding a corporate PPA, by obtaining a stable long-term income stream, thus enhancing the bankability of a project.

All relevant types of Corporate PPAs can be concluded in the Belgian market and under the regulatory framework in the country. Major corporate entities who have concluded Corporate PPAs with renewable electricity generated in Belgium include Google, INEOS and Borealis. Given the limited number of corporate PPAs concluded so far, it remains unclear what type of corporate PPA is used most often in Belgium.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Corporations are allowed to purchase electricity directly from a facility, subject to certain technical and regulatory conditions. In addition, corporations are free to purchase electricity from the supplier of their choice. All types of Corporate PPAs are allowed in Belgium: direct, sleeved and synthetic.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

The amount of parties involved depends on the type of corporate PPA chosen. When it comes to on-site PPAs, for example, besides the generator and the consumer, there will usually also be an electricity supplier/utility involved, purchasing the surplus green electricity not consumed locally and selling it onwards via the grid, as well as supplying any residual electricity required by the off-taker (and in that case also being responsible for the balancing of the grid connection of the off-taker).

When it comes to physical PPAs, besides the producer and the consumer, an electricity supplier/utility will usually be involved, in particular for purposes of grid balancing and to supply any residual electricity required by the off-taker. Where the seller of the green electricity does not intend to obtain the required supply permit(s) itself, the utility may take a greater role and actually act as an intermediary in the purchasing and selling of the electricity (sleeved PPA).

Synthetic PPAs, on the other hand, function with a derivative contract structure where the off-taker and the generator agree a defined 'strike price' for power generated by a renewable energy facility. Each party will then enter into separate agreements with their electricity supplier/utility to sell/acquire (as applicable) electricity at the spot price.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

As a first point, it is to note that holders of a supply licence granted in another Member State of the European Economic Area, specific rules apply which facilitate the issuance to them of one or more of the supply licences mentioned below.

Federal level: A federal supply licence is required for the supply of electricity by an intermediary to customers established in Belgium who are connected to the transmission grid or to a direct line with a nominal voltage exceeding 70 kV.

Flemish Region level: The supply of electricity to customers through the distribution grid (i.e. the grid with a voltage equal to or less than 70 kV) or the local transmission grid of electricity is subject to a supply license issued by the Flemish regulatory authority (VREG).

Generally speaking, this obligation will not apply to supply of electricity via a direct line (defined as an electricity line with a nominal voltage equal to or less than 70 kV that connects a production installation to a customer) rather than through the distribution grid.

Walloon Region level: The supply of electricity to end consumers through the distribution grid (i.e. the grid with a voltage equal to or less than 70 kV) or the local transmission grid of electricity is subject to the prior grant of a (general or a limited) supply license issued by the Walloon regulatory authority (CWaPE).

The construction of a direct line is subject to the prior grant of an individual authorisation issued by the CWaPE.

Brussels Capital Region: The supply of electricity to end consumers through the distribution grid (i.e. the grid with a voltage equal to or less than 70 kV) or the local transmission grid of electricity is subject to the prior grant of a (general or a limited) supply license issued by the Brussels regulatory authority (BRUGEL). A distinction is made between regular licenses and "green licenses", the latter being awarded to suppliers of green electricity.

Direct lines with a voltage equal to or less than 70 kV may be laid subject to the prior granting of an individual permit issued by the Minister.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

An important regulatory challenge for CPPAs with a fixed price comes from the subsidy regime. As outlined in detail below, the most important subsidy mechanism in Belgium is a green certificate scheme. The goal of the green certificate scheme is to ensure that renewable energy projects are not loss-making. The amount of green certificates a producer is entitled to can therefore fluctuate over time, depending on the electricity price. In these circumstances, a developer of a renewable energy project may be reluctant to enter into a CPPA with a fixed price. This is because if the electricity market price increases, the project developer may receive less green certificates, while the price at which he sells his electricity remains the same, resulting in a loss.

On a more general level, it is noted that developers of renewable energy projects are faced with limited availability of sites due to spatial planning restrictions, as well as potential opposition from local residents (NIMBY).

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

It is currently not possible to have on-site PPAs covering more than one specific location for offtake, i.e. where a generator supplies electricity through a direct line (bypassing the public grid) that connects various installations offtaking the electricity that have separate connections to the public grid. This is not allowed as it is deemed to detract from the exclusive rights of the transmission system operator or the distribution system operator, whatever is the case.

This prohibition may in the future be relaxed under certain specific conditions, pursuant to the implementation in Belgium (at the federal level and in the three regions with competence for the electricity market) of the EU's Electricity Market Design Directive and Regulation. The implementing legislation is currently being prepared.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

There is a growing interest in concluding corporate PPAs for electricity produced from renewable energy sources. This trend is not entirely surprising, considering the growing importance of sustainability and responsible governance withing corporations. More in general, electricity from renewable energy sources is becoming more and more competitive, not only because of the subsidies available but also because of the general decrease in production costs.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Entering into a PPA may be advantageous for companies in various ways. First, corporate PPAs may help a company achieve its sustainability goals. Second, a PPA can allow companies to enter into a long term electricity supply agreement with stable (often even fixed) electricity prices. This creates stability in a company's cost structure and can potentially be used as a tool for hedging. Finally, a corporate PPA allows undertakings to be supplied with (renewable) electricity at a very attractive price. The supplier of electricity, on the other hand, gets the assurance that he will be able to market its electricity for a long time at a stable price (thereby increasing the bankability of a renewable energy project).

What subsidies are applicable to the generation and sale of renewable energy?

General: In Belgium, the most important subsidy mechanism is a green certificate scheme. This includes a guaranteed minimum price mechanism, where electricity network operators are required to purchase the green certificates at a guaranteed minimum price, subject to generation type and location of the asset. It should be observed that there are four parallel schemes of RSE support in Belgium. This results from the division of competences when it comes to renewable energy.

Belgium's political system is a federal system comprising a federal government level, as well as three regions (Flanders, Wallonia and the Brussels-Capital Region, with mostly economical competences) and three communities (the Flemish Community, the Wallonia-Brussels Community (formerly the French-speaking community) and the German-speaking community, with cultural and language linked competencies such as education). The competence to regulate renewable energy belongs to the regions (i.e. Flanders, Wallonia and Brussels Capital), rather than the federal government. In relation to renewable energy, the federal government is (only) competent to regulate the major infrastructures for energy storage, the transmission of electricity through grids with a voltage higher than 70 kV, the transmission network tariffs, the commodity tariffs for off-takers and the production of energy in Belgium's territorial waters and its exclusive economic zone in the North Sea.

Federal level: On the federal level, a green certificates scheme applies in order to support offshore wind energy installations. In respect of this sector, it should be noted that the Federal Parliament adopted a new Act establishing a tender procedure for new concessions for offshore wind farms, whose operators will then be eligible for support. To date, the key modalities for this tender have not yet been elaborated in Royal and Ministerial Decrees.

In addition, companies can reduce their taxable profits with an increased investment deduction for energy saving and energy recovery investments.

Flemish Region: A green certificates scheme applies in order to support renewable energy installations in the Flemish Region. Regularly – including recently for projects receiving permits from 2020 onwards, the subsidy levels and periods are adjusted downwards for new projects.

The green certificates scheme does not apply to all renewable energy technologies, however. Certain types of renewable energy will (depending on their capacity) not be eligible for the green certificates scheme but will receive subsidies depending on the type and capacity of the renewable energy installation. These subsidies are distributed by means of "calls for proposals". This is, for example, the case for photovoltaic installations with a capacity between 40 kW and 2 MW, and for wind turbines on land with a capacity between 10 kW and 300 kW.

Brussels Capital Region: A green certificates scheme applies in order to support renewable energy installations in the Brussels Capital Region. The Coalition Agreement for the new Brussels Region government states that by 2024 (i.e. the end of the current legislature), the green certificates scheme and the percentage of certificates allocated will be readjusted, taking into account the reduction of the cost of renewable energy systems. In addition, supplementary subsidies are offered to companies willing to invest in "green" projects, subject to the applicant meeting certain requirements.

Walloon Region: A green certificates scheme applies in order to support renewable energy installations in the Walloon Region. In addition, a wide range of support, including energy bonuses, investment aid for cogeneration plants or processing plants, tax deductions for investments, is offered.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

When it comes to tradable green certificates, reference is made to the answer to the above question.

As for guarantees of origin (GoOs), it should be observed that there are four parallel schemes of GoOs in Belgium. The reason, therefore, is the division of competences when it comes to renewable energy (see above).

Federal level: The federal GoOs can only be issued for electricity produced offshore from water, currents or wind.

Flemish Region: Flemish GoOs are granted to the owner of a production plant located in the Flemish Region, or to the natural or legal person designated by him for this purpose, for each 1 000 kWh of electricity generated in the plant from renewable energy sources (wind, solar, aerothermal, geothermal, hydrothermal energy, ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogas) or qualitative cogeneration. In May 2020, the Flemish energy regulator (VREG) for the first time also issued GoO for gas.

Walloon Region: Walloon GoOs are granted for electricity produced from renewable energy sources, from combined heat and power systems. In addition, GoOs are also granted to gas produced from renewable sources.

Brussels Capital Region: GoOs are granted to production and cogeneration plants that (i) are located on the territory of the BCR and, (ii) that have been the subject of a prior certification procedure. Every GoO corresponds with a volume of 1000 kWh green electricity.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	All options are possible.
What term is typically agreed for the PPAs?	The typical term of PPAs is from 10 - 15 years.
Are the PPAs take-or-pay or limited volume?	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.
Are there any other typical risks?	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.
Change in law	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.

Increase / reduction of benefits	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.
Market liberalisation (if applicable)	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.
Credit risk	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.
Imbalance power risk	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.
Production profile risk	There is no market standard structure currently in place for this type of commercial arrangement in Belgium.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Balancing is done by ELIA in accordance with the Federal, Flemish and Walloon technical regulations. ELIA assumes the balancing responsibility for the Belgian territory. In doing so, it cooperates with so-called "access responsible parties" (**ARPs**). The ARP is responsible for maintaining a balance within its own individual balance area. The perimeter of an ARP consists of injection and off-take points for which they were appointed ARP.

Commission Regulation (EU) 2017/2195 establishing a guideline on electricity balancing applies directly to the BE energy market.

The imbalance tariffs, charged to ARPs, are set by the regulatory authority (**CREG**) on the basis of a proposal by the transmission system operator for electricity (**ELIA**). In principle, the tariffs are set every four years.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

2020: Ineos and Engie entered into a 10-year PPA for 84 MW from the off-shore wind farm Norther.

2020: Borealis and Eneco entered into a long term PPA. Under this PPA, over 1 000 gigawatt hours of electricity will be supplied to Borealis over the next decade.

2019: Google and Engie entered into a PPA for 92 MW from the off-shore wind farm Norther.

2020: AB Inbev entered into a 10-year Virtual Power Purchase Agreement BayWa r.e., so as to purchase 100% renewable electricity for its European brewing operations (a.o. 5 breweries in Belgium).



Botswana

Last modified 09 February 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs are not currently deployed in Botswana.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Botswana does not allow corporate owners to purchase directly from a facility or a choice of suppliers.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

There are no other third parties commonly party to the PPA structure.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

A generator may not sell electricity to consumers and customers, except in terms of a licence issued by the Botswana Energy Regulatory Authority ("BERA") authorising the sale of such electricity.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Various stakeholders have identified the following key challenges to adopting green energy:

1. Subsidised thermal tariff;
2. A general lack of energy information for policy, planning and decision-making;
3. Ineffective private sector participation and low investment in the energy sector possibly due to the lack of clear policy and incentives as well as the previous absence of an impartial regulator to provide a level playing field for the industry;
4. A lack of a detailed renewable energy strategy;
5. A lack of trained personnel in the energy sector;
6. The focus is mainly on base-load energy supply, transmission grid reliability, service delivery, financial turnaround and rural electrification.

Many of the challenges mentioned above gradually being overcome by the establishment of BERA.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

The establishment of BERA promises to bring about a change in the operation and regulation of the energy sector.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

There is certainly corporate appetite. There are currently no political or financial incentives available, although the Botswana Government is focussing on the utilization of green energy.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Currently, there are no corporate PPAs in Botswana.

What subsidies are applicable to the generation and sale of renewable energy?

None as yet.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

No.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Not applicable.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Not applicable.

Balancing

Does your country operate a balancing responsibility scheme?

No.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

None.



Brazil

Last modified 06 September 2023

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs in Brazil (which are essentially for solar and wind sources) have been exponentially growing in the past years and the regulatory and economic perspectives indicate that this trend will continue for the future.

Most PPAs in Brazil are physical, however, the development and maturity of this market has been leading to the rise of more complex arrangements, such as the trading of power derivatives, which have become more usual and popular in the last few years.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

According to Brazilian regulation there are two power market structures: Regulated Market; and Free Market. Consumers included in the Regulated Market can only purchase power from the local distribution company, which are concessionaries of the distribution services and operate in a monopolistic structure within the applicable geographical areas.

As for the consumers allowed to be part of the Free Market, they can buy their power from other market agents, including directly from generation facilities and energy brokers. Accordingly, corporate PPAs in Brazil are executed within the Free Market.

Since January 1, 2023, consumers that have a charge equal or above 500 kW, supplied at any voltage, can enter the Free Market. But this threshold is expected to be reduced even further. According to the current regulation, as of January 2024, all high voltage consumers will be able to migrate to the Free Market. Also, the complete opening of the free market (ie to all consumers, regardless of charge or voltage) is currently under discussion and is expected until 2028.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Most corporate PPAs are between generators and offtakers. However, the development of the power sector enabled a trend in the market that involves an energy broker taking part in the agreement to enable better risk allocation. The energy broker may undertake risks that the other parties are not willing to take (such as submarket and production/consumption profiles risks), since its diversified power portfolio allows it to better allocate and mitigate them.

Other agreements are required to enable the physical delivery of the power to the offtaker, such as agreements for the use of the distribution/transmission system, entered with the relevant distribution/transmission utility company.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes, the generator may sell electricity directly to the end user, provided that both the generator and the end user are participants of the Free Market.

To be part of the Free Market, the parties must be enrolled as agents before the Chamber of Electricity Commercialization (CCEE). The enrolment process involves the provision of several documents and information related to corporate and financial aspects of the company, the adhesion to the commercialization rules, the adequacy of the consumer's or the generator's electricity measurement systems, among other steps. Moreover, agents must comply with the applicable requirements and regulations issued by the Brazilian National Electric Energy Agency (ANEEL).

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Financial

There is a financial risk associated to the corporate PPAs considering the uncertainty of future energy prices. The price of the spot energy market, which is currently calculated on an hourly basis, takes into consideration several variables such as hydrological conditions, power demand, entrance of new players, among numerous others. Prices may rise significantly and directly affect the parties; or they may decrease and become a competitive disadvantage. This risk may be mitigated by means of a price review mechanism agreed between the parties.

Planning

Considering the long-term structure of corporate PPAs, the offtaker needs to estimate its power consumption level, taking into consideration the possible growth in its consumption, as accurately as possible, otherwise some divergences between the planned and the actual consumption rate may occur. To mitigate this risk, it's important to establish contractual mechanisms that can absorb some variations regarding the initial planned amount, such as defining a contracted amount limited to a percentage of the global charge, or contracting a diversified portfolio, with different term and delivery conditions, to minimize any exposure.

Counterpart

Corporate PPAs are used by developers to obtain funding for the construction of their facilities and delivery of the agreed power. Until the generator's facilities are completed there's a risk of delays or issues in the construction of the plant and, therefore, in the delivery of the contracted power supply. To mitigate this risk, it's important to analyze the developer's background and its capability of delivering the project on time and include provisions in the PPA regarding construction and delivery milestones. Another way to mitigate this risk is asking the developer to present a performance bond.

Performance

Renewable sources, especially wind and solar, are intermittent and, therefore, may generate contractual exposures for the offtaker or the generator, depending on the contract structure. The Brazilian power market has been mitigating this risk by contracting an energy broker that may provide the remaining power when the renewable sources included in the corporate PPA do not perform as expected. Additionally, corporate PPAs in Brazil generally contain specific provisions regarding supply obligations and guarantees.

Submarket

The Brazilian power market is divided into four submarkets, which may present different spot prices among them. So if the consumer is in a different submarket of the generator, even if the amount produced is the same as the amount consumed, there may be some positive or negative amounts that need to be settled. This difference between submarket prices may create risks for both the offtaker and the generator. To minimize these risks one strategy is purchasing electricity from a generator that is located in the same submarket of the offtaker; but this alternative is not always available due to certain conditions, including technical and geographical ones. An alternative that has been used by the power market to address this matter is including energy brokers in the PPA contractual structure to manage the submarket risk, due to their diversified portfolio. Another alternative is including provisions that anticipate the costs of submarket swaps, so both parties have more predictability and may better allocate their risks.

Technical (Connection)

The exponential increase of renewable power projects in Brazil in the last few years, especially in certain regions of the country (ie northeast region), has created an outlet issue for all such generated power, since the current power transmission infrastructure in Brazil is not sufficient to accommodate all the projects that have already been authorized by ANEEL. In this sense, one of the main risks for power projects under development in Brazil is the attainment of the relevant authorization to connect to the grid. As an effort to minimize such risk and restriction, ANEEL has been adopting certain measures to improve the transmission flow margin, including the promotion of new Transmission Auctions, which are set to take place over the new few years. The purpose of these auctions is to attract investments for improvements and expansion of the Brazilian power transmission grid infrastructure.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Modernization of the Brazilian Power Sector

At the beginning of 2019, the federal government announced its plan to submit a set of measures to modernize the regulation of the power sector and the Ministry of Mines and Energy (MME) formed a work group for this purpose. One of the main results of the discussions held in this working group is Bill of Law No. 414/2021 (PL 414). PL 414, also known as the Bill of Law of Modernization of the Power Sector, which has been in discussion in the Brazilian congress since 2021, is considered a priority of the new Administration (elected in 2022). The main aspects of PL 414 are to:

- complete opening of the power market (further detailed below);
- improve the power market;
- improve rates; and
- reduce charges.

Expansion of the Free Market

In the past years, the Brazilian power market has seen an expansion of the Free Market, increasing the direct participation of corporate consumers in the energy sector. As mentioned above, since January 1, 2023, consumers that have a charge equal or above 500 kW, supplied at any voltage, can enter the Free Market. The next step of such expansion will occur in January 2024, when all high voltage consumers will be able to migrate to the Free Market, which represents approximately 106,000 consumer units in Brazil. A complete opening of the Free Market is under discussion in the federal government and the Congress, with an expectation of a complete opening until 2028.

Review of Incentives

In the last few years, small hydro, solar, wind, biomass, and qualified cogeneration projects received a subsidy in the form of a discount of 50% in transmission and distribution tariffs. These subsidies were reviewed and terminated for new projects, and a transition regime is being put into place by the Federal Government. Please refer to Item 10 for further details.

PPAs in Foreign Currency

The Foreign Exchange Legal Framework (Federal Law No. 14,286/2021), which entered into force in December 2022, enabled the possibility of payments in foreign exchange for obligations performed in Brazil, in agreements entered between exporters and holders of a concession, permission or authorization in the infrastructure sector. This new legal framework enabled the possibility of execution of PPAs in foreign exchange, which, previously, had several restrictions under Brazilian law.

This possibility was highly anticipated by the sector, and it is expected to contribute even further for the development of the power sector in Brazil, facilitating the obtainment of foreign investments and financing, and reducing exchange risk to developers, since most of the supply agreements related to the construction of a power plant are entered with foreign companies, in foreign currency.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Considering the increase of the supply of power generated from renewable sources, the prices have become more competitive over time. The advance of technology related to renewable power generation also contributed to the competitiveness of the energy prices, since such power generation became cheaper in the long-term. This trend has generated an interest in the consumers to replace their power supply agreements, which use sources that cause more environmental impact, for renewable power.

Also, corporate PPAs offer the possibility of associating offtakers' brands to the financing and acquisition of renewable energy, which has shown to be very beneficial since, more than ever, both consumers and investors claim for companies that show their concern with the environment and sustainability and that have consistent ESG policies.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Due to Brazil's natural characteristics (hydrology, availability of solar radiations, strength of the winds), the country is a global leader in the generation of power from renewable sources. This vast experience of the Brazilian market contributed to a business environment with great diversification of players, business models and risk appetite which presents opportunities to clients with several business profiles and objectives.

What subsidies are applicable to the generation and sale of renewable energy?

In the past few years, to promote the development and the competitiveness of the renewable sources, the federal government granted a subsidy for small hydro, solar, wind, biomass and qualified cogeneration projects in the form of a discount of 50% in transmission and distribution tariffs (TUST and TUSD, respectively). However, considering the goal has already been attained, in 2021, Federal Law No. 14,120/2021 was enacted and terminated the grant of such discounts for future generation projects, creating a transition regime.

The projects that already benefitted from TUST or TUSD discount will retain the benefit until the end of their respective authorization grant (in the event of renewal of the grant, the discount will not be renewed). As for new projects, the law established that (i) if the authorization request was filed before ANEEL until March 2, 2022, and (ii) the power plant achieved commercial operation within 48 months counted from the issuance of the relevant authorization grant, then the project could still benefit from the discount. New projects that do not comply with both of these criteria are not entitled to the discount.

Without prejudice to the above, additional transition rules are still under discussion by the sector's authorities.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Brazil integrates the International REC Standard and, therefore, is authorized to issue RECs (Renewable Energy Certificates), by means of a single authorized issuer, and the Brazilian companies can trade such RECs. The issuance of such certificates has exponentially risen in the past few years, with over 9 million certificates issued up to 2022. Each certificate equals 1 MWh of renewable energy generated and injected in the power system.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	There are a number of possible options: fixed prices, step prices adjusted over the term, and price indexation; hybrid forms of these alternatives are possible. Given the private nature of contracts, it is difficult to generalise on commonly used pricing arrangements across the Brazilian market.
What term is typically agreed for the PPAs?	The usual term for a PPA in Brazil is within the range of 8 to 20 years.

Are the PPAs take-or-pay or limited volume?

The PPAs deployed in Brazil are usually structured as a take-or-pay combined with a monthly flexibility (usually between 10% and 15%) and yearly seasonality.

Are there any other typical risks?

For the main risks regarding corporate PPAs in Brazil, please refer to [Challenges](#).

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	If the generator falls short of the contracted power amount, it will need to acquire the necessary amount in the market to comply with the PPA.
Change in law	Neither party. Generally, corporate PPAs contain a provision establishing that in the event of change in law that affects the contract, the parties will renegotiate its conditions in good faith.
Increase / reduction of benefits	Given the private nature of contracts, it is difficult to generalise on this across the Brazilian market, but where the reduction of benefits is caused by a change in law, this may be covered by a change in law clause.
Market liberalisation (if applicable)	Not applicable
Credit risk	Offtaker or generator, depending on the credit rating of the parties involved.
Imbalance power risk	Not applicable
Production profile risk	Offtaker or generator, depending on the PPA structure and generator's and consumer's production and consumption profiles, respectively.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

The physical delivery of the electricity is controlled by the Operator of the National Electricity System (ONS), who centralizes the dispatch of the power plants.

The contractual/financial portion is handled by Chamber of Electricity Commercialization (CCEE), who is responsible for the financial balance of the power system. CCEE is also responsible for the short-term or spot market and for the calculation of the spot price.

All corporate PPAs must be registered with CCEE. If generators fail to provide the amount of power contracted or if consumers fail to contract all their consumption, the difference between the actual and the contracted electricity production/consumption will be subject to the spot price. Also, generators and consumers may be penalized by CCEE for their shortfall.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

- Scatec, Equinor and Hydro Rein (joint developers of the Mendubim Project) entered into a PPA with Alunorte in July 2022. The PPA has a term of 20 years, and it involves approximately 60% of the capacity of the project (531 MW).
- Casa dos Ventos and Braskem entered into a BRL2.1 billion PPA in March 2023, with a term of 22 years.
- Atlas Renewable Energy and Brasil Albras entered into a PPA in April 2023, with a term of 21 years. This is reported as one of the largest PPAs executed in Latin America.
- CEMIG and Gestamp entered into a PPA in November 2022, with a term of ten years and total expected supply of 79.2 GWh.



Chile

Last modified 10 October 2023

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

PPAs represent 60% of the annual sales of the National Electric System, according to the information provided by the National Electric Coordinator. That 60% is equivalent to 46,267 GWh as of December 2022.

The National Energy Commission estimated in its latest Electricity Demand Forecast Report for the period 2022-2049, that the electricity consumption of the National Electric System would increase from 76.3 TWh to 123.7 TWh, which is equivalent to an increase of 62.05% in that period, where regulated clients present annual average growth of 3.05% and nonregulated clients 2.02%.

Currently PPAs are frequently deployed due to the increase in the spot price of energy. Also, in case of a long-term energy demand (eg the supply required by distribution companies) PPAs continue to be the predominant agreement.

PPAs are adapted to the requirements of both parties. Therefore, there are many structures that a PPAs can take, for example, physical delivery, take or pay contracts, delivery or pay, lump-sum contracts, fixed prices contracts, indexed prices.

The first and most used PPAs in the generation industry in Chile is lump-sum contract, where within a certain period of time, usually monthly, there is a commitment from the generator to deliver and to sell a minimum or maximum of energy units (MWh). This implies that if the generator is not capable of generating the energy agreed upon, it must buy the energy in the spot market to fulfil the supply obligation.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

A client is considered regulated if its contracted power is less than or equal to 5,000 kW. Regulated consumers do not have a choice of suppliers, as they are supplied from the relevant distribution company concessionaire.

In turn, if a client has over 5,000 kW, it is considered a non-regulated customer, and can be supplied with electricity from other means, such as self-generation or direct supply from a facility.

Finally, customers who are connected to the network and whose power is greater than 500 kW and less than 5,000 kW can choose to be regulated customers or non-regulated customers. This trend has decreased in the last year.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Utilities are also a common party in PPAs, however the structure is different since those PPAs are entered into after a public bidding process in which generators present competitive offers to supply energy to end users subject to regulated price. In this sense, management of the network and commercialization to end consumers are performed by distribution concessionaires in a vertically integrated manner.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

The energy market in Chile is structured as a mandatory pool-type market restricted to generators and does not currently allow brokers or energy traders. The power generated is withdrawn by generators to be commercialize and sold in the spot market or in the contracts market (distribution companies or PPAs to non-regulated customers). Therefore, there is no license requirement or other form of authorization required for a generator to sell electricity directly to end non-regulated consumers.

Only power generation companies that operate interconnected facilities can commercialize energy in the system. The coordination of the operation must be carried out through the National Electric Coordinator, according to the provisions established in the electricity law, according to the regulations and technical standards determined by the National Energy Commission (*Comisión Nacional de Energía* or CNE).

The regulatory framework for the power generation in Chile is based on a competitive, non-discriminatory, free-enterprise system in which generators participate in two related activities, energy production and commercialization of such energy to non-regulated customers and distributors concessionaires.

Distribution concessionaires centralize in a vertical manner the business of distributing the electricity through its network infrastructure and the commercialization to regulated customer within the area of the relevant concession.

There are regulatory discussions around introducing the power retailer segment into the market, to boost competition and promote active participation of end-consumers in the market.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The accelerated increase in renewable generation in the north of the country has led to lack of adequate transmission infrastructure which represents the major technical challenge. This has resulted in financial pressure for renewable energy projects due to energy curtailments and the decoupling of energy prices between injection and withdrawal points.

This has prevented some generators from being able to fulfil the PPAs they have entered into, although so far these have only been isolated cases.

To overcome this situation, the government is taking several measures. On December 2021, the National Electric Coordinator awarded a consortium with the project Kimal-Lo Aguirre, a transmission line of 1,500 km that will be able to transport 3,000 MW of nominal energy from the north to central Chile. In addition, a bidding process to build 2 GW of storage capacity was recently announced.

Also, the government submitted a bill of law on energy transition before the Congress that seeks to make more efficient the expansion of transmission infrastructure. In addition, Law No. 21,505 was enacted in 2022, which promotes the storage of electric energy, and modifications are currently being made to the regulation that establishes how power is remunerated, which is key to the deployment of energy storage in Chile.

Notwithstanding the challenges, Chile has a state policy committed to the energy transition, which promotes the adoption of green energies. According to the Framework Law on Climate Change, by 2050 at the latest, greenhouse gas emissions neutrality must be achieved, and for the energy sector, the goal set by the government is that by 2030, 80% of energy should come from renewable sources and by 2050, 100% of energy generated should be zero emissions.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

No regulatory changes are expected that could significantly alter the current scenario on corporate green energy and corporate PPAs.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Appetite for green energy has significantly increased in recent years, which is reflected, among other things, in the renewable energy consumption in Chile, which increased from 10% in 2017 to nearly 20% in 2021.

The last 15 years the government has implemented several policies encouraging companies to satisfy their energy demand through NCRE, having set a goal so that by 2030, 80% of energy comes from renewable sources and by 2050, 100% of energy generated is zero emissions. These policies also include a reduction in the payment of transmission tolls, the obligation for electricity companies to have a percentage of withdrawals from NCRE sources, the possibility to sell the NCRE Attributes and carbon offsets, the creation of investment support funds and the establishment of measures to facilitate the interconnection of generating plants, among others.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The structure of the PPAs is flexible and there are no regulations that establish restrictions to the parties, who can agree the more convenient commercial conditions considering the nature and special needs of the relevant business.

From an energy security perspective, all the energy generated is injected to a system interconnected nationwide. This means that any energy supply will have a back-up, giving the system stability and security.

Regarding PPAs, there is a very sophisticated local market with the best global practices, applying market standard indexing formulas to be defined on the relevant price variables.

What subsidies are applicable to the generation and sale of renewable energy?

NCRE plants that generate less than 9 MW are completely exempt from paying tolls for using the main electrical transmission system, and NCRE plants that generate more than 9 MW but less than 20 MW are partially exempted.

There are benefits for investors importing capital goods for energy projects over USD5 million, which will be exempt from VAT, subject to the prior approval of the Chilean Ministry of Finance. In addition, the Chilean VAT Law establishes a benefit for companies that invest in fixed assets (eg solar and wind energy plants). In this regard, the company is entitled to a reimbursement in cash of VAT paid on the acquisition of goods and services that compose fixed assets.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

There is no regulation on green certificates, and currently there is no scheme for their commercialization. Generation companies issue such documents to their clients, certifying that the energy purchased correspond to NCRE.

In addition, Renewable Energy Certificates (CER) have recently entered into the market dynamics where incumbents offer end-costumers to certify under an international standard that a portion or total energy meets are met by renewable energy.

The National Electric Coordinator, an independent technical body in charge of coordinating the operation of all the facilities of the National Electric System, launched in 2021 the RENOVA platform, a National Renewable Energy Traceability Register, which is helpful for these purposes.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Prices tend to be fixed and indexed to CPI. Price is usually

	<p>established based on multiple factors, for example the price of coal, the spot market price, commissioning date, among others that reflect the cost of generating energy.</p>
What term is typically agreed for the PPAs?	From 4 up to 20 years.
Are the PPAs take-or-pay or limited volume?	PPAs can have both structures.
Are there any other typical risks?	<p>Today the <i>force majeure</i> in PPAs is limited, especially in those PPAs subscribed between generators and the distribution companies. In such case, the generator must acquire energy from the spot market to comply with the agreed supply.</p> <p>Also, in the last couple years, generators are facing financial risks due to decoupling of energy prices between injection and withdrawal points.</p> <p>Some of the causes are transmission congestion, increase in the costs of providing ancillary services, mismatches between the injection and withdrawal time physical profiles, increase in costs per operation to the technical minimum.</p> <p>Within the short-term solutions, there is the modification to the Regulation of power transfers between generating companies, to allow the progress of storage.</p>

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Generator
Change in law	<p>It is not applicable. When the law changes, both parties will be subject to the law of the contract.</p> <p>If the law that has changed involves the public, then usually both parties agree to renegotiate the terms of the PPA.</p>
Increase / reduction of benefits	Both parties
Market liberalisation (if applicable)	Not applicable
Credit risk	Offtaker
Imbalance power risk	Generator
Production profile risk	Generator. Incumbents can always withdraw electricity from the system to serve their contractual needs regardless of whether the electricity withdrawn was partially or totally produced by them.

Balancing

Does your country operate a balancing responsibility scheme?

Yes, balancing responsibility is the scheme for the National Electric System.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

The Independent Coordinator of the National Electric System is the balancing authority. Usually the generator and offtaker do not undertake balancing.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

- Grenergy entered into a PPA to supply 140 GWh a year for a 12-year period to an international utility company with a presence in the Chilean market.
- Energías Renovables Fotonos de Chile entered into a ten-year PPA with Generadora Metropolitana for 350 GWh/year to supply the Libertad solar plant. The agreement also includes Non-Conventional Renewable Energy (NCRE) attributes.
- On December 2022, CODELCO entered into a PPA with AES Andes to supply 210 MW of renewable energy from 2023 to 2040.



Colombia

Last modified 16 December 2020

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

A CPPA could be sold to a corporate buyer via a utility company or through a self-generation scheme.

CPPA via a utility company takes the form of a Financial PPA in the sense that not physical delivery is required (a volume imbalance implies that the generator could buy the difference at the wholesale energy market).

CPPA via a self-generation scheme takes the form of a Physical PPA.

Financial PPAs between a corporate user and a generator are allowed by regulation and they can be negotiated over-the-counter or through the exchange market organized by the Colombian Stock Exchange (so called, DERIVEX). However, they are not commonly used because of additional regulatory costs that makes the deal not appealing in mostly all cases.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

There are no restrictions for long-term CPPAs executed between participants of the Wholesale Energy Market (namely generators and retailing companies). However, there are restrictions for a generator to sell CPPA to large scale users, as only a retailing company can enter into a CPPA with a large-scale user.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Not normally; sometimes guarantors are involved.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

No, pursuant to Law 143 of 1994 and regulation issued by the Colombian Energy Regulator, it is forbidden for a generator to sell energy to an end consumer. Although only retailing companies are entitled to sell energy to an end consumer, vertical integration between generation and retailing activities is permitted. As mentioned before, only under a self-generation scheme could an Independent Power Producer sell energy to an end consumer and no license or other form of authorization is required.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Social issues with ethnic communities

As a multicultural country, Colombian natural resources used to produce clean energy are almost always around or in the territory of ethnic communities (i.e. wind in La Guajira, hydroelectric projects in Antioquia). Before undertaking any activity of exploration or exploitation of natural resources, which are on the lands of these peoples, a prior consultation (*consulta previa*) should be carried out with the affected community to guarantee their effective participation, through a scenario aimed at guaranteeing their fundamental rights. This process might take longer than expected and without its achievement it is impossible to obtain the permits and licenses required for the project. Projects which have successfully achieved this process have hired NGOs, and private agencies to advise them on the process.

Environmental issues

As a rule, the use of exploitation of renewable natural resources requires the prior granting of a permit, authorization or concession by the competent environmental authority. In certain parts of Colombia, environmental entities take a lot of time to analyze and issue environmental licenses. It is important to file license and permits papers as soon as feasible in order to avoid delays.

Interconnection procedure

Domestic law enables vertical integration between generation, distribution and retailing activities. Thus, the grid owner might have an incentive to obstruct access. Additionally, grid technical conditions might impose an additional challenge for the interconnection of a new renewable generation unit because in such cases the regulator might require a prior investment from the grid owner to update or expand the grid before authorizing the interconnection.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

The Ministry of Energy has recently launched a Mission of energy transformation and modernization of the electricity industry: roadmap for the energy of the future. The Mission has already recommended to the Ministry to enable CPPAs directly negotiated and executed between a corporate buyer and an Independent Power Producer.

In December 2020 the Ministry of Energy will launch the roadmap and will establish if such recommendation will be included in the regulatory agenda for 2020.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

In 2014 the Colombian Congress enacted Law 1715 to promote unconventional renewable energies. This law sets forth tax, regulatory and practical benefits for renewable energy investors in Colombia. See [Subsidies](#) for more information.

In 2019 the Congress enacted Law 1955/19 (so-called The National Development Plan 2018-2022), which commands retailing companies to purchase 8-10% of the energy provided to final users from renewable energy.

In line with this goal, in October 2019 the Ministry of Mines and Energy conducted an auction to award long-term power purchase agreements to renewable energy generators and to retailing companies as power purchasers. However, it is not yet foreseeable if the Colombian Government will organize a new renewable energy auction in the short term.

Finally, both legislation and government have identified that renewable energies could also be implemented in non-interconnected zones, in order to provide electricity by replacing diesel electricity generation. The National Development Plan also states that the FENOG and public-private partnership initiatives will attract private investment for energy efficiency.

What are the key local advantages of the corporate PPA model which can benefit our clients?

- State, private and public-private partnerships may generate, transmit, distribute and trade electricity without requiring a concession.

- There are no legal restrictions for long-term PPAs executed between participants of the Wholesale Energy Market (namely generators and retailing companies).
- Contract law concept of hardship can be disapply contractually by parties.
- The activity of selling energy in the wholesale market does not require a license but all generators must be registered before a Public Register administered by the Superintendence of Public Utilities.
- Law 1819 of 2016 created the carbon tax in Colombia. Furthermore, Decree 926 of 2017 created the carbon neutrality mechanism and pursuant to that regulation, a renewable energy project qualifies as an initiative eligible for selling carbon reduction credits.
- There are no legal restrictions for long-term CPPAs under a self-generation scheme where the IPP is the owner of the assets. When using RSE under a self-generation scheme, surplus energy can be negotiated as energy credits. The Law also provides for the establishment of a Management Fund, which may finance all or part of the RSE projects for residential sectors at levels 1, 2, and 3.
- Law 1715 of 2014 includes tax benefits as explained in [Subsidies](#).

What subsidies are applicable to the generation and sale of renewable energy?

No subsidies are applicable to the generation and sale of renewable energy.

Law 1715 of 2014 covers the support schemes for renewable energy projects which include the following tax benefits:

- income deduction for a period 15 years on 50% of the investment made;
- VAT exclusion;
- exemption from payment of customs tariff duties; and
- accelerated depreciation of assets.

It also allows the release of surplus energy into the network for all self-generators.

Finally, the General Regime of the Tax Statute includes the following tax benefits:

- discount for investments in control, conservation and improvement of the environment;
- VAT exclusion on imports of environmental control systems, monitoring systems and environmental programs;
- income exemption from the sale of energy generated from renewable energy projects; and
- VAT exclusion on the sale of electricity and provision of public energy service.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Colombia does not have a RECs system nor regulations regarding the issuance of RECs. Companies issuing RECs are often registered with the International I-REC Standard. The International REC Standard has authorized and accredited ECSIM to become Local Issuer of I-REC certificates in Colombia.

However, Law 1819 of 2016 created the carbon tax in Colombia. Furthermore, Decree 926 of 2017 created the carbon neutrality mechanism and pursuant to that regulation, a renewable energy project qualifies as an initiative eligible for selling carbon reduction credits.

Trading of RECs in Colombia is not regulated and therefore issuers and buyers agree the conditions of trading without the State's intervention.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Fixed.
What term is typically agreed for the PPAs?	CPPAs are typically agreed for 2 years. However, current development of renewable energy projects in Colombia has led to the execution of long-term agreement (approximately 15 years).
Are the PPAs take-or-pay or limited volume?	Take-or-pay.
Are there any other typical risks?	Transmission or Interconnection Risk: CPPAs usually indicate that the generator party bears the risk of connecting the facility with the grid and transmitting power to the nearest substation. Normally the generator to bear all or a significant portion thereof.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

A CPPA could be sold to a corporate buyer via a utility company or through a self-generation scheme.

Type of risk	Details
Volume risk	CPPA via utility company: Offtaker. CPPA through a self-generation scheme: Generator
Change in law	Offtaker
Increase / reduction of benefits	Generator
Market liberalisation (if applicable)	Not applicable
Credit risk	Offtaker
Imbalance power risk	CPPA via utility company: Offtaker CPPA through a self-generation scheme: Generator
Production profile risk	CPPA via utility company: Offtaker CPPA through a self-generation scheme: Generator

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

The authority in charge of balancing the system in the day-ahead spot market is the system operator XM S.A. E.S.P., pursuant to Resolution 24 of 1995 (The Wholesale Energy Market Code). All generators are responsible for primary reserve and shall contribute with AGC services and it becomes a regulatory cost for such units that are incapable to adjust output in response to change in load. Besides AGC there is no other regulation in place imposing Balancing Responsible Party obligation.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

- EPM S.A. E.S.P announced in March 20 that it won the auction bidding for the “CaribeMar” portion of assets formerly belonging to the utility company “Electricaribe”. This transaction has not closed yet but it is expecting to be closed before the end of this year. This deal has been the largest energy sector transaction of the year, the most important in the history of EPM.
- Enerpereira S.A. E.S.P. won the auction for “CaribeSol” equivalent to the other portion of the assets belonging to Electricaribe. DLA advised Enerpereira in this auction and it is suitable for publication.
- Brookfield sold to Northland Power the utility company Empresa de Energía de Boyacá (known as EBSA) at USD\$1,05 billions.
- EDP Renewables (EDPR) a global leader in the renewable energy sector and one of the world’s largest wind energy producers, has secured two 15-year Power Purchase Agreements (PPA) at the recent renewable auction organised by the Colombian Government (2019).
- Trina Solar sold to TPG three solar projects of 100MW each. These projects are in stage of construction and were awarded long term PPAs at the recent renewable energy auction. These projects were part of a larger transaction involving assets in Europe and Latin America.



Czech Republic

Last modified 26 July 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

PPAs have not been used very much as the Czech Republic has not yet fulfilled its obligation under Directive 2018/2001 of the European Parliament and of the Council (EU) to adopt legislation and remove obstacles to the conclusion of such contracts. However, it can be expected that over time these contracts will be used more frequently.

We can distinguish between virtual and physical contracts. Virtual contracts are based on the customer purchasing electricity from the electricity trader at the market (spot) price. The generator and the customer then settle between themselves the funds received on the generator's side in relation to the price they have agreed in the PPA. If the spot price of the electricity received by the producer is higher than the price agreed in the PPA, the producer shall pay the customer the difference between the spot price of the electricity and the price agreed in the PPA. If, on the other hand, the spot price of the electricity received by the producer is lower than the price agreed in the contract, the customer shall pay the producer the difference between the agreed price and the spot price of the electricity.

In the case of so-called physical contracts, the supply of electricity is made by direct transmission of electricity from the producer's facility to the customer, where the electricity generation plant is often located directly at or near the customer's premises. The price of electricity may be negotiated as a fixed amount, regardless of the evolution of the electricity price on the market. Surplus electricity may then be resold to an electricity trader, this is however not always very beneficial due to the low price.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

The contract is between the customer and any electricity producer. The law does not restrict the choice of producer.

Both direct and sleeve PPAs and synthetic PPAs are allowed. Direct PPAs have evolved as a way for utilities to contract directly with generators for electricity produced from one or more specific facilities.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Agreements involving third parties are possible, the law does not restrict it in any way. In such PPAs, the third party usually acts as an intermediary between the manufacturer and the buyer. Renewable energy produced by the generation site is not delivered directly to the point of demand or consumption of the business, but via a third party (usually the energy company) to the existing energy grid.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes, this is possible. It needs to obtain an electricity trader's licence or electricity generation licence. The difference between the licences is whether the generator supplies the end user with electricity through a direct line, where it must obtain a generation licence, or through the public grid, where an electricity trader's licence is also required.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The governmental support in the Czech Republic which has been enormous before 2010 is since then being reduced and vast majority of "green bonuses" is no longer effective (exceptions are listed in [Subsidies](#)). Also the green energy is now being further taxed.

Further issue is quite lengthy and complicated building process in the Czech Republic (i.e. obtaining all necessary permits etc.).

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

The EU Clean Energy Package introduces recast legislation, including the Energy Efficiency Directive (Directive (EU) 2018/2002), the Renewable Energy Directive (Directive (EU) 2018/2001) and Energy Union Governance Regulation (Regulation (EU) 2018/1999), which are designed to cover the electricity and renewables markets from 2021 to 2030. The Energy Efficiency Directive sets an indicative target for energy efficiency of 32.5% by 2030. The Renewable Energy Directive increases the consumption target from renewables to 32% by 2030, and the target to at least 14% of transport fuel originating from renewable sources by 2030.

In mid-July, as part of the biggest ever package of climate action, the EU proposed to increase the existing target of 32%. The proposal would also see the EU as a whole reduce energy consumption by nine per cent by 2030 compared to current levels.

In January 2020, the Czech Republic published its National Energy and Climate Plan. The document contains objectives and key policies in all five dimensions of the Energy Union. Through this document, Member States are obliged, among other things, to inform the European Commission of their national contribution to the agreed European targets for greenhouse gas emissions, renewable energy, energy efficiency and electricity and transmission system interconnectivity.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The importance of green energy has recently been growing significantly, mainly due to the negative consequences of traditional non-renewable sources, especially fossil fuels.

The topic of green energy is very topical in the Czech Republic. By signing the Paris Agreement, countries have committed themselves to moving away from fossil fuels and to ensuring carbon-free energy by 2050. It will therefore be necessary to switch to energy sources other than fossil fuels.

Green energy is also an issue for electricity suppliers. Many of them offer tariffs in which they guarantee that the electricity consumed has been entirely generated from renewable sources.

Different types of subsidies are available for families, mostly for the installation of a photovoltaic power plant for self-consumption or for the installation of a small solar power plant. The subsidies are mainly aimed at reducing energy consumption and saving money.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The nature of the benefits arising from PPAs can be diverse; on the customer side, these include mainly long-term fixation of electricity costs, minimisation of the risk of electricity price fluctuations and a guarantee of the purchase of electricity from renewable sources. Thanks to the PPAs, the producers of electricity from renewable energy sources secure a predictable income in the long term, which guarantees them a return on investment and the possibility of obtaining bank financing.

What subsidies are applicable to the generation and sale of renewable energy?

Until 2020, it was possible to use a subsidy from the Renewable Energy Support Programme. This programme focused on energy efficiency, energy development infrastructure and renewable energy sources, promoting introduction of new technologies in the field of energy management and secondary raw materials.

A subsidy programme called Renewable Energy Sources is available from 2022. Through this programme, Czech companies can receive subsidies to build renewable energy sources. Subsidies can be obtained for wind or small hydropower plants, projects related to the use of biomass energy. The aim of the programme is to support the production and distribution of energy from renewable sources. Support will be given to installations with the highest efficiency and without a negative impact on the electricity grid.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Yes, the Czech Republic uses certificates of origin, which declare the quantity of a given commodity produced at a specific location, at a certified facility and under specified conditions.

Furthermore, the Czech Republic operates Green Certificates, which prove that certain electricity is produced using renewable energy sources. These certificates have two purposes. Firstly, they can serve as an accounting mechanism in the event of having to comply with obligations set by the government, or as proof that a certain amount of renewable energy has been produced, for customers requiring green electricity. Second, green certificates help to create a market for green certificates that operates independently of the electricity commodity market.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	<p>Given the private nature of contracts, it is difficult to generalise on commonly used pricing arrangements across CZ market.</p> <p>The price of electricity is often adjusted in different ways in the contract; often the price of electricity consists of a fixed component, which covers the investment made by the producer, and a variable component, which relates to the quantity of electricity supplied. The same electricity price may be guaranteed for the entire duration of the contractual relationship or for individual sub-periods, with the possibility of further adjustments according to pre-agreed conditions.</p> <p>The PPA agrees on the minimum and maximum amount of supply per year that the generator is obliged to provide to the customer. It is then common for the price arrangements to include an obligation for the customer to pay the fixed component of the electricity price even if it does not take the agreed minimum amount of energy per year; this ensures that the generator recovers its investment.</p>
What term is typically agreed for the PPAs?	<p>A specific feature of PPA contracts is their long-term nature, as a PPA contract is usually concluded for a period of 15 to 25 years, with no exception for automatic contract extensions.</p>
Are the PPAs take-or-pay or limited volume?	<p>The legislation does not restrict the choice. It is therefore possible to have PPAs take-or-pay or limited volume.</p>

Are there any other typical risks?

The question arises as to which party will bear the risk of changes in legal and tax regulations that may occur during the course of a long-term contractual relationship. Due to the requirements of banks lending the manufacturer's investment in the energy equipment, this responsible party is often the customer, who is not entitled to claim damages or other claims from the manufacturer in the event of a change in legislation.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Where a PPA is based on fixed volume, the producer bears the risk. Conversely, with a pay-as-produced PPA, the off-taker bears the risk.
Change in law	The PPA will usually include change in law provisions, as this will usually prevent the PPA from being frustrated in the event of a significant change in law.
Increase / reduction of benefits	Depends on the specific PPA wording.
Market liberalisation (if applicable)	Czech Republic liberalised its electricity market through its Energy Act. As such, this is not a risk for CPPA parties.
Credit risk	Given the private nature of contracts, it is difficult to generalise on this across market, however depending on the relative strength of the parties, one party may wish to seek performance security from a party with lower creditworthiness.
Imbalance power risk	Depends on the specific PPA wording.
Production profile risk	Usually, this risk is allocated to the buyer, who acquires any missing volume from the market. Under the CPPA, a third party may also take responsibility for providing the missing electricity in order to manage this risk.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Balancing is performed by the users of the network.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

The Jarošov brewery was one of the first Czech companies which started to build a photovoltaic power plant through the PPA.



Egypt

Last modified 18 October 2023

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Following the initial Feed in Tariff (FiT) program launched in 2014, the Egyptian Electricity Regulatory Authority (EgyptERA), the regulator of electricity markets in Egypt, was motivated to start providing alternative schemes to the FiT, through the issuance of periodical books and decrees. This not only encouraged power generators to market their services to corporates and enter the market, it also motivated corporates to shop for lower tariff electricity to decrease their expenses, which resulted in various cPPAs being concluded in the last few years.

The operational schemes under Egyptian law are the net-metering scheme and the self-consumption scheme.

Under the net metering scheme, the consumer must enter into a balancing agreement with the Egyptian Electricity Transmission Company or with a licensed distribution company, to allow for the sale of any surplus generation through the installation of a bi-directional meter to set-off their electricity consumption with the excess electricity they feed into the network.

As per a recent amendment to the net-metering scheme, it is only applicable if the consumer (off-taker) is the owner of the PV plant, which was not the case in previous CPPAs in Egypt. Nevertheless, it still permits the consumer to contract with a third party to construct, operate, and maintain the PV plant. Based on the above, for the consumer to make use of this scheme, the consumer will need to obtain the necessary licenses and permits from the Egyptian Electricity Regulatory Authority (EgyptERA) from the outset.

In contrast, the self-consumption scheme permits the consumer to enter into a PPA with licensed generators for the construction, ownership, and operation of the PV Plant, including its connection to the consumer's internal grid. However, it is important to note that any energy surplus generated by the generator will not be injected into the government electricity grid.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Egyptian laws and regulations allow corporate owners to buy directly from a facility and to choose from different suppliers. The option to choose from different suppliers that are offsite is currently non-operational but is expected to be operational in the next few years.

Over the past two years, EgyptERA has been working with Det Norske Veritas (DNV), financed by the European Bank for Reconstruction and Development (EBRD), to implement new rules and regulations that would govern the private-to-private market. The initial draft allows eligible consumers (mainly consumers connected to the Transmission Network and contracted with the EETC) to buy electricity from eligible generator through cPPAs.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

No, but the law does not prohibit an arrangement like this.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Generators are permitted to sell electricity directly to end users. Under the Electricity Law, carrying out the activities of generation or supply of electricity requires a licence from EgyptERA.

However, projects with capacities of 500 kWh or less and projects where the power is produced for personal use don't have to get a license if they satisfy certain conditions.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Generators are still facing financial and political problems because:

- government has imposed subsidies on utilities in Egypt;
- there are no restrictions on carbon emissions and therefore no need for buyers to adopt green energy solutions; and
- short-term renewable energy project feasibility has been affected due to the current economic situation (devaluation of the Egyptian pound and increased interest rates).

This has led to an increase in levelized cost of electricity (LCOE) for renewable energy while government electricity prices have yet to adjust.

To compensate the current challenges, regulators have provided other benefits to generators such as the RECs or no grid connection fees under certain conditions. However, it remains politically challenging to remove the subsidies provided to consumers.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

As previously stated, EgyptERA has been working with DNV to implement new regulations that govern the private-to-private market. The main objective of the new regulations is to pave the way for the implementation of new privately owned renewable projects. These projects are to be connected to the grid and sold using cPPAs to the developers of green hydrogen.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The electricity sector is deemed as an investment activity as per Law No.72 of 2017 (Investment Law). So it is subject to the general incentives and the special incentives in accordance with the territory of the activity.

As general incentives, the projects are exempted from stamp tax, documentation and registration of the incorporation contract, real estate, finance contracts and mortgage related fees for five years from the date of establishment. Additionally, the registration contracts of the land required for the project are exempted from any fees. Any imports of machinery, equipment, or devices will be subject to a unified 2% of the value custom.

Special Incentives are in the form of a deduction from the net taxable profits in accordance with the territory. A 50% discount from the taxable profit is applied for Zone A, which covers the geographical locations that are in the most need of development (underdeveloped locations). A 30% discount is applied for Zone B, which covers all geographical areas other than those of Zone A, for projects working in specific activities, including projects relating to the generation and distribution of electricity. Renewable Energy secondary industries such as PV plants and electrolyzers were also included in 2022. Similarly, the Value Added Tax Law No.67 of 2016 exempts the generation, transmission, distribution of electricity from VAT.

Other financial incentives include the new CBE 11% [subsidized interest rates](#) for industrial and renewable projects.

Project developers can now benefit from the Egyptian Pollution Abatement Programme (EPAP), which grants developers up to 10% of the loan amount for renewable projects.

What are the key local advantages of the corporate PPA model which can benefit our clients?

CPPAs benefit from the flexibility to agree on pricing as there is no restrictions to be imposed by the government.

Moreover, RECs are increasing in value and tradability; so generators and corporates are currently enjoying this benefit.

Companies that operate using the net metering scheme or self-consumption scheme are exempt from paying integration fees up to a capacity of 10 MW. This used to be set at 1 MW.

What subsidies are applicable to the generation and sale of renewable energy?

No subsidies are currently applicable for generation and sale of renewable energy.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

EgyptERA issued certificates of origin for the power for each MW/h, provided that the electricity produced is not less than 1 MW/h. The certificate is intended to incentivise the consumption of energy from renewable resources by permitting trading in the certificates.

The Egyptian Exchange (EGX) has partnered with the Agricultural Bank and Libra Capital to establish Libra Carbon. This is the first Egyptian company to specialized in the management and issuance of carbon certificates. The company will include all of the necessary components for trading and issuance of carbon certificates.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	<p>A range of pricing mechanisms could be employed in a cPPA. The following are the commonly used mechanisms in Egypt:</p> <ul style="list-style-type: none"> • A fee corresponding to the difference between the government tariff and the target rate set by the contract. This pricing mechanism is more commonly used in most of the cPPAs in Egypt. • Fixed price (with no inflation) for the duration of the cPPA. However, this is rarely used given that usually this price will be higher than the government price.
What term is typically agreed for the PPAs?	<p>The typical term of cPPAs is from 20 to 25 years, but this may vary depending on the interests of the parties.</p>
Are the PPAs take-or-pay or limited volume?	<p>PPAs are generally agreed on a take-or-pay basis.</p>
Are there any other typical risks?	<p>One of the typical cPPA risks is the lack of free market structure so the buyer is generally the sole buyer of the electricity. If there is a dispute between the generator and the</p>

buyer, the generator won't be able to sell the energy generated to any other entity.

Change in law is a common risk. Any legislative change or binding court judgment which changes the legal nature poses a risk of changing the commercial benefit of the transaction for the parties.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	As most cPPAs are based on fixed volumes with a take-or-pay principle, the off-taker bears the risk. However, this risk may be balanced using a net metering agreement with local distribution company which may then cover or purchase any shortfall or surplus of electricity.
Change in law	The cPPA will usually include change in law provisions, as this will usually prevent the cPPA from being frustrated in the event of a significant change in law. Such clause seeks to rebalance the original economic intentions of the parties.
Increase / reduction of benefits	The reduction of benefits is normally covered by a clause in the cPPA where it may render the PPA not economically viable; so the clause should stipulate that if the PPA is no longer economically viable to any of the parties, the parties will reconvene and reassess the model.
Market liberalisation (if applicable)	Currently, it is not applicable. But there is a plan adopted by the Egyptian government to liberalise the electricity market in 2025.
Credit risk	Most cPPAs are constructed based on a financing to be obtained by the generator, so the generator bears the risk.
Imbalance power risk	Balancing in Egypt is done by EETC, as detailed below.
Production profile risk	The consumption profile is usually more stable than the production profile. Usually, this risk is allocated to the buyer under a cPPA, and the buyer acquires any missing volume from the local distribution company.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

On the Egyptian electrical grid, the power injected must be equal to the power withdrawn at each moment. The balancing authority in Egypt is EETC, the operator of the public electricity transmission network, which is responsible for the physical balance of the grid in real time.

That said, EETC financially compensates for the differences observed related to the injections and withdrawals within its balance perimeter from the electrical network.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

A PPA was signed with Al-Nowais Group of the United Arab Emirates for a photovoltaic power plant in Kom Ombo, under BOO system with a capacity of 500 MW, and the commercial operation is targeted at the end of 2023. A PPA was also signed with Al-Nowais Group for a wind park constructed in the Gulf of Suez with a capacity of 500 MW, and the commercial operation is expected at the end of 2023.

The global wind and solar company majority-owned by Aker Horizons, and Actis, a leading global investor in sustainable infrastructure, has signed an agreement to sell the Lekela Power portfolio to Infinity Group and AFC, subject to regulatory approvals and customary closing conditions. Lekela Power's portfolio encompasses operational power projects, with an aggregate installed capacity of over 1 GW, located in South Africa, Egypt, and Senegal.



Ethiopia

Last modified 18 February 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs are a recent phenomenon in Ethiopia and consist mainly of utility PPAs.

Under existing Ethiopian law, transmission and distribution of electrical energy through the integrated national grid system is exclusively reserved for the two Government-owned utilities (Ethiopia Electric Power or EEP tasked with generation and transmission of power and Ethiopian Electric Utility or EEU responsible for the distribution part). This implies that IPPs can sell electricity they generate to third parties (corporations, for example) provided they do not use the national grid system. Corporate PPAs, therefore, are permitted as long as IPPs use off-grid transmission.

In addition, Ethiopian law authorizes Ethiopian Electric Power (EEP) to lease electricity transmission lines. IPPs can, therefore, enter into a lease/ wheeling arrangement with EEP and sell the energy they generate to relevant third parties by leasing the national grid system.

Although the Ethiopian Energy Authority has recently issued a Directive to regulate the manner of involving in mini, off-grid power generation and distribution, the Directive does not deal specifically with corporate PPAs. Hence, at this stage, there is a lack of clarity on the type of structure cPPAs may take.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Corporations can directly purchase electric power from producers or suppliers of their own choice that are involved in the generation, off-grid transmission and distribution of power. However, as the area is not regulated in a comprehensive manner, implementation of off-grid power distribution in the sense of a cPPA is yet to be practical.

Supply of electric power through the national grid is reserved to the state-owned enterprise, i.e. the Ethiopian Electric Power (the off-taker) which in turn will transmit the generated electricity to another state-owned enterprise, the Ethiopian Electric Utility that will ultimately supply it to end customers. These state-owned enterprises are granted exclusive rights for the transmission and distribution of electricity through the national grid.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

No, parties to the PPA are the generator or the IPP and the off-taker.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes, Independent Power Producers upon acquiring the necessary licenses, can directly sell electricity to end-user as long as the transaction is off-grid. EEA has recently introduced a directive to regulate mini, off-grid power generation, transmission and distribution to communities, but this directive does not specifically address cPPAs. As mentioned above, the state-owned enterprises are granted exclusive rights for transmission and distribution of electricity through the national grid.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The major challenge for businesses adopting green energy is a lack of comprehensive regulation of cPPAs. As the concept is new to the Ethiopian energy market, sector-specific incentives are not available, and this deters corporations from adopting green energy policies. This challenge could be overcome by formulating laws and regulation specifically addressing cPPAs and providing incentives for those companies ready to meet their energy needs from renewable energy sources.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

As things stand right now, Ethiopian energy laws do not comprehensively regulate cPPAs, for this reason it is difficult to predict which forms of cPPAs the government may or may not adopt. However, we expect the area to be regulated soon shedding light on forms of cPPA companies may enter into as the government intends to use off-grid electrification as one of the means to meet its national electrification goals.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Besides the general objectives of the government to promote green energy, as stated in the Growth and Transformation Plan II^[1] there are no specific political or financial incentives for adopting green energy.

[1] Federal Democratic Republic of Ethiopia: [Growth and Transformation Plan II \(GTP II\)](#) (2015/16-2019/20)

What are the key local advantages of the corporate PPA model which can benefit our clients?

The main advantage for private actors that wish to deploy cPPAs is the possibility of supplying electricity off-grid. Currently, 44% of the population has access to electricity, 11% of which is sourced from off-grid electrification. This leaves more than half of the population in need of electricity, creating a potential market for the private sectors to engage in generation and off-grid transmission and distribution of electricity as the government plans to source 35% the access from off-grid transmission and distribution by 2025.^[1] Additionally, investment in the area of electricity generation, transmission and distribution will make investors eligible for exemption from Business Income Tax for up to five years. Moreover, loss incurred during the income tax exemption period can be carried forward for half of the exemption period after expiry, the maximum limit being five income tax period. Customs duty exemptions are also applicable to investors in the energy sector.

[1] [National Electrification Program 2.0 Integrated Planning for Universal Access](#)

What subsidies are applicable to the generation and sale of renewable energy?

Not applicable.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Not applicable.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Not applicable.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Not applicable.

Balancing

Does your country operate a balancing responsibility scheme?

Not applicable.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

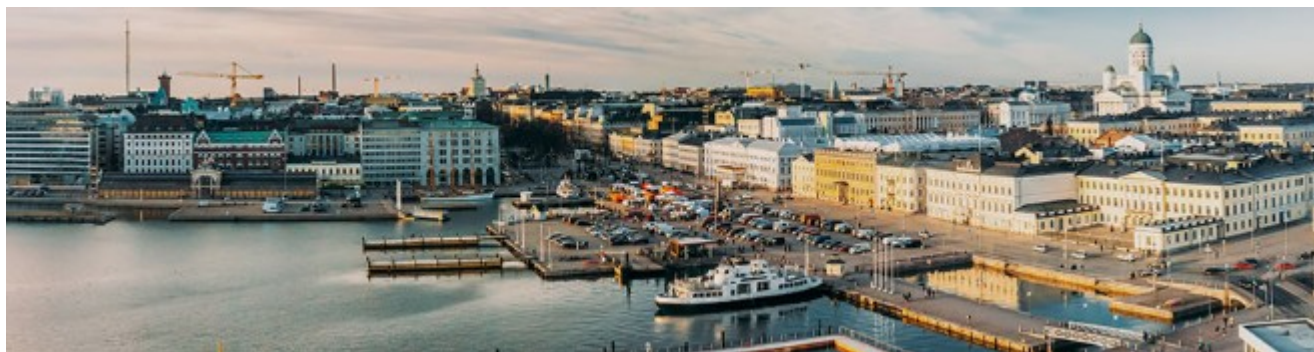
What significant transactions/deals have taken place in the last 12-18 months?

The Ethiopian Electric Power (EEP) signed the first PPA in December 2019 with ACWA Power for the construction and generation of two (125MW each) solar power generation sites at Gad and Dicheto in the Somali and Afar Regional State in Ethiopia. More recently, the Tulu Moye Geothermal Operations PLC signed a PPA and IA with Ethiopian Electric Power for the generation and sale of 150MW of electricity in March 2020.

MLA assisted ACWA Power in setting up two project companies (SPVs) and obtaining investment permits, including but not limited to reviewing the Project Agreements, namely, the Power Purchase Agreement and the Implementation Agreement, reviewed the land lease agreements for both projects, drafted and reviewed various financial documents (including assignment agreements and account charge /pledge agreements and land mortgage agreement) as well as assisting the client in reporting to Lender's local counsel.

MLA is also assisting/advising six financial institutions/Lenders including African Development Bank, PROPARCO, DFC, European Investment Bank and FMO on the project financing of the Tulu Moye Geothermal project in Ethiopia as a local legal counsel.

Please note that details of the information concerning the projects are public information, but MLA's involvement in the matter is confidential.



Finland

Last modified 10 October 2023

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Both physical and financial PPAs are used in the market.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

In Finland, corporate owners may decide where to buy electricity so they may purchase electricity both: (1) directly from a production facility; and/or (2) from a choice of suppliers.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

In practice, it is most common that parties to a PPA are only the generator and the offtaker/buyer.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

End users may purchase, and the generator may sell power directly. The sale of electricity does not need a licence.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The challenges with respect to the developers of new wind parks have mainly related to:

- long duration of the permitting (including appeals) processes;
- regional concentration of the wind production on the west coast due to permitting restrictions in the eastern part of Finland;
- bottlenecks of transmission grid capacity.

With respect to the long permitting processes, the Finnish government has already introduced a temporary fast-track system for environmental and water permit procedures and certain appeal processes related to the green transition projects. The legislation regarding the fast-tracking of green transition projects entered into force in January 2023.

Further, the new Governmental Programme includes the following targets to tackle some of the above challenges:

- reduction of duplicate complaints and reducing the possibility of complaints between authorities;
- ensuring resources and better management of Administrative Courts;
- resourcing sufficiently the permitting of electricity grid investments.

In relation to the transmission grid capacity, the Finnish electricity TSO Fingrid Oyj announced during the spring 2023 that new grid connections at more than one MW are not permitted to connect to the main grid or distribution network (this does not apply to connection agreements made before 1 May 2023). The temporary restrictions are imposed due to the dramatic growth in wind power and the regional concentration on the west coast that poses a challenge to the stability of power plants and the power system as a whole. Lifting of these restrictions requires new main grid connections that are to be completed in the west coast region in 2027 and 2028. Also, temporary production output limitations in some areas have been (and may be) imposed by Fingrid to maintain the transmission grid stability.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Finland has very high ambitions for increasing green energy production that supports its climate goals. According to the new Governmental Programme published in June 2023, Finland is committed to the previously defined climate targets. The Governmental Programme also outlines that the operating conditions for wind power and increase of wind energy production will be further developed. There is also a desire to build wind power in different parts of the country (current wind production is mainly located to the west coast area) and, to a significant extent, also offshore.

Anticipated regulatory changes are therefore assumed to be mainly positive with respect to the production of local green energy and demand for cPPAs supporting the targets set in the Governmental Programme.

In 2023 Finland implemented temporal windfall tax legislation (Act on temporary profit taxes for the electricity and fossil fuel sectors) following the EU Emergency Regulation that is applied to the electricity companies. The windfall tax rate is 30% of the firms' net profits exceeding a 10% return on capital in 2023.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The corporate interest towards green energy has been increasing during recent years. The increase of wind power in Finland as well as other renewable energy forms together with the corporate sustainability objectives have created a growing market for corporate green energy solutions.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Local advantages in Finland regarding the use of PPAs include favourable wind conditions, large share of unused land, net power deficit and governmental goal to reach full coal exit by 2030 and good security of the transmission grid. Finland is also part of the Nordic wholesale electricity market (Nord Pool), which includes the Nordic countries and the Baltic countries. The Nord Pool enables sale and purchase of electricity between the Nordic countries as well as day-ahead and intraday trading, clearing and settlement, data and compliance. The power grids in the Nordic countries are interconnected; Finland is in direct contact with the system of Sweden, Norway, Estonia and Russia. In 2022 Finland ceased electricity imports from Russia.

Further, according to Transparency Int., Finland is the third least-corrupt nation, which provides a strong basis for large-scale projects.

Increasing interest for green hydrogen (and P2X) investments in Finland drive the demand for new green energy PPAs for P2X developers.

The new Governmental Programme brings the green electricity distributed via public EV charging points to the scope of traffic sectors' blending mandate, creating a market for green electricity based green fuel tickets.

What subsidies are applicable to the generation and sale of renewable energy?

Energy aid is granted for investment and study projects in renewable energy and energy efficiency. The support is particularly targeted at sectors outside the emissions trading scheme, such as renewable energy projects in transport, small-scale production and energy efficiency projects. The number of authorisations for energy aid is confirmed annually in the budget process and by Parliament.

The feed-in-tariff subsidy scheme was replaced by a premium auction scheme for 1.4 TWh of new capacity, which was executed through the auction process finalized in March 2019. Currently, there are no plans for new production subsidy schemes related to renewable energy production or new tendering rounds under the premium system in Finland.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Yes. Finland has enacted national regulation for guarantees of origin for electricity, gas, hydrogen, heating and cooling and the verification of the origin of energy by guarantees of origin.

Guarantee of origin (GoO) is a certificate issued for electrical energy produced using renewable energy sources in accordance with the applicable legislation. If an electricity supplier sells or uses renewable energy in its marketing, it must verify the origin of the electricity. GoOs may be transferred from one account holder to another within the Finnish GoO register, and GoOs can also be imported/exported between other AIB (Association of Issuing Bodies) member registers.

The generators can freely sell the certificates generated to the produced volumes together with the physical electricity output from the production plant under a PPA or separate from the physical electricity sales to be traded on an open market.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Typically, PPAs are based on a fixed price for an agreed period as this offers both the buyer and the seller stability and predictability of prices / revenues and protects against fluctuations in electricity prices. The pricing structures may, however, vary and be eg a combination of fixed and floating prices.
What term is typically agreed for the PPAs?	According to the Finnish Wind Power Association, the typical term of PPAs is from 10 to 20 years.
Are the PPAs take-or-pay or limited volume?	The PPAs have generally been based on the take-or-pay principle.
Are there any other typical risks?	Not applicable

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	The risk allocation for volume risk depends on the PPA type:

	pay-as-produced (offtaker bears the risk) or fixed volume model (producer bears the risk).
Change in law	Typically, the change in law provision seeks to restore the original economic intentions and balance between the parties, first through mutual negotiations of the effects of the change in law.
Increase / reduction of benefits	<p>Typically, the PPA delivery obligations also include the delivery of environmental attributes and those are often included in the contract price. The definition of environmental attributes may or may not also include the future benefits.</p> <p>The allocation of this risk can also be connected with a change in law provisions and follow the risk allocation mechanism under such provisions.</p>
Market liberalisation (if applicable)	Not applicable.
Credit risk	Typically, some credit support under the PPA is required from both parties and at least if the financial standing of either party deteriorates.
Imbalance power risk	In the absence of specific allocation, the liability would remain with the generator.
Production profile risk	Usually, this risk is allocated to the buyer under a cPPA and the buyer acquires any missing volume from the market.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

The Finnish TSO (Fingrid Oyj) is the authority responsible for maintaining a continuous power balance in Finland and for the nation-wide imbalance settlement.

In accordance with the Finnish legislation, each party operating in the electricity market is obliged to maintain a continuous power balance between its electricity production, procurement, consumption, and sales. In practice, an electricity market party cannot do this by itself, which is why it must have an open supplier which balances the power balance of the party. A party whose open supplier is Fingrid is referred to as a balance responsible party. The open delivery between Fingrid and a balance responsible party is agreed through a balance agreement. The balance responsible party must have a valid imbalance settlement agreement with eSett Oy, being the company referred to in the Finnish Electricity Market Act as the entity through which Fingrid has organised the functions related to the management of nation-wide imbalance settlement.

In practice, in the PPA structure there must be a company that is legally responsible for balancing the electricity that is produced or consumed at the input and output points of the grid. The PPA structure will also usually include an agreement on balancing services agreement with a balance responsible party.

The party responsible for balancing may be either the producer, the offtaker or a third party and the party best placed to do so will vary on a case-by-case basis. Usually in physical PPAs the parties have the same balancing responsible party, and this is a prerequisite in pay-as-produced PPAs. In financial PPAs the parties always have different balancing responsible parties.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

We have acted as advisor for SAJM Holding, a Finnish solar PV developer in its divestment of development phase solar PV park with contemplated capacity of 475 MWp.

We also recently advised Kommunalkredit Austria AG and AP Pension Livsforsikringsaktieselskab as lender to Renewable Power Capital (RPC) in the financing (and subsequent refinancing) of a portfolio of three onshore wind farms with a total capacity of 171 MW in Finland, known as Merkkikallio, Puutikankangas, and Rustari (OX2 being the seller of the projects).

We advised Prime Capital AG and Prime Green Energy Infrastructure Fund S.A. SICAV-RAIF on the acquisition of the 192 MW Lappfjärd wind farm in Finland (closed in June 2021) and the subsequent financing of the project in 2022 as well as on the acquisition of Project Sandbacka from Svevind, a privately owned developer of renewable energy projects and its co-development partner AB Vindkraft i Skog. Project Sandbacka is a 90 MW ready-to build wind farm in Finland comprising 14 wind turbine sites.

Also, in 2022 we advised a UK renewable energy investor in early phase wind farm projects to be located in Kajaani and Kalajoki Finland.



France

Last modified 08 June 2022

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

The use of corporate PPAs in France began to rise in 2019 and will probably continue to increase in the following years.

Before the emergence of corporate PPAs, renewable energy was promoted in France through a feed-in tariff (FiT) mechanism, where a producer could sell its production to an electricity supplier at a regulated price, and tendering processes. The FiT mechanism has been replaced mainly by the purchase obligation system and the contract for difference support mechanism (see [Subsidies](#)).

Renewable energy's generation costs have decreased during the last few years, which allowed easier direct negotiations between the producers and offtakers, instead of a tendering process.

Also, PPAs allows the producers to secure the financing of the means of production which facilitates the development of new renewable energy projects.

Therefore, companies are being increasingly interested by the alternative brought by corporate PPA in order to (i) buy renewable electricity at a regulated price, and (ii) meet their corporate social responsibility (CSR) objectives to produce more green energy and prove their consumption of renewable electricity.

Various corporate PPAs have been concluded in 2019 and 2020 notably by the following French companies: Boulanger, SNCF Energie, Crédit Mutuel Alliance Fédérale, Groupe Aéroport de Paris and Orange. This trend reflects the growing involvement of French companies with the RE100 global initiative to commit to 100% renewable energy by 2050.

In France, corporate PPA may take different forms: direct PPA (or physical PPA), indirect PPA (or sleeved PPA) and financial PPA (or synthetic PPA).

The duration of a corporate PPA may vary from approximately 5 years (brownfield projects) to 25 years (greenfield projects), depending on the maturity of the installation.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

French regulations allow corporate owners to buy both directly from a facility and to choose from a pool of suppliers (notably in the case of an Off-site PPA).

Direct PPAs have evolved as a way for corporates to contract directly with power generators for the power produced from one or more specific facilities.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Agreements involving third parties are possible, notably when it comes to sleeved PPAs, in which the “sleeve” (i.e., the intermediary) is responsible for intermediating the different processes between the generator and the end user. The intermediary is free to deliver the electricity to an end user, transforming the Corporate PPA in a B2B2C scheme.

Within such contractual schemes, the risk and hazard of intermittency are borne by the intermediary.

The legal constraints of an indirect PPA are as follows:

- the intermediary must have an administrative authorization as described in Article L. 333-1 of the Energy Code (purchase for resale of electricity);
- the intermediary's activity is subject to obligations of communication and information;
- installations marketing their production via a PPA must be attached to a balance perimeter; and
- there are obligations to participate in the capacity mechanism.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

An end user consumer has the possibility to conclude a purchase contract directly with a generator, pursuant to Articles L. 331-1 and L. 314-18 to L. 314-27 of the Energy Code.

It should be noted that if the end user signs a direct PPA with a generator, the latter becomes, in the eyes of the law, a supplier. This change from the legal status of “producer” to “supplier” is very significant because it means that producer becomes subject to specific rules in the same way as all the other suppliers present on the market.

In France, Articles L. 343-1 to L. 343-6 and Article R. 343-5 of the Energy Code provide specific provisions for the construction of direct lines. Their construction is subject to authorization by the administrative authority, which “*shall take into account the environmental requirements applicable in the area concerned*” and “*may refuse, after obtaining the opinion of the Energy Regulation Commission, authorization to build a direct line if the granting of such authorization is incompatible with imperatives of general interest or the proper performance of public service missions*”. Authorizations for the construction and operation of such direct lines shall be issued for a period not exceeding twenty years. Otherwise, the connection of the installation may be requested from the public grid, transmission or distribution system operator depending on the power of the installation. The connection and access to the grid is by right. They entail the payment of a fee to the grid operator.

Pursuant to Article L. 321-16 of the Energy Code, any generation facility connected to the public transmission system or the public distribution system must be the subject, by its operator, of a capacity certification application to the public transmission system operator. A producer who has signed a PPA must therefore have its generation facility certified by RTE and can then use its certificates to benefit the players on whom this capacity obligation is based, i.e. the energy suppliers.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

French companies cannot receive guarantee of origins for the green electricity purchased from a facility benefitting from a contract for difference mechanism (see [National support scheme](#)).

Some fear that French companies will turn to foreign producers to buy abroad the green electricity they need.

Corporations adopting green energy are still facing the strong part that nuclear energy holds in France. France has indeed a particular position towards nuclear energy, which provided a stable power price and still has the largest share in the French energy landscape (currently around 70% compared to around 10% globally). Despite the growing attractiveness of renewable energy in France and corporate PPAs, it is quite difficult to estimate the share nuclear energy will hold in the French energy mix in the near future (2025-2030).

Moreover, as corporate PPAs are still quite recent in France, companies may have been confronted to the lack of a standardized contract or market practice rules strongly implemented in France. However, in order to address this matter, *France Energie Eolienne* (FEE) has published at the end of 2019 its standard corporate renewable power purchase agreement, available in open source. This is the result of one year of work and was elaborated by a special FEE working group and in collaboration with various stakeholders in the energy sector, such as producers, consumers, lenders, investors, lawyers, tax specialists.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

At this stage, no regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs have been identified.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The corporate appetite for green energy is growing among French largest companies.

Smaller generators will have to go through aggregators, responsible for grouping the production of small producers, to be able to sell electricity directly to large customers.

When companies sign a corporate PPA, the company that generates the green power provides a guarantee of origin, testifying to their financial contribution to the development of renewable power.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The key local advantage of the corporate PPA model in France is in particular the stability these contracts provide by their fixed price for a long term contract, which protects against fluctuation of energy prices. Corporate PPAs also allows companies to achieve their goals in terms of renewable energy supply.

What subsidies are applicable to the generation and sale of renewable energy?

Before the emergence of corporate PPAs, renewable energy was promoted through two mechanisms:

- the feed-in tariff (FiT) mechanism, where a producer could sell its production to an electricity supplier at a fixed price for a long-term period; and
- call for tenders awarding long term contracts at a fixed price.

The FiT mechanism was replaced mainly by the contract for difference support mechanism.

The contract for difference mechanism takes the form of the payment of a fee corresponding to the difference between the market price and the target rate set by the contract, for a maximum of 20 year term. The fee is paid by EDF OA or any obliged purchaser when the market price is lower than the target rate, and when the market price is higher than the target rate, the producer must pay the difference between the two rates to EDF OA or the obliged purchaser. The producer who benefits from the contract for difference system will therefore be entitled to sell its electricity on the markets (i) directly, (ii) by means of an aggregator or (iii) by a power purchase agreement (PPA). The contract for difference mechanism protects the producer from market price variations because producers will receive or pay the difference between a target rate and the market price.

The allocation of this support mechanism is made through an "open gate" system (*guichet ouvert*) or by a tendering process.

The open gate system allows any producer meeting the specific requirements defined by the DGEC (*Direction Générale de l'Energie et du Climat*) and published on the CRE (*Commission Régulation de l'Energie*) website to benefit from the contract for difference mechanism. The call for tenders is a more competitive and complex system for producers.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

The European Directive n°2009/28/CE dated 23 April 2009 relative to the promotion of the use of energy generated from renewable sources which provides the Guarantee of Origin scheme for renewable source electricity was implemented in France in 2012, through articles L.314, R.314 and R333 of the French Energy Code.

In France, the guarantee of origins is issued by an independent organization (currently Powernext) and certifies that a renewable energy or cogeneration source has injected a quantity of energy into the electrical grid (one guarantee of origin representing one MWh of electricity produced).

According to article L.311-21 of the French Code of Energy, *"Electricity produced for which a guarantee of origin has been issued by the producer may not give entitlement to the benefit of the purchase obligation or the contract for difference within the framework of the contracts mentioned in Articles L. 121-27, L. 311-12, L. 314-1, L. 314-18, L 314-31 and, where applicable, L. 314-26"*.

Therefore, legislative change in the French Code of Energy would be necessary in order to allow French companies to receive a guarantee of origins for the green electricity purchased from a facility benefitting from a contract for difference mechanism. Such change may not to be expected for the foreseeable future, as during the Parliament's discussions on the Climate-Energy Law in 2019, amendments to this rule have been submitted and have been rejected [See **Note 1**].

Note 1: Amendment no. 47 proposed by Mrs Prévile, on July 16, 2019 and amendment no. 537, proposed by Mr Lambert, on June 21, 2019.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Corporate PPAs can be concluded on a fixed price or on a variable price (based on the percentage of a market reference for example).
What term is typically agreed for the PPAs?	<p>According to the recent corporate PPA that have been executed during the past 2 years, the term is typically around 21 or 25 years.</p> <p>However, depending on the maturity of the installation concerned, the corporate PPA can have a term from 5 years (brownfield projects) to 25 years (greenfield projects).</p>
Are the PPAs take-or-pay or limited volume?	Details pending.
Are there any other typical risks?	One of the risks inherent to the corporate PPA is the risk of customer bankruptcy during the term of the PPA. Indeed, the risk borne by the seller is equal to the difference between the price determined in the cPPA and the market price for the

volume contracted and the remaining duration of the cPPA. A public guarantee fund covering this risk of default might be set up order to support the development of the renewable energy market in France.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Coming soon.

Balancing

Does your country operate a balancing responsibility scheme?

Yes, France operates a balancing responsibility scheme.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

On the French electrical grid, the power injected must be equal to the power withdrawn at each moment. The balance authority in France is RTE (*Réseau Transport Électricité*), the operator of the public electricity transportation network, which is responsible for the physical balance of the grid on real time.

A balance responsible entity is a market operator which financially compensates for the differences observed *a posteriori* between injections and withdrawals within its balance perimeter from the electrical network. In order to become a balance responsible entity, operators have to comply with RTE specific regulations and execute with RTE a participation agreement as a balance responsible entity.

The contractual commitment with RTE obliges the balance responsible entities to ensure the adequacy between the injected and withdrawn power within their balance perimeter from the electrical network. If an imbalance is discovered, it shall be invoiced either to RTE or to the balance responsible entity, depending on the positive or negative difference between the injections and withdrawals.

It is more common for generators to become a balance responsible entity.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

In May 2019, a solar cPPA has been concluded between Boulanger and Voltalia for 5MW during 25 years, which will represent a minimum of 10% of Boulanger's consumption by 2022.

In July 2019, a solar cPPA has been concluded between SNCF Energie (subsidiary of SNCF Mobilités) and Voltalia for a total of 143 MW during 25 years, which should produce between 3 and 4% of the consumption of electricity required for SNCF Mobilités trains by 2022-2023.

In December 2019, a solar cPPA has been concluded between Crédit Mutuel Alliance Fédérale and Voltalia for a total of 10 MW during 25 years, which should cover 5% of the total consumption of electricity of Crédit Mutuel.

In February 2020, a solar cPPA has been concluded between ADP Group (Groupe Aéroport de Paris) and UrbaSolar for a total of 47 GW during 21 years, which will cover 10% of the electricity needs of the three Paris airports.

In July 2020, a wind cPPA has been concluded between Orange and Boralex during 5 years, for a total of 67 GWh per year of electricity.

In 2021, a solar cPPA has been concluded between Orange and Engie, for a total of 51 MWc per year during 15 years, with a commissioning date scheduled on January 1st, 2023.

In 2021, a solar cPPA has been concluded between Ze Energy (an independent electricity producer) and Sorégies, for a total of 150 Gwh per year during 20 years.

In 2021, a solar cPPA has been concluded between Orange and Total (through its subsidiary Total Quadran) for a total of 100 Gwh per year during 20 years.

In April 2021, a green corporate power purchase agreement has been concluded between EDFR and SNCF for a period of 20 years. This contract covers the electricity production of a 20 MW solar power plant and the plant's annual production will amount to 25 GWh.

In June 2021, a long-term renewable electricity direct purchase contract (Green Corporate PPA) has been concluded between SNCF Energie, a subsidiary of SNCF Voyageurs, and RES, for 40 megawatts over 15 to 20 years, which should cover about 2% of the electricity consumption required for all SNCF Voyageurs trains.

In December 2021, a multi-buyer solar corporate PPA has been concluded with 10 companies for a 56 MW solar power plant developed by Volitalia in the south of France, for a duration of 20 years.



Germany

Last modified 16 December 2020

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Although corporate PPAs are generally permitted in Germany, they are not widely deployed. This is mainly due to the way in which the German renewable energy support scheme works.

In Germany, when marketing electricity generated through renewable energy sources, provided they meet certain criteria, installation operators generally have two options: they will either use (1) a form of financially supported marketing which allows operators to benefit from a "market premium" (which is a financial bonus for the operators of systems that generate energy from renewable sources and market their power directly on the free energy market), or (2) the so-called "other direct marketing form" (*sonstige Direktvermarktung*), which is not financially supported.

Being able to utilize the "market premium" method mitigates market price risks and provides installation operators with a degree of comfort regarding their revenues. However, a precondition of being able to benefit from the market premium is that the installation operator must transfer the right to label electricity produced in the installation as 'electricity generated in renewable energy installations' to the competent network operator. If the installation operator transfers this right in order to utilize the market premium, it will no longer be permitted to also sell electricity as green energy to third party purchasers because to do so would cause it to be in breach of the so-called prohibition of multiple sales (*Doppelvermarktungsverbot*) under the German Renewable Energy Act.

For new installation operators, corporate PPAs for the supply of green energy are only permitted under the German Renewable Energy Act where the electricity is marketed by way of the "other direct marketing form". Accordingly, operators of new installations cannot benefit from the "market premium". This often makes corporate PPAs financially less attractive to operators of new installations and/or corporations/utilities as potential counterparties.

The situation may be different where market prices of electricity from renewable energy installations continue to move towards grid parity, meaning operators of new installations would not need to rely on the financial support offered under the "market premium" method. Further, the increasing desire of companies to be (or at least appear) sustainable means that many companies are willing to pay a higher price for green labelled energy. As a result, installation operators may opt for the "other direct marketing form" as doing so becomes increasingly financially rewarding.

Moreover, the financial support offered under the "market premium" method is for a finite period of 20 years only. Corporate PPAs are, therefore, beginning to play an important role for existing installations that, after 20 years following their commissioning, fall outside of the support scheme.

The development of standardised documentation for PPAs (e.g. as recently endorsed by the European Federation of Energy Traders - EFET) will likely lead to further interest in corporate PPAs in the German market and facilitate further engagement in them.

Finally, interest in PPAs might further increase where the above-mentioned prohibition of multiple sales (*Doppelvermarktungsverbot*) under the German Renewable Energy Act is eased. In this respect, there is a growing debate on the limitations for the further development of renewable energy production in Germany this prohibition is creating.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Yes. Direct purchases from a renewable energy installation operator and purchases from a choice of suppliers are both generally possible.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

To date, there have been few corporate PPAs deployed in Germany and there is little publicly available information on the specifics of relevant transactions. As a result, it is difficult to comment on common PPA structures and it is unclear, for example, how frequently intermediate marketing companies and/or third parties providing balancing services become part of PPA structures. Still, it seems not to be uncommon that utilities or trading companies become intermediaries to renewable energy installation operators and corporate offtakers.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Save in circumstances where energy supply companies are supplying household consumers, there is no licence (or other form of authorisation or notification) requirement for a generator to sell electricity directly to an end user. However, registration with the market master data register (*Marktstammdatenregister*) will be required. Also notification requirements and tax related requirements may apply.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The challenges for corporations in adopting green energy are largely of a financial nature. In general, renewable energy generators are only willing to sell renewable electricity to corporations by way of "direct marketing", where they can be certain they will receive the market price in return for the electricity they provide, as well as the financial support payment (which a generator would otherwise receive from the network operator for the utilisation of the "market premium" (for new installations)). For these reasons, and until market prices of renewable installations reach (or at least come close to) grid parity, corporations are often reluctant to use corporate PPAs unless they are specifically willing to pay a higher price for green labelled energy.

However, as financial support under the "market premium" method has reduced substantially since the introduction of a tendering process to determine the "market premium" (with support of 0 Euroct./kWh in some of the recent offshore wind auctions), it is likely that corporate PPAs will start to play a greater role for renewable energy generators and corporate buyers. Also, the development of standardised documentation and potential amendments to the prohibition of multiple sales (*Doppelvermarktungsverbot*) under the German Renewable Energy Act may further support the development of this market.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

For new installations which may benefit from financial support under the "market premium" model, there are currently a number of financial obstacles to entering into a corporate PPA in Germany as a result of current regulations.

However, the German regulatory framework in relation to renewable energy is constantly under review and development. As such, amendments may be brought in to encourage the deployment of corporate PPAs.

The German Federal Government has commissioned a study to ascertain how the current support schemes may be further developed, and whether, for example, the introduction of Contracts for Differences (CfDs) may be appropriate (especially in order to reduce the need for statutory support). The study also aims to address whether alternative marketing forms (such as corporate PPAs) may be effectively

utilised. However, as the results from this study are not expected until autumn 2021 (following which any proposed legislation or regulations would need to be developed), substantial short term changes to the regulatory framework in Germany in relation to renewable energy are unlikely.

Nevertheless, the introduction of tendering and auction processes and the reduction in financial support payments for the production and sale of renewable energy, together with the growing appetite of corporate buyers for this type of energy, mean that it is likely that Germany will see an increase in the frequency of corporate PPAs. As highlighted above, also a potential loosening of the prohibition of multiple sales (*Doppelvermarktungsverbot*) under the German Renewable Energy Act could enhance interest in corporate PPAs.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

There are no general political or financial incentives for corporations to adopt green energy. Corporate appetite for green energy is mainly driven by the desire of companies to be, or appear to be, sustainable (for example, in circumstances where a company has made various environmental commitments in furtherance of its level of sustainability). In light of climate change concerns and the growing public debate on sustainability of commercial activities, we expect that the corporate appetite for green energy will increase further in the near future.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The corporate PPA model enables German corporations to be recognised for their renewable energy achievements, potentially giving rise to reputational benefits. Corporate PPAs may also enable corporations to improve their ecological footprint and assist them to meet their sustainability commitments.

What subsidies are applicable to the generation and sale of renewable energy?

The main subsidy or financial support for generating and selling electricity from renewable energy sources is by way of the payment of a "market premium" and, in exceptional cases, by way of a fixed feed-in tariff. In cases where an installation operator does not claim any financial support, there is the opportunity to obtain guarantees of origin (*Herkunftsnachweise* – GoO).

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Upon request of the installation operator, and where no support payment (i.e. especially no market premium or feed-in tariff) has been claimed by the installation operator for the relevant amounts of electricity, the German Federal Environmental Agency (*Umweltbundesamt*) may issue guarantees of origin (*Herkunftsnachweise* – GoO) for electricity generated by renewable energy sources, which may be used for trading purposes.

German law additionally provides for the issuance and transfer of guarantees of regional origin (*Regionálnachweise* – GoROs). However, GoROs can only be transferred along the contractual supply chain of the electricity for which they have been issued.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
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Do prices tend to be floating or fixed?

To date there have been very few corporate PPAs deployed in Germany and there is a lack of publicly available information on the specifics of relevant transactions.

In many cases, corporate PPAs have only been used for marketing the production and sale of renewable energy from existing installations that – after 20 years following their commissioning – fall outside the support scheme. Therefore, at this stage, it is difficult to comment on general trends.

What term is typically agreed for the PPAs?	As above
Are the PPAs take-or-pay or limited volume?	As above
Are there any other typical risks?	As above

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	<p>To date there have been very few corporate PPAs deployed in Germany and there is a lack of publicly available information on the specifics of relevant transactions.</p> <p>In many cases, corporate PPAs have only been used for marketing the production and sale of renewable energy from existing installations that – after 20 years following their commissioning – fall outside the support scheme. Therefore, at this stage, it is difficult to comment on general trends.</p>
Change in law	As above
Increase / reduction of benefits	As above
Market liberalisation (if applicable)	As above
Credit risk	As above
Imbalance power risk	As above
Production profile risk	As above

Balancing

Does your country operate a balancing responsibility scheme?

There is a balancing responsibility scheme in Germany. The feed-in and offtake of electricity will be allocated to a specific balancing group assigned to a so-called "balancing responsible party". Relevant balancing groups are held and administered by the competent German electricity TSOs on the basis of contractual agreements between TSOs and the balancing responsible parties.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Relevant balancing groups are held and administered by the competent German electricity TSOs on the basis of contractual agreements with the balancing responsible parties.

In the German market, generators commonly assign balancing activities to third parties, such as direct marketing companies (*Direktvermarktungsunternehmen*) who will then often also act as balancing responsible party towards the TSO. However, the relevant balancing responsible party could potentially also be the generator or the offtaker themselves.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

There have been a number of recent PPA transactions relating to existing installations which have fallen outside the support scheme. In most cases, however, these PPAs have been concluded between the installation operators and utility companies, rather than directly between installation operators and corporations. Mercedes-Benz recently claimed to be the first corporate customer entering into a PPA relating to wind installations which fell outside of the support scheme. Also German technology group Bosch announced the conclusion of long-term (12 to 16 years) PPAs with RWE, Statkraft and Vattenfall each relating to solar installations.

There have also been transactions in relation to installations currently under development. For example, Energiekontor and Innogy had agreed on a PPA regarding a solar energy power plant under development.



Greece

Last modified 12 February 2025

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

The use of corporate PPAs in Greece (which are essentially for solar and wind sources) has grown rapidly in the past few years. The regulatory and economic perspectives indicate this trend will continue in the future.

The current regulatory and legislative framework in Greece that regulates the form and/or structure of PPAs, either physical or virtual, is at an early stage.

In general terms, under the applicable law, PPAs have to include at least the details of the end customer, the size of the RES plant's installed capacity, the agreed energy consumption by the end customer or the agreed energy to be purchased by the electricity supplier and the duration of the PPA, which must be at least eight years.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Greek law allows both direct and sleeved corporate PPAs, although the sleeved structure seems to be the most common.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Under the Green Pool system, which the European Commission initially rejected, eligible electro-intensive industrial users would sign long-term PPAs with RES producers to decarbonize their energy consumption and add up to 4 GW of new RES electricity generation capacity in Greece. A dedicated aggregator (Green Pool Operator) would be appointed through a competitive bidding process to undertake all shaping responsibilities and supply the electro-intensive industrial users with a supply that matches their consumption requirements. But, following European Commission's objections, the government is considering revising the Green Pool scheme and resubmitting it to the European Commission according to the updated National Energy and Climate Plan (NECP).

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes, Greek law provides both holders of a production license and holders of a supply license (to supply their subsidiaries with electricity), as well as customers established within the Greek territory (to procure themselves), with the right to apply for a direct line license, individually or jointly.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

In general terms, except for the energy price crisis that affects all industries and consumers, the renewables industry is still facing major roadblocks in the areas of legislation, planning and grid capacity.

While PPAs offer price stability, they also come with potential risks, including uncertainties around the performance of renewable energy projects and changes in legislation.

Many corporations find the upfront costs of solar panels, wind turbines, or energy storage facilities prohibitive. Even though EU funds and subsidies exist, navigating through the process remains complicated. Improving access to EU funding, expanding tax incentives and establishing low-interest rates in green loans are a few ways to overcome this challenge. Simplifying licensing procedures and implementing fast-track approvals would help overcome the slow bureaucracy procedures.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Not at the moment.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The corporate appetite for green energy has increased as more long-established market players want to enter into green PPAs.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Greek banks are playing a key role, as they're encouraging customers to establish PPAs by offering low interest rates as an incentive, though they're still not as favorable as those for subsidized projects.

What subsidies are applicable to the generation and sale of renewable energy?

The following subsidies are provided to RES producers: Feed in Premium, Feed in Tariffs and auctions. In relation to auctions, 4 GW of renewable projects will be auctioned in Greece until the end of 2025. Power generators are also driven to corporate offtake to satisfy investors' appetite that can't be satisfied only through the applicable subsidy schemes.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

As an EU member state, Greece has to have a guarantee of origin scheme for renewable source electricity.

Under the current legal framework, guarantees of origin certify that some of the energy consumers are supplied with is sourced from renewable plants or heat and power cogeneration (or even other types of energy sources, such as energy storage plants, following the subsequent issuance of the Ministerial Decision no. 81331/3661).

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	

From an overview of the few disclosed deals in the Greek market, the price agreed in the context of a PPA usually ranges from EUR34/Wh to EUR50/MWh.

The allocation of project risks determines the fair value of each PPA closed. So when the agreement deviates from the industry's standard terms (eg having a variable rather than a fixed volume) it's expected for the final agreed price to widely differ from the market average.

What term is typically agreed for the PPAs?

Usually, PPAs have a term of 10-20 years. PPAs between a RES producer and an industrial offtaker or an electricity supplier have priority when it comes to connection to the grid and have a minimum term of eight years.

Are the PPAs take-or-pay or limited volume?

From an overview of the few disclosed deals in the Greek market, the majority of the PPAs concluded seems to be limited volume.

Are there any other typical risks?

- Credit worthiness of purchaser
- Unexpected/ unforeseeable events (*force majeure*)
- Risks related to the development, performance and volume production of the renewable power plant
- Adverse movements in the market price of electricity
- Legislative or regulatory changes

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	The seller usually bears the volume risk. The parties can mitigate this risk by including a take-or-pay clause in a corporate PPA, so they can effectively eliminate the risks related to changes in the market demand or economic conditions of the offtaker.
Change in law	<p>A change in law might affect either party, depending on its content.</p> <p>The parties can mitigate the risk by including in a corporate PPA:</p> <ul style="list-style-type: none"> • a liability cap in favor of the weaker party of the contracts; • a provision by operation of which the change in law risk is entirely borne by the producer in the first year of the term and entirely borne by the offtaker in the last year of the term; or • a provision referring the matter to a technical expert to maintain a contractual balance of the parties' obligations.

Increase / reduction of benefits	An increase in benefits favors the buyer while a reduction in benefits favors the seller. This risk generally doesn't affect PPAs signed with private counterparties, but where the reduction of benefits is caused by a change in law, this may be covered by a change in law clause.
Market liberalisation (if applicable)	In Greece the electric market is liberalised.
Credit risk	Given the early stages of a Greek PPA legal framework, we can only assume that depending on the financial situation of the parties, one party might want to seek performance security from a party with lower creditworthiness. As such, the risk is balanced against the party expecting payment.
Imbalance power risk	<p>Depending on the PPA structure, the imbalance risk for a physical PPA can be with either the seller or the corporate buyer.</p> <p>It's common for an appropriate third party (such as a utility or wholesale market trader) to step in and manage the risk.</p>
Production profile risk	Offtaker or generator, depending on the PPA structure.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

In the applicable balancing responsibility scheme, the model of Central Dispatch per unit is adopted by ADMIE (IPTO S.A.) through executing the unified scheduling process. The party responsible for balancing can be either the producer, the offtaker or a third party. The appropriate party to undertake balancing will vary on a case-by-case basis.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

- In March 2024, the first "green" bilateral electricity supply contract (PPA) with a public sector company was signed between TERNA ENERGY and EYATH S.A., a company that provides water supply and sewerage services to more than 1.2 million citizens in the greater Thessaloniki Urban Area. With the aim of reducing its carbon footprint and energy costs, EYATH S.A. became the first company in the public and broader public sector to enter such a contract. The contract with EYATH was signed for the supply of electricity up to 100 GWh per year.
- Meton Energy S.A. has signed ten-year bilateral PPA with PPC and RWE Supply & Trading, which will purchase the green electricity produced by the new solar farm.
- [Mytilineos Energy & Metals](#) and [Karatzis S.A.](#) signed a 210 MW long-term PPA for the green energy produced from a 262 MW solar portfolio. Under the PPA, Mytilineos will be able to offtake 80% of the energy produced, enhancing its green supply basket.



Hungary

Last modified 12 February 2025

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Deployment

Corporate Power Purchase Agreements (cPPAs) have recently gained more popularity in the Hungarian solar energy sector evidenced by a growing number of solar projects using cPPAs as a tool for securing financing and providing price stability to customers.

As of January 1, 2025, Act LXXXVI of 2007 on electricity (Electricity Act) also introduced the definition of “renewable power purchase agreement,” which is a contract under which a natural or legal person undertakes to buy electricity generated from renewable energy sources directly from the producer.

The penetration of cPPAs in the Hungarian electricity market has been slow so far, one of the main reasons being the “generous” feed-in-tariff (FiT) scheme, under which eligible renewable energy producers sell their entire production to the transmission system operator MAVIR at a high statutory price. In the parallel METÁR system, renewable energy producers have to enter the market and sell their production to traders, aggregators or users, or eg via the power exchange HUPX, with MAVIR supplementing the sales price up to the amount of the green premium subsidy awarded in a tender (CFD model).

Structure

It's typical in the Hungarian market that cPPAs are concluded as long-term agreements (with a duration of 10-15 years) offering price certainty for both the corporate buyer and the renewable energy generator. These agreements are generally structured in one of the following ways:

- **Offsite cPPAs:** in this prevailing type, the electricity is supplied from the producer's facility to the corporate buyer via the public network. This contractual structure requires a separate agreement between typically the buyer and its balance responsible party (energy trader) for scheduling and balancing activities.
- **Onsite cPPAs:** the electricity is supplied to the buyer outside of the public network (no system usage fees) via a direct production line between the power plant and the buyer's consumption point. The power plant is often located directly on or near the offtaker's premises.
- **Virtual cPPAs (vPPA):** here the buyer buys electricity from its supplier at a market (spot) price. Then the seller and the buyer settle between themselves the funds received by the producer in relation to the price they've agreed in the vPPA. If the market price of the electricity collected by the seller is higher than the contractual price specified in vPPA, the seller will pay the buyer the difference between the market price and the vPPA price. If, on the other hand, the market price received by the seller is lower than the price agreed in the vPPA, the buyer will pay the seller the difference between the vPPA price and the market price of electricity.

These structures help corporations manage energy costs and meet sustainability goals while supporting the growth of renewable energy projects in Hungary.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Yes, it's possible to buy electricity both directly from a facility and from a choice of suppliers in the current Hungarian regulatory framework. This flexibility is supported by the applicable laws, which facilitate various purchasing options to encourage the adoption of renewable energy in general. Pursuant to section 56 (2) of the Electricity Act, customers can buy electricity directly from power producers.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Yes, third parties such as power suppliers as balance responsible parties are commonly involved in Hungarian onsite or physical cPPA structures. These third-party suppliers often act as intermediaries, facilitating the transaction between the producer and the offtaker, provide scheduling and balancing, and partial electricity supply to the offtaker (with a view to the volatile nature of the renewable-based production).

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Generally, yes, but under certain statutory limitations. Electricity can be generated in a power plant with a nominal capacity of 50 MW or more with an operating license for generating electricity or a self-supply production license. A small power plant with a nominal capacity of 0.5 MW or more needs a combined small power plant license or a self-supply production license. With these licenses, the producer is authorized to sell the electricity of their own production, and electricity received from the transmission system operator under system level services or from the distributor under the distribution flexibility service. Producers supplying electricity directly to users are treated as electricity traders supplying electricity directly to users, with the exception of the obligation for requesting an operating license pertaining to trade in electricity (please refer to section 4 of the Electricity Act).

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

There are still several challenges related to adopting green energy in Hungary. These include technical, financial, regulatory and tax challenges. We summarize the details of these challenges and possible suggested solutions in the table below:

Challenge	Details	Possible solutions
Technical challenges	Network development: Granting sufficient injection capacities to renewable energy sources requires significant upgrades to the public network. This includes enhancing grid capacity and flexibility and storage capabilities to handle the intermittent nature of renewable energy.	In terms of grid development and integration issues, investing in grid modernization and smart grid technologies can help integrate renewable energy more effectively. But this requires a comprehensive grid modernization approach. Alternatively, cutting-edge energy storage technology may also help to bridge this gap by developing advanced energy storage solutions, which can mitigate the intermittency of renewable energy sources.
Financial challenges	High initial costs: The upfront costs of renewable energy projects can be prohibitive for many corporations. This includes the costs of technology,	To reduce the sometimes prohibitive initial cost burden for corporations, providing financial incentives and subsidies for renewable energy

	installation, and grid connection.	projects can be a key factor to manage financial challenges. Expanding access to green financing options, such as green bonds and sustainable loans, can also support the funding of renewable energy projects.
	Access to financing: While green bonds and other sustainable financing options are available, there's still a need for more accessible and affordable financing solutions for corporations.	
Regulatory challenges	Complex licensing procedures: The regulatory framework for renewable energy projects is very complex and there are frequent changes in regulation. Streamlining the licensing processes would be essential to encourage more investments.	Simplifying the licensing procedures for renewable energy projects can reduce delays and encourage more investments. Beyond simplifications and acceleration, streamlining measures should focus on reducing inconsistencies in how different (local) authorities work to increase predictability and legal security.
Tax challenges	Robin Hood tax: The "Robin Hood tax," ie the income tax imposed on licensed energy suppliers under Act LXVII of 2008, is one of the biggest challenges for cPPAs. This tax was initially set at 31% of the electricity generator's tax base (except for generators under 50 MW with a CGT or METAR subsidy). This Robin Hood tax was further increased to 41% for the 2023 and 2024 tax years.	Such high level of taxes levied on renewable energy projects should be reconsidered and decreased.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Yes, there are a couple of anticipated regulatory changes that could potentially affect the corporate green energy and cPPA landscape in general. They include:

- 1. Grid capacity allocation regime:** Hungary is expected to revise its capacity allocation regime to better support the integration of renewable energy sources into the grid. This includes changes to how capacity is allocated and managed, which could potentially facilitate more cPPAs in the future.
- 2. Wind energy policies:** There are potential revisions to wind energy policies aimed at easing restrictions and streamlining the licensing procedures for wind projects. This could open the way for new opportunities for cPPAs involving wind energy.
- 3. Support for solar energy and BESS:** The government is enhancing support schemes for solar energy and storage facilities, including subsidies and incentives for both residential and industrial sectors. These changes are likely to encourage more cPPAs in the solar sector.
- 4. Guarantees of Origin:** Hungary is expanding its national support scheme with tradable green certificates, such as guarantees of origin – which have recently been made available for energy generated by onsite power plants. This will provide additional financial incentives for companies to invest in renewable energy projects and enter into cPPAs as an increasingly popular contract structure in the energy sector.

These regulatory changes aim to create a more favorable environment for corporate green energy initiatives and will likely facilitate the growth of cPPAs in Hungary in the not-too-distant future, continuing the trend of PPAs' increasing popularity in the energy sector.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

In Hungary, there are currently no direct sources of incentives for companies to enter into cPPAs.

Generally, there's growing interest among Hungarian corporations in adopting green energy. This trend is driven by increasing awareness of environmental sustainability, corporate social responsibility, and the financial benefits of renewable energy, coupled with some favorable regulatory changes and market trends (eg increasing energy prices) in recent years. Many companies are looking to reduce their carbon footprint and align with global sustainability goals, while also seeking predictability and hedging opportunities against market price fluctuations.

The Hungarian government has also implemented several policies to encourage the adoption of green energy, including:

- the National Energy and Climate Plan outlining Hungary's commitment to increase renewable energy capacity while reducing greenhouse gas emissions; and
- a comprehensive regulatory support aiming to ease regulations for renewable energy projects, such as reducing the safety distance requirements for wind turbines and simplifying the licensing process.

Additional financial incentives were also introduced in the form of subsidies and grants for renewable energy projects (solar and wind energy), green loans provided by financial institutions specifically designed to finance projects with positive environmental impacts, such as renewable energy and energy efficiency improvements, and some tax benefits reducing the overall cost of energy projects.

These incentives and the growing corporate appetite for green energy are helping to drive the transition towards a more sustainable energy landscape in Hungary.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Key local advantages of cPPAs include a couple of benefits that clients should consider when choosing between models:

- **Price stability and financial benefits:** cPPAs provide long-term price stability by locking in electricity prices for a set period (typically 10-20 years). This helps companies protect themselves from the volatility of energy markets, allowing for more predictable budgeting and financial planning. Corporate PPAs can also offer financial benefits through potential cost savings on energy bills. By securing a fixed price for electricity, companies can avoid future price increases and benefit from lower energy costs over the long term.
- **Regulatory compliance and sustainability goals:** Corporate PPAs can help companies comply with regulatory requirements related to renewable energy use and reducing emissions. This is particularly relevant as Hungary continues to align its energy policies with EU directives. By entering into PPAs with local renewable energy projects, companies can support the growth of the renewable energy sector in Hungary, contributing to the country's energy transition and economic development. Corporations can also directly support the development of their own renewable energy projects, helping them meet their sustainability and carbon reduction goals. This is increasingly important for companies looking to enhance their environmental, social, and governance (ESG) credentials.
- **Company reputation:** Demonstrating a commitment to renewable energy through PPAs can enhance a company's corporate image and reputation. This can be a valuable asset in attracting customers, investors, and talent who prioritize sustainability.

What subsidies are applicable to the generation and sale of renewable energy?

Hungary's primary support scheme for renewable energy is METÁR (Renewable Energy Support Scheme). This system provides "contract-for-difference" type premium tariffs for renewable energy producers, ensuring a stable income for generated electricity. The Hungarian government also offers other support, including:

- **Energy storage subsidies:** there are specific subsidies available for energy storage projects, which are crucial for integrating renewable energy into the grid, helping cover the costs of installing and maintaining energy storage systems.
- **Green loans:** green loans offered by Hungarian financial institutions with favorable terms for projects with positive environmental impact (such as renewable energy installations) are also partly subsidized by the Hungarian government.
- **Tradable Guarantees of Origin:** In line with EU regulation, Hungary implemented a national scheme for registering and trading guarantees of origin, which provide additional financial incentives for renewable energy generation by allowing producers to sell Guarantees of Origin representing the environmental benefits of their energy.

These subsidies and incentives are designed to support the growth of renewable energy in Hungary, making it more financially viable for companies to invest in green energy projects.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Yes, Hungary implemented a national support scheme with tradable green certificates known as Guarantees of Origin (GOs). These certificates are electronic and tradeable, proving that a certain share of the energy consumed was produced from renewable energy sources.

The Hungarian Energy and Public Utility Regulatory Authority (MEKH) oversees the issuance and trading of these certificates. Hungary joined the European Energy Certificate System (EECS) in early 2022, allowing Hungarian GOs to be accepted and traded on international markets. This system provides additional financial incentives for renewable energy producers and helps companies demonstrate their commitment to using green energy.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Energy prices in a cPPA can be both floating and fixed, depending on the contract and the preferences of the buyer. Hybrid pricing forms are also possible.
What term is typically agreed for the PPAs?	cPPA terms generally range from 10 to 15 years. Entry-level cPPAs might last 10-12 years, while more comprehensive agreements often last between 15 and 20 years.
Are the PPAs take-or-pay or limited volume?	cPPAs can be structured as either take-or-pay or limited volume agreements. The choice between these structures depends on the specific needs and risk preferences of the parties involved. The take-or-pay version is prevailing.
Are there any other typical risks?	The long duration of the cPPA (10-15 years) in a dynamic regulatory and market environment.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

The allocation of risks in cPPAs typically depends on the specific terms negotiated between the parties. However, some common trends are emerging from the practice. Price risks are typically borne by the offtaker by agreeing to a fixed price for the electricity, which can protect the producer from market price fluctuations.

Volume risks are either shared or borne by the producer as it may be responsible for delivering a specified amount of electricity and face contractual penalties or compensation if actual production falls short compared to the contractually committed electricity volumes. Credit risks are generally borne by the producer also bearing the risk of the offtaker defaulting on payments. This risk can be mitigated through credit assessments and requiring (bank) guarantees or collateral. The situation is similar with operational risks, given that the producer is usually responsible for operating and maintaining the renewable energy facility, ensuring it meets performance standards.

Regulatory risks are likely shared between both parties by drafting contractual provisions providing that any regulatory changes affecting the cPPA shouldn't affect the agreed terms of the contract. Force majeure risks are handled similarly, so both parties typically share the

risk of unforeseen events (eg natural disasters) that could disrupt the operation of the renewable energy project. Force majeure clauses should outline the responsibilities and actions of both parties in such events in line with their mutual agreement.

Balancing

Does your country operate a balancing responsibility scheme?

Yes, a balancing responsibility scheme is operated in the Hungarian electricity market. This scheme requires market participants, including renewable energy producers, to be responsible for balancing their electricity supply and demand.

The balancing responsibility scheme incentivizes accurate forecasting and efficient energy management, helping to maintain public grid stability and reliability. Participants who fail to balance their supply and demand may incur imbalance charges, which are designed to reflect the costs of maintaining system balance.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

In Hungary, the balancing responsibility scheme is centrally managed and operated by MAVIR Hungarian Independent Transmission Operator Company Ltd. MAVIR is responsible for maintaining the balance between electricity supply and demand in the public electricity network.

Typically, generators are responsible for forecasting their production and ensuring they meet their commitments. They may need to adjust their output or purchase balancing services if they deviate from their forecast. Offtakers (corporate buyers) are also generally responsible for forecasting their consumption and ensuring that they match their contracted supply. They too may need to engage in balancing actions if their actual consumption deviates from their forecast. Both generators and offtakers can either choose to undertake balancing by themselves or contract third-party service providers to manage their balancing responsibilities. This flexibility allows them to choose the most efficient and cost-effective way to meet their balancing obligations.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

Generally, we can mention two significant deals in this period. One is a cPPA between Faerch Group and GoldenPeaks Capital. In July 2024, Faerch Group, a leading supplier of circular, multi-purpose food packaging, signed one of the largest PPA deals in Hungary with GoldenPeaks Capital. This 12-year physical PPA will provide 15 GWh/year of renewable energy to Faerch's sites in Hungary, which is clear evidence of reaching a significant milestone in Hungary's renewable energy market, showcasing the growing demand for green energy solutions.

In Q1 2024 Dreher Breweries and independent energy supplier Enery signed a "landmark" ten-year cross-border virtual power purchase agreement (vPPA). The contract started from 2025 with a yearly electricity volume of 14 GWh.

These agreements help the companies achieve their carbon reduction targets by providing renewable energy and asset-bundled green certificates. These deals also highlight the increasing corporate appetite for renewable energy in Hungary and the role of PPAs in supporting sustainability goals.



Ireland

Last modified 19 February 2025

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

There was a significant gap between the closure of the Renewable Energy Feed In Tariff (REFIT) schemes to new applicants in December 2015 and the first auction under the Renewable Energy Support Scheme (RESS) in 2020. During this gap, project developers that didn't have the benefit of REFIT support were forced to consider other routes to market options, and the first unsubsidized Irish cPPAs were entered into during this period.

Irish government policy is set out in its Renewable Electricity Corporate Power Purchase Agreements Roadmap, which was published in 2022. It intends to promote cPPAs to compliment RESS and, in this regard, and although dropped from subsequent plans, Ireland's 2019 Climate Action Plan included a target of 15% of electricity demand to be delivered by renewable energy cPPAs.

RESS (and the parallel and similar schemes for offshore wind (ORESS)) takes the form of a floating feed-in premium (similar to a CfD) and is allocated by periodic auctions. There have been four auctions to date and consultation on the terms and conditions for the fifth and final auction in the current program closed in February 2025. There's been one ORESS auction and bidding on a second ORESS auction will take place in Q2 2025. Support under the second ORESS auction will be allocated on a significantly different basis to previous schemes. It will involve developers bidding to develop a project (known as Tonn Nua) rather than developers bidding for support for their own projects (as was the case in ORESS 1 and onshore auctions).

Although RESS has been successful, cPPAs are seen by generators as a viable alternative. The third and subsequent rounds of RESS and the ORESS schemes include compensation for oversupply and curtailment. Despite this, and the fact that cPPAs are unlikely to provide similar compensation, we've seen continued enthusiasm for cPPAs in Ireland.

To date, the Irish cPPA market has been dominated by big tech companies. But the last few years has seen a wider group of corporates entering into cPPAs. These include companies in the agri/food sector, manufacturers in the life sciences sector and financial institutions.

There's a combination of reasons for the increased use of cPPAs in Ireland. From a buyer's perspective these include ESG requirements and price certainty. The prices in the Irish Single Electricity Market (the SEM) have been volatile and, although they've fallen back somewhat, they've been elevated for a significant period. CPPAs offer corporates a hedge against future volatile power prices by securing a fixed energy price for a period of 10 to 15 years. The Irish government's data center policy states that there's a preference for data centers supported by cPPAs or which are otherwise decarbonized by design. Recent proposals by the Commission for Regulation of Utilities regarding connection policy for large energy users suggest that further requirements (discussed below) will be added.

From a generator's perspective, cPPAs are a bankable alternative to RESS participation and allow projects to be brought forward outside the RESS auction timeframes.

As outlined below, the Irish regulatory framework is such that, save for assets with a maximum export capacity of less than 10 MW (which aren't considered in this guide), participation in the SEM is mandatory. The mandatory nature of the SEM means that the physical PPA structures adopted in other jurisdictions – including in the UK – have to be altered for Ireland (see below).

Virtual cPPA structures used in other jurisdictions can be applied in the Irish market with significantly less alteration as there's significantly less interaction with the SEM. Virtual PPAs in the Irish market are typically settled at the difference between the agreed PPA Strike Price and the SEM Day-Ahead Market Price. In a Virtual PPA structure, the generator will typically have a separate arrangement with a licensed supplier for the physical sale of its power into the SEM for a pass through to the generator of the Day Ahead Market Price and the corporate will similarly have an agreement with a licensed supplier for the purchase of its power requirements from the SEM at the Day Ahead Market Price.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Participation in the SEM is mandatory, so cPPAs that are physically settled have to pass the power through the SEM. A further complication is that electricity can only be supplied to final customers by a licensed electricity supplier. For these reasons, physical PPAs are less common in Ireland, although certain corporate offtakers and generators may have licensed suppliers in their group, as set out below, it's possible to involve a third-party supplier. The third-party licensed supplier is appointed as the generator's intermediary for the purposes of its interactions with the SEM. The intermediary appointment allows the licensed supplier to take title to the power, pass it through the SEM and supply it to the offtaker. The licensed supplier might receive a sleeving fee from the parties for providing this service and it might also assume certain trading and balancing risks.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

As mentioned above, for physical PPAs, a licensed supplier buys the generator's electrical output, passes it through the SEM and sells it to the corporate offtaker. For this purpose, there is a need for back-to-back PPA arrangements. The licensed supplier will be appointed as the generator's intermediary, allowing it to interact with the SEM on the generator's behalf and to receive all payments from the SEM associated with the relevant generator. The licensed supplier will also have the corporate offtaker's meter point registered to it. Depending on the commercial arrangement, there may be a need for a separate agreement between the generator and offtaker or between all three parties.

The party to which balancing risk is allocated under the arrangements may also look to engage a specialist energy trader to manage balancing risk on its behalf, whether under a settlement reallocation agreement or otherwise.

In the absence of the generator or corporate offtaker holding a supply license which reduces the need for third-party involvement, physical PPA structures can be complex and for this reason virtual PPA structures have been favored by most in the Irish market.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

In Ireland a license to supply electricity issued by the CRU is required to supply electricity to final customers. Given this, coupled with the mandatory nature of the SEM, it's not usual for renewable generators to sell physical electricity directly to final customers.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

CPPAs compete for projects with state support schemes. The most recent Irish support schemes for commercial scale renewables introduced measures that may increase the attractiveness of such support schemes for generators relative to cPPAs. The key developments are that RESS 3, RESS 4 and ORESS 1 introduced indexation and compensation for some unrealized available energy which weren't available in the earlier RESS schemes.

For RESS 3 and RESS 4 there's annual indexation of 30% of the strike price in accordance with the Harmonised Index of Consumer Prices. This is to be reviewed for RESS 5, and the department has suggested that downward indexation may be added.

For ORESS, there's a one-time blended indexation of 100% of the strike price (components of which may be upwards only) triggered by the later issuance of notice to proceed under its construction contracts or 18 months after the project has received certain permissions. In addition, ORESS projects will also benefit from annual indexation of 30% of the strike price in accordance with the Harmonised Index of Consumer Prices.

Corporates will look to cPPAs as a hedge against rising electricity prices, so competing with these indexation provisions may be problematic subject to any downward pressure indexation puts on prices bid into the relevant auctions due to reducing the inflation risk that projects have to carry.

In addition, RESS 3, RESS 4 and ORESS also provide for unrealized available energy compensation (UAEC). This is compensation up to a project's strike price in circumstances where it's curtailed or there is oversupply, however, it's not available for constraints and connection outages. As curtailment is an issue in Ireland and oversupply may become an issue particularly once offshore projects become operational, this is a significant change. Corporates might have difficulty matching this benefit; however, this change may also put downward pressure on prices bid into the RESS as it reduces the risks that developers have to carry.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Section 37 of the Electricity Regulation Act 1999 provides for direct lines/private wires; but it's generally accepted that the provisions are unworkable for a combination of reasons and, consequently, direct line/private wire structures aren't used in Ireland. The government consulted on updating the legislation on private wires and in 2024 the government published guiding principles for policy formulation. It's expected that legislative amendments will be brought forward in line with these guidelines, though the timeframe hasn't been stated. Facilitating private wires is likely to help and offer regulatory certainty to numerous decarbonization projects.

Although not directly a challenge for cPPAs, due to significantly increased electricity demand in recent years, which the Commission for Regulation of Utilities (the CRU) has attributed to data centers, the CRU has reviewed large energy user connection policy. The CRU recently published a proposed decision on a revised connection policy for large energy users for consultation. In the proposed decision the CRU suggests that data center operators should have to self-report annually on their use of renewable energy (directly or through cPPAs) and their sites' emissions. Although the data center sector was the first to adopt cPPAs in Ireland and has contracted greater volumes than any other sector, if this requirement is introduced, it may add further requirements for cPPAs.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

There are two key drivers for cPPAs in Ireland. Firstly, corporates have a growing interest in green PPAs, as investing in clean energy will help to improve green credentials and further their ESG ambitions. Secondly, cPPAs are usually long term and provide fixed power prices, and this hedge against rising energy costs is a key driver for many corporates to enter into these arrangements. In the context of the current significant pressure on energy costs, the ability to control or even cut energy costs can contribute significantly to future-proofing organizations in competitive markets.

Corporates in Ireland, particularly large technology companies, are also increasingly joining voluntary renewable certification schemes, such as RE100, an initiative of companies committed to consuming 100% renewable energy.

In Ireland, despite the government's stated ambition for cPPAs, there are currently no political incentives for corporates to enter into cPPAs, which are generally being concluded on a voluntary basis in Ireland. It appears, however, that the government is leaning towards requiring new data centers to be decarbonized by design, which plainly necessitates the purchase of significant volumes of renewable energy and may require cPPAs.

What are the key local advantages of the corporate PPA model which can benefit our clients?

All EU member states have to have a Guarantee of Origin (GO) scheme for renewable source electricity. A GO guarantees that 1 MWh of electricity was generated using renewable energy sources. These are tradeable certificates and don't necessarily follow flows of energy, a characteristic that makes them well suited to use in conjunction with financial/virtual cPPAs.

In Ireland, the Single Electricity Market Operator (SEMO) is the body that issues GOs to generators and it's a member of the Association of Issuing Bodies that provides a standardized system. Corporates who purchase GOs from generators can deliver GOs to their energy suppliers to demonstrate – for the purposes of SEMO's annual fuel mix disclosure – that the supplier has supplied a unit of renewable electricity. The corporate can also use a cancellation statement as evidence in the case of audit that it's consumed the relevant renewable energy.

In Ireland, generators that participate in support schemes such as REFIT and RESS can't receive GOs.

What subsidies are applicable to the generation and sale of renewable energy?

The RESS schemes are the current schemes by which Ireland supports renewable generation. The support takes the form of a floating feed-in premium (similar to a contract for differences) which is allocated by means of a pay as bid auction. To date there have been four RESS auctions and the government has recently consulted on the terms and conditions for the fifth auction. There are also separate RESS schemes for offshore wind (ORESS) and four projects were successful in the first ORESS auction which took place in May 2023. The terms and conditions for the second auction for the Tonn Nua site have been published and bidding for the auction will take place in Q2 2025.

Before the RESS, Ireland provided support through the three Renewable Energy Feed-In Tariff (REFIT) schemes, which provided a floor price set at a single level for all participating projects. These schemes closed to new applicants in 2015, but projects will continue to receive support, which lasts for 15 years or until the fixed end date for each scheme.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Other than Guarantees of Origin, Ireland doesn't have a scheme of tradeable certificates associated with renewable generation.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	With regard to pricing agreements, there are several possible options: fixed prices, step prices adjusted over the term, and price indexation. Hybrid forms of these variants are possible. Given the private nature of contracts, it's difficult to generalize on commonly used pricing arrangements across the Irish market. Corporates have been prepared to offer higher fixed prices that can be attractive to generators. As cPPAs can offer an option to hedge against electricity market prices, a fixed price element is a common feature of cPPAs.
What term is typically agreed for the PPAs?	The typical term of cPPAs is from 10 to 15 years, but this may vary depending on the interests of the parties.
Are the PPAs take-or-pay or limited volume?	cPPAs have generally been based on the take-or-pay principle.
Are there any other typical risks?	Change in law is a common risk, resulting from the legal nature of GOs. Any legislative change or binding court judgment that changes the legal nature poses a risk of changing the commercial benefit of the transaction for the parties.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	In our experience, Irish cPPAs operate on a pay-as-produce basis (subject to requirements regarding project availability) meaning that the corporate offtaker bears the risk (although some corporates impose annual volume cap on their obligation to purchase). But this risk is usually balanced through arrangements with an electricity supplier that may then cover any shortfall.
Change in law	The cPPA will usually include change in law provisions, as this will usually prevent the cPPA from being frustrated in the event of a significant change in law. The change in law clause seeks to rebalance the original economic intentions of the parties. Often if the parties cannot agree, the changes to the cPPA following a change in law will be determined by an expert.
Increase / reduction of benefits	Given the private nature of contracts, it's difficult to generalise on this across the Irish market, but where the reduction of benefits is caused by a change in law, this may be addressed by means of the change in law clause.
Market liberalisation (if applicable)	The Irish electricity market was liberalised progressively following the Electricity Regulation Act 1999. As such, this isn't a risk for cPPA parties.
Credit risk	Given the private nature of contracts, it's difficult to generalize on this across the Irish market. But, depending on the relative strength of the parties, one party may wish to seek performance security from a party with lower creditworthiness. As low creditworthiness most strongly affects the party obliged to pay, the risk is balanced against the party expecting payment.
Imbalance power risk	Under the Trading and Settlement Code, all generators are balance responsible, but there are mechanisms that can be used to transfer this responsibility to third parties. In particular, renewable generators typically appoint the licensed supplier that buys the physical output under a PPA as intermediary. The intermediary appointment allows the supplier to receive payment for the power when sold into the SEM. But it also has the effect of transferring balance responsibility to that supplier. Further mechanisms that can be used to transfer balance responsibility include settlement reallocation agreements under the Trading and Settlement Code that are often coupled with appropriate contractual arrangements and can be used to transfer balancing risk including to third-party traders. In our experience, for physical PPAs balancing risk is generally transferred to a supplier or third party with a trading capability who is better placed to manage these risks than either the generator or corporate offtaker.

Production profile risk

The consumption profile is usually more stable than the production profile. Usually this risk is allocated to the buyer under a cPPA and the buyer acquires any missing volume from its electricity supplier at market prices.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Ireland operates a central dispatch model and the system is balanced by EirGrid Plc as Irish Transmission Asset Owner (TSO). The Balancing Market (the BM) determines the imbalance settlement price for settlement of the TSO's balancing actions and any uninstructed deviations from a participant's notified *ex ante* position. The balancing market is operated by the SEMO in accordance with the Trading and Settlement Code.

As mentioned above, all generators registered in the SEM are balance responsible and must register in the BM. However, where a generator appoints an intermediary, that intermediary assumes balance responsibility on the generator's behalf. Other arrangements such as settlement reallocation agreements may also be used to transfer the financial consequences of balancing risk to third parties who are better placed to manage it. Structuring these arrangements is a core part of developing any Irish cPPA.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

In 2017, Microsoft announced the first cPPA in Ireland, which was entered into in respect of a project which was then owned by GE. Following this, a number of other significant deals have been announced involving big tech firms such as Facebook. Since then, there have been an accelerating number of significant cPPA deals in Ireland. Notable examples are:

- Microsoft's deals to acquire 900 MW of power in total from Statkraft, Power Capital and Energia. These deals amount to delivery of 28% of Ireland's PPA targets for 2030.
- Power Capital's deal to sell 58 MW of capacity from its Tullabeg solar farm to Google.
- Highfield's deal to sell power from two solar projects (220 MW) to Meta.
- Greencoat's agreement to sell the output of its Ballybane Wind Farm to Keppel.

Our team has advised on over 1 GW of Irish cPPAs over the last three years whether acting for generators, lenders or offtakers.



Italy

Last modified 16 December 2020

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs are used in Italy for energy sources but with certain limitations.

Corporate PPAs are short-term contracts in Italy (usually having a duration of 1 year) and adopt the sleeved structure. A key limitation to the use of corporate PPAs are their duration as it is not long enough to allow the project to be bankable or become profitable.

Existing long-term corporate PPAs provide for a term not longer than 5 years and variable prices based on the market price of the energy.

The market does not offer long-term corporate PPAs due to risks associated with long-term energy price trends and the buyer's financial standing long-term requirements.

Long-term corporate PPAs do not offer prices which are capable of sustaining a project from a financial perspective. The current legal framework does not provide any form of public guarantee or mitigation of such risks.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

The Italian regulator allows both direct and sleeved corporate PPAs, although the sleeved structure is the most commonly adopted.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Yes. Utilities entities are generally party to the PPA structure.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes, by means of the SEU (*Sistema Efficiente d'Utenza*). Prior to its entry into operation, a SEU is required to apply for the obtainment of the operating license (*licenza di esercizio*) from the relevant Customs Agency for the payment of the excise duties.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The main factors hindering the spread of corporate PPAs in Italy are, *inter alia*: (i) the absence of any incentives; (ii) the absence of support to the aggregation of demand; and (iii) the low discounts offered by awarded applicants in capacity auctions under the New RES Decree.

In addition, one of the major challenges that needs to be addressed is the streamlining of the planning and authorisation process, which has been burdensome due to the highly fragmented regional procedures and different levels of support from local authorities, especially in some of the regions that boast the highest levels of solar irradiation.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

The Ministerial Decree no. 186/2019 (the “**New RES Decree**”) refers to a public consultation that GME (*Gestore dei Mercati Energetici S.p. A.*) (“**GME**”) initiated on 23 January 2020.

Indeed, GME is entrusted with the creation of a market platform for long-term trading of energy from renewable sources, whilst the ARERA (*Autorità di Regolazione per Energia Rete e Ambiente*) the electricity & gas regulator (“**ARERA**”), is required to remove any regulatory barriers.

The public consultation document was aimed at receiving comments by electricity market operators on the structure of the PPA Platform depicted by GME, i.e., *inter alia*:

- **access to the PPA Platform (seller side):** electricity market operators producing energy from renewable sources through newly constructed plants, entered into operation after 1 January 2017 and non-benefitting from feed in tariffs on the energy produced. Offers on the platform may also be referred to plants which are not yet built or built whilst not yet operating;
- **access to the PPA Platform (buyer side):** traders, wholesalers and large consumers may be admitted to the platform, subject to the obtaining of the electricity market operator license;
- **negotiable products:** in order to facilitate the exchanges on the PPA platform, it is proposed the creation of standard contracts, providing for a baseload loading gauge, a minimum duration of 5 years and a maximum duration of 10 years.
- **the role of GME:** GME will stand between the seller and the buyer avoiding the parties – in case the financial adequacy assessments of the parties, to be carried out on a yearly basis, have had a positive outcome – to be exposed to insolvency risks;
- **guarantees:** rolling guarantees on a yearly basis;
- **OTC clearing:** it is proposed to allow the registration with the PPA Platform of PPA contracts executed over the counter, subject to compliance of the contract terms with the standard PPA negotiated on the platform. Following registration, the GME would guarantee the insolvency risks of the parties.

The New RES Decree also provides for the creation of a standard corporate PPA draft to be used in the above-mentioned market platform where subsidy-free energy may be negotiated. Both the owners of energy plants and offtakers (also associated) may access the platform.

Corporate PPAs are introduced as an alternative to the traditional energy incentive system. Indeed, in order to be admitted to the market platform, the plants must be newly built, entered into operation after 1 January 2017 and not benefit from incentives on the energy produced (with the express prohibition for such plants to participate in the auction and registration procedures). In order to access the platform, it will be necessary to obtain a specific qualification from the GSE (*Gestore Servizi Energetici*) (“**GSE**”), based on requirements that will be the subject of a specific determination.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

There are no specific facilitations provided yet under Italian law. Some facilitations are under discussion but the process is at an early stage.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The primary benefits of the corporate PPA model deployed in Italy are:

- the take-or-pay mechanism, which allows all the renewable energy produced by the plant will be purchased by the buyer;
- certainty of future cash flows for the purchaser.

What subsidies are applicable to the generation and sale of renewable energy?

The New RES Decree aims to support, for the three-year period 2019-2021, the production of electricity through plants powered by renewable sources.

The sources contemplated by the New RES Decree are: onshore wind, hydroelectric, plants fuelled by landfill and gas residues from purification processes, and photovoltaic (except for plants located in agricultural lands).

On the other hand, the following sources are excluded: offshore wind, biogas plants, geothermic, biomass and bio liquid plants, oceanic and thermodynamic solar plants. These exclusions are justified by the need to provide for different and separate incentive schemes for those sources that still maintain profiles of innovation and low diffusion, while maintaining higher costs.

Even the New RES Decree, although it provides for registers and auctions until 2021, introduces a safeguard principle represented by the indicative overall annual maximum cost for incentives of 5.8 billion Euro. This is the same threshold set by the 2016 Decree, which will continue to apply to plants registered in a useful position in the rankings formed as a result of the relative auction and register procedures.

Solar energy will compete, both for the auctions and the registers, with the wind power plants. The base tariffs are EUR 105.00 for solar and EUR 150.00 for wind (for plants from 1 to 100 kW), EUR 90.00 (for plants from 100 kW to 1 MW) and EUR 70.00 (above 1 MW). The New RES Decree, unlike the 2016 Decree, eliminates direct access to the incentives for small power plants.

Biogas plants can have access to the incentive regime of the Ministerial Decree 23 June 2016 provided that: (i) they have a power up to 300 kW; (ii) they are managed by farmers or by agricultural companies; (iii) the biogas is produced from by-products for at least the 80%; (iv) the thermal energy produced is used for self-consumption. Plants with a power up to 100 kW can have a direct access to the incentive regime, whereas plants with a power up to 300 kW shall undergo a competitive procedure and be enrolled in specific registers that will be opened from 10 April 2019 to 9 June 2019.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Yes, certificates of origin for renewable-energy plants are granted to producers of electricity from renewable sources actually generated and injected into the grid in each solar year; they are aimed at promoting transparency in the contracts of sale of renewable energy.

ARERA approved a number of rules to guarantee that the electricity sold to the individual customers is actually generated from renewable sources and not sold multiple times.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	<p>Short-term corporate PPAs (for a term of less than 1 year) usually have fixed prices.</p> <p>Long-term corporate PPAs tend to have floating prices and are based on the market average price for electricity minus a fixed amount.</p>
What term is typically agreed for the PPAs?	Corporate PPAs generally are short/medium-term contracts in Italy, generally providing for a 1-year duration whilst, in

limited cases, also a 5-year term has been agreed.

Are the PPAs take-or-pay or limited volume?

Corporate PPAs generally are structured on a take-or-pay basis.

Are there any other typical risks?

Other typical risks are:

- financial risk linked to the economic and financial standing of the purchaser;
- construction delay and capacity shortfall; and
- *force majeure*.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Volume risk is generally borne by the seller. The parties may mitigate such risk by including in a corporate PPA a take-or-pay clause, so that risks related to changes in the market demand or economic conditions of the offtaker may be eliminated.
Change in law	<p>A change in the law may favour any of the parties, depending on its nature.</p> <p>The parties may mitigate such risk by including in a corporate PPA: (i) a liability cap in favour of the weaker party of the contracts; (ii) a provision by operation of which the change in law risk is borne 100% by the producer on the first year of the term and 100% by the offtaker in the last year of the term; or (iii) a provision referring the matter to a technical expert in order to maintain a contractual balance of the undertakings.</p>
Increase / reduction of benefits	An increase in benefits favours the buyer. A reduction in benefits favours the seller. This risk generally does not affect PPAs signed with private counterparties.
Market liberalisation (if applicable)	Market liberalisation benefits the buyer.
Credit risk	Credit risk is generally borne by the seller. The producer may mitigate such risk by signing a corporate PPA with a jointly-liable energy-demand aggregator (e.g. industrial clusters).
Imbalance power risk	<p>Depending on how the PPA is set up, the imbalance risk for a physical PPA can sit with either the seller or the corporate buyer.</p> <p>It is common to pay an appropriate third party (such as a utility or wholesale market trader) to manage the risk.</p>

Alternatively, a large enough developer may have access to balancing tools within its wider group and hence offer to manage this risk (i.e. not outsource to a third party).

Production profile risk

Depending on how the PPA is set up:

- In "Pay as produced" PPA, with the same price every hour, even if volume differs, the purchaser takes the risk; or
- In "Take or Pay" PPA, consumers buy a base load for each time period, thus the seller takes the risk if volume differs.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

The Italian balancing authority is Terna S.p.A., the Italian transmission system operator.

Generator and off-taker typically undertake balancing through a trader.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

Please find below a public list of the corporate PPAs signed in the last 12-18 months, the majority of which is for subsidy-free assets:

- 200 GWh corporate PPA for a 7-year term signed in May 2019 by FERA, in quality of producer, Duferco, in quality of Offtaker, and DXT commodity trader.
- 95 GWh corporate PPA for a 5-year term signed in September 2019 by KGAL Investment Management, in quality of producer, ORI Martin, in quality of Offtaker, and DXT, commodity trader.
- 1,5 TWh corporate PPA for a 2-year term signed in October 2019 by ERG Power Generation S.p.A., in quality of producer, and ACEA Energia, in quality of Offtaker.



Kenya

Last modified 20 February 2025

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Historically, KPLC (Kenya Power and Lighting Company) has provided most of the country's electrical needs, with power being generated by KenGen (a government-backed power generation company) and Independent Power Producers (IPPs) who enter into long-term PPAs with KPLC. KPLC then distributes energy and sells it to retail consumers.

Changes brought in with the Energy Act of 2019 (Energy Act) opened up the power sector by permitting other entities to distribute and transmit power and also allowing for net metering and wheeling of generated power.

Corporate PPAs have recently gained significant traction in Kenya, with many large corporations exploring options for self-generation. Between June 2023 and June 2024 alone, the Energy and Petroleum Regulatory Authority (EPRA) approved 18 solar captive PPAs between independent power producers (IPPs) and various industrial and manufacturing companies.

While some large malls and corporate headquarters in Nairobi have financed and installed solar systems without relying on PPAs, most corporate entities have adopted direct wire/private wire PPAs. Under this model, the generation facility is developed on or adjacent to the corporate offtaker's premises.

Generation of up to 1 MW for "own use" is permitted under the Energy Act without the need for extensive licensing. This makes the approaches highlighted above appealing to corporates who want a simple fix to the rising costs of power in Kenya. Direct wire PPAs also avoid the need to rely on any external party for transmission or distribution, further reducing the potential for administration and bureaucracy.

Virtual PPAs and sleeved PPAs are almost non-existent in Kenya. This could be because the regulatory framework isn't mature /sophisticated enough (see below) and/or because corporate sustainability goals/targets for the use of renewable energy can, in fact, be inadvertently met by reliance on the national grid (79.89% of Kenya's energy is already generated from renewable sources). However, with the introduction of wheeling under the Energy Act, sleeved PPAs are expected to gain traction once the necessary regulations for implementing wheeling are in place.

We expect further development in this area as the Energy Act imposes obligations on designated factories and buildings to conserve energy and assess energy consumption (ss. 188 and 189). PPAs that give corporates the freedom to choose more efficient energy sources may be an attractive solution to some large manufacturers or industrial groups.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Yes. Corporate owners can purchase directly from a facility if the cPPA is approved by EPRA in accordance with section 163 (1) of the Energy Act which provides that "All contracts for the sale of electrical energy as well as provision of transmission and distribution network services, between and among licensees, and between licensees and retailers and eligible consumers shall be submitted to the Authority for approval before execution."

An eligible consumer is a consumer that can choose any licensee to be a supplier and with whom the consumer can contract to buy electrical energy for the consumer's own use, in accordance with regulations made under the Act. A consumer is any person supplied or entitled to be supplied with electrical energy or petroleum.

With respect to suppliers, corporates can also buy power from a choice of suppliers. But in practice the choice of suppliers is usually limited to KPLC. This is likely to change once private entities become more involved in supplying electricity.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

A cPPA is typically entered into between an IPP and a corporate offtaker, with third-party involvement being uncommon at present. However, this is expected to change with the implementation of wheeling, which may necessitate the involvement of KETRACO or KPLC in such agreements.

EPRA has to approve the PPAs but it's not a party to the agreement itself.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Section 117 of the Energy Act stipulates that anyone wishing to engage in generating, exporting, importing, transmitting, distributing, or retail supplying electricity has to apply for a license from the Authority, in accordance with the provisions of the Act. But no authorization is required for generating electricity for personal use, provided the capacity doesn't exceed 1 MW. Based on this, where a generator intends to sell electricity directly to an end user, the generator should also obtain a retail supply license in addition to the generating license.

It is expected that the proposed Energy (Electric Power Undertaking Licensing) Regulations 2024 will provide more detail on the various categories of licenses provided for in the Energy Act, once established. KenGen (the state-backed generator) has already announced its intention to supply industrial consumers once clear regulations are in place.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

- Green energy sources tend to be intermittent/unreliable such that corporations are rarely able to rely exclusively on a green solution to meet their power needs. This is particularly the case for solar power, which, in the absence of affordable storage facilities, can only provide a solution during daylight hours. Many corporates adopt a hybrid approach and will also explore how to use net-metering to sell back excess supply.
- Most technologies require significant space to be efficiently developed. Unless corporates or generating entities own their premises or land on which to develop a generating plant, corporations and/or generating entities have to lease or acquire the required space. This can be a significant challenge, particularly for foreign-owned corporations. Acquiring land for generating power also requires significant engagement with the local community to ensure the investment/development is well received.
- High upfront costs for most technologies in terms of equipment and personnel. Difficulty with logistics and some supply networks can mean equipment is difficult to maintain, and spares might not be readily available or properly stored.
- The cPPA market is only now opening up in Kenya, and the regulatory controls are untested and somewhat ambiguous. It's seemingly likely that regulatory reform will follow in the next few years as stakeholders interpret the applicable legislation. This uncertain and/or changing regulatory landscape can sometimes make it difficult for corporates to commit to PPAs with substantial terms. Although regulations like the proposed Energy (Electricity Market, Bulk Supply and Open Access) Regulations 2024 have been published for public comment, they still need to be implemented to provide clarity for entities interested in adopting cPPAs.
- Emerging local capacity in the development, operation and maintenance sectors coupled with obligations to develop and use local content.
- Proper enforcement of standards and regulations. Particularly in the solar space, there's a proliferation of sub-standard solar energy technologies and equipment. There's also a lack of availability of affordable power storage solutions.

Interventions

- For some time, the Kenya Revenue Authority offered tax exemptions for some solar-PV equipment (though this was reviewed in 2020). Permanent exemptions that applied to a wider range of technologies would help in managing the substantial up-front costs.
- KPLC could explore how to use virtual PPAs and sleeved PPAs to increase revenue and maintain market position.
- Regularly reviewing standards for energy technologies and equipment and genuine and consistent enforcement of regulations and standards.
- Implementing programs and initiatives to develop local capacity. Incentives could also be offered to corporates to provide training and /or upskill individuals.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

As highlighted in other answers, changes to the Energy Act in 2019 mean that energy generators can now obtain distribution licenses, empowering them to increase their offering and sell electricity directly to consumers.

The Energy (Net Metering) Regulations 2024 came into effect on July 18, 2024. These regulations apply to renewable energy technologies with an installed capacity of less than 1 MW. They allow consumers to feed excess power into the grid during low consumption periods and offset the cost of electricity consumed from KPLC with the capacity supplied to the grid.

The draft Energy (Electricity Market, Bulk Supply, and Open Access) Regulations 2024 were published in February 2024 for public comment. While they are yet to be finalized and take effect, these regulations aim to open Kenya's electricity market by ensuring non-discriminatory open access to transmission and distribution systems to enhance competition. These regulations will provide a framework for implementing wheeling, which is likely to result in the uptake of sleeved or wheeled cPPAs.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Various corporates in Kenya are adopting green energy:

- Mumias Sugar Company generates 34 MW of electricity from its bagasse-based co-generation plant.
- Kenya Breweries Limited plans to generate at least 9.3 MW at its Ruaraka plant and 2.4 MW from solar power in Kisumu.
- Kenya Tea Development Agency has set up various hydropower plants throughout the country to reduce the significant energy costs associated with processing and manufacturing tea.

The primary reasons for this growing corporate appetite for green energy solutions include the need to:

- reduce rising operation costs that are largely attributed to rising energy costs;
- improve reliability of power supply;
- increase focus on sustainability and environmental, social and governance (ESG) considerations globally and in Kenya
- obtain new sources of revenue; and
- meet sustainability goals imposed by foreign-owned parent companies.

Beyond the incentives that are generally available in the market (eg tax exemptions for importing solar products), there are no specific incentives being made available to corporates as a means of encouraging the use of green energy.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The advantages of using cPPAs in Kenya include:

- energy security (particularly reduction of black/brown outs and surges if direct-wire solutions are used);
- discretion to use specific energy sources or exclusively renewable energy as a means of satisfying sustainability goals;
- avoiding high (and increasing) costs of power supply from a state-owned utility and/or passing on the pricing risk;
- for direct-wire solutions, excess power sold back to the grid may create a source of revenue; and
- direct-wire PPAs may be the only means of generating and accessing electricity in some instances as the national transmission network doesn't always cater for very remote connections.

What subsidies are applicable to the generation and sale of renewable energy?

While many subsidies have been the subject of recent potential revision, there are currently still various tax incentives for involvement in renewable energy, including:

- VAT exemption on specialized equipment for developing and generating solar and wind energy, including deep cycle batteries which use or store solar power;
- VAT exemption on inputs or raw materials supplied to solar equipment manufacturers for manufacturing solar equipment or deep cycle-sealed batteries which exclusively use or store solar power;
- exemption from tax on interests to be paid on loans from foreign sources for investing in the energy sector – pursuant to Legal Notice 91 of 2015;
- exemption from tax on payments made to a non-resident for services rendered under a power purchase agreement – pursuant to Legal Notice 165 of 2015; and
- exemption from payment of stamp duty on instruments executed for loans from foreign sources received by investors in the energy sector.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Yes. In 2024, the International Tracking Standard Foundation approved Kenya for the issuance of International Renewable Energy Certificates (I-REC) and designated EPRA as the local issuer.

An I-REC serves as a transferable certificate confirming that one megawatt-hour (MWh) of electricity has been generated from renewable sources and fed into the grid. As the local issuer, EPRA is responsible for inspecting energy-generating facilities across the country to verify that electricity is produced from renewable sources. The local implementation of I-RECs is intended to help Kenya meet its international commitments and agreements on clean energy.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	<p>cPPAs: While there are currently limited examples, for direct wire PPAs, prices tend to be fixed and subject to escalation.</p> <p>PPAs with KPLC: The tariff applicable per kW/h is fixed, and KPLC is obliged to accept up to a certain capacity for the term of the PPA (take or pay basis).</p>

What term is typically agreed for the PPAs?**cPPAs:** In our experience, generally between 10 to 20 years.**PPAs with KPLC:** 20-25 years.**Are the PPAs take-or-pay or limited volume?****cPPAs:** Unknown but likely negotiated on a commercial basis.**PPAs with KPLC:** Previously always take-or-pay (but there has been movement towards take-and-pay to alleviate the burden on the utility to pay for electricity that's not ultimately used).**Are there any other typical risks?****cPPAs:** Unknown but likely negotiated on a commercial basis.**PPAs with KPLC:** Political risks are typically accepted by the offtaker and backstopped by the government (but see our note above on parties involved in PPAs).**To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?**

Type of risk	Details
Volume risk	cPPAs in Kenya don't currently have a prescribed form, such that a number of these risks can be negotiated on a commercial basis. But as most cPPAs are usually based on fixed volume terms, the generator usually bears the volume risk.
Change in law	Negotiated on a commercial basis. In some instances, this risk is borne by the offtaker, particularly when the change in law leads to increased costs.
Increase / reduction of benefits	Negotiated on a commercial basis. In some instances, changes in benefits due to a change in law may be addressed under the change in law clause (see above).
Market liberalisation (if applicable)	Unknown – in a traditional PPA it would sit with offtaker.
Credit risk	Due to the private nature of contracts, it's difficult to generalize on this across the Kenyan market. The offtaker under a cPPA may have to provide credit support such as a parent company guarantee to mitigate payment risk. The need for such security typically depends on the offtaker's creditworthiness and may also be influenced by the requirements of the project's financiers.
Imbalance power risk	Unknown – in a traditional PPA it would sit with offtaker.
Production profile risk	Unknown and also not covered by traditional PPAs.

Balancing

Does your country operate a balancing responsibility scheme?

No formal scheme is in operation, but there are entities that are responsible for balancing supply and demand.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Until January 2022, KPLC operated the National System Control Centre (NSCC). EPRA reassigned the role of system operator to the Kenya Electricity Transmission Company Limited (KETRACO) under Section 138 of the Energy Act. As the system operator, KETRACO is now responsible for balancing supply and demand and ensuring the safe transmission of electricity to end users. Notably, KETRACO is developing a new NSCC, which will enable real-time remote monitoring of the power grid and coordination of electricity supply and demand to enhance system safety and reliability.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

In 2022, Bamburi Cement signed a PPA with MomNai Energy Limited to develop a 14.5 MW solar plant in Mombasa and a 5 MW solar plant in Nairobi, both located adjacent to its factories. Once completed, these plants are expected to significantly reduce the company's power costs.

Between June 2023 and June 2024, EPRA approved 18 captive power purchase agreements between independent power producers (IPPs) and various corporate entities, including Mombasa Cement Limited (for 10 MW), Mabati Rolling Mills Limited (for 2.5 MW), and Abyssinia Iron and Steel Limited (for 7.8 MW).



Mexico

Last modified 16 December 2020

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Traditionally in Mexico, Corporate PPAs have been Physical PPAs under the legacy regime called *Autoabastecimiento* or Self-Supply, where a group of medium to large consumers (usually belonging to the same corporate group) together with a selected generator form a corporation (the **"Self-Supply Corporation"**), which will be responsible for obtaining the necessary permits (particularly important is the power generation permit from the Energy Regulatory Commission **"CRE"**) and entering into the relevant agreements (particularly important are the Transmission Agreements for the wheeling of electricity with the State-owned transmission and distribution utility **"CFE"**). The generation would own the vast majority of shares in the Self-Supply Corporation and the consumers would need to own at least one share. The PPA would be entered directly between the Self-Supply Corporation and the consumers.

This Self-Supply regime was the only mechanism available to purchase the electricity from a private generator. Prior the energy reform of December 2013 in Mexico, only the CFE could generate and sale power and electricity. The Self-Supply scheme was an exception to the CFE state-owned monopoly, where private parties were allowed to generate their own electricity through the Self-Supply Corporation. With the reform of 2013, the projects that were developed under the Self Supply scheme have been recognized as legacy projects and will remain valid for the remaining duration of the Transmission Agreement entered into with the CFE. Although no more projects of this type will be authorized.

After the energy reform, the electricity market has been opened to private participation in generation, marketing, and supply of electricity. Only physical transmission and distribution of electricity remain a state monopoly. As the market develops, we will begin to see different types of corporate PPAs.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Through the Self-Supply scheme, corporate owners may purchase directly from a facility. For new projects, after the reform, corporate owners may purchase the electricity directly from a generator, if the state-owned transmission system (**"National Transmission System"**) is not used (distributed generation or local generation). If the National Transmission System is to be used: (i) the electricity would need to be purchased from a supplier, or (ii) consumers with a minimum average yearly consumption is 1 MW, may become registered with the CRE as qualified consumers and may enter into a PPA with a generator.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Yes, marketing companies or suppliers are necessary if the electricity is to be wheeled through the National Transmission System. If there is no need to use the National Transmission System (distributed generation or local generation) the use of third parties may not necessary.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes, as long as the user is registered with the CRE as a qualified user (minimum average consumption of 1 MW per year). The generation will need a generation permit with the CRE.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The main problem is that the current administration is not in favour of private participation in the energy industry and would like to have the State-owned CFE controlling the market. There have not been any changes in the laws, yet, but the new policy has created uncertainty. However, the market since the reform of 2013 has evolved to an open market structure with solid regulations, and it is unlikely that this new government could change the rules to give back to CFE an integrated monopoly.

For instance, most of the Self-Supply projects are renewables. The regulations allow that these projects have a cost benefit in the transmission and distribution of electricity. The new government has indicated that these benefits are currently under review and may be terminated. However, there are legal mechanisms available to fight against such measures.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

As mentioned in [Challenges](#), the government has announced the review of the transmission and distribution rates currently available for renewable Self-Supply projects. These special rates are similar to a subsidy, to allow the development of renewable generation. Other than the termination of these special rates, there are no other anticipated regulatory changes.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Mexico has adopted aggressive international commitments to develop the use of green energy. The regulations provide that all consumers have to obtain a certain percentage of their electricity through renewable sources. This percentage is currently 7.4%, but in 2021, it will be increased to 10.9%, and in 2022 such percentage will be 13.9%. Increments for the following years will be announced by the Energy Ministry. The main responsible parties are the suppliers, who need to purchase the electricity from a portfolio of renewable generators in such a way, that their customers consume electricity from renewable sources to comply with these percentages. If such consumption minimum requirements are not met, the responsible party would need to purchase green energy certificates (by its Spanish acronym "CELs") in the Mexican market.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Under the Self-Supply scheme, the most beneficial aspect is price. Renewable developers have been able to offer significant discounted prices to the standard CFE end user price.

For projects post the 2013 energy reform, where the Self-Supply scheme is no longer available, large consumers are still looking, first to comply with the clean energy minimum consumption requirements; second, to obtain lower prices from renewable sources; third, to use in their advertisement that they are a "clean energy user". Finally, but not less important, companies are looking for reliability in the supply.

What subsidies are applicable to the generation and sale of renewable energy?

There are no subsidies in Mexico for renewable generation or sale of electricity. As mentioned above, there are some advantages given to Self-Supply projects in the transmission of electricity from renewable sources.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

The clean energy certificates (CELs) are issued by the Energy Regulatory Commission (CRE) in Mexico to renewable facilities.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Most PPAs, particularly the Self-Supply projects, are based on a percentage discount over the CFE standard rate.
What term is typically agreed for the PPAs?	Most PPAs are between 15 to 20 years. However, in recent years we have seen from 2 to 5 years.
Are the PPAs take-or-pay or limited volume?	Take-or-pay.
Are there any other typical risks?	Perhaps the only serious risk is a possible change in law that would increase the transmission rate, which would make the Self-Supply projects economically non-feasible.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	There is no volume risk. Consumers maintain their supply contract with the CFE utility. If the renewable supply is short, the supply from the CFE utility kicks in, at the CFE standard rates.
Change in law	Equally balanced
Increase / reduction of benefits	Equally balanced
Market liberalisation (if applicable)	Equally balanced
Credit risk	The generator assumes the credit risk.
Imbalance power risk	Equally balanced
Production profile risk	Equally balanced

Balancing

Does your country operate a balancing responsibility scheme?

Balancing is the responsibility of the system operator "CENACE", a governmental institution regulated by the Energy Regulatory Commission (CRE).

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

CENACE is not an authority, it is just the operator. The authority is the CRE. The generator and offtaker do not take balancing themselves.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

There have been many, but there is no public record or reliable source of information.



Morocco

Last modified 10 February 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Law No. 13-09 relating to renewable energy¹ introduced the possibility for operators of renewable energy production installations to enter into direct power purchase agreements with end-users to sell the electricity produced. The price is freely agreed between the parties and is not determined by the law (no feed-in tariffs). However, the end-users cannot resell the electricity to third parties.

Law No. 13-09 requires that all renewable energy projects be connected to the national grid. Therefore no direct wire projects can be implemented pursuant to Law No. 13-09. In this regard, the operator has the right to access the national low-voltage, medium-voltage, high voltage and very high-voltage grids within the limit of their carrying capacity.

[1] Law No. 13-09 relating to renewable energy as amended by law No. 58-15 and its implementing decrees

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Corporate owners can purchase directly from a renewable energy electricity production installation.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

As previously indicated in point 2 above, no direct wire projects can be implemented pursuant to Law No. 13-09. The operators of renewable energy production installations will need therefore to access the national medium-voltage, high-voltage and very-high-voltage grids in order to commercialize the electricity produced from renewable energy sources and this subject to the available technical capacity of the grid.

In practice, two agreements are entered into between the generator and the national electricity transport grid operator in order to access the national grid:

- a grid connection agreement pursuant to which the operator of renewable energy production installations connects its facility to the national grid;
- a network access agreement pursuant to which the operator is granted the right to inject electricity into the grid in compliance with certain technical and financial conditions.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes.

Renewable energy production installations are subject to different regimes depending on their installed capacity:

- **free-regime:** applicable to renewable energy electricity production installations with an installed capacity, per site or group of sites owned by the same operator, of less than 20KW;
- **prior declaration:** applicable to renewable energy electricity production installations with an installed capacity, per site or group of sites owned by the same operator, between 20KW and 2MW. This prior declaration is submitted before the Ministry;
- **prior authorization:** applicable to renewable energy electricity production installations with an installed capacity, per site or group of sites owned by the same operator, exceeding 2MW.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

- Some of the implementing decrees of law No. 13-09 have not yet come into force, in particular the ministerial order identifying the map of areas for the development of solar projects. Therefore, no solar project can be authorized by the Ministry.
- The Moroccan national electricity grid has reached its capacity limits in certain regions.
- It is not possible today to sell electricity to the distributors connected to the medium-voltage grid.

These challenges are currently addressed in the draft reform of Law No. 13-09 (see [Regulatory changes](#)).

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

A new Draft Law No. 40-19 reforming law No. 13-09 aiming to improve the legislative and regulatory framework relating to the renewable energy sector in Morocco was published in December 2019 by the Moroccan General Secretariat of the Government. In this reform, the Moroccan legislator is addressing the current legal and technical difficulties faced by the operators, particularly:

Solar Zoning

Draft Law No. 40-19 removed this zoning requirement for solar energy projects. The zoning remains, however, applicable to wind energy projects.

National grid reception capacity and contribution to the stability of the grid

One of the main innovations introduced by Draft Law No. 40-19 is the introduction of the national grid carrying capacity (*capacité d'accueil*) defined as the maximum quantity of installed capacity from renewable energy sources that the national grid can accommodate without facing management constraints. This carrying capacity will be fixed by the national electricity transport grid operator following the approval of the National Electricity Regulation Authority.

The publication of the grid reception capacity, following the entry into force of Draft Law No. 40-19, will give more visibility to the operators in order to submit or not the authorization pursuant to Law No. 13-09.

Selling electricity to distribution network operators

Draft Law No. 40-19 introduced the possibility for distribution network operators to acquire up to 40% of the total energy supplied from renewable energy sources.

In order to develop projects under the self-consumption regime, a draft bill was published on the website of the General Secretariat of the Government on 19 November 2020. This draft bill introduces a new self-consumption regime depending on whether or not the installation is connected to the grid.

This new regime allows for better visibility and greater transparency as to how the installations are operated and, where applicable, connected to the grid.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The Moroccan Government has set up its National Energy Strategy, which aims to reach 53% of electricity generation from renewable sources by 2030. This political incentive pushes the authorities to grant customs and tax incentives to corporates investment conventions.

There are, however, no specific financial incentives available to corporates that wish to adopt green energy.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The price is freely agreed by the parties and is not determined by the law (no feed-in tariffs).

What subsidies are applicable to the generation and sale of renewable energy?

No subsidies are applicable.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

No.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Fixed
What term is typically agreed for the PPAs?	20 years
Are the PPAs take-or-pay or limited volume?	Both options are possible
Are there any other typical risks?	Not applicable

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Generator
Change in law	Usually the change in law is qualified as <i>force majeure</i> event.

Increase / reduction of benefits	Generator
Market liberalisation (if applicable)	Not applicable
Credit risk	Generator
Imbalance power risk	Generator
Production profile risk	Generator

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

The national electricity transport grid operator is the balancing authority.

Draft Law No. 40-19 also requires the contribution by the generators to the stability of the grid by paying a tariff determined by the National Electricity Regulation Authority. In this regard, Draft Law No. 40-19 introduces the term "system services" consisting of a set of services enabling the national electricity transport grid operator to maintain frequency, voltage and cross-border trade with other countries. System services also allow the national electricity transport grid operator to manage the intermittent nature of renewable energy sources connected to the grid.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

Aftissat II wind farm project developed by Nareva Holding, through its subsidiary Energy Eolienne du Maroc, pursuant to Law No. 13-09. The wind farm will have a capacity of 200MW and will enter into service in 2022.



Mozambique

Last modified 01 February 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

The Mozambican government is attempting to develop the Renewable Energy sector to connect more communities to the grid and grow the economy.

Corporate PPAs in Mozambique most closely resemble the sleeved structure, known as an "off-take" agreement in Mozambique.

Electricidade de Moçambique (**EDM**) is the national utility company, and because it manages the national grid, it tends to be the sole electricity off-taker. There are only a handful of projects which has a corporate buyer of electricity directly from the generator.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Legally speaking it is an open market, but in practice, because the national utility company manages the national grid, the approach has been that the national utility company tend to be the only off-taker requiring the regulatory authority to approve any arrangement that does not involve EDM as the off-taker.

While regulators do not restrict corporate owners to purchase from a choice of suppliers as such, in practice, corporate owners are limited in terms of options, as EDM supplies electricity on a *de facto* monopoly basis.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

In Mozambique, cPPAs are commonly concluded between the generator and the off-taker with no involvement of third parties.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Legally speaking, yes it is permitted. However, because the national utility company manages the national grid and distribution, it is difficult to sell electricity directly to an end-user without the involvement of the national utility company.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Some of the challenges to corporations adopting green energy are as follows:

Technical

- lack of capacity to install, operate and maintain green energy systems;
- poor retention of trained personnel in the national renewable energy sector;
- the lack of local training, which jeopardises the operation of small-scale projects scattered all over the country.

Political

- consolidation of the political environment;
- lack of a political and strategic framework to motivate the development of green energy; and
- lack of inter-ministry coordination.

Financial

- lack of involvement by the banking sector in promotion, assessment and implementation of green energy programs;
- no government instruments to improve the credit and mitigate the risk of credit by third parties; and
- need for revision of taxes and import duties on equipment intended to exploit green energy.

Regulatory

- insufficient green energy regulatory framework; and
- poor harmonization of the existing regulatory framework with the future regulatory framework.

These challenges can be overcome by:

- institutional capacity building, both of public and private institutions' human capital;
- improvement of the regulatory framework, in order to make it more enforceable and effective;
- granting tax benefits, to make the acquisition of green energy equipment easier;
- establishment of financing schemes, to provide access to easy credit;
- education, training and establishment of good working conditions.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

In October 2017, the government launched the review and amendment of the 1997 electricity law, to modernise it and put it on par with best practices in the sector, including unbundling the value chain as controlled by EDM the national utility company so that generators may sell electricity directly to corporate buyers. This process is still ongoing as of January 2021.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The corporate appetite for green energy and incentives are still limited in Mozambique. Nevertheless, there are a few financial incentives provided for in Resolution No. 62/2009, of 14 October, which approves the Policy on Development of New and Renewable Energy. These include:

- incentives based on prices and tariffs of new and renewable energies supply systems;

- provision of special funding (subsidies) for projects and programs of new and renewable energy supply, utilizing funds, non-interest-bearing public loans or Government loan guarantees; and
- promotion of carbon credits opportunity.

In addition, Law n.º 3/2012, of 23 January, which amends Articles from the Value-Added Tax (**VAT**) Code, provides for a deduction of 60% of the taxable amount, for construction services of rural electrification.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Officially there is no PPA model as approved by the Government. The consolidated practice is that EDM is the principal off-taker has developed a PPA model which it uses to agree on the offtake.

Key advantages:

- **Pricing flexibility** – the government grants special tariffs in order to attract investment to power projects.
- **Tax incentives** – the relevant legislation grants special tax benefits in order to attract investment to power projects.
- **Off taker credit support** – to secure payment obligations under the PPA.
- **Political risk cover** – the government accepts political risk concerns raised by Concessionaire and Lenders; such cover is usually provided from multilateral development banks and other financial institutions.

What subsidies are applicable to the generation and sale of renewable energy?

The subsidies applicable to the generation and sale of renewable energy are as follows:

- financing through public funds and low-interest loans or government loan guarantees;
- tax incentives intended to promote the domestic production of equipment under a special investment regime, e.g., an industrial free zone;
- direct subsidies (e.g., discounts) to new and renewable energy equipment users on purchasing such equipment.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

So far, there is no national support scheme with tradable green certificates as such. In fact, there is a scheme for the issuance of carbon credits stemming from the development of new and renewable energy projects. However, such credits are property of the Mozambican State, and the Government, at its sole discretion, may share its gains in a pre-negotiated portion if it considers that such share may be an incentive for an IPP with experience in the carbon credit market.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Typically, prices tend to be fixed, and the parties contractually agree to an adjustment period.
What term is typically agreed for the PPAs?	30 years.
Are the PPAs take-or-pay or limited volume?	

Renewable technologies which may not be dispatched by the off-taker, particularly large dams, wind and solar, only follow the take or pay method for the deemed Capacity Payment (CP) method ("limited volume").

The take or pay method is generally used in the long term gas supply agreements. PPAs, particularly thermal generation facilities, such as gas turbines, engines fuelled by diesel or heavy fuel oil and coal-fired generation facilities, briefly reference this method, however only for redirecting payment to the gas supply agreement.

Are there any other typical risks?

There are other typical risks, which include:

- force majeure events;
- political and legislative risks; and
- change in control.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	<p>Offtaker.</p> <p>It is usually expected that the off-taker shall pay for what has been produced, therefore permitting that the project company meets its capital costs (debt service, return of equity and fixed operating costs).</p>
Change in law	<p>National utility company if it is the Offtaker/Government.</p> <p>The government usually takes responsibility for the risk of change in law, and in some circumstances, considers it a political risk. To some extent and subject to the government's approval, the project company may negotiate protection against the change in law, namely a stabilisation clause, which provides that changes in law shall only apply to the project if such change results in a benefit to the project.</p>
Increase / reduction of benefits	Offtaker
Market liberalisation (if applicable)	Offtaker
Credit risk	Offtaker
Imbalance power risk	Offtaker
Production profile risk	Offtaker

Balancing

Does your country operate a balancing responsibility scheme?

Yes, in practice, Mozambique operates a balancing responsibility scheme.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Apart from being the sole off-taker of the nationally produced electricity, EDM is the manager of the national electricity transportation grid, whose competencies include the management of the system services required for the balance between production and consumption.

The generator and the off-taker do not typically undertake balancing themselves. Despite its dual capacity, EDM adopted an organic structure that clearly separates its role of off-taker from that of manager of the national electricity transportation grid.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

During the last 12-18 months, the following transactions took place in Mozambique:

- financial close for 41 MW Metoro Solar Power Plant project (the largest solar power project to be implemented in Mozambique), implemented by Neoen and EDM;
- 40MW solar power plant project in Mocuba, the first one commissioned in 2019 to supply electricity to the national grid;
- approval, by the United States International Development Finance Corporation (“DFC”), of a loan of up to two hundred million United States Dollars (US\$200M) aimed at financing the development, construction and operation of a 420 MW gas-fired thermal power plant in Inhambane province, Southern Mozambique;
- provision, by the DFC, of political risk insurance for up to one point five billion United States Dollars (US\$1.5B) to support the development, construction and operation of an onshore gas liquefaction plant and supporting facilities in area 4 of Mozambique’s Rovuma Basin.
- conclusion of a PPA, for the supply of 40 MWp of photovoltaic power, between EDM and Niassa Energia Solar, Limitada, a subsidiary of Alten Africa.



Netherlands

Last modified 10 October 2023

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs (cPPAs) are steadily gaining ground in the Netherlands, although not as rapidly as in some other European countries. Over the last few years, reduced pricing under the SDE++ subsidy system coupled with increasing CAPEX costs for renewable projects (along with traditional challenges such as grid access and spatial planning issues) have made it increasingly challenging for project developers to set up bankable projects. This has led the market to look for viable alternatives to the long-standing subsidy model, one of which is cPPAs, which offer increased financial appeal and bankability due to price predictability.

One pressing challenge for broadening access to cPPAs in the Dutch market is the varied creditworthiness of potential offtakers. To make cPPAs more accessible, especially for parties with lower credit ratings than large multinationals, effective credit enhancement products will be key. On the other hand, the EU's strict unbundling regulations have negatively affected the creditworthiness of traditional offtakers such as utility companies, indirectly incentivising project developers to look for offtakers with a higher degree of creditworthiness (alternatively acceptable forms of credit enhancement).

One interesting development, particularly for data centres, is that the Amsterdam Internet Exchange (AMS-IX) has positioned Amsterdam as a desirable location for such developments. These data-intensive businesses are increasingly becoming major participants in cPPAs to meet their (substantial) energy requirements.

Although the sleeved model has been more frequently used in the Dutch market, all forms of cPPAs as they are known in other jurisdictions can be implemented in the Netherlands. Prominent players such as Microsoft, Google, NS (the state-owned Dutch railway operator), Philips, AkzoNobel, and DSM often express interest in and have participated in cPPA structures. Regulatory oversight is offered by the Netherlands Authority for Consumers and Markets (ACM), which enforces the Electricity Act and Gas Act.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

All types of Corporate PPAs are allowed in the Netherlands: direct, sleeved and synthetic.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

In the Netherlands, cPPAs often involve more than just the generator and the offtaker. Except for in the case of an onsite cPPA, a transport arrangement will be necessary with a grid operator as grid operators cannot, due to the "group prohibition principles," be part of a corporate group that includes companies generating, supplying, or trading energy, which affects the structure of most cPPAs.

Generally, common third-party involvement includes the following participants:

- **Utilities as facilitators:** Utilities often act as intermediaries, especially for offsite or sleeved cPPAs. They smooth out fluctuations in electricity production and supply, providing a level of stability that both generators and offtakers often need.

- **Aggregators:** These entities bundle smaller producers to offer a more substantial and stable energy supply to corporate offtakers, facilitating financial viability for smaller renewable projects
- **Financial institutions:** Particularly in synthetic or virtual cPPAs, banks or other financial institutions may offer hedging or credit enhancement services, particularly if the offtaker lacks strong creditworthiness.
- **Consultants and advisors:** While not direct parties, these professionals often play crucial roles in structuring and negotiating cPPAs, particularly for newcomers to the renewable energy landscape.
- **Grid operators:** Though not usually a formal party to the cPPA, their role is vital for the transport of energy in offsite cPPAs, even more so due to the “group prohibition” that requires separate arrangements with grid operators for transportation.
- **Regulatory bodies:** Organisations like the Netherlands Authority for Consumers and Markets (ACM) are not parties but play a critical role in ensuring compliance with national and EU regulations.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

A licence is only required for supply to low-volume users (ie max 3*80 A). In case of a cPPA, therefore, no permit will be required.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Financial

The substantial upfront investment needed for renewable infrastructure can deter corporations. However, government incentives, subsidies, and innovative financial options like cPPAs alleviate these financial burdens, allowing companies to transition without substantial upfront costs.

Technical – grid integration and congestion

Intermittent renewable energy sources present a technical hurdle, further exacerbated by the Netherlands' insufficient grid capacity. Network congestion can result in increased electricity prices and restricted reliability. The Netherlands is investing in grid expansion, smart grid technologies, demand response, and storage solutions to tackle these issues effectively.

Regulatory

The complex nature of environmental and other permissions can stall the speed of a renewable project development. The Dutch government is expected to provide clear guidelines and facilitate public-private partnerships to streamline regulatory procedures, including challenges like nitrogen permissions, and noise and sound regulations.

Political

Spatial planning restrictions and local opposition due to the high population density add complexity to onshore projects. As a result, new wind farms are primarily offshore. For onshore projects, compulsory local resident participation is often mandated to mitigate conflicts. These participation requirements, although making projects more complex, offer a way to engage communities and resolve disputes.

Overcoming these multifaceted challenges in the Netherlands requires a concerted effort from the government, private sector, and local communities. Policies that incentivise green energy adoption, technological advancements, and increased public awareness are all pivotal to meeting the stringent renewable targets and transitioning to a more sustainable energy future.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

EU Clean Energy Package

The EU Clean Energy Package, effective from 2021 to 2030, plays a vital role in shaping the regulatory landscape. The Energy Efficiency Directive sets a target of 32.5% for energy efficiency by 2030. Meanwhile, the Renewable Energy Directive aims to increase renewable energy consumption to 32% by 2030, with at least 14% of transport fuel coming from renewable sources. These directives will inevitably affect corporate commitments to renewable energy and the structure of cPPAs.

Emergency Ordinance of 2023

An Emergency Ordinance was issued earlier this year, emphasising that projects for planning, construction, and operation of renewable energy plants are of high public interest. The ordinance allows for certain exemptions from European environmental legislation and sets deadlines for permit procedures, offering a more agile regulatory framework to fast-track renewable projects.

Q2 2023 Regulatory Changes for Hydrogen

Specific regulations on hydrogen are coming, with Delegated Acts that set standards for green hydrogen production and certification. These acts will have criteria that significantly impact the green PPA market for hydrogen as a renewable energy carrier.

Anticipated New Energy Act

A new Energy Act is expected to replace the existing Electricity Act 1998 and the Gas Act. This all-encompassing act will merge rules for gas and electricity transmission and supply, incorporating European rules and focusing on the transition to cleaner energy sources. Issues like net-congestion are expected to be addressed more elaborately in this act.

These regulations will significantly alter the corporate green energy landscape in the Netherlands, providing new opportunities and challenges for companies aiming to adopt renewable energy and participate in cPPAs. The regulations are not only setting new standards and targets but are also creating mechanisms to accelerate the transition to renewable energy sources.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The appetite for green cPPAs is growing, especially because this will help achieve sustainability goals and also because the available subsidies for green energy cover the difference between the cost price of generation and the market value of the electricity. The growing appetite for electricity due to, eg expanding data centre networks combined with aggressive clean energy commitments, clearly outlines the increasing demand for renewable energy deals.

What are the key local advantages of the corporate PPA model which can benefit our clients?

In the Netherlands, the cPPA model provides several local advantages.

Pricing Stability

One of the most salient benefits is price stability. With the reduction in SDE++ subsidy support and the increasing CAPEX in renewable projects, cPPAs can offer a hedge against volatile energy prices. By fixing the price of renewable energy over an extended period, corporations can more accurately forecast their energy costs, contributing to a more stable financial planning process.

Flexibility

cPPAs offer a high degree of flexibility in contract structuring. Terms can be customised to meet the specific needs of the corporation, whether it's the length of the contract, the volume of power, or other bespoke requirements.

Energy Security

Being able to secure a long-term supply of renewable energy enhances a corporation's energy security. With the Netherlands facing substantial grid congestion issues, having a direct agreement with a renewable energy producer can offer an additional layer of security and resilience in a corporation's energy supply chain.

Green Credits

CPPAs are an effective way to procure renewable energy certificates (RECs), enabling corporations to prove the renewable origin of their electricity consumption. These RECs can be instrumental in fulfilling corporate sustainability goals and demonstrating compliance with local and international environmental standards, an area where a law firm can provide strategic guidance.

What subsidies are applicable to the generation and sale of renewable energy?

SDE+ (Stimulation of Sustainable Energy Production)

This operating feed-in tariff subsidy was designed to bridge the price gap between grey and green electricity. It compensated for the cost differential between the market price and the cost price of generating sustainable energy. The SDE+ was highly popular and instrumental in facilitating various renewable energy projects across the country.

SDE++

Having replaced SDE+ in the summer of 2020, SDE++ expands on its predecessor by allocating subsidies based on reduced emissions rather than generated kWh of electricity. This provides a more holistic approach to climate change mitigation while supporting various forms of renewable energy and CO₂ reduction techniques.

Energy Investment Tax Reduction (EIA)

This scheme allows companies to deduct 55% of their investment costs from their fiscal profits. The EIA aims to spur investments in renewable energy and energy-efficient technologies.

Upscaling fully-renewable hydrogen production via electrolysis (OWE) subsidy

Expected in September 2023 , this new subsidy program focuses on businesses that develop hydrogen production plants using electricity from solar or wind. The electrolyzers must have a capacity between 0.5 to a maximum of 50 MW. Importantly, this subsidy is not expected to be used cumulatively with the SDE++ and is scheduled for application from the second half of October.

Demonstration Energy and Climate Innovation grant (DEI+)

This grant is targeted at demonstration projects that are innovative and aim to reduce carbon emissions at a low cost. Eligible innovations include, but are not limited to, hydrogen, green chemistry, energy efficiency, and various forms of renewable energy. It's important to note that the installations must be "new," and not more than two previous subsidies should have been allocated for the same. Projects with a primary objective of cost reduction, where subsidy based on SDE++ is possible, are excluded.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

All EU Member States are obliged to have a Guarantee of Origin scheme for renewable source electricity, which has been implemented in the Netherlands as *Garanties van Oorsprong* (GoO), of which Verticer is the system administrator.

The GoO's can be transferred from the generator to the offtaker, and cPPAs often provide for this transfer. Through this transfer, the offtaker is able to validate the renewable source of the energy consumed.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	All options are possible. A combination with the market price as used for the SDE+ subsidy is also possible.

What term is typically agreed for the PPAs?	The typical term of cPPAs is from 10 to 15 years, corresponding with the term of the SDE+ subsidy.
Are the PPAs take-or-pay or limited volume?	There is no market standard structure currently in place for this type of commercial arrangement in the Netherlands.
Are there any other typical risks?	See answer to previous question above.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	There is no market standard structure currently in place for this type of commercial arrangement in the Netherlands. Apart from this the risk allocation will be heavily dependant on the specific facts that underly the specific issue on the basis of which a risk allocation would need to be made.
Change in law	As above
Increase / reduction of benefits	As above
Market liberalisation (if applicable)	As above
Credit risk	As above
Imbalance power risk	As above
Production profile risk	As above

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

TenneT, the national Grid Operator is the balancing authority. Balance responsible parties (BRPs) are responsible for maintaining supply and demand on the energy market within their own portfolio.

The generator is the BRP, but it is allowed to transfer this responsibility to a service provider in case of a sleeved cPPA.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

- **July 2023:** AMPYR Solar Europe as seller and Asahi Europe & International (on behalf of Royal Grolsch) as offtaker entered into a virtual 22 MW cPPA relating to production originating from a portfolio of solar parks with similar total capacity to feed the beer production facilities of Grolsch in the Netherlands.
- **July 2023:** (Kronos Solar) EDPR as seller and Google as offtaker entered into a 15-year 40 MW cPPA relating to production originating from a four solar plants in Gelderland with a similar capacity.
- **April 2023:** Eneco as seller and Google as offtaker entered into a ten-year cPPA relating to production originating from the 73.5 MW Fryslân and the 79 MW Kroningswind near-shore farms for a capacity of 288 GWh and 227 GWh respectively.
- **April 2023:** Sunrock as seller and Iron Mountain as offtaker entered into a cPPA relating to production originating from a 4 MW solar system in the harbour of Rotterdam.
- **January 2023:** Klimaatfonds Nederland as seller and Scholt Energy as offtaker entered into a ten-year 10 MW cPPA relating to production originating from the Loon op Zand Solar Park.
- **December 2022:** Eneco as seller and KPN as offtaker entered into a 15-year cPPA relating to production originating from the 760 MW Hollandse Kust West development.
- **November 2022:** RWE as seller and Koehler Paper as offtaker entered into a ten-year 49.7 MW cPPA relating to production originating from the 54 MW Waddenwind project in the region of Groningen.
- **June 2022:** Vattenfall as seller and Air Liquide as offtaker entered into a 15-year 115 MW cPPA relating to production originating from Hollandse Kust Zuid offshore wind farm.
- **February 2022:** Eneco as seller and USG Industrial Utilities (Chemelot) as offtaker entered into a 15-year 90 MW cPPA relating to production originating from the Windpark Fryslân near shore wind project.
- **November 2021:** Vattenfall as seller and Cargill as offtaker entered into a ten-year 78 MW cPPA relating to production originating from 90 MW Windpark Hanze wind project.
- **June 2021:** Vattenfall as seller and BASF as offtaker entered into a 742 MW cPPA relating to production originating from the Hollandse Kust Zuid offshore wind project.



New Zealand

Last modified 10 October 2023

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

In comparison to the US and Europe, the New Zealand PPA market is in a relatively nascent stage. However, demand for corporate PPAs has increased in New Zealand in the last two to three years, driven both by a focus on sustainability and coinciding with a significant increase in the pipeline of solar generation in New Zealand. New Zealand has an aspirational target of 100% renewable electricity by 2030.

At the larger end of the market, a group of New Zealand's largest commercial and industrial energy users (the Major Electricity Users Group) have entered into various PPAs to meet their combined annual electricity demand of around 2,000 GWh, or 2 TWh. This group continues to procure PPAs on a competitive basis. In the technology sector, large technology off-takers such as Amazon and Microsoft have also entered into significant PPAs in connection with data centre development.

We are increasingly seeing PPAs moving into other sectors such as retail, government, education and agriculture.

Typically, corporate PPAs tend to be financial. Direct-wire, behind the meter PPAs are also possible; for example, there are some of solar developments close to an off-taker wishing to secure its own source of power (eg for use in a wastewater treatment facility).

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

In New Zealand, corporate owners are free to purchase directly from a generator's facility or a range of other suppliers. However, facilities generating greater than 10 MW must sell to the wholesale market via the clearing manager to supply the electricity grid. Hence why larger PPAs are undertaken on a virtual basis.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Typically, corporate PPAs are between the generator and the off-taker. In the context of solar development, it is common to see a tripartite PPA between the development special purpose vehicle, the ultimate owner of the facility and the off-taker.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

The New Zealand Electricity Market is a mandatory gross pool market. This means that all grid-connected generation must be sold to the clearing manager (directly or indirectly via a retailer) and all consumption from the grid must be purchased from the clearing manager (directly or indirectly via a retailer). Accordingly, if a grid connected generator wishes to sell electricity to an end-user other than on a virtual basis, it would need to be registered as a retailer under the New Zealand Electricity Code.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

We see the following short/medium term challenges for corporations adopting green energy:

- New Zealand does not currently have a legislative or other form of comprehensive framework dealing with Energy Attribute Certificates (as contemplated by the IREC standard). This adds to the challenges of substantiating green claims with regard to energy consumption. There are examples of private sector certification and trading schemes that have been established in an attempt to address this challenge. Ultimately, this is a matter which will need to be addressed by future New Zealand governments.
- The New Zealand Carbon Price under the Emissions Trading Scheme is recognised to be below the market price in other jurisdictions (reducing the incentive to adopt green energy). There are also significant free allocations of New Zealand Carbon Credits for heavy emitters.
- On the supply side of the equation, developers of renewable generation face several technical challenges including at the grid connection phase because of capacity constraints and more generally arising from transportation issues given New Zealand's geography and population density/spread (the majority of New Zealand's population lives in the North Island whereas historically much of the renewable generation is located in the South Island). With regard to connection issues, relevant agencies and the grid operator (Transpower) are aware of these challenges and have taken steps to provide greater certainty to developers (for example, Transpower has recently overhauled its grid connection process).
- For developers of renewable generation who rely on third-party debt financing, reducing exposure to merchant risk is a key consideration for debt providers lending money for renewables/storage projects.
- Finally, market participants have noted a degree of uncertainty created due to government/regulatory issues such as the lack of a regulatory framework for offshore wind and the extent to which government is likely to directly invest in new generation such as the Lake Onslow Pump Hydro Scheme.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

We do not anticipate any regulatory changes which will directly impact corporate PPAs, for example, the form or content of PPAs.

The Electricity Code has recently been amended to address the potential for inefficient price discrimination in very large PPAs (among other things, contemplating a net quantity of electricity that equals or exceeds 150 MW consumed at a point in time). The Code amendment prohibits generators giving effect to materially large contracts (MLCs) unless the net value from the contract is positive relative to alternatives or the buyer can onsell unused electricity under the MLC on no worse terms than if they had consumed the electricity themselves. The Electricity Authority has indicated it may make further amendments if the current clauses are imposing unreasonable compliance costs on generators, and the public policy interest can be achieved more efficiently.

In 2023, the government passed legislation making climate-related disclosures mandatory for some large financial market participants (around 200 entities that are large publicly listed companies, insurers, banks, non-bank deposit takers and investment managers). They are required to report on governance, strategy risk management and metrics and targets. The legislation may well be broadened to require climate-related disclosures from more types and sizes of entities. This will in turn enhance the incentives for parties to enter into corporate PPAs.

New Zealand's planning laws are also in the process of being reformed. See the recently passed Natural and Built Environment Act 2023 and the Spatial Planning Act 2023 (which are intended to replace the Resource Management Act 1991).

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

We would describe the appetite for green energy as being high and likely to increase as the mandatory climate related disclosure regime comes into force for larger mandated entities.

New Zealand Green Investment Finance Limited (a state-owned green investment bank) was established as part of the government's commitment to address climate change and to support New Zealand's transition towards a net-zero-emissions economy by 2050.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The key local advantages of a corporate PPA model would be greater price certainty and, from an ESG perspective, the ability to make green energy related claims.

What subsidies are applicable to the generation and sale of renewable energy?

New Zealand does not have a subsidy regime applicable to the generation and sale of renewable energy.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

As noted above, New Zealand does not currently have a universally recognised, national support scheme with tradable green certificates.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Prices are typically fixed.
What term is typically agreed for the PPAs?	The typical term of PPAs is from 10 to 15 years, but this does vary significantly depending on the interests of the parties.
Are the PPAs take-or-pay or limited volume?	PPAs have generally been based on the take-or-pay principle.
Are there any other typical risks?	Change in law is a typical risk, however regulatory change is slow to be implemented, usually providing developers with an opportunity to adapt their projects as required.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Offtaker.
Change in law	Offtaker or shared.
Increase / reduction of benefits	Offtaker.
Market liberalisation (if applicable)	Offtaker or shared.

Credit risk	Offtaker.
Imbalance power risk	Offtaker or shared.
Production profile risk	Generator.

Balancing

Does your country operate a balancing responsibility scheme?

No.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

In September 2022, Microsoft announced it had signed a ten-year PPA with Contact Energy for all the renewable energy attributes generated by Contact's 51.4 MW geothermal power station.

Amazon Web Services signed a 103 MW wind PPA with Mercury in early 2023.

In 2023, Eastland Generation Limited signed a PPA with Ormat Technologies. Ormat will purchase all the proposed 50 MW geothermal power plant's generation under a fixed price PPA.



Norway

Last modified 07 September 2023

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs for hydropower and onshore wind (in addition to future offshore wind) in Norway typically have a term of 10 to 25 years. Pricing models may affect the term of a PPA. We expect that solar PPAs will be more visible in the market in the near future when the regulatory changes have been implemented.

Corporate PPAs are long-term contracts, under which an entity/business agrees to buy electricity directly from an energy generator.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

In Norway, corporate owners can buy electricity both directly from a production facility and/or from a choice of suppliers.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

In practice it's most common under the PPA structure (at least for larger PPAs) that only the generator/seller and the off-taker/buyer are direct parties to the PPA, without any third-party involvement.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

End users can buy power directly. The generator has to get a license to trade electricity (*Omsetningskonsesjon*), but that also applies to other PPAs. Off-takers (entities being the buyer under PPAs) also must obtain a license to trade electricity.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

This depends on the green energy segment/industry in the Norwegian market. To mention some regulatory challenges in the short /medium term for a selection of "new green industries":

Offshore wind

The first concession areas for licenses to develop and build offshore wind turbines in the areas Utsira Nord and Sørliche Nordsjø II (Phase I) were released on 29 March 2023. The application deadlines for both areas have been postponed from 1 September 2023 until 1 November 2023 for now, based on pending clarifications with ESA. The government has initiated workstreams covering Statnett's work to

expand and develop the grid system in Norway to meet the new industry requirements, NVE's work to identify new areas to be developed as future offshore wind areas (around 20 new areas to be investigated and released for new license processes in 2025), ongoing work related to amendments in the Ocean Energy Act and regulation/regulatory framework needs to be adapted by the government and the Parliament (related to projects outside the Norwegian baseline; if within the baseline the current Energy Act will apply).

The Norwegian support scheme will be rendered through long-term CfDs/contracts for the difference between the Norwegian state and the consortia/participator winning the auction or the license allocation.

Since the government has decided to establish radials in the first phase to connect to the Norwegian mainland, the projects will end up being more expensive to build. The grid infrastructure both from the seabed/offshore constructions to the mainland and onshore locally in the municipality to the regional grid will need a lot of upgrade and newbuilds to ensure that Norway will be able to use the new offshore energy production onshore (either through power-2 X chains to other renewable sources or stand-alone).

Solar

The regulatory framework in Norway needs to be developed and adapted by the government and Parliament for this new green industry to become a success in Norway. The current regulatory framework and grid system is not sufficient for the growth and development of the solar industry. On 12 June 2023, Parliament instructed the government to work on an overall action plan, including to prepare the regulatory framework and resolve certain solar-resolutions to make it easier to share solar electricity between buildings, require that new buildings or state-owned buildings must install solar or other local energy sources to ensure the local energy production is intensified, and increase the MW threshold allowed to be produced in addition to put more decision-making authority on the municipalities under the Planning and Building Act. These "solar package" resolutions from the government are expected early 2024.

Hydrogen

The government has announced its support plan (billions of support to build hydrogen factories), to reach the goal of net zero emission in Norway. The challenge lies within political and financial decision-making, including that the government actually starts actively supporting this new industry and develops a sufficient regulatory framework that also considers the safety of handling and transporting hydrogen. We expect positive steps and changes in this industry within the next few months.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Except for the above, we're currently not aware of any regulatory changes that might affect the regulatory landscape for corporate green energy and cPPAs in Norway.

Almost all political parties are, however, committed to targets implemented by the EU to reduce to greenhouse gas emissions and to enhance the regulatory and financial prerequisites for renewables.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

There is strong corporate appetite for green energy. The Norwegian government offers several renewable energy incentives (and subsidies), most notably in recent years provided by way of the discontinued electricity certificate system. The certificate system required certain producers and large consumers of electricity to buy electricity certificates on the open market.

Many Norwegian corporations also view this as an important Corporate Social Responsibility issue.

Notably, a number of large volume end-user corporate PPAs have been entered into with counterparties such as Norsk Hydro and Alcoa, to provide power for production of "Green Aluminium."

What are the key local advantages of the corporate PPA model which can benefit our clients?

Key local advantages include securing a long-term source of delivery for green electricity/energy (whether fixed price or flexible price model). Norway is one of the countries world-wide with highest percentage of clean/green energy resources. The future will show how Norway can use these natural resources to reach the goal of the Paris agreement and secure green energy for Norway and other countries it exports to (including any hybrids/interconnectors to be built in the future).

What subsidies are applicable to the generation and sale of renewable energy?

No direct subsidies are currently available for the generation and sale of renewables except for the electrical certificates awarded to generators commissioned before the end of 2021. The current power price situation (as of 2023) has resulted in financial support for power consumed by end users at their permanent residence.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Yes. Guarantee of origin (GoO) is a certificate issued for electrical energy produced using renewable energy sources in accordance with the applicable legislation. If an electricity supplier sells or uses renewable energy in its marketing, it must verify the origin of the electricity. GoOs can be transferred from one account holder to another in the Norwegian GoO register, and GoOs can also be imported /exported between other AIB (Association of Issuing Bodies) member registers. Currently the market value of the GoOs is limited.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	<p>Most of the PPAs in Norway have, until recent years, been based on "fixed price" for an agreed time period to ensure certainty for future energy prices and stabile revenue. Such PPAs are have relatively straightforward clauses, defining the agreed fixed time period of delivery, fixed volume/quantity, point and price model. Both seller and buyer/offtaker have an obligation to sell and deliver, buy and accept the agreed quantity regardless of actual production / consumption of power. Since the Norwegian energy market is quite predictable and stable compared to other European countries, it will usually be possible for a seller to deliver power at an agreed delivery point. The seller will be responsible for delivering the agreed fixed volume under the PPA from the market if the seller's own energy production cannot cover the agreed delivery obligation. Under fixed price PPAs the seller has high/full risk related to delivery obligations of the volume. Sellers with large portfolios normally handle this risk very well, but this must be considered from case to case. In the past few years there has been a trend to include "facility <i>force majeure</i>" clauses handling variable production capacity (eg in wind power projects), where the number of turbines and wind from nature will decide the total wind production capacity per year.</p> <p>In the past five years a new trend of using "pay as produced" PPAs has emerged. A seller's delivery obligation will then relate to either the entire or a fixed part of the actual production from specific energy facilities. Some more tailoring of this type of PPA is needed compared to the fixed price PPA, and buyers with steady offtake of power (to sourcing or</p>

hedging purposes) may find this type of PPA less suitable. It all depends on the seller's and buyer's positions and market conditions.

What term is typically agreed for the PPAs?

Typically between 10-25 years, but you may see deviating periods, such as between 5 and 10 years.

Are the PPAs take-or-pay or limited volume?

A typical corporate PPA contains regulation for delivery of a fixed volume of power.

Are there any other typical risks?

Risks related to fixed volume and production delivery /imbalance power risk.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Developer/producer
Change in law	Offtaker
Increase / reduction of benefits	Offtaker
Market liberalisation (if applicable)	Not applicable
Credit risk	Developer/producer
Imbalance power risk	Developer/producer
Production profile risk	Developer/producer

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Statnett is the balancing authority and participants in the power market must either be responsible for their own balancing or have an agreement with a balancing party to undertake the balancing requirement. The party responsible for balancing may be either the producer, the offtaker or a third party and the party best placed to do so will vary on a case-by-case basis. Usually in physical PPAs the parties have the same balancing responsible party, and this is a prerequisite in pay-as-produced PPAs. In synthetic PPAs the parties always have different balancing responsible parties.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

Not applicable.



Peru

Last modified 16 December 2020

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs are widely used in Peru's energy market and are either sleeved or physical wherein either distribution companies or free customers purchase energy directly from the generation companies.

Distribution companies serve all regulated clients and for that purpose, pursuant to Law 28832, Law to Secure the Efficient Development of Electricity Generation, they carry out competitive tenders, at firm prices, to acquire energy and capacity from the generation companies. These tenders result in the execution of long or medium-term PPAs.

OSINERGMIN, Peru's energy regulator, approves all bidding documents (including contract templates). Distribution companies may enter into short bilateral PPAs with producers to cover to possible future energy imbalances, but they represent a very small percentage of their energy consumption.

Free customers and generators directly negotiate the terms and conditions of their PPAs.

Financial and direct line corporate PPAs are yet to be developed in Peru.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Corporate owners can directly purchase energy from suppliers in accordance with article 5 of the Free Electricity Users Regulation approved by Supreme Decree No. 022-2009-EM.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Generators and offtakers are commonly in the PPA structure.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

The electric power generator must have a generation concession. The electric power generator may not contract with free users and distributors more power or firm energy than its own and those it has contracted with third parties.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Politically and financially, Peru is currently facing a scenario of surplus installed capacity which, to date, reaches almost 30% pre Covid-19 (the international recommended level is around 30%). Energy prices are still dropping due to the Covid-19 crisis and investments in the sector have followed that same trend, which is expected to gradually reverse towards 2021 as the mining sector is recovering from plummeting metal prices and large mining projects.

Despite this, RER projects granted by the government during the 2010-2016 term are scheduled to start operations between 2017-2021. The guaranteed revenue scheme committed by the government will ensure profitability.

Towards 2023, appetite for new energy investments should resume and grow thanks to increasing energy demand levels. Investment in hydropower is highly likely. However, viability of RER projects will greatly depend on (i) continued government support and the development and introduction of new technologies that will allow green energy to compete with other cheaper sources of energy.

One of the most relevant obstacles faced by energy projects is the process of obtaining permits and approvals. The government recently amended the regulatory framework with the goal of making administrative proceedings more efficient. However, the real challenge is implementing these changes.

Finally, the so-called "social license" is also one of the most challenging issues for energy projects. Not only do energy projects need to meet regulations but they also need to seek social acceptance. Establishing workable relationships with the local population is key to any energy project success.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Material amendments to the energy legal framework are expected to be introduced by the government in the next few months. These changes will mainly modify energy pricing and market rules, but none are expected to directly alter the PPA regulatory landscape. Those who qualify as free customers will continue to freely negotiate the terms of their agreements, while PPAs designed to meet the demand of regulated consumers will be subject to stricter regulations and supervision from OSINERGMIN.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Currently there are not incentives for the green energies use.

What are the key local advantages of the corporate PPA model which can benefit our clients?

In the case of free customers, PPAs are very flexible and offer the parties the ability to negotiate the best agreement possible, as long as mandatory regulations are not breached. Prices, volume, and terms can be freely negotiated between customers and generation companies and usually reflect reasonable and fair assignment of risks and costs.

As to PPAs which supply regulated clients, the framework establishes certain strict rules that do not directly limit the contents of the PPAs but restrict the ability of certain commercial decisions. For example, the legal framework establishes the moment in which public tenders have to be carried out by distribution companies, establishes maximum prices, minimum terms, conditions and volume.

What subsidies are applicable to the generation and sale of renewable energy?

The RER premium is a subsidy created by Legislative Decree No. 1002 that is given within the framework of public tenders carried out by OSINGERMIN to contract energy from RER generators.

There is a guaranteed income in energy tenders. It does not include the delivery of (i) energy committed to third parties and (ii) energy that can be purchased in the SEIN itself.

Formula:

Income from Energy Sales + Additional Price Paid to Winning Bidders ("Premium") = Guaranteed Income.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

A renewable and negotiable energy certificates regulatory framework has not yet been developed in Peru.

Companies manage sustainability certificates for reputational reasons.

Within the framework of sustainable buildings construction, companies seek to obtain international certificates such as the Leadership in Energy and Environmental Design (LEED) certificate or the Excellence in Design for Great Efficiencies (EDGE), which shows that design, construction and operation of the building was carried out efficiently and sustainably.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	<p>PPAs to supply regulated customers are subject to prices set by OSINERGMIN.</p> <p>For free customers it will depend on the nature of the free customer though usually fixed price subject to revisions to reflect changes in key costs.</p>
What term is typically agreed for the PPAs?	<p>For PPAs which supply regulated customers the term will typically be 10 to 20 years as there is a regulatory limitation to the volume of energy that can be purchased through short-term agreements (i.e. 5 years or less).</p> <p>Theoretically, free customers should seek long-term agreements as the usual tendency is for prices to increase. However, customers may decide to agree otherwise based on their market knowledge and predictions.</p>
Are the PPAs take-or-pay or limited volume?	<p>PPAs for free customers may take either form, or other alternatives. As parties negotiate their own terms. PPA's can contain a take-or-pay form in some cases.</p>
Are there any other typical risks?	<p>Since natural gas is used for 35% of the national generation capacity, some PPA's terms could consider some limitations or issues related to gas transportation.</p>

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	

In general terms, local PPAs usually assign risks in an equitable manner.

As PPAs are freely agreed between parties, these tend to assign risks to the party best suited to mitigate them.

Having said this, volume risk is usually allocated with customers, as they are the ones demanding the service.

Change in law

Changes in law are commonly and partially absorbed by generators through energy prices.

Increase / reduction of benefits

The increase or reduction of benefits is usually borne by distribution companies and final customers (due to regulatory limitations rather than by standard PPA terms and conditions).

Market liberalisation (if applicable)

Not applicable

Credit risk

Generators

Imbalance power risk

Generators and suppliers

Production profile risk

Generators

Balancing

Does your country operate a balancing responsibility scheme?

Also, there is a balancing scheme for isolated electric systems.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

The generator typically undertake a balancing scheme.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

In August 2020, ISA Peru bought Orazul Energy Group for US \$ 152 million.

In April 2020, Sempra Energy sold Luz del Sur SAA to China Yangtze Power (China Three Gorges Corporation's subsidiary) for US \$ 3,5 billion.

In April 2019, Odebrecht Latinvest sold the Chaglla hydroelectric plant to China Three Gorges consortium for approximately US \$ 1.4 billion.



Poland

Last modified 10 October 2023

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs are not yet predominant on the Polish market, but they are becoming more popular. According to the information presented by [RE-Source](#) as of September 2023, approx. 1 GW of capacity was contracted under cPPAs in Poland.

Most of the cPPAs so far were virtual PPAs and under the pay-as-produced structure. But this is changing, and more cPPAs with physical delivery are being negotiated.

The basic types of cPPAs in Poland include:

- Volume: pay-as-produced (prevails) or baseload/forecasted volume types.
- Type of settlement: physical delivery or financial settlement (virtual), the latter prevailing so far.
- Location:
 - Onsite cPPA, in which the source is directly connected to the consumer's installation (this involves locating generation facilities in close proximity to the consumption sites).
 - Offsite cPPA, in which the source is not connected to the consumer's installation (this involves locating sources anywhere in the country and transmitting energy via the transmission or distribution network) – prevailing type.
 - Offsite cPPA, in which electricity is supplied through a dedicated cable line between the generator's installation and the consumer's (this involves the use of a direct line).

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Yes, corporate owners are free to exercise their right to choose the supplier and conclude various types of agreements with various kinds of suppliers.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Yes, often a trading company acting as the balancing responsible party (BRP) is a party to the agreement (in trilateral form or in B2B agreement with respective counterparty when independently appointed) and takes the role of balancing deviations in generation /consumption.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes, generators can sell electric energy directly to end users. Generators need to hold the generation license to be able to sell produced electric energy. To be able to provide a baseload product, depending on the cPPA structure and potential involvement of BRP, generators may need a trading license to buy the missing volume of electric energy (imbalance) on the market and then resell it to the offtaker.

Direct sale (which does not require the transportation to take place via a distribution or transmission grid) is also possible on the basis of direct line or onsite connection.

Historically, the construction of a direct line depended on the issuance of a positive decision by the President of the Energy Regulatory Office (Regulator). The decision could have been issued if the applicant was refused the provision of transmission or distribution services. In practice, it was nearly impossible to receive such a decision. The Act of 28 July 2023 amending the Energy Law and certain other acts introduced significant changes regarding direct line regulations. Pursuant to the amendment, only an appropriate notification of the construction of a direct line to the Regulator will be required (instead of previously required consent issued by the means of the administrative decision).

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The main obstacles at the moment include the standard cPPA's requirement concerning the counterparty's strong financial standing and respective contractual collateral to be established, which narrows potential offtakers to major companies. The Polish windfall tax regulations are also applicable to cPPAs and are basically depriving the generators of the revenues exceeding the statutory price cap level (regardless of the mutually and consensually agreed price levels by parties to the cPPA). Other challenges include the dynamically changing regulations.

For the past few years, investors also predominantly participated in the auction system (CfD scheme). This support is provided in the form of contract for difference where generators are paid the difference (if any) between the auction bid and the market price (specifically defined price published by the Polish Power Exchange). However, as the prices of electric energy increased, more investors turned to cPPAs as an instrument to securing financing of investments that is more favourable than auctions.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Many business models face a variety of barriers in different EU Member States. According to Clean Energy for All Europeans package (the Winter Package), Member States have to identify and remove barriers to PPAs in their National Energy and Climate Action Plans (NECAPs).

The European Commission is currently working on the regulation of PPA contracting mechanisms to make them an alternative to the traditional energy supply contracting model.

In March 2023, the European Commission proposed to reform the design of the EU electricity market to promote renewable energy, better protect consumers, and improve industrial competitiveness. The proposed reform includes amendments to several pieces of EU legislation, including the Electricity Regulation, the Electricity Directive, and the REMIT Regulation. The expected entry into force of the new regulations is 2023/2024.

To improve the competitiveness of EU industry and reduce its exposure to volatile prices, the Commission proposes to facilitate the use of more stable long-term contracts, such as PPAs. Through PPAs, companies can establish their own direct energy supply and benefit from more stable prices for renewable and non-fossil energy production. To address current barriers to the use of PPAs, such as buyer credit risk, the reform requires Member States to ensure the availability of market-based guarantees for PPAs.

The new rules could allow smaller operators to buy green energy (generated directly from renewable sources) through PPAs, rather than black energy with guarantees of origin, as is currently the case. Proposed changes include a reduction in the duration of standard PPAs (currently 5-10-15 years on average), pricing appropriate for end-users of different sizes, and proposals to create a future European PPA trading platform and databases managed by regulators. This will be a very important development for many industries.

The support of cPPAs is also mentioned in the Energy Policy of Poland until 2040, a government document defining the government's energy policy strategy.

The inframarginal windfall tax in 2023

Amid a surge in energy prices across Europe in 2022, the Polish government passed a law requiring energy companies – both generators and traders – to pay a special fee on revenues exceeding a set price cap (windfall tax). This law was introduced to implement Council Regulation (EU) 2022/1854 of 6 October 2022 on emergency intervention to deal with high energy prices (part of a coordinated action with other EU Member States), which remained in force until 30 June 2023. In the new law, the Polish government set the obligation to pay this special charge until the end of 2023 and, based on recent announcements, this deadline may even be extended until mid-2024.

On the other hand, the provisions of EU Regulation 1854/2002, under which Poland introduced the contribution to the special fund (price cap), expired on 30 June 2023. In June 2023, the European Commission published a report on the application of Regulation 2022/1854 in the Member States – on the review of emergency interventions to address high energy prices. The European Commission recommended that the price cap legislation in the EU should not be extended beyond 30 June 2023, not least because of the impact on renewable energy investments and PPAs. Energy market stakeholders, including the European Federation of Energy Traders (EFET), SolarPower Europe and WindEurope, also called on EU Member States to stop using emergency power market interventions and inframarginal revenue caps in national legislation.

The Council decided not to amend EU Regulation 2022/1854, meaning that the Polish price cap should also end on 30 June 2023, which did not happen. Nevertheless, despite press announcements, there is no basis for extending the application of these emergency regulations into 2024.

In addition, as of 1 September 2023, an amendment to the legislation on the calculation of the price cap came into force, which specifically addresses PPAs, in particular hedged PPAs, and could lead to a situation where the generator is penalised for hedging its PPA and could be liable to pay the additional windfall tax.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

In Poland, there are currently no direct sources of incentives for companies to enter into cPPAs. The main motivation for companies to enter into a PPA is securing the required volumes of electric energy and hedging against market price fluctuations.

A further impetus for the development of large-scale RES and the cPPAs that serve them is the reporting requirements for ESG-related activities. Measures related to the procurement of green energy – largely or even exclusively – will have to be included in companies' strategies. This is defined in the Sustainability Reporting Directive (CSRD).

What are the key local advantages of the corporate PPA model which can benefit our clients?

CPPAs can offer attractive pricing, in comparison to the standard market prices of electric energy. CPPAs also secure certain volume of electric energy in the long term. Furthermore, it serves the offtakers by fulfilling their ESG requirements.

What subsidies are applicable to the generation and sale of renewable energy?

The first main support system for RES generators in Poland was the system of "green certificates." Green certificates confirmed generation of a given volume of electric energy from renewable energy sources. Green certificates constituted property rights with certain financial value (determined by the demand set by the respective regulation in the form of the quota obligation levied on the sale of electric energy to final customers, with some exceptions, and the supply resulting volume of generation) and can be traded on the Polish Power Exchange. This system has been in place since 1 October 2005 and will continue for older installations (generating electric energy before 1 July 2016).

The following support systems are currently in force in Poland:

- **Auction system** – the auction system for renewable energy sources in the form of CfD.
- **Guarantees of origin (GOO)** – awarded to generators for generation of given volume of electric energy indicated in the document in electronic form certifying to the final customer that the environmental values resulting from avoided greenhouse gas emissions and the quantity of electricity fed into the grid specified in such a guarantee have been produced by a renewable energy installation.

They allow the generator to earn additional income and are often the subject of PPAs.

- **FiT/FiP tariff scheme** – the FiP system applies to biogas plants and small hydropower plants with an installed electrical capacity of up to 1 MW, while the FiT system can cover installations up to 500 kW.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Yes. According to the Renewable Energy Sources Act of 20 February 2015, a guarantee of origin is a document certifying to the final customer that the amount of electricity fed into the distribution network or transmission network specified in this document was produced from renewable energy sources in RES installations. Guarantees of origin of electricity from RES are traded on the Polish Power Exchange (POLPX). According to the legislation, guarantees of origin are issued in electronic form and transferred to the Register of Guarantees of Origin (RGP).

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Both models are possible in the Polish system, hybrid forms as well. The most popular is the fixed price model.
What term is typically agreed for the PPAs?	The duration of the cPPAs is usually linked to the lifecycle of the project and financing requirements. These are usually long-term commitments (10-15 years).
Are the PPAs take-or-pay or limited volume?	Both models are applicable in Poland, with take-or pay model prevailing.
Are there any other typical risks?	The long-term nature of these contracts against the dynamically changing regulatory and market landscape.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	In this respect, the design of the risk depends on the will of the parties. If the PPA is designed on the basis of a fixed volume of electricity production, the risk is borne by the generator. Conversely, in a pay-as-produced PPA, the risk is

	borne by the offtaker, but this risk can be offset using a sleeving contract with the electricity supplier, who can then deal with any deviations.
Change in law	One of the key provisions of the cPPAs, due to their long-term nature, is in fact the change of law clause, market disruptions and taxes.
Increase / reduction of benefits	This situation is usually covered by a change of law clause.
Market liberalisation (if applicable)	Not applicable, market is already liberalized.
Credit risk	Standard requirement limiting the number of potential counterparties to major entities.
Imbalance power risk	Actual generation and offtake will almost always be incompatible. These temporary shortages or surpluses of energy should be balanced (commercial balancing). In Poland, this is done by one of the parties (if it has a status of BRP) or by appointed BRP (trading company) which carries out settlements on behalf of the contracting parties.
Production profile risk	As the production of energy from renewable sources is variable and the volume of energy produced by a generating source and the volume consumed by an energy-consuming company may not match, the imbalance needs to be secured by BRP.

Balancing

Does your country operate a balancing responsibility scheme?

No.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

In Poland, the BRP (*Podmiot Odpowiedzialny za Bilansowanie*) is an entity operating on the balancing market run by TSO (which is responsible for matching the supply and demand in the power network) and makes settlements with TSO for any imbalances.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

The Polish market is developing and the number of signed PPAs is expected to increase significantly by the end of 2023. The vast majority of these contracts relate to the sale of electricity from renewable energy sources – mainly from wind and solar farms (as these electricity generation facilities are considered to be the most stable source of electricity).

In January 2022, Axpo announced that it had signed a PPA to buy power from solar power plants owned by the R.Power Group. The contract covers the offtake of energy from photovoltaic power plants with a total installed capacity of nearly 300 MWp, which are currently under construction across Poland. The estimated capacity of the individual power plants ranges from 0.3 MWp to 30 MWp. Commissioning will take place gradually and will last until mid-2023. The O&M will be operated by Nomad Electric Services, which will take care of farm productivity, maintenance and service.

In April 2022, T-Mobile announced that it had entered into a 15-year contract with Augusta Energy, a joint venture between German asset management company KGAL and Portuguese V-Ridium Power, owned by Greenvolt.

In May 2022, PGE Obrót announced one of the largest PPAs on the Polish market with CMC Poland, the owner of Huta Zawiercie. PGE Obrót will supply a total volume of 0.8 TWh of energy between 2024 and 2030 from the Jeziórko photovoltaic farm currently under construction in the Podkarpacie region, which is expected to reach a capacity of 100 MW by the end of next year. As of January 2020, CMC Poland consumes more than 800 GWh of energy annually, of which more than 30% comes from RES, as the group has already been active in the PPA market for several years, it announced that it has concluded a ten-year financial contract with Norway's Statkraft for the annual supply of 200 GWh of green energy.

In March 2023, Qair Polska announced that it had signed a contract for the supply of renewable energy under a corporate PPA with physical delivery. The contract covers a period of 12 years between 2023 and 2034. The offtaker is a multinational company with production facilities in Poland, employing nearly 10,000 people. The PPA with physical offtake provides for the supply of energy from wind farms and a photovoltaic farm, the construction of which started in early 2023. The size of the contract was tailored to the customer's needs and is one of the largest corporate PPAs in the Polish renewable energy market. The company will supply 2 TWh of green energy over the term of the contract.

In July 2023, Qair Poland announced that it had signed a 15-year PPA with abka Polska. The contract provides for the financial settlement of electricity sales and the purchase of guarantees of origin from Qair's wind farm and large-scale solar plant. Over the entire period, the contract covers a total of almost 1.7 TWh of energy from the wind farm and large-scale photovoltaic farm.

In March 2023, Green Genius announced that it had signed a 41 MW PPA with Respect Energy, of which 16 MW was contracted for five years and the remaining 25 MW for ten years. This is the second PPA signed between the two companies since October 2022. The contract is effective from 1 April 2024. Green Genius will supply 18 GWh of green energy per year under the five-year contract for 16 MW. Meanwhile, the remaining 25 MW of the ten-year contract will provide Respect Energy with a further 29 GWh per year.

The above shows that PPAs in Poland are gaining popularity not only among smaller or foreign investors in Poland (who may be more accustomed to such contracts in the energy market), but also among the largest energy companies in the country.



Portugal

Last modified 29 September 2022

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

While cPPAs are on the rise in Portugal, their deployment is still quite limited and continued growth is expectable.

The most common form of cPPAs in Portugal are physical PPAs. Moreover, Private Wire PPAs are trending, as companies become more sustainability centered.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

The Portuguese regulatory framework does not restrict corporate owners from purchasing directly from a facility, or from a choice of suppliers.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Utilities or energy suppliers may be third parties to a cPPA depending on the type of PPA chosen.

In physical PPAs the utility supplier can act as an intermediary in the sale/purchase of the energy.

In other instances, electricity suppliers or utilities purchase surplus energy, which is then sold to the grid.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Sale of energy directly to a consumer is limited to companies registered as electricity retailers. Registration requests involve proving economical and technical capacity and good standing. Requests are presented to the general directorate of energy and geology (*Direção Geral de Energia e Geologia* (DGEG)).

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Corporations wanting to shift to green energy may face some challenges, namely the time-lag until Commercial Operation Date (COD).

The Portuguese government has set ambitious targets as regards renewable energy, which may lead, in the medium or long term, to a downward impact on electricity market prices. Furthermore, the growing trend – especially as regards solar power – has led to a shortage in grid capacity.

The current economic and social landscape poses a pending threat of volatility in prices, which reflects particularly in the energy market.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Renewable energy plays a key role in governmental strategy and regulatory updates are expected. The country's regulatory landscape is pro-renewable power production. So it is not expected that reforms will negatively affect the corporate green energy and cPPA landscape.

The general legal framework for the national electric system was recently revised with the approval and publication of Decree-Law no. 15 /2022, dated January 14, 2022.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Corporate PPAs are a growing trend in Portugal, with rising numbers over the last years. Companies are increasingly focused on sustainability, so cPPAs present robust options for ESG strategies.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Key advantages are the continuity of supply and price stability arising from long-term contracts, particularly if fixed contractual prices or hybrid remuneration structures with a strong fixed component are adopted.

What subsidies are applicable to the generation and sale of renewable energy?

Guaranteed remuneration schemes, notably Feed in Tariffs (FiT) awarded before the entry into force of Decree-Law no. 15/2022, dated January 14, 2022, remain applicable to existing power production projects for the relevant attributed timeframe. The current framework enacted by Decree-Law no. 15/2022, does not allow for guaranteed remuneration schemes.

Other current mechanisms include contracts for differences (CfD).

Besides financial incentives, renewable energy developers benefit from priority of access to the grid.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Yes, Portugal has a national support scheme with tradable Guarantees of Origin (GOs). This scheme is based on the issuance of GOs by the Guarantees of Origin Issuing Body – EEGO (which in the Portuguese case is REN) and negotiation and trade of GOs through the EEGOs system. Pursuant to legislative amendments to the rules governing GOs, trade of these instruments is increasingly open to renewable energy producers.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
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Do prices tend to be floating or fixed?	Both options, as well as hybrid models, are possible. Floating prices tend to be agreed as contribute to more balanced risk sharing mechanisms.
What term is typically agreed for the PPAs?	Contracts tend to be long-term (10-15 years).
Are the PPAs take-or-pay or limited volume?	Traditionally contracted (limited) volume.
Are there any other typical risks?	Changes in law, notably affecting balancing mechanisms and support schemes.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Traditionally balanced in favor of generators, as PPAs refer to contracted volumes that are generator forecasted percentages of each project's expected production.
Change in law	Traditionally negotiated to be shared in good faith between generators and offtakers. In some situations, the concept of market change in law is included in PPAs to address and allocate / share the risk arising from changes to electricity market price.
Increase / reduction of benefits	Traditionally negotiated to be shared in good faith between generators and offtakers. Provisions excluding changes to special taxes/levies, fluctuation of market prices and compensation fees from the concept of change in law are usually included in PPAs.
Market liberalisation (if applicable)	Not specifically addressed in the context of PPAs, given the market structure in the country.
Credit risk	Security for offtakers' payment obligations is traditionally negotiated and agreed in the context of PPAs, thus balancing credit risk in favor of generators.
Imbalance power risk	Negotiated to be shared in good faith between generators and offtakers. In some situations, the concept of market change in law is included in PPAs to address and allocate / share the imbalance power risk.
Production profile risk	In cPPAs, the risk is usually allocated to the buyer, which acquires missing volume from the market. In other cases, third parties may provide the missing electricity, thus managing this risk.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

The Global System Management activity is carried out by the transmission system operator (TSO), pursuant to balancing schemes foreseen and described in the Procedures Handbook for the Global Management of the Electric System (*Manual de Procedimentos da Gestão Global do Sistema*), where safety and operational criteria for the operation of the National Electricity System and rules for the operation of balancing markets are found.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

- EDP – Sakthi Portugal (150,000 MWh)
- EDP Comercial and NOS SGPS (62,000 MWh/year for 11 years)
- EDP Renováveis, S.A. and The Procter & Gamble Company (127.5 MW)
- Shell and Sonae Group (100,000 MWh)



Senegal

Last modified 21 September 2022

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

The liberalization of the power generation sector in 1998 has led to the advent of independent power producers in Senegal, and consequently to the growth of power purchase agreements (PPAs).

On October 3, 2003, the *Commission de Régulation du Secteur de l'Électricité* adopted Regulation No. 02-203 on the granting of production licenses to independent producers through calls for tender.

The first electricity purchase contracts concluded between *Société Nationale d'Electricité* (Senelec) which is the Senegalese national electricity company, and independent power producers related to thermal power plants, notably Contour Global in December 2000 with a capacity of 89.2 MW and the Kounoune plant in February 2008 for a capacity of 67.5 MW.

In 2010 with the development and promotion of renewable energies through the enacting of the Renewable Energy, the government of Senegal, through Senelec, concluded the first PPA dealing with renewables, which is the Bokhol solar photovoltaic plant with a capacity of 20 MW followed by other PPAs such as the Taiba Ndiaye wind for a capacity of 151.8 MW.

The Energy Sector Regulatory Commission (CRSE) is the institutional authority in charge of regulating the electricity, downstream hydrocarbon and downstream gas sectors. The CRSE is vested with broad powers, including issuing opinions, taking decisions, making regulations and issuing implementing regulations.

The structure of the PPAs takes the form of a technical and commercial contract signed between the independent producer and Senelec in accordance with the concession agreement signed between the latter and the state of Senegal. This PPA model is based on “take or pay” with a commitment from the Senelec to purchase exclusively all the electricity produced by the independent producer whether or not Senelec is able to take it into its network, for example, due to network unavailability or curtailment measures.

In terms of guarantee, the state provides its sovereign guarantee to mitigate the risk associated with take or pay agreements.

This same take or pay structure will be applied to the future 300 MW gas-fired power plant to be built in Dakar sponsored by West African Energy with the Turkish company Çalık Enerji and the US group General Electric (GE).

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Yes, the law allows independent producers to sell electricity to eligible customers or to independent retailers under conditions determined by decree. The eligible consumers are categories of consumers authorized, according to the minimum power threshold of electrical energy, specified by order of the Minister in charge of Energy, to conclude contracts for the purchase of electrical energy directly with producers or suppliers of electrical energy.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

The PPA model used by Senelec on behalf of the state of Senegal does not include third parties other than the generator and the offtaker. However, the generator may conclude agreements with subcontractors for instance for the construction of the power plant, but they won't be part of the PPA.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Direct selling to an end user is allowed subject to the independent producer having a license.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Coming soon.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

We are not aware of any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Through the strategy of universal access to electricity by 2025, as well as the reduction of emissions of greenhouse gases and the promotion of renewable energies, the government of Senegal grants tax incentives to companies that use renewable energy. Thus, the government of Senegal has exempted from value added tax (VAT) a list of 22 items of equipment used in the production of renewable energy from solar, wind and biogas sources.

The government also offers incentives to private organizations in the field of rural electrification in the form of direct and indirect tax benefits to reduce costs and increase their competitiveness. These tax incentives for private investments in rural electrification can amount to an income tax exemption of up to 30%.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The PPA model used by the government of Senegal through Senelec offers several advantages to independent producers.

To begin with, all energy produced or likely to be produced by independent producers will be purchased by Senelec, with a flexibility on the calculation of the pricing. There's also the Exclusive Development right granted to independent producers, including the management of all activities carried out under, or related to, the PPA. On the financial side, Senelec undertakes, through the PPA, to provide guarantees to the lenders and independent producers' lenders and also to substitute itself for the independent producer in case of default by the latter in addition to the sovereign guarantee of the state to cover Senelec's defaults.

Finally, there is no obligation to choose the Senegalese courts to resolve disputes. Parties may refer any dispute to an international arbitration court.

What subsidies are applicable to the generation and sale of renewable energy?

Coming soon.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

We are not aware of a national support scheme with tradable green certificates.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	<p>Each PPA has its own specificity and the price structure is differently negotiated. But as a general rule, Senelec agrees with the independent producer on an initial price when the agreement is signed and then they set out in the PPA mechanisms for calculating the price for each year until the end of the contract.</p> <p>In some PPAs, Senelec and the independent producer have made provisions for the annual revision of the electricity purchase price with an adjustment rate agreed in advance.</p>
What term is typically agreed for the PPAs?	<p>The law does not specify a standard duration for PPAs signed with Senelec, but from all the PPAs we have reviewed, the term of the agreement is 20 years.</p>
Are the PPAs take-or-pay or limited volume?	<p>The PPAs have generally been based on the take-or-pay principle.</p>
Are there any other typical risks?	<p>The major risks that may affect the independent producer are, on the one hand, a risk of a change in law or taxation that could negatively affect the provisions of the contract or the benefits of the independent producers or, on the other hand, a political risk with a change of political regime that could terminate all the existing agreements.</p> <p>Unfortunately, the PPAs we reviewed do not include stabilization clauses that could anticipate these risks in advance and address them before they arise.</p>

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	<p>So far, Senegal has only used the pay or take model in its PPAs. For this particular type of PPA, the risk is taken by the</p>

	offtaker, which is Senelec as it undertakes to purchase all of the delivered and undelivered energy deriving from the plant.
Change in law	The PPAs we have reviewed do not include provisions relating to the change of law, but if there was the case the risk would be taken by the government through its public entity Senelec.
Increase / reduction of benefits	As we already mentioned, in case of reduction of benefits caused by a change of law, the risk would be taken by the government through its public entity Senelec.
Market liberalisation (if applicable)	With the liberalization of the electricity sector, this risk does not exist.
Credit risk	The credit risk is supported by Senelec as the offtaker. The state gives its sovereign guarantee to covers Senelec's obligations regarding the PPA.
Imbalance power risk	To be confirmed.
Production profile risk	To be confirmed.

Balancing

Does your country operate a balancing responsibility scheme?

No, we are not aware of such balancing responsibility scheme.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

In February 2020, Senegal inaugurated the first phase of the Taiba Ndiaye wind power plant. This plant has injected 50 MW into the Senelec network since December 2019 and will provide 158.7 MW of clean and reliable energy for over 2 million people. It comes in addition to the eight solar plants already available in the network.



South Africa

Last modified 16 December 2020

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

The use of corporate power purchase agreements ("**CPPAs**") has increased in recent years, partially due to renewable energy generation and storage technology becoming more affordable. It has also been driven by increased appetite from corporates to act in a more sustainable and socially and environmentally responsible manner. Due to certain intermittent electricity supply issues faced in the country, corporates have also sought to diversify their energy supply arrangements so as to place less reliance on utility generated power.

The most common forms of CPPAs in South Africa, in our experience, tend to be those concluded on a direct or private wire basis or a wheeled basis.

Direct or private wire CPPAs typically involve a generation facility being built or installed on, or adjacent to, the property of the corporate. The facility is developed, owned and operated by an independent power producer ("**IPP**") and the corporate buys all or a portion of the power from the IPP. Any required power in excess of that generated by the IPP is provided by the utility (national utility or municipality).

Generally speaking, for a wheeled CPPA, the corporate concludes a CPPA with an IPP and electricity is 'wheeled' by the utility from the IPP to the corporate via the grid. The CPPA itself will be a bilateral arrangement concluded between the corporate and the IPP, and will regulate the purchase by the corporate of renewable energy from the IPP. In addition to this, a series of further agreements is required to cater for the 'wheeling' of energy. More often than not, wheeling is achieved through a series of amendments or contractual modifications to (i) the standard form power supply agreements between the utility and its customers (i.e. the corporate) and (ii) the distribution, connection and use of system arrangements between the grid operator (Eskom) and generator (the IPP).

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Yes, corporate owners can purchase directly from a facility. While regulators notionally allow corporates to purchase power from a choice of suppliers, in reality the choice of suppliers is often limited (largely, in many instances, to local municipalities and/or Eskom, for example).

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

As outlined in [Structures](#), the parties to a CPPA commonly tend to be the IPP and the corporate. Third party involvement is perhaps less common in this market other than in cases of wheeling which, as above, often requires the involvement of the grid operator.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes.

In terms of the Electricity Regulation Act No. 4 of 2006 ("**ER Act**"), subject to certain exceptions (see below), a licence issued by the National Energy Regulator of South Africa ("**NERSA**") is required to operate any generation, transmission or distribution facility, import or export any electricity, or be involved in trading electricity.

There are exemptions to the requirement for obtaining a license, and we have set out some of the more notable examples of the exemptions below.

If a generation facility (i) does not have a point of connection to the national grid (e.g. a captive own use facility), (ii) is for the sole purpose of providing standby or back-up electricity (for a duration not longer than a supply interruption), or (iii) is connected to the grid and does not have a generating capacity of greater than 100KW (subject to certain additional administrative requirements), it does not require registration with, or licence from, NERSA.

While a licence is not required, a generator must, in certain circumstances, nonetheless register with NERSA, including:

- Generation facilities with an installed capacity of no more than 1 MW which are connected to the national grid and (i) supply to a customer or related customers with or without wheeling of that electricity through the national grid, and (ii) the generator complies with the grid code and has entered into a connection agreement with the holder of the relevant distribution licence.
- Generation facilities that produce electricity from waste or the residual product of an underlying industrial process where (i) the generation facility is operated solely to supply electricity for consumption by a customer who is related to (or an affiliate of) the generator or owner of the generation facility, and (ii) the generator complies with the grid code.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

In recent years, there has been uncertainty and debate regarding the licensing and registration requirements for generators (particularly regarding whether certain own use, embedded generation and *de minimis* exemptions were applicable or not). However, recent regulatory updates (as recent as April this year), have introduced a series of exemptions for generators from licensing (as above) which has clarified the position substantially.

In addition, the Minister of Mineral Resources and Energy has approved that NERSA may process licence applications for the following self-generation facilities of above 1MW even if they are not in compliance with the Integrated Resource Plan, 2019 ("**IRP 2019**"):

- a generation facility that is connected to the national grid, in circumstances in which the generation facility supplies electricity to a single customer and there is no wheeling of that electricity through the national grid; and/or
- a generation facility that is connected to the national grid, in circumstances in which the generation facility is operated solely to supply a single customer or related customers by transporting electricity through the national grid where wheeling arrangements are in place between all affected parties.

Previously, if not in compliance with the IRP 2019, prospective applicants were required to obtain Ministerial approval for deviation from the IRP 2019 before applying to NERSA for a licence. This has, to some degree, simplified the process for applicants regarding the above facilities.

In addition to this, there was a fair amount of uncertainty around the role that energy or battery storage could play in the energy matrix in South Africa. Thankfully, the regulations on New Generation Capacity have further been amended, *inter alia*, to allow for the procurement of new generation capacity by other organs of state, active in the energy sector which specifically includes generation capacity derived from energy storage.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

In February 2019, the President of South Africa announced a proposal to unbundle Eskom into three separate businesses, namely generation, transmission and distribution – each of which will be housed in separate legal entities under Eskom Holdings SOC Limited. Since then, the process of unbundling has begun and, at the date of this report, we believe that divisional boards have been established and managing directors appointed for each of the business units. The unbundling is expected to be complete by the end of 2022 and will have a considerable impact on the structure of the energy market. It is likely this will necessitate regulatory changes to cater for, and differentiate between, the roles of each of the separate unbundled Eskom entities in the wider energy market.

Interesting to note is that circa 10,000MW of generation capacity in South Africa is scheduled to be retired in the next 10 years, which creates the need for new generation capacity, much of which we believe (at this stage) will be procured from the private sector and, more specifically, clean or renewable energy sources. Regulatory reform and policy alignment (particularly in policy planning documents such as the integrated resource plan, as above) will be crucial to ensuring that sufficient generation capacity is procured from the private sector.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The appetite for clean and sustainable energy amongst corporates in South Africa is growing rapidly, particularly given the recent increased focus on sustainability and environmental, social and governance (ESG) considerations globally and in South Africa. Notable cost reductions due to improvements and efficiencies in renewable energy technologies have also made it less expensive to generate electricity from these sources. We expect this trend to continue.

The Income Tax Act No. 58 of 1962 permits a taxpayer to claim a deduction on the costs incurred in respect of plant, machinery and articles owned by it, that are first brought into use by that taxpayer in the course of its trade in the generation of electricity from various renewable energy resources. For example, in respect of photovoltaic solar energy of more than 1MW, a taxpayer is allowed a deduction of the costs to the taxpayer of the asset producing the electricity on a 50/30/20 basis, being that a taxpayer is allowed a 50% deduction of costs in the first year of use, 30% in the second year and the balance in the third year of use. Where a photovoltaic solar energy system produces less than 1 MW of power, then the taxpayer is allowed a 100% deduction in the first year of use.

South Africa also introduced a carbon emissions tax under the Carbon Tax Act No. 15 of 2019 on 1 June 2019, which is to be implemented in three phases. The first phase is currently in implementation (the South African government has indicated that the impact of the carbon tax will be reviewed before the next phase is implemented in 2023). The carbon tax is levied on entities that operate emissions generation facilities at a combined installed capacity equal to or above certain carbon tax thresholds (which apply in respect of various activities). Certain allowances or offsets are available linked to (for example), emissions levels, trade exposure, participation in carbon budgets and investments in emission reducing projects.

What are the key local advantages of the corporate PPA model which can benefit our clients?

1. Potential increased reliability of supply by diversifying suppliers to avoid possible supply constraints.
2. Price certainty given the uncertainty of utility price increases.
3. Reduce carbon footprint and potentially benefit from offsets or incentives in terms of the Carbon Tax Act No. 15 of 2019.
4. Support local economic development (including skills development and job creation) through a more established local renewable energy industry.

What subsidies are applicable to the generation and sale of renewable energy?

The Department of Minerals and Energy ("**DoME**") established the Renewable Energy Finance and Subsidy Office, whose mandate includes:

- the management of renewable energy subsidies; and
- offering advice to developers and other stakeholders on renewable energy finance and subsidies. This includes information on the size of awards, eligibility, procedural requirements, and opportunities for accessing finance from other sources.

The subsidy is milestone driven, and the milestones are set out in a subsidy agreement to be entered into between the DoME and the recipient of the subsidy (the key milestones being financial close, construction and commissioning etc). The subsidy takes the form of a grant and is "once-off" in that it is a single disbursement linked to a construction milestone, and is provided on the basis that if any subsequent milestones are not met, the DoME may request that the grant be paid back.

We have not been involved in any projects which, to our knowledge, have benefited from the subsidy.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Not at present. While the trading of renewable energy certificates ("**RECs**") is recognised in South Africa, the South African government does not participate in or regulate RECs (a REC initiative on regulation and certification was suspended by the government in 2010/11 and has not, to our knowledge, been formally recommenced). The South African government does, however, permit RECs to be traded voluntarily. There is therefore no central registry in South Africa and the market in South Africa currently operates on a voluntary basis (in terms of certification, trading and registration).

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Given the private nature of contracts, it is difficult to generalise on commonly used pricing arrangements across the South African market. However, in our experience prices tend to be fixed (often indexed to inflation).
What term is typically agreed for the PPAs?	In our experience, generally between 10 to 20 years.
Are the PPAs take-or-pay or limited volume?	Generally, take-or-pay.
Are there any other typical risks?	<p>Foreign denominated input costs as many components of the facility are still imported.</p> <p>Recently, pandemic related risks have been prevalent (particularly whether the impacts of the pandemic constitute force majeure events etc).</p> <p>Wheeled CPPAs may offer no guarantee of system availability due to the fact that, in certain circumstances, electricity is wheeled through the national grid.</p> <p>Changes in law, particularly regarding recently promulgated pandemic related legislation (disaster management regulations etc).</p>

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Where a CPPA is based on fixed volume terms, the generator

	generally bears the risk. Conversely, where an offtaker agrees to purchase whatever energy is produced under the CPPA, the offtaker bears the risk.
Change in law	The CPPA will usually include a change in law provision to ensure that the parties are rebalanced to reflect their original economic intentions. In our experience, this risk often sits with the offtaker (particularly where the change in law results in an increased cost etc).
Increase / reduction of benefits	Given the private nature of contracts, it is difficult to generalise on this across the South African market. However, where the reduction of benefits is caused by a change in law, these may be covered by the change in law clause (see above) and borne by the offtaker.
Market liberalisation (if applicable)	Given the private nature of contracts and the subjective nature of the application of this on contracting parties, it is difficult to generalise on this across the South African market. In our experience, this is likely to be dealt with as a change in law event (see above, as the liberalisation is likely to involve regulatory reform) or can specifically be allocated to the offtaker or generator (and may find application as a result of an effect of the market liberalisation).
Credit risk	Given the private nature of contracts and the subjective nature of the credit worthiness of contracting parties, it is difficult to generalise on this across the South African market. The offtaker under the CPPA may be required to provide credit support (a parent company guarantee, letter of credit etc) to mitigate payment risk, which is ultimately dependent on the credit worthiness of the offtaker and/or may be driven by the requirements of the financiers of the project/facility.
Imbalance power risk	This is likely to be a risk for the offtaker in South Africa as the offtaker is often forced (under structures typically in use in South Africa, see above) to procure any required power in excess of that generated by the IPP from the utility (see above) and Eskom manages this risk, as balancing authority (see below).
Production profile risk	In our experience, it is often the buyer who bears this risk, as it may be forced (under structures in use in South Africa, see above) to procure any required power in excess of that generated by the IPP from the utility (see above and below).

Balancing

Does your country operate a balancing responsibility scheme?

In substance, yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Under CPPAs in South Africa, our experience is that the generator and offtaker do not typically undertake balancing themselves.

Eskom is the system operator and is the legal entity responsible for short-term reliability of the interconnected power system. As part of its function, it controls and operates the transmission system and dispatches generation (or balances the supply and demand) in real time. As such, this really only applies where there is wheeling of energy.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

AB InBev entered into multi-tiered CPPAs with SOLA Energy Group for the provision of 8.7MW of renewable energy to its breweries. The deal was worth R400m.^[1]

[1] [AB InBev bolster breweries with 8.7 MW renewable energy from SOLA](#)



Spain

Last modified 04 October 2022

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

In 2018 the use of PPAs began to take off in Spain. In that year some major PPAs were signed: Audax with Cox Energy (600 MW) and WElink (708 MW); Iberdola with Euskaltel (500 MW) and with Kutxabank (391 MW); and Factor Energía with ENHOL (94 MW, the longest lasting PPA in Spain – 20 years so far). In 2019 other major PPAs were: Audax with the Chinese giant Trina Solar (500 MW), and with the Norwegian company Statkraft (525 GW yearly, over 15.5 years). Since 2018, the Spanish PPA market has grown to become the major market in the EU.

According to the Electricity Sector Act (Act 24/2013), PPAs in Spain may take one of either the following forms:

- Physical PPAs. Where the corporate consumer acquires legal title over the electricity. Current options via batteries or derivatives contracts may still result expensive, so there are options to be offered to corporate consumers that can better manage this risk by firming up load requirements from a retailer via, for example, a “sleeved” Synthetic PPA.
- Financial PPAs:
 - Contracts for Differences (CfDs): prices are cleared with respect to one strike price established by the contract.
- Collar PPA: including cap-and-floor prices to constraint final prices within a given range.
- Direct PPA (self-consumption), where there is a direct on-site supply through the direct physical delivery of electricity between the producer and the corporate consumer.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Yes, according to the current regulations, corporate owners may purchase directly from a facility/producer (onsite) or from a supplier (offsite).

Royal Decree 244/2019, of April 5, 2019, has facilitated the process for Direct PPAs (self-consumption) lowering the taxes and tolls and simplifying the process in certain cases.

This new regulation together with the current volatility in the energy prices has led to a significant increase of Direct PPAs (self-consumption) in Spain.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Other than generator and offtaker, it's common for a market representation agent to be party to the PPA. It can be a supplier. In physical-offsite PPAs, the generator sells the energy to end users through a supplier that provides both the energy from the facility and the missing energy from its generation portfolio.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes. According to the Electric Sector Act, several licenses/permits are required to generate electricity, covering the project, the construction and the operation of the power plant.

However, no specific license or other form of authorization is required to sell electricity. Nevertheless, the suppliers are required to submit a communication and a responsible statement to the competent authority before the start of their activity.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

- **Plant development risk:** time-lag between closing the PPA and Commercial Operation Date (COD) of the plant. Parties may wish to ensure that the seller and the facility/works are insured throughout the construction period (and not only after commencement of the supply period (ie following COD)).
- **Grid access congestion:** to avoid overcapacity in terms of connection permits and grid access, the Spanish government published Royal Decree 1183/2020, which creates a simpler and more transparent process, regulating, among other things, capacity auctions. However, to date no capacity auctions have been held so far and it is not clear yet how the awarding criteria will work in practice.
- **Regulatory risk:** renewable energy legislation in Spain has suffered a series of drastic changes in the recent years as a consequence of decarbonization policies, COVID-19 and volatility of prices due to the war in Ukraine. Parties may wish to limit change in law coming into effect after the date of the agreement, and to exclude those changes in law which may be foreseeable. Change in law clauses usually regulate the renegotiation of the PPA if the change in law has created a significant unbalance in the economic situation of the parties under the PPA.
- **Political risk:** COVID-19 and the war in Ukraine have already led to recent regulatory changes affecting PPAs (as further explained in section 7 below). Volatility of prices has not stopped, so more regulatory changes are foreseeable in the near future. The EU is working on a major structural reform of the electricity market, which may affect Spain with independence of the "Iberian Exceptionality" which has already implied a reduction on the energy prices as explained in section 7 below.
- **Price risk:** volatility in energy prices may result, in a long-term contract, in an unforeseen market scenario that cause a substantial imbalance of the contract. As explained in the previous paragraphs, a solution could be the introduction of specific price review clauses (eg change in law) for those extreme hardship imbalance scenarios.
- **Force majeure:** COVID-19 has increased the importance of force majeure in PPAs. After the pandemic, it has become a must to include specific provisions in the PPAs to tackle the effects of the pandemic. One of the major consequences of the pandemic is the problems that some generators are facing with delays in equipment supply. This situation has, in some cases, created a delay in achieving COD and thus, negotiations around COD long stop date and force majeure have become fierce in the recent times.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

In recent years, several regulations affecting PPAs have been approved:

- In December 2020, the Statute of electro-intensive consumers was approved, regulated under the Royal Decree 1106/2020, whose purpose is to "maintain and improve the competitiveness of electro-intensive industrial companies at European and international level." This Statute also develops the Royal Decree-Law 24/2020, which creates the Spanish Reserve Fund for guarantees of electro-intensive entities (FERGEI). This Statute promotes long-term bilateral contracts for the supply of energy (PPAs), especially between consumers and renewable generators, by offering guarantee state coverage mechanisms. Electro-intensive consumers see PPAs as a solution to the current volatility of prices and have already indicated their intention to hold a PPA auction at the beginning of 2023.

- NECP (National Energy Climate Plan 2021-2030), approved by the government in March 2020 and submitted to the European Commission, also encourages PPAs. Measure 1.10 of the NECP foresees mechanisms to reduce the risk of these operations.
- As explained above, Royal Decree 244/2019, of April 5, 2019, regulating the administrative, technical, and economic conditions for self-consumption of electricity, has eliminated procedural and economical barriers for Direct PPAs, resulting in a significant increase of this type of contract in Spain.
- As pointed out below, Royal Decree-Law 23/2020 has added a new provision related to the specific remuneration scheme for green energy (see num. 10).
- Following the escalation of gas and electricity prices, the government approved a set of measures to mitigate the impact of this situation with the publication of Royal Decree Law 17/2021, in September 2021. One of the measures consists of a temporary mechanism to reduce the surplus remuneration of renewable energy production facilities. The Ministry of Ecological Transition and Demographic Challenge has clarified that electricity purchased through both Physical and Financial PPAs (see num. 2) is excluded from the application of the reduction mechanism, provided these are not intragroup PPAs.
- Also, following the economic impact of the war in Ukraine, the Royal Decree Law 6/2022, makes some modification of the aforementioned mechanism, and extends its application until June 30, 2022. The same rules and criteria apply with the following modifications:
 - Fixed-price bilateral contracts (PPAs) with a term longer than a year, are not subject to the reduction.
 - Fixed-price energy contracted will only be exempted from the reduction mechanism for hedging prices below EUR67/MWh. Therefore, PPAs subscribed before the Royal Decree Law 6/2022 are subject to this mechanism for the share of the price that exceeds EUR67/MWh.
 - Intragroup PPAs, between the generator and trader, are subjected partially to the reduction mechanism. For these PPAs, the hedging price used in the reduction calculation will correspond to the price passed on to the end consumers by the traders.
- The reduction mechanism has been recently extended until December 31, 2022 by virtue of Royal Decree Law 11/2022.
- Royal Decree Law 6/2022 has also amended remuneration parameters under the specific remuneration scheme (*régimen retributivo específico*, Royal Decree 413/2014) for the current semi regulatory period (January 1, 2020 to December 31, 2022) which were set out by Order TED/171/2020 and have been amended by Royal Decree-Law 6/2022. Royal Decree Law 6/2022 creates a new regulatory semi-period from January 1, 2022 to December 31, 2022, and foresees the publication of a new order regulating the remuneration parameters for this new regulatory semi period. The order is still under approval.
- Other major amendment implemented by Royal Decree Law 6/2022 is article 22 of Royal Decree 413/2014, of June 6, so that the adjustment value for deviation from the market price for energy generated in 2023 and subsequent years is null. This measure will be implemented in 2023 to allow the generators sufficient time to consider their pricing strategies. This measure will affect the updating of remuneration parameters for the semi regulatory period between January 11, 2026, and December 31, 2028. The government will amend RD 413/2014 to adapt it to this forecast. Additionally, article 22.1 of RD 413/2014 has also been amended to provide greater certainty to generators by specifying the period to be considered for estimating the market price based on OMIP futures. This measure may have an impact on PPAs as hedging of energy prices in the derivatives market is incentivized.
- Royal Decree Law 17/2022 has introduced additional amendments to energy sector regulation (i) to the balance system as further explained below, (ii) for co-generation installations which can be now excluded from the specific remuneration scheme (*régimen retributivo específico*) and be applied the exceptional measures for limiting gas prices regulated under Royal Decree Law 10/2022.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

There has been a significant increase in the appetite for PPAs in the past few years. In fact, Spain has become the largest PPA market in Europe with more than 4 GW of deals. Motivation for these contracts is varied:

- Firstly, and most importantly, it protects consumers from volatility in energy prices and provides certainty in energy costs, similar to how large corporations protect themselves from other volatile economic aspects (exchange rate and interest rate).

- Secondly, depending on the behavior of future prices, the possibility to offer any excess electricity generated by the company from its exchanges to the wholesale market when market dynamics cause prices to surge could be of interest.
- Thirdly, PPAs have become an important instrument for corporates to comply with their ESG objectives. In this regard, the negotiations in respect of ownership of Guarantees of Origin (GoOs) have gained great importance.
- Finally, in terms of project finance structures, the existence of a PPA with a robust corporate offtaker is regarded as very positive element by lenders.

What are the key local advantages of the corporate PPA model which can benefit our clients?

In the last year the gap between market price and generation cost in Spain has led to the signing of PPAs with an installed power of 4 GW, with deals like the photovoltaics PPAs between Audax and Cox Energy (600 MW) and WElink (708 MW). The costs of photovoltaic energy have fallen in Spain by 81% since 2010.

New regulations approved as a result of the rise in energy prices (ie Royal Decree Law 17/2021 and Royal Decree Law 6/2022) have created a reduction in the number of PPAs closed in the recent months.

What subsidies are applicable to the generation and sale of renewable energy?

As a preliminary remark, please note that the current (electricity production) remuneration scheme does not provide for any feed-in tariff system.

Since 2014, the main strategy to support the production and consumption of renewable energy in Spain comprises a public auction of a certain level of installed power with the right to the Specific Remuneration Scheme. This scheme means that the relevant facilities will receive the market price plus an additional remuneration which is aimed to guarantee a "reasonable return" on the investment.

As previously indicated in section 7 above, of Royal Decree Law 6/2022 has amended the remuneration parameters applicable to the Specific Remuneration Scheme.

As mentioned above in 7, Royal Decree-Law 23/2020 has added a new provision related to the remuneration of renewable energy production facilities. According to this provision, to promote predictability and stability in income and financing of new electricity production facilities from renewable energy sources, the government will develop a new remuneration framework for the generation of electricity from such sources, based on the long-term recognition of a fixed price for energy, through competitive procedures (ie public auctions).

This new renewable economic regime (REER) was approved by the Royal Decree 960/2020. The REER is granted by means of public auctions which distinguish between different technologies and establishes the auctioning criteria based on the price per unit of electricity expressed in EUR/MWh with certain adjustments based on market participation.

The next auction of 520 MW for solar thermoelectric, biomass, distributed photovoltaic and other technologies is expected to take place in October 2022.

Additionally, the Administration may grant subsidies for the construction of energy generation infrastructures, at the central, regional and local level, and that certain tax advantages can be obtained for such constructions.

Finally, in addition to pure financial incentives, other policies that promote the development of renewable energies in Spain are the following:

- priority of access to the grid – renewable energy generators have priority over other operators to access and connect to transmission and distribution networks; and
- priority of dispatch of electricity generated in the wholesale market – under equal market conditions renewable energy generators have priority over other conventional generators to deliver their electricity in the wholesale market.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Guarantees of Origin (GoOs) may be issued to all generators of energy from renewable sources. GoOs can only be exported by the owners of a power plant (and when exported, the generators have to renounce to the respective support scheme). Additionally, Spanish consumers appreciate GoOs for corporate image and social responsibility reasons.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	<p>With regards to pricing agreements, there are several possible options: fixed prices, step prices adjusted over the term, and price indexation (sometimes with caps, floors and collar arrangements).</p> <p>Hybrid forms of these variants are possible. Given the private nature of contracts, it is difficult to generalize on commonly used pricing arrangements across the Spanish market. Corporates have however been prepared to offer higher fixed prices, which can be attractive to generators. Due to the rise in energy prices, use of market indexed prices has increased. A widely used formula is a discount on the market price.</p>
What term is typically agreed for the PPAs?	<p>At this time the terms of the PPAs range between eight and fifteen years although there are examples of PPAs for longer periods in Spain in recent years.</p>
Are the PPAs take-or-pay or limited volume?	<p>There are different kind of products. For instance, in the physical-offsite PPAs, we find:</p> <ul style="list-style-type: none"> • PPA "as generated", in which the offtaker consumes all generation produced by the plant (it is the most competitive product in terms of price, but the most risky); • PPA "baseload", in which the renewable developer is in charge of converting the plant's gross generation into a base load (it keeps a good balance between price and risk); • PA "as consumed", in which the renewable developer is responsible for converting the gross generation into a curve that closely follows the customer consumption (only available to companies with a large generation portfolio).
Are there any other typical risks?	<p>As explained above, volatility in the energy markets due to COVID-19 and the war in Ukraine have increased negotiations regarding risk allocation in respect of price, delays in COD and force majeure. PPAs are long-term agreements, and it shouldn't be affected by temporary scenarios. But the volatility of prices due to the war in Ukraine is also being noted in the futures market, which competes with PPAs. This has led to an increase in the price of PPAs, which are very sensitive to futures prices.</p>

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
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Volume risk	Where a PPA is based on “as consumed” structure, the producer bears the risk (such risk is reduced with the possibility to sell the surplus to the market). Conversely, with an “as generated” PPA, the offtaker bears the risk (but this risk may be balanced through the use of a sleeving agreement with an electricity supplier which may then cover any shortfall).
Change in law	The PPA will usually include change in law provisions, as this will usually prevent the PPA from being frustrated in the event of a significant change in law. This clause generally applies to both parties.
Increase / reduction of benefits	Given the private nature of contracts, it is difficult to generalize on this across the Spanish market, but where the reduction of benefits is caused by a change in law, this may be covered by a change in law clause.
Market liberalisation (if applicable)	In Spain the electric market is liberalized.
Credit risk	Generally, in favor of the producer/seller.
Imbalance power risk	Balancing is performed by the system operator, Red Eléctrica de España (REE). REE organizes and coordinates a market in which power plants compete to offer the operation reserve service (secondary reserve) and also an additional tertiary reserve market. Secondary reserve is remunerated by means of market mechanisms via two concepts: availability (control band) and usage (energy). It is equivalent to the European product known as aFRR – automatic Frequency Restoration Reserves. Tertiary reserve is an optional service managed and remunerated by market mechanisms.
Production profile risk	The consumption profile is usually more stable than the production profile. Usually, this risk is allocated to the buyer under a cPPA and the buyer acquires any missing volume from the market. Under the cPPA, a third party may also take responsibility for providing the missing electricity to manage this risk.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Balancing is performed by Red Eléctrica de España (REE) in accordance with Operating Procedure 1.5 (Establishment of the reserve for frequency-power regulation of July 13, 2006). REE organizes and coordinates a market in which power plants compete to offer the operation reserve service (secondary reserve) and an additional tertiary reserve market. Secondary regulation is an optional ancillary service whose purpose is to maintain the generation-demand balance, correcting automatically deviations with respect to the anticipated power exchange schedule of the “Spain” Control Block, and the system frequency deviations. Tertiary regulation is an optional ancillary service that, if subscribed to, is accompanied by the obligation to bid, and is managed and remunerated by means of market

mechanisms. Its purpose is to resolve the deviations between generation and consumption and the restoration of the secondary control band reserve used.

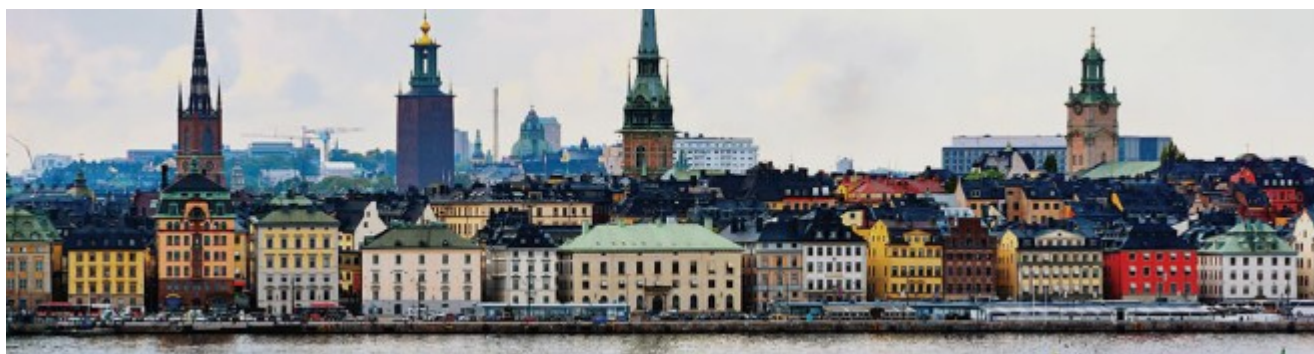
The seller may appoint a market representation agent, which may also be the Balancing Responsible Party, entering into a Market Representation Services Agreement.

Royal Decree Law 17/2022 has recently introduced an active demand response balancing system applicable when manual activated balancing systems are not sufficient to supply balance energy, which is assigned through an auction system.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

- BASF/ENGIE, up to 20.7 terawatt hours
- SAUR/ENGIE, 40 MW
- TUBOS REUNIDOS/ STATKRAFT, 10 years energy production
- MERK/TOTAL, 45 MW
- PEPSI Co/ IBERDROLA, 590 MW
- DANONE/IBERDROLA, 590 MW
- ALCOA Corp/ENDESA, 906.3 MW
- Mahou San Miguel/ENDESA, 10 years energy production
- Procter & Gamble/EDP, 127.5 MW



Sweden

Last modified 29 September 2022

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

The Nordics are often seen as one of the most environmentally progressive areas of Europe. Sweden was the first country in the world to pass an environmental protection act, as well as hosting the first UN conference in 1972 focusing on the global environment. Therefore, it will not come as a surprise that Sweden has ambitious goals for sustainability going forwards. The Swedish government has pledged to become fossil-free by 2045 using 100 per cent renewable energy.

Corporate PPAs have been, and continue to be, a useful tool to enable Sweden to reach its goal. Indeed, Sweden hosts one of the most developed corporate PPA markets in Europe.

PPAs have gained favour in Sweden for a number of reasons. First, fluctuating market prices for power and some bad experience with shorter term financial hedging have led mainly lenders to seek long term price security. It is exceedingly difficult to raise bank debt for a project absent a PPA. Second, a trend has been set in Scandinavia for large data centres operating in the Nordics to sign up to PPAs for their power consumption needs.

For some time after the PPA market got going in earnest, pay as produced, physical PPAs were the most common form of agreement structure. However, over recent years we have worked on a full range of PPA forms in Sweden - including synthetic, portfolio and baseload structures. At the time of writing we have worked on over 5GW of onshore wind PPAs in the Nordics all with varying PPA solutions.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Electricity trade in Sweden is deregulated and customers can decide where they buy electricity from. Electricity distribution however takes place via national or regional electricity network monopolies and network operations are regulated by the Swedish Energy Markets Inspectorate (Ei).

There is no restriction from Ei for the type of Corporate PPAs used and physical and financial PPAs are common in the market.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

No, the usual parties to a PPA will only be the generator and the offtaker.

In Sweden electricity producers have three main options as to what to do with their generated electricity: (i) it can be sold to electricity traders or users, (ii) it can be sold via the electricity market Nordpool or (iii) they can use it for their own purposes.

The electricity being produced will need to be transferred to the grid and a PPA structure will include a grid connection agreement and an electricity transmission agreement. Local or regional operators own and run the grid and are responsible for transporting the

electricity from production sites to users – the Swedish grid is divided nationally, regionally and locally. The 400 kV national grid is owned and operated by Svenska Kraftnät and three grid companies, E.ON Distribution, Vattenfall Distribution and Ellevio own the majority of the Swedish 10-130 kVs regional grids with other local operators completing the picture.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Electricity is transported to the end user by the grid companies referred to above. The grid companies do not necessarily need to be a state or municipality entity but can be a private company. However, a grid owner must have a permit, known as a grid concession, from Ei in order to build and operate high-voltage power lines. The grid concession will also contain an obligation to connect electricity plants in the concession area.

It may be noted that it is not permissible under law for one and the same entity to both sell electricity and own and operate a grid.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Sweden's aim to establish a solely renewable energy power system is not without challenge both from a policy and regulatory perspective as well as operationally.

Policy and regulatory challenges include:

- ensuring that market design is adequate enough to encourage the flexibility that renewable energy requires;
- making sure that there is an adequate security of supply; and
- ensuring that the current distribution and transmission infrastructure can adapt.

The operational system will also need to make changes to expand network infrastructure, ensure that systems are stable and balance the new forms of supply and demand given that the transmission infrastructure has been around for a long time.

There are a number of solutions to overcome these challenges that Sweden can look to, including exploring expanding areas of artificial intelligence, battery storage and battery storage. Transmission infrastructure will require modernisation to accommodate the additional renewable energy capacity which will vary in frequency when compare with more conventional energy sources. With the very quick build-out of wind power in Sweden, capacity shortage in the national grid has also become an issue. For some projects such as offshore wind power projects, the cost of connecting the project to the grid may become prohibitive.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

In Sweden, government support for renewable energy is provided by way of electricity certificate system instead of a feed-in tariff system or other similar systems. The certificate system requires certain producers and large consumers of electricity to purchase electricity certificates on the open market. Ultimately the costs for the system are passed on to the consumers via the electricity bill.

The electricity certificates system is currently being phased out. Production facilities being taken into operations after December 31, 2021, are no longer entitled to allocation of electricity certificates and the electricity certificates system will be completely cancelled in 2035. The Swedish Energy Agency has also recently proposed to look into whether the system should be cancelled even earlier than 2035. The move comes due to the fact that the goal of increasing the renewable energy production with 46.4 TWh before 2030 was reached in March 2021, and that the Swedish government believes that onshore wind projects are profitable enough without a subsidy. Instead the government has outlined that investment will be encouraged by other means.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Corporates in the Nordics are serious about their sustainability objectives, and cPPAs can help to achieve this aim, as well as having the added benefit of hedging power price risk. A number of large corporates (with huge appetites for power) are based in Sweden, such as Tetra Pak (packaging), Preem (petroleum), Volvo Cars (automobiles), Volvo (trucks), Asko and Electrolux AB (household appliances), Telia Company AB (telecoms), Ericsson (telecoms), IKEA (furniture), Scania AB (trucks), Atlas Copco (industrial tools and equipment), SCA (pulp and paper), Sandvik AB (technology and engineering) and Kubal (aluminum), as well as new ventures such as Northvolt (batteries), H2 Green Steel (green steel production) and the SSAB, LKAB and Vattenfall joint venture HYBRIT (green steel production). Furthermore, banks in the Nordic market are familiar with the importance of PPAs as part of their project financing structures for renewable projects, as a longer term contract for a fixed price is helpful for a borrower's debt service. Finally, the Sweden government has been a prominent supporter of wind farm developers by cutting energy taxes and making sure that the regulatory system remain clear cut for those in the industry.

Corporate PPAs have gained favor in Sweden for a number of years. First, until recently there has been a trend where Sweden has been experiencing increasingly lower power prices, and February 2020 saw power prices fall below zero for the first time. Due to these falling prices, a surplus of power production has been evident, so developers/generators have looked to obtain financial certainty that cPPAs bring although the main driver for price certainty has been financing banks' requirements. Recently, power prices have increased substantially and the effects of this on the cPPA market paint a mixed picture. It is probably fair to say that the appetite, at least on the developer side, is somewhat subdued due to the uptick in wholesale market prices. So we have seen a trend recently where construction financing is put in place to avoid locking in power prices in the long term.

Secondly, due to the favorable cold climate, a trend has been set in Scandinavia for large tech companies to establish data centers in the Northern part of Scandinavia and Finland and in that connection sign up to cPPAs for their power consumption needs. In 2013 Google signed its first wind PPA in Europe for a ten-year agreement with developer OX2 to power its data center. This was followed in quick succession in the next few years where Google entered into a number of PPAs with almost all main developers (Eolus, Arise and Rabbalshede, all with sites based in Sweden). Other tech giants such as Meta and Microsoft have followed the lead and have shown a huge appetite to sign up to cPPAs in the last couple of years.

Third, as the PPA market has developed, despite in the intermittent nature of renewable technologies, offtakers have increasingly been able to secure baseload PPA arrangements from green generation facilities. The opportunity to participate in green energy while retaining guaranteed levels of supply to meet demand have ensured that corporate demand in the PPA market has continued to burgeon in Sweden.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The Swedish PPA market is amongst the most developed in the world. As a result offtakers and developers have been able to secure increasingly creative and ambitious offtake solutions in a Swedish market that is very familiar with PPA arrangements. Indeed, rather than the green certificate system, the advent of corporate PPAs has been the main factor in the rapid development of onshore wind power in Sweden.

What subsidies are applicable to the generation and sale of renewable energy?

The Government through various agencies (county administrative boards, the Energy Agency, the National Agricultural Agency) operate several different schemes for the construction of photovoltaic installations, electricity storage and wind power. The regulatory environment and the amounts available under these schemes change rapidly.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

In 2012, Sweden and Norway put together a joint electricity certificate (elcertificate) scheme which sought to boost renewable electricity production in both countries. This is a market-based support scheme whereby producers of renewable electricity receive one certificate per MWh of electricity they produce for a period of up to 15 years. All forms of renewable electricity are eligible for this scheme.

The electricity producers can freely sell their certificates, which can generate extra revenue for their electricity production – these are traded on an open market with parties free to agree their price. The purchasers of these certificates are Swedish or Norwegian parties

who are required to purchase certificates to meet quotas set by the Swedish and Norwegian legislation. In Sweden, participants have to buy certificates corresponding to approximately 25% of their electricity production/consumption. The obligation to buy certificates is prescribed by law and will continue in Sweden until 2035 (although we note that the Swedish Energy Authority has recently proposed to look into whether the system should be cancelled earlier than 2035).

If a purchaser is also a supplier of electricity to end-users, the cost of the certificate will be passed on – therefore electricity consumers in Sweden and Norway contribute to the expansion of the production of renewable obligations. Quotas are applicable on an annual basis, and each year the electricity certificates are cancelled. This means that purchasers must buy new certificates to continue to meet their obligations, thus creating a continuing demand for certificates. The quotas are calculated on a country-by-country basis (one quota for Sweden and one quota for Norway) based on assumptions about the future usage of electricity. Those assumptions were made with a view to facilitating the increase of renewable energy of 26.4 TWh until 2020. Sweden subsequently expanded the ambition by adding an additional 18 TWh for the period until 2030. Since the goal of adding 46.4 TWh of renewable energy was reached in March 2021, the Swedish government has decided to phase out the certificates system. Production facilities being taken into operations after December 31, 2021, are no longer entitled to allocation of electricity certificates and the electricity certificates system will be completely cancelled in 2035 (or earlier).

Sweden also participates in the Guarantees of Origin scheme. A guarantee of origin is an electronic document proving to a final customer that the corresponding 1 MWh of electrical energy was produced from renewable sources.

The Directive (EU) 2018/2001 of the European Parliament and of the Council of December 11, 2018, on the promotion of the use of energy from renewable sources states that all renewable power producers have a right to receive guarantees of origin for their production. The Swedish Energy Authority (*Energimyndigheten*) has a duty to issue GOs, as prescribed by the Swedish Act on Guarantees Of Origin 2010 (*Lag (2010:601) om ursprungsgarantier för el*).

CESAR is the registry for GOs in Sweden. GOs are issued based on meter values from the Swedish balancing settlement.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	The Swedish market caters to all forms of pricing structure. Historically, however, agreements will comprise a combination of fixed and floating prices.
What term is typically agreed for the PPAs?	The typical term of PPAs is from 10 - 15 years, however this does vary significantly depending on the interests of the parties.
Are the PPAs take-or-pay or limited volume?	PPAs have generally been based on the take-or-pay principle. Although, again, we have worked on many baseload and synthetic agreements in the market as well.
Are there any other typical risks?	Businesses that trade internationally or have operations overseas are likely to be exposed to foreign exchange risk arising from volatility in the currency markets. One of the typical CPPA risks is therefore currency exposure, with EU CPPAs being commonly priced in Euros. Concerns about currency fluctuations between sterling and the euro as a result of Brexit are therefore key considerations for parties to UK-EU27 CPPAs.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	<p>Where a PPA is based on fixed volume, the producer bears the risk.</p> <p>Conversely, with a pay-as-produced PPA, the off-taker takes this risk. However, we would expect this risk to be balanced through the use of a sleeving agreement with an electricity supplier which may then cover any shortfall.</p>
Change in law	<p>The PPA will usually include change in law provisions, as this will usually prevent the PPA from being frustrated in the event of a significant change in law. The risk of such a change in law is balanced against the party receiving the GoOs or renewable benefit, however a change in law clause seeks to rebalance the original economic intentions of the parties. In recent years offtakers have increased the focus on change of law clauses and terms in this respect have tightened from the vantage point of producers.</p>
Increase / reduction of benefits	<p>There is no set rule with regards to allocation of this risk. We often see the value of benefits included in the general contract price for electricity. Accordingly, in this case, the risk of a reduction in benefits would be borne by the offtaker (subject to change in law provisions).</p> <p>Whether the agreement will concern the sale of future benefits is a point for negotiation with no standard allocation of risk.</p>
Market liberalisation (if applicable)	<p>This is not a risk in the Swedish market which is liberalized.</p>
Credit risk	<p>Credit risk is almost always mitigated with the inclusion of credit support documentation, often provided by both parties.</p>
Imbalance power risk	<p>The PPA will allocate this risk, often in exchange for a defined fee. In the absence of specific allocation the liability would remain with the generator.</p>
Production profile risk	<p>The consumption profile is usually more stable than the production profile. Usually this risk is allocated to the buyer under a CPPA and the buyer acquires any missing volume from the market. Under the CPPA, a third party may also take responsibility for providing the missing electricity in order to manage this risk.</p>

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

As noted above, Svenska Kraftnät is the authority responsible for making sure that the transmission system in Sweden is safe, environmentally sound and cost-effective.

According to Swedish legislation, there must be a company that is legally responsible for balancing the electricity that is produced or consumed at the input and output points of the grid. Therefore a PPA structure will usually include a balancing services agreement with a balancing responsible party who takes on the responsibility for ensuring that there is a balance between the electricity being produced and consumed. In order for a company to provide the balancing responsibility services, it must have a balancing services contract with Svenska Kraftnät. There is a very competitive market for providing these services.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

We have worked on over 5GW of onshore wind transactions in the Nordics in the last 5 years.

Most recently, we acted for Prime Capital AG and Enlight Renewables on their acquisition from RES of the 372MW ready-to-build Björnberget project in the north of Sweden.

Furthermore, we recently advised Credit Suisse Energy Infrastructure Partners (CSEIP) in their significant investment with Fortum, whereby CSEIP will acquire an 80% stake in Fortum's entire Nordic wind portfolio with a mix of operational and greenfield assets with a total installed capacity of approximately 500MW.

Before this we worked on the 254MW Stavro project in northern Sweden, negotiating offtake arrangements with each of Google and Holmen.



Tunisia

Last modified 29 September 2022

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

PPA contracts are increasingly used in Tunisia, for several reasons, including the increase in demand for electricity, the recent diversification of sources of electricity production and especially new energies, and also for the liberation of the production of electricity which resulted in the emergence of new producers in the form of private companies of electric energy.

In fact, the production, transport, distribution and import of electricity and fuel gas have been nationalized in Tunisia since 1968. The management of these activities is mainly entrusted to a public establishment called Tunisian Electricity and Gas company (STEG). Then, since 1996, Tunisia has liberalized the production of electricity, allowing private companies, through authorizations or concessions, to invest and set up projects in electricity production.

(Art. 1, Art. 3 and Art. 4 New Decree-Law No. 62-8 on the creation and organization of STEG+ Decree No. 96-1125 of June 20, 1996, setting the conditions and procedures for granting the concession of electricity production to private persons).

There are therefore several electricity generators, but only one offtaker (at the national level), namely STEG.

PPAs differ according to the electricity generation regime:

- authorizations: for the production of electricity from renewable energy to meet local consumption needs;
- concessions: (i) for the production of electricity from green energies for export, (ii) for the independent production of electricity, (iii) for the production of electricity from gas from hydrocarbon concessions.

The PPA structure is a direct contract between the generator and the public company entitled with a monopoly of supplying electricity to end users.

The contract should comply with the template or model enacted by the law.

At this regard there are two templates or model contracts:

- The first is about the purchase by the offtaker of the electricity produced from renewable energy by the Generator.
- The second is about the transportation by STEG (STEG) in its network of the electricity produced by the Generator and the purchase of STEG of the surplus produced by the generator from the renewable energy.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

The STEG, as an offtaker, purchases electricity from a big choice of suppliers of electrical energy. The latter are even obliged to sell the electricity intended for national consumption only and in full to STEG. This is also the case for the surplus energy produced, which must be sold, from the different suppliers to the STEG.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

In addition to the generator and the off-taker, there are other bodies that can have an impact on the conclusion of a PPA, without necessarily being a contracting party. These bodies are:

- The Superior Commission of Independent Electricity Production: a public body that has as its attributions to make decisions on any question related to each project of independent electricity production. (Art.5 of the decree n°96-1125).
- The Ministry of Industry through the Interdepartmental Commission of Independent Electricity Production.
- The special commission to the General Assembly of the People's Representatives (Commission of Industry, Energy, Natural Resources, Infrastructure and Environment), through which, pass obligatorily the contracts of sale to STEG of the surplus of electricity produced from renewable energies for self-consumption. (Art. 10 of Law No. 2015-12).
- The specialized authority responsible for examining issues relating to projects for the production of electricity from renewable energy. (Article 39 and following of the decree n°2016-1123).

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Except for STEG, which can both generate and sell electricity to end-users, electricity generators cannot sell it to an end-user.

In fact, the projects of electricity production from renewable energies are carried out either for self-consumption, or to sell it, in totality and exclusively to the public body (the STEG) which sells it to end-users, or to export it.

(Art. 5 of Law No. 2015-12 on the production of electricity from renewable energy).

The sale of electricity to end users under Tunisian law is the monopoly of the STEG, which is a public company owned 100% by the state.

Similarly, the holder of a concession for the exploitation of a natural gas deposit can use this raw gas or its by-products to produce electricity, but only to supply its own sites. And any excess of electrical energy over its own needs may be sold to a distribution agency designated by the concessioning authority, and not to an end user.

(Art. 66.3.a of the Hydrocarbons Code).

This is also the case for the valorization of non-commercial gas, from which the electric energy produced can only be sold to a distribution company designated by the conceding authority, and not to an end user.

(Art. 66.3.b of the Hydrocarbons Code).

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

One of the major challenges remains financial since the installation costs of renewable energy production units from green energies, for self-consumption and professional use, are very high. Some companies do not have the means to finance them, especially in terms of self-financing (30% equity commitment).

To remedy this shortcoming, some leasing companies have already financed (even in an isolated way) some photovoltaic installations. Moreover, Tunisia is in the process of setting up a pilot scheme for financing photovoltaic projects by leasing, given that certain conditions for this implementation are now quite favorable, (setting up guarantee funds, international refinancing lines, the participation of international donors).

Another challenge is contractual. PPAs in Tunisia are adhesion contracts (standard contracts approved by the Ministry of Energy). It is the public body (licensing authority, the ministry in charge of energy, STEG) that sets the main conditions of the PPAs, since the producers of electricity from green energies can only sell it to STEG.

Also the process of obtaining the authorizations is at some level long and complicated.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

To our knowledge, there are no regulatory changes that will alter the regulatory landscape for corporate green energy and cPPAs.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The general context of electricity production has encouraged the state and companies to favor renewable energy as a source of energy production. Until the end of 2019, 97% of electrical energy was produced from natural gas; the part of renewable energy had not exceeded 3%.

Given the evolution of natural gas prices, electricity sales tariffs have been subject to several increases. Compared to the 2010 tariffs, the increases have been significant and have affected all electricity consumers (with the exception of social tariffs).

To remedy these drawbacks, Tunisia has set a Tunisian Solar Plan (TSP), which aims to bring the share of renewable energy (wind, solar PV and solar CSP) to 30% of total electricity production in 2030.

Also, Tunisia, having already signed the Paris Agreement of 2015 on climate, has committed to the level of the Nationally Determined Contribution (NDC) to reduce its greenhouse gas emissions in all sectors, including energy, aiming at a reduction of 46% in 2030 compared to 2010.

To implement these objectives, Tunisia had put a whole legislative and regulatory framework including:

- Law 2004-72 of August 2, 2004, on energy management, completed by Law 2009-7.
- The law 2005-82 of August 15, 2005, creating a system of energy management.
- The law 2015-12 of May 11, 2015, on the production of electricity from renewable energy. It encourages the initiatives of independent producers (local authorities, public enterprises and private companies) and liberates the production and export of electricity through three regimes (1) self-consumption, (2) independent production of electricity to meet the needs of national consumption and by selling exclusively and in full to STEG, and (3) export.
- The Government Decree No. 2016-1123 of August 24, 2016, setting the conditions and modalities for the realization of projects for the production and sale of electricity from renewable energy.
- Order of the Minister of Energy, Mines and Renewable Energy of February 9, 2017, approving the standard contract for the transmission of electrical energy produced from renewable energy for own consumption, connected to high and medium voltage networks and purchase of the surplus by STEG.
- Order of the Minister of Energy, Mines and Renewable Energy of February 9, 2017, approving the standard contract of sale to the Tunisian Electricity and Gas Company of electrical energy produced from renewable energy subject to authorization.
- Order of the Minister of Energy, Mines and Renewable Energy of August 30, 2018, approving the revision of the standard contract of sale to the Tunisian Electricity and Gas Company of electrical energy produced from renewable energy subject to authorization.

What are the key local advantages of the corporate PPA model which can benefit our clients?

For financial incentives:

Tunisia has provided and regulated in (Decree No. 2005-2234 as amended by Decree No. 2009-362) premiums relating to actions concerned by "the regime for energy management," to encourage actions with the objectives of rational use of energy, the development of renewable energy, including:

- energy audit and prior consultation
- material and immaterial investments in the field of energy management
- solar water heating
- electricity production in the agricultural sector
- biogas production for the purpose of producing electricity

Also, companies investing in green energy can be supported by guarantee funds such as the Tunisian Guarantee Company (SOTUGAR), the Guarantee Fund SME II. These funds support companies by promoting their access to bank financing through the establishment of guarantees.

In addition, lines of credit are granted to Tunisian banks by some development institutions to finance projects involved in the energy transition. Among which we cite:

- The SUNREF line of credit granted by AFD to Tunisian banks UBCI, UIB and Amen Bank for a total amount of EUR40 million between 2017 and 2018.
- The line of credit granted by the International Finance Corporation (IFC) to Attijari Bank, for a sum of EUR40 million.
- The line of the GGF (Green for Growth Fund) to the profile of Tunisia Leasing & Factoring (TLF) – EUR10 million.

Finally, by Law No. 2005-82 as amended by Law No. 2014-54, a Fund for Energy Transition (FTI) for the financing of operations aimed at rationalizing energy consumption was created. This Energy Transition Fund is governed by the decree 2017-983.

There are also tax incentives:

- Reduction of the rate of value added tax for the import of certain components in the field of renewable energy (6% against 18% for the common law) for the year 2018.
- Reduction of customs duties on components that do not have similar locally manufactured (10%).

These rates are subject to change by the Finance Act each year.

What subsidies are applicable to the generation and sale of renewable energy?

In addition to the subsidies relating to the actions concerned by "the scheme for energy management" provided by Decree No. 2005-2234, there are other subsidies granted by the Tunisian Investment Fund (TIF) created by Law 2016-71 of September 30, 2016. These premiums are:

- Premium of the increase of the added value and competitiveness: equal to 15% of the investment cost, is capped at TND1 million.
- Regional development premium (depends on the development area): it includes two categories:
 - Areas of the "1st group": 15% of the investment cost, capped at TND1.5 million.
 - Areas of the "2nd group": 30% of the investment cost, capped at TND3 million.
- Premium for the development of employability (depending on the development zone): Coverage (for 3 to 10 years) of employer's charges, it is not capped, as well as coverage (for 1 to 3 years) of a part (50%) of salaries, to the extent of TND250 / monthly salary.
- Sustainable development premium equal to 50% of the value of the approved investment components, capped at TND300,000.

The benefit of PV and wind concession projects to the FTI aid remains to be confirmed according to the modalities written in the concession agreement specific to each project.

Moreover, the TIF can participate in the capital of the project company with the following participation rates:

- Maximum 60% of the capital - ceiling of TND2 million if the cost of the project is equal or lower than TND2 million.
- Maximum 30% of the capital – ceiling of TND2 million if the cost of the project is higher than TND2 million.

Other premiums and incentives are provided for energy production projects from renewable energy, which are of national interest, (whose investment cost exceeds TND50 million, or create at least 500 jobs for 3 years).

The projects benefit from the Tunisian Investment Fund of:

- a deduction of profits from the corporate tax base within the limit of ten years;
- an investment premium within the limit of the third of the investment cost including the expenses of the works of intramural infrastructures with a ceiling of TND30 million; and
- the participation of the state in the assumption of responsibility of the expenses of the infrastructure's works.

There are also bonuses granted by the Energy Transition Fund (ETF), which are the following:

- For self-consumption projects with an installed capacity of more than 1.5 kW: a premium of TND1200 /kW installed (ceiling of TND3,000 for residential and TND5,000 otherwise).
- For rural electrification and pumping installations with an installed capacity of more than 10 kW: subsidy of TND1,000 /kW installed (ceiling of TND50,000).
- For the other projects: subsidy of 20% of the investment (ceiling of TND200,000).
- For intangible investments: a premium for feasibility studies related to renewable energy self-generation projects. This premium is of an amount of 70% of the investment with a ceiling of TND30,000.

[Does your country implement a national support scheme with tradable green certificates \(such as guarantees of origins\)?](#)

No, there is no national support scheme with tradable green certificates.

Typical PPA terms and risk allocation

[To the extent corporate PPAs are deployed, how are prices, terms and risks affected?](#)

Topic	Details
Do prices tend to be floating or fixed?	The selling prices to STEG of electrical energy produced from renewable energy facilities are set by order of the Minister of Energy. They differ according to each project, and according to the conditions provided in the specifications if the project is carried out under a concession. It is therefore difficult to know if they are floating or fixed.
What term is typically agreed for the PPAs?	<p>PPAs relating to the sale to STEG of the surplus of electrical energy produced from renewable energies for self-consumption are concluded for a duration of 20 years. It will be renewed by tacit agreement, for a period of one year, unless terminated by either party by registered letter with acknowledgement of receipt at least one month before the end of the current year.</p> <p>(Article 21 of the Minister of Energy's model contract of February 9, 2017).</p> <p>PPAs concerning the sale of electrical energy from renewable energies in order to sell it, in full and exclusively to STEG, are concluded for the duration corresponding to the duration of the authorization. It could be extended in case of extension of</p>

the duration of the Authorization in accordance with the decision of the Minister in charge of energy on the advice of the Technical Commission and will be the subject of an amendment to the Contract.

(Article 4 of the contract -type provided for by the Order of the Minister of Energy of August 30, 2018).

PPAs relating to the sale to STEG of electricity from gas derived from hydrocarbon exploitation concessions, are concluded for a period determined by the conceding authority.

Are the PPAs take-or-pay or limited volume?

PPAs are volume-limited. Each contract determines the volume of electricity to be produced, as well as the volume of surplus energy to be sold to STEG.

For example, in the context of the sale to STEG of electricity produced from gas from hydrocarbon concessions, the volume of electricity sold for each concession is 40 MW.

(aforementioned Decree n°2002-1318 of June 3, 2002).

This is also the case for the production of electricity from renewable energies to meet the needs of local consumption subject to authorization, where the volume of energy is previously fixed by the minister of energy. (Article 14 of the aforementioned Decree No. 2016-1123 of 24 August 2016).

Are there any other typical risks?

Under the PPA relating to the sale to STEG of electricity generated from renewable energy subject to authorization, and in case of recourse of the parties to arbitration to settle disputes, the arbitral sentence rendered will be final, will bind the parties, and will not be subject to appeal. In addition, the provisions relating to emergency arbitration will not apply.

(Article 23 of the Order of February 9, 2017, as amended by the Order of August 30, 2018, mentioned above).

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	It is the generator that assumes the volume risk. In fact, each PPA determines in advance the volume of electricity and also caps the excess energy, which STEG commits to purchase or transport.
Change in law	Within the framework of the PPA relating to the sale to STEG of electricity produced from renewable energies subject to an

authorization, the risk of change in the law is assumed by the two parties to the contract. In the event that a change in the law affects the viability of the project in a substantial way that disrupts the scheme of the contract, the producer must notify the Minister in charge of energy, and both parties must make every effort to obtain an exemption from the effects of the change in the law.

(Article 16 of the standard contract approved by the aforementioned order of February 9, 2017).

In the framework of the PPA concerning the sale to STEG of the surplus of electric energy produced from renewable energies for self-consumption, the risk of change in the law is assumed by the two parties since any modification applies to the contract from the date of its coming into force.

(Article 18 of the standard contract approved by the aforementioned order of February 9, 2017)

Increase / reduction of benefits

There is no general rule applicable in this matter. Nevertheless, in the case of unscheduled interruption of the evacuation of electrical energy by STEG beyond a period fixed by the parties to the contract, the energy generator is entitled to request payment for the Energy not removed.

Market liberalisation (if applicable)

This risk does not exist in Tunisia. For the moment, only the production of energy is liberated in Tunisia.

Credit risk

In general, the credit risk is assumed by the producer. As such, under the contract of sale of electricity produced from renewable energy, the failure by the producer to some of its obligations, including financial obligations, is supported by it and not by STEG. To remedy this, a "Direct Agreement" is created between STEG, the Producer and financial institutions, through which these institutions compensate for the failures of the Producer, and in some cases replace it.

(Article 22 of the contract approved by the aforementioned order of August 30, 2018).

Imbalance power risk

This risk, although minimal, is assumed by the Power Producer, as most PPAs are standard contracts determined by

the Ministry of Energy, which lays down the important provisions (eg transfer price of the energy transferred, volume, conditions for termination of the contract).

Production profile risk

The consumption profile is usually more stable than the production profile.

The risk of overproduction is assumed by the producer, since the maximum volume of energy, or the excess volume of energy transferred to STEG is capped.

Balancing

Does your country operate a balancing responsibility scheme?

No.

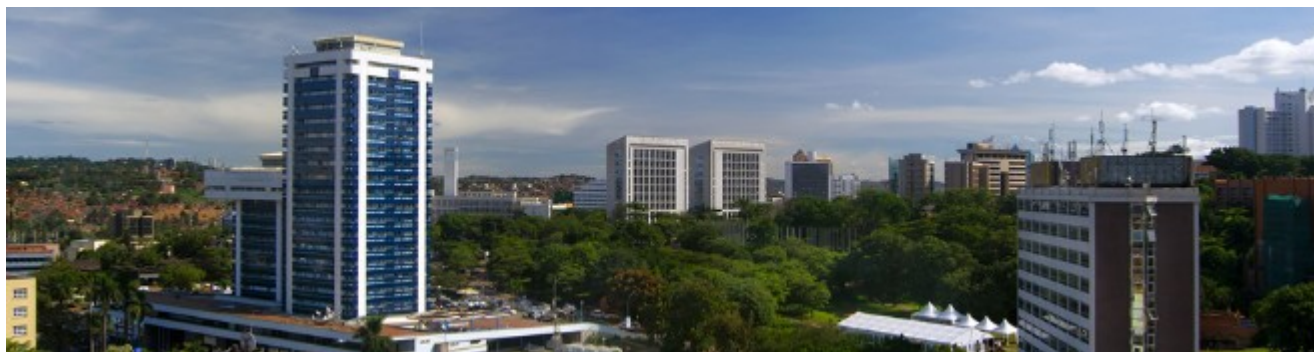
If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

- Combined cycle power plant in Rades "C" with a capacity of 450 MW, at a total cost of TND816.5 million, and financed by the Japan International Cooperation Agency.
- Gas turbine power plant in Mornaguia with a capacity of 624 MW, at a total cost of TND660 million, with external financing from the Islamic Development Bank and the Saudi Fund for Development and self-financing of STEG.
- Photovoltaic plant "Tozeur1" with a capacity of 10 MW, for a cost of TND35 million and financed by KFW.
- Photovoltaic plant "Tozeur2" with a capacity of 10 MW and a cost of TND25 million: the financing loan was signed with KFW in December 2018.



Uganda

Last modified 09 February 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs are uncommon in Uganda.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

No. Corporate owners may not outrightly purchase directly from a facility. Uganda operates a single-off-taker electricity supply model where all electricity is purchased by the Uganda Electricity Transmission Company Limited (UETCL). The UETCL, in turn, sells the power to licensed supply and distribution companies. The corporate owner may then purchase power from the licensed supply & distribution company.

For example, the key distributor; Umeme presently holds a 20 years (up to March 2025) concession to operate assets formerly owned by the Uganda Electricity Distribution Company Limited and the right to supply and distribute electricity within and indicated distribution network in Uganda. Ordinarily, a generator/facility will not be permitted to sale directly to corporate owners in areas covered by a pre-existing supply and distribution license (in competition with Umeme).

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

This is uncommon. The PPA is signed between the generator and off-taker. However, the PPA and particularly the tariff must be approved by the sector regulator (The Electricity Regulatory Authority/ERA).

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Generators are ordinarily to sell to the single off-taker only. However, generators may be permitted to sale directly in areas with no connection to the national grid or a "generation for own consumption" where the entity generates the power for its own purposes.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

- Stipulation of, and regular review of, the Uganda Renewable Energy Feed-in Tariff for sales to the grid of electricity generated by renewable energy systems of up to a maximum capacity of 20Mw as a means of providing a fixed tariff based on levelized costs of production for a guaranteed period of time encourages predictability and transparency in determining the tariff.

- Introduction of a Uniform System of Accounts (USoA) to enable the regulator easier assess an entity's financial performance and foster an understanding of the cost of providing services in the industry for a fair and reasonable determination of electricity tariffs. That is:
 - Considering that the electricity tariffs paid by customers are a composite of the costs incurred in the generation, transmission and distribution of electricity, availability of accurate and consistent information on the cost of providing the electricity supplied, through the USoA, simplifies tariff determination.
 - Due to ring-fencing rules, electricity consumers are protected from bearing undue costs that are attributed to other (non-electricity related) businesses that Electricity Regulatory Authority (ERA) licensed companies may be engaged.
- The willingness by the Electricity Regulatory Authority to engage in bi-lateral discussions regarding applications enables investors to reach workable solutions where varying views are held.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Not at the moment.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Not applicable.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Not applicable.

What subsidies are applicable to the generation and sale of renewable energy?

VAT Exempt status:

- 1 (sc) the supply of deep cycle batteries, composite lanterns, and raw materials for the manufacture of deep cycle batteries and composite lanterns,
- (t) the supply of photosensitive semiconductor devices, including photovoltaic devices, whether or not assembled in modules or made into panels; light emitting diodes; solar water heaters, solar refrigerators and solar cookers.
- (dda) the supply of any goods and services to the contractors and subcontractors of hydro-electric power, solar power, geothermal power or biogas and wind energy projects
- Zero-Rated Supplies

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Not applicable.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Not applicable.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Not applicable.

Balancing

Does your country operate a balancing responsibility scheme?

Not applicable.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

Advised CrossBoundary Energy (CBE) on a proposed establishment of an own use solar generation facility for a beverages manufacturer in Uganda.



United Arab Emirates

Last modified 21 January 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Power generation by private entities is strictly regulated across the Middle East. In certain countries the only means of entering a non-utility scale transaction is under a net-metering scheme. Generally such schemes are arranged on the basis that the owner of a property will also own the power generation plant.

Notwithstanding, we do see corporate PPAs in the Middle East where the energy facility is located on-site or adjacent to the business needing the energy. However the agreement structure tends to be a leasing or hire-purchase structure where the offtaker pays for the power generation plant according to its performance.

Wheeling regulations are becoming more common in the region, thereby allowing energy generated from a renewables facility in one location to be bought by an end user in another, using the national/local grid network. Jordan is perhaps the largest market where wheeling of power takes place.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Most of the Middle East's markets continue to have a state owned utility company at the core of the electricity market. Rarely can purchasers contract with a third party for electricity supply, hence the development of the leasing / hire-purchase model in net metering schemes.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Under the net metering schemes seen in the region, a standardised electricity connection agreement is entered into between the purchaser and the utility. Under the terms of that connection agreement, the utility's meters record the purchasers usage and generation. In the utility's billing cycle, the two figures are netted-off. The lessor / supplier of the power generation plant has a bilateral contract with the purchaser.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

No.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

There are a variety of challenges facing the adoption of renewable energy by corporates in the Middle East, including:

- **Conservatism** - renewable energy is a relatively new development in the region and there has been a reluctance to move away from traditional conventional (hydrocarbon fuelled) generation. However, this attitude is changing. Nevertheless, it may take some time for some countries to fully embrace renewables and for corporates to trust that renewable energy can meet their energy needs in a reliable and affordable manner.
- **Subsidised markets** - a potential issue in some Middle Eastern countries is that big corporate energy consumers subsidise the cost of energy for smaller businesses and/or private consumers through paying higher tariffs. Should the big corporates enter into private PPAs and effectively go "off-grid", this will result in less income for governments to provide these subsidies. As a result, some Middle Eastern governments have been reluctant to allow large scale self-generation projects. Electricity subsidies are however either being reviewed, reduced or removed in numerous Middle Eastern countries, so this issue may fall away.
- **Financial incentives** - electricity prices are already low in many countries across the Middle East. This presents a challenge to the corporate PPA market, as the prices being offered by developers to corporate off-takers must be attractive enough to encourage them to take the risk of investing in a private renewable energy facility. Low market prices also present a test to the developers as they want to see a certain level of profitability in the projects they undertake. Finding the balance between offering a compelling price to a corporate off-taker and making an acceptable profit, could be challenging. As mentioned above, there are indications that electricity subsidies will be reduced in some Middle Eastern countries which may mean this balance becomes easier to achieve as standard electricity prices increase.
- **Grid suitability** - some Middle Eastern countries do not have transmission systems (or grid operators) able to handle a large amount of intermittent renewable energy generation. Whilst some countries have already upgraded their grids to deal with additional intermittent generation (Jordan with its 'Green Corridor', for example), this will be an ongoing task as more capacity is added to the grids (at both local and national levels).
- **Regulations** - the Middle East is dominated by markets where a government owned utility has a monopoly on the offtake of electricity. Only where there are specific laws and regulations allowing for it, may self-generation and corporate offtake projects be possible. Regulations and law enabling the export and sale of excess power to the grid are quite limited in some countries (such as Saudi Arabia), meaning privately developed projects might be a less attractive proposition where power unconsumed cannot be sold.
- **Funding issues** - given the Middle Eastern corporate PPA market is relatively new, finding banks willing to lend directly to projects with somewhat untested structures may prove difficult. This will particularly be the case with international banks where they do not already have a relationship with the developer or corporate. In addition, corporate off-takers might not be willing and or able to give the type of payment security that lenders typically expect on non-limited recourse financed energy projects in the region. It may therefore be that alternative sources of finance and/or funding arrangements need to be considered.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

Net metering regulations for rooftop solar were prepared by the Saudi Arabian electricity regulator in 2018. To our knowledge there were never commercially utilised. A new set of regulations have been prepared, including provisions for wheeling of power. However, until they are published and adopted by the national utility we do not expect to see material changes there.

Elsewhere in the GCC, net metering concepts have generally been adopted and their application is growing. Jordan has perhaps the longest running and most flexible regulatory regime for corporate PPAs.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

We are seeing a range of drivers for green energy.

For global companies, commitments made under programmes such as RE100 are pushing change.

For other companies, the long term economic benefit of hedging a substantial aspect of their cost base by adopting self-generation is substantial.

What are the key local advantages of the corporate PPA model which can benefit our clients?

Energy security and the availability of consistent 'quality' electricity at cheap prices are key, especially so in remote areas where energy supply may be unreliable and of poor quality.

What subsidies are applicable to the generation and sale of renewable energy?

Net metering is the policy tool most often adopted by governments in the region as a means to encourage self-generation.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Generally not, although there are certain projects that we understand have attempted certification.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Fixed.
What term is typically agreed for the PPAs?	Up to 25 years, however 15 year contracts may be more common (and acceptable to the purchaser).
Are the PPAs take-or-pay or limited volume?	<p>Under the net metering models across the region, plants have tended to be sized to prevent substantial over-generation. The reason being that under the net metering schemes, credits against future purchases of power from the national utility tend to be time-limited, making a consistently positive position vis-à-vis the national utility uneconomical.</p> <p>However, with the roll-out of battery technology, we expect the scale of rooftop solar to be revisited and the percentage of power taken from the grid by companies with rooftop solar to reduce.</p>
Are there any other typical risks?	<p>There is a lingering regulatory risk in relation to solar leasing and hire-purchase models in the region's net metering models. Such models are designed for self-generation as opposed to third party generation.</p> <p>This risk allocation has been addressed through a compulsory purchase of the plant.</p>

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Generally with the generator
Change in law	Balanced
Increase / reduction of benefits	Balanced
Market liberalisation (if applicable)	Balanced
Credit risk	Generator
Imbalance power risk	Not applicable
Production profile risk	Generator

Balancing

Does your country operate a balancing responsibility scheme?

No.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

No.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

A range of corporate PPAs have been signed in net metering markets. This is particularly the case for manufacturing, food processing and logistics facilities.

Recently we have seen an increase in the number energy service contracts signed which have included rooftop as a means of meeting KPIs.



United Kingdom

Last modified 16 December 2020

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Corporate PPAs have become more prominent in recent years due to the rise of wind and solar in GB and the convergence of a number of market conditions. The closure of the Renewables Obligation (RO) scheme to new participants from 31 March 2017 has meant that generators are seeking alternative financing options. Corporate PPA prices are increasingly beating wholesale electricity prices. cPPAs have become an attractive prospect for corporate buyers who increasingly want to be seen to be acting sustainably. cPPAs offer corporates a hedge against future volatile power prices by securing a fixed energy price for a fixed period. Major corporates in the GB Corporate PPA market now include Shell, M&S, Unilever, Sainsbury's, Nestle, McDonalds, Lloyds and HSBC. In addition to this, an increasing number of corporates are becoming members of RE100, a group of companies that have pledged to work towards meeting 100% of their energy needs from renewable sources.

The electricity and gas markets in GB are regulated by the Gas and Electricity Markets Authority (GEMA), operating through the Office of Gas and Electricity Markets (Ofgem). Ofgem makes decisions on a wide range of regulatory matters, including price controls and enforcement. The regulatory framework and the aggregated nature of the electricity grid meant that the large majority of cPPAs in GB have been concluded using the "sleeved" structure or so-called "physical" PPAs, where electricity is physically settled. Although GB has seen synthetic PPAs, where no electricity is physically delivered, but the price differential between an agreed price and the wholesale electricity price is paid (i.e. financial settlement) (e.g. M&S), this approach has not yet been widely adopted.

The structure of sleeved cPPAs is intended to mitigate risk for the corporate buyer by passing through balancing obligations and liability to a utility. A sleeved cPPA involves a direct agreement between the corporate buyer and the generator to purchase all or some of the electricity generated at a pre-determined price. All too often, the corporate does not have the capability to manage the actual power offtake, including necessary balancing services. The corporate buyer, therefore, additionally enters into a bilateral agreement with a utility, who will then act as the corporate's agent in managing the offtake as well as taking care of all balancing services and grid access. This cPPA offtake will be credited by the utility against the corporate's electricity requirements, and the utility will then top it off during any periods where the corporate's demand is higher than the generator's actual output. The utility will charge a management fee for its services in relation to the cPPA called the "sleeving fee".

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Ofgem allows both direct and sleeved PPAs as well as synthetic PPAs. Direct PPAs have evolved as a way for corporates to contract directly with power generators for the power produced from one or more specific facilities. A variety of suppliers are active in the GB market, and consumers are free to change supplier with minimal disruption. Under the current regulatory structure, end consumers can only buy electricity from a single supplier. Nevertheless, Ofgem has recently performed a consultation on the option of allowing a single consumer to have multiple suppliers.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Agreements involving third parties are possible. In such PPAs, the third party typically acts as an intermediary between the generator and the buyer (also referred to as an offtaker). The renewable power produced by the generation site is not directly delivered to the corporate's demand or consumption location, but through the third party (typically a utility company) on the existing power grid. Since renewable generators (especially wind and solar) cannot guarantee output as it fluctuates with weather conditions, corporates require a "sleeving" arrangement with an energy utility company whereby the supply from the renewable generator is topped up with other energy. This structure provides a stable energy supply and is, therefore, commonly used in GB.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Direct selling is in principle permitted in GB. The activities of generation and supply of electricity, however, require a licence, although *de minimis* exemptions for both are available which may apply to small scale generators.

All licenced generators are subject to the Electricity Generation Standard Licence Conditions (SLC). Exemptions can be granted for on a class or individual basis. Individual exemptions may be granted by the Secretary of State (acting through BEIS) under s 5(1)(a) of the Electricity Act 1989.

Schedule 2 to the Electricity (Class Exemptions from the Requirement for a Licence) Order 2001 sets out four licence exemption classes for generation:

- Class A applies to persons who operate small generators which provide less than (i) 10 MW capacity or (ii) 50 MW where a generation has a declared net capacity of 100 MW;
- Class B applies to persons who generate power from offshore generators, provided that these only supply electricity to offshore installations;
- Class C applies to persons who provide power from generators connected to the grid on 30 September 2000 and are not normally capable of exporting more than 100 MW; and
- Class D applies to persons who do not provide power except from generators connected to the grid on 30 September 2000, provided that the generators are not subject to central despatch.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Brexit sheds legal and contractual uncertainties on the future of PPAs in GB. It remains unclear whether the EU Clean Energy Package will be implemented or whether GB will adopt a new regulatory framework. In the case of a hard Brexit, where GB leaves both the EU and EEA, GB would be released from its renewable energy targets under the Renewable Energy Directive (Directive 2009/28/EC and Directive (EU) 2018/2001) and from EU state aid restrictions.

Nevertheless, the Government has indicated that it will transpose existing EU state aid law into domestic law upon withdrawal by virtue of an implementing act under the European Union (Withdrawal) Act 2018. Under the current draft State Aid (EU Exit) Regulations 2019, laid before Parliament on 21 January 2019, the Competition and Markets Authority (CMA) will be the responsible authority for EU state aid provisions and decisions implemented into UK law. The CMA will generally continue the role of the Commission in its authorization and investigation powers, and state aid approved by the Commission or given under a block exemption prior to Brexit will not need to be approved again by the CMA.

The Government has prepared the Electricity (Guarantees of Origin of Electricity Produced from Renewable Energy Sources) (Amendment) (EU Exit) Regulations 2018, which upon a no-deal withdrawal will ensure that GoOs issued in EU Member States continue to be recognised in GB. Furthermore, GB will continue to issue GoOs to eligible GB renewable generators (REGOs).

A notice issued by the Commission dated 7 March 2018, however, states that following a no-deal withdrawal, GoOs issued in GB will cease to be recognised in the EU-27 Member States.

More generally, EU energy law will cease to apply to GB and its electricity markets will be decoupled from the Internal Energy Market (IEM), which means that cross-border flows of electricity will no longer be governed by EU legislation. GB has sought to mitigate this

impact by enacting the European Union (Withdrawal) Act 2018, which will transpose all EU law into UK national law. In the case of a no-deal withdrawal, however, the inability to enforce any necessary cooperation with EU institutions may render these laws ineffective to an extent.

In summary, there may be some scope for GB to diverge from the current EU renewables regime over time, however, GB may be expected to voluntarily align with this, and such development may be covered by a future cooperation or trade agreement.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

The EU Clean Energy Package introduces recast legislation, including the Energy Efficiency Directive (Directive (EU) 2018/2002), the Renewable Energy Directive (Directive (EU) 2018/2001) and Energy Union Governance Regulation (Regulation (EU) 2018/1999), which are designed to cover the electricity and renewables markets from 2021 to 2030. The Energy Efficiency Directive sets an indicative target for energy efficiency of 32.5% by 2030. The Renewable Energy Directive increases the consumption target from renewables to 32% by 2030, and the target to at least 14% of transport fuel originating from renewable sources by 2030. GB has not yet consulted on the implementation of this, and it remains unclear whether GB will voluntarily adopt the Renewable Energy Directive.

In January 2019, BEIS published GB's draft National Energy and Climate Plan (NECP) for 2021 to 2030. This does not contain new policy announcements, however, it acknowledges that despite GB's plans to leave the EU, it is still seeking cooperation with the EU to support the delivery of clean, cost-efficient and secure energy supplies.

Whilst the EU is a party to the Paris Agreement, the UK (as other EU member states) is itself a signatory and as such will continue to be bound by its own decarbonization commitments under its Nationally Determined Contributions post-Brexit. Material changes to the UK's commitment to addressing climate change are, therefore, not expected.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Corporates in GB are developing a growing appetite for green PPAs, in recognition that investing in clean energy will help to improve green credentials, cut operational costs and contribute significantly to future-proofing their organizations in competitive markets. Rapid cost reductions in wind and solar power have made it less expensive to generate electricity from these technologies than from new coal or gas plants. As a result, there has been a great increase in wind and solar projects and this trend is expected to continue to grow.

Corporates in GB are increasingly joining voluntary renewable certification schemes, such as the RE100, an initiative of companies committed to consuming 100% renewable energy. Notable UK members of the RE100 include Burberry, Gatwick Airport, Heathrow Airport, H&M, and Tesco.

According to "Energy Trends March 2019" published by BEIS [1], renewable electricity generation in 2018 was 111.1 TWh, a record high and increase of 11.8% compared to the previous year. The share of renewables in electricity generation increased by 3.9% from 2017 to 33.3% and renewable electricity capacity was 44.4 GW at the end of 2018, a 9.7% increase compared to the previous year. According to energy market analysts EnAppSys, based on recent trends, renewables are expected to be the most dominant source of power in GB in 2020. With UK offshore wind farms now providing a relatively low-cost source of power compared to historic levels, wind is set to continue to be the primary source of renewable energy generation. These statistics suggest the significant potential of cPPAs in the near future.

In GB, there are no political incentives for corporates to enter into cPPAs, which are generally being concluded on a voluntary basis in GB. Whilst not a financial incentive per se, the ability for corporates to hedge against market price fluctuations over the long term is a key driver for many corporates to enter into cPPAs. Furthermore, subject to negotiation, corporates may secure long-term electricity prices at below-market levels.

[1] Energy Trends March 2019

What are the key local advantages of the corporate PPA model which can benefit our clients?

All EU Member States are obliged to have a Guarantee of Origin scheme for renewable source electricity, which has been implemented in GB as the Renewable Energy Guarantee of Origin (REGO), of which Ofgem is the system administrator.

Unlike some Member States, GB allows for the issuance of REGOs to supported generators. This has ensured a liquid REGO market in GB, and many cPPAs use REGOs/GoOs as evidence of the transfer of renewable benefit from the generator. GB is, however, reducing support offered to generators, most recently closing its Renewables Obligation scheme to new capacity on 31 March 2017.

What subsidies are applicable to the generation and sale of renewable energy?

The primary subsidy for generators with capacity above 5 MW is the Renewable Obligation, however, this was closed to new participants on 31 March 2017 applies. To continue the support of low-carbon electricity generation, the Government introduced contracts for difference (CfDs) for eligible generators, with the fixed "strike" price being set by auction. The successful bidder enters into a contract with the Low Carbon Contracts Company (LCCC) for a 15 year period.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

In GB, the Government has gradually cut back support schemes for onshore renewables as development costs for renewable generators sink, allowing for the first subsidy-free renewable projects.

The Renewables Obligation scheme detailed above set an obligation on electricity suppliers to source a proportion of the electricity that they supply to costumers from renewable sources. Suppliers evidence this through the purchase of Renewable Obligation Certificates (ROCs) from eligible generators. The scheme has been closed to new participants on 31 March 2017, and projects that already receive support under the ROC scheme will continue to do so until either (i) the end of a particular project's lifetime or (ii) in 2037 when the scheme fully closes.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	With regards to pricing agreements, there are several possible options: fixed prices, step prices adjusted over the term, and price indexation. Hybrid forms of these variants are possible. Given the private nature of contracts, it is difficult to generalise on commonly used pricing arrangements across GB market. Corporates have, however, been prepared to offer higher fixed prices which can be attractive to generators. As cPPAs can offer an option to hedge against electricity market prices, a fixed price element is a common feature of a synthetic cPPA.
What term is typically agreed for the PPAs?	The typical term of PPAs is from 10 - 15 years, however, this may vary depending on the interests of the parties.
Are the PPAs take-or-pay or limited volume?	PPAs have generally been based on the take-or-pay principle.
Are there any other typical risks?	Businesses that trade internationally or have operations overseas are likely to be exposed to foreign exchange risk

arising from volatility in the currency markets. One of the typical cPPA risks is, therefore, currency exposure, with EU cPPAs being commonly priced in Euros. Concerns about currency fluctuations between sterling and the Euro as a result of Brexit are, therefore, key considerations for parties to UK-EU27 cPPAs.

Change in law is a common risk, resulting from the legal nature of GoOs. Any legislative change, binding court judgment or changes to network codes which changes either the legal nature of the GoO or more broadly changes cost sources, including changes to the balancing regime or transmission and distribution costs, pose a risk of changing the commercial benefit of the transaction for the parties. The implications of Brexit will need to be carefully considered for change in law provisions.

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Where a PPA is based on a fixed volume delivery to the offtaker, the generator bears the risk. With a pay-as-produced PPA, the offtaker bears the risk, however, this may be mitigated through the use of a sleeving agreement with an electricity supplier which may then cover any shortfall.
Change in law	The PPA will usually include change in law provisions, as this will usually prevent the PPA from being frustrated in the event of a significant legislative or network code change or court judgment. The risk of such a change in law is balanced against the party receiving the GoOs or renewable benefit, however, a change in law clause seeks to reopen the agreement in order to rebalance the original economic intentions of the parties.
Increase / reduction of benefits	Given the private nature of contracts, it is difficult to generalise on this across GB market, however, where the reduction of benefits is caused by a change in law, this may be covered by a change in law clause.
Market liberalisation (if applicable)	GB liberalised its electricity market through the Electricity Act 1989. As such, this is not a risk for cPPA parties.
Credit risk	Given the private nature of contracts, it is difficult to generalise on this across GB market, however depending on the relative strength of the parties, one party may wish to seek performance security from a party with lower creditworthiness. As low creditworthiness most strongly affects the party obliged to pay, the risk is balanced against the party expecting payment.
Imbalance power risk	Balancing in GB is done by Elexon in accordance with the Balancing and Settlement Code (BSC). There is, however, no restriction on either party to a cPPA acting as balancing party. As the costs of balancing energy following under or over

delivery may be high and may, therefore, significantly increase the costs of the party bearing that risk, a party which is better placed to bear this risk should be selected. This may be the case if, for example, it has existing energy sources which can be used for correcting the imbalance in its portfolio.

Production profile risk

The consumption profile is usually more stable than the production profile. Usually this risk is allocated to the offtaker under a cPPA and the offtaker acquires any missing volume from the market. Under the cPPA, a third party may also take responsibility for providing the missing electricity in order to manage this risk.

Balancing

Does your country operate a balancing responsibility scheme?

Yes.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

As noted above, balancing is done by Elexon in accordance with industry code BSC. The BSC sets out that individual generation and demand assets (BM Units) may balance themselves or act through a "Lead Party". It leaves open whether a Lead Party or BM Unit must be a generator or supplier, and as such it would be prudent to expressly designate the function in the cPPA. Regulation (EU) 2017/2195 establishing a guideline on electricity balancing applies directly to the GB energy market, however, this is largely implemented in the BSC.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

GB's first offshore wind corporate PPA was signed by Danish wind giant Ørsted with Northumbrian Water for 30% of the electricity generated from the 573 megawatt (MW) Race Bank Offshore Wind Farm. It was announced at the end of February 2019 that a 10-year long-term PPA had been signed between the two parties. This is the first of its kind corporate PPA ever signed in GB and is an expansion of an existing renewable electricity supply agreement between the two companies which began in April of 2018. From 1 March 2019, Northumbrian Water started sourcing 30% of its electricity needs from the offshore project. Ørsted said it would also provide balancing services in respect of the wind output so that the electricity can be delivered to Northumbrian Water under their existing supply agreement signed in 2018.

Danske Commodities (DC) has signed an offtake deal with its parent Equinor ASA (EQNR) for the output of the latter's 30 MW Hywind Scotland floating wind farm. The Danish energy trader said that the 20-year PPA will make it the sole offtaker, taking over the balancing and trading of the wind farms' output. Additionally, DC has signed a PPA for the output of a 126 MW portion of the Sheringham Shoal offshore wind farm in UK waters. This 15-year PPA is effective as of 12 July 2019. Furthermore, DC has signed a 15-year PPA with the Dungeon offshore wind farm in GB. Effective 16 July 2019, DC will take over balancing and trading of 281 MW, equivalent to 70% of the wind farm's production. This is the company's fourth long-term PPA in GB market and the third offshore wind PPA in less than a month, following the 20-year PPA with Hywind Scotland wind farm and a 15-year PPA with GB offshore wind farm Sheringham Shoal.



United States

Last modified 24 March 2021

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

Many private companies in the United States have altered the way they procure power significantly in the last decade. Traditionally, power was obtained by corporate buyers from the local utility without consideration of the sources of such power. Public commitments to use renewable or “green” energy have driven a movement toward the direct procurement by commercial and industrial companies of renewable energy from independent power producers in the wholesale market. Such commitments came first from tech companies but have spread across many sectors, from retailers to industrial manufacturers. In 2020, the Renewable Energy Buyers Alliance reports that 10.63 GWs of corporate deals were announced in the US up from 1.53 GWs in 2016. The EPA’s [Green Power Partnership](#), a voluntary program, now sets minimum usage for its members from 7% to 50%. Commitments to go 100% renewable or even carbon negative have become more common - the RE100 reports that 79 of its 260 members are in the United States.^[1]

Multiple options are available to a corporate offtaker looking to achieve its green power goals.

Renewable Energy Credits

Historically, corporate buyers have purchased and retired Renewable Energy Credits or RECs separate from power procurement to demonstrate the reduction of carbon emissions. This strategy is still being employed. The NREL reports about 197,000 customers procured about 68.7 million MWh of unbundled RECs in 2019.

Self-Supply

Another option for corporate and industrial buyers to gain access to renewable energy is through the ownership of on-site generation. This is not achievable at every location since only certain places in the US are suitable for solar or wind, for example. This approach also depends upon the buyer having sufficient space and a facility that can support on-site generation.

Traditional PPA with an Independent Power Producer

A Traditional PPA involves the direct purchase of energy from a generation project and the physical delivery of energy from such project. The buyer takes title to the power at the delivery point. This requires the ability to physically interconnect either directly or through the local transmission grid. Generation equipment may be installed on-site, including wind turbines or rooftop or ground-mounted solar facilities. The transaction usually includes the purchase of RECs along with the energy. Under existing regulations, physical transactions directly with wholesale producers are not permitted in all locations.

Virtual PPA with an Independent Power Producer

Virtual PPAs or financial PPAs are based on a contract for the purchase of energy generated by a renewable project which is then physically delivered and sold into the regional wholesale market in which the renewable project is located. The project receives a variable market price from the regional market. If the contract price exceeds the market price, the corporate offtaker pays the project the difference. In this way, the power project is assured that it will sell power generated at a fixed price which supports development and financing of the project. The transaction is often in the form of a contract for differences or a fixed-for-floating swap. A Virtual PPA also

typically includes the purchase of RECs. Divorcing the transaction from the physical delivery of energy provides broader flexibility to corporate offtakers in addressing practical constraints and regulatory restrictions which can limit potential transactions.

Green Tariffs

Bundled products are offered by utilities in some locations including green power and RECs. Retail products can be market-based or linked to a specific renewable project which are sometimes called "Green Tariffs."

[1] RE100 is an association sponsored by The Climate Group that include companies making such a commitment such as Google, Bank of America and Facebook. See RE100's 2020 annual progress report [online](#).

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

The options available to a corporate buyer vary based on the location of the corporate buyer's facility and the project and the transaction type. Independent System Operators and Regional Transmission Organizations operate regional wholesale markets in approximately two-thirds of the US. Independent power producers in these regions own and operate generation projects and sell power via the established market. Not all states take the same approach and various aspects of the wholesale or retail power market may be deregulated and competitive or regulated.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

No. Independent power producers sell to traditional utilities, municipal utilities or regional cooperatives at wholesale who then engage in separate retail transactions with customers. IPPs in some markets can also engage in wholesale transactions directly to corporate buyers or to aggregators representing a group of retail customers.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Direct transactions are permitted in some locations. Independent power producers typically must obtain certain permits or make certain filings in connection with the generation and sale of power as well as environmental and land use considerations at the project site. Requirements may apply at both the federal and state level and vary widely by state and county.

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

Market Price Risk

Corporate buyers entering into a Virtual PPA face the risk that wholesale market prices for energy will decline below the contract price or strike price such that significant amounts will be payable by the corporate buyer to the generator. Virtual PPAs may include terms which require the generator to share in potential revenues or limit potential market price risk with a floor or a collar.

Counterparty Credit Risk

Many generators are today offering Virtual PPAs as to a portion of a renewable generation project such that the project will by necessity have other customers. The impact of a breach by such other customer could put the economic viability of the project in question or prompt action by the financing parties. Thus, in addition to the credit risk of the generator, each customer bears some credit risk as to the other customers of the project.

Changing Regulation

The regulation of the energy industry in the US continues to change based on high-level policy considerations such as the appropriate level of regulation or the integration of new technologies. Frequent changes can have a negative impact on development. For example, there are certain federal incentives that benefit owners of renewable generation assets (known as Production Tax Credits or PTCs and the Investment Tax Credits or ITCs). Monetizing these existing incentives represents significant economic value which has spurred development over time. However, they are typically extended or reauthorized for a limited term of a few years such that generators are often racing the existing sunset date and development decreases as they approach.

Accounting Treatment

Virtual PPAs may result in mark-to-market or derivative accounting treatment on the books of the relevant corporate buyer.

Technology Risk

By electing to purchase power from a specific generation facility under a Virtual PPA or a traditional PPA, the reliability of supply to that corporate buyer then becomes subject to the performance of the particular technology and equipment selected and maintained by the generator.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

With the election of a new President in the US in 2020, there is an expectation that legislation in support of the development of renewable generation projects and related technologies like energy storage may be forthcoming. This could be in the form of extended or expanded federal tax credits or policy or new legislation, directives to federal agencies or executive orders. This is in addition to the requirements and regulation of the energy industry that applies at the state level based on the location of the project.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

The voluntary undertaking by private companies to purchase a certain minimum amount of renewable power to satisfy its energy requirements has become widespread. Public pressure continues to mount on commercial and industrial companies to develop a strategy to limit their contribution to carbon emissions via energy usage and industrial processes.

What are the key local advantages of the corporate PPA model which can benefit our clients?

The purchase of RECs bundled with renewable energy in whatever form allows corporate buyers to “claim” the use of renewable or green energy. Once claimed, the RECs are then considered “retired.” On-site generation can shield corporate buyers from reliability issues on the bulk system.

What subsidies are applicable to the generation and sale of renewable energy?

See discussion above regarding federal tax credits. In addition, some states also have tax credits or other incentives available to support the generation or consumption of renewable power or the development and use of related technologies like energy storage.

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

Throughout the US, there are many regional electronic REC tracking systems to facilitate the creation, management, and retirement of RECs. Users establish virtual accounts to allow the receipt and transfer of RECs. The Center for Resource Solutions offers “Green-e” products which are subject to third-party verification and detailed standards as to additionality and other environmental considerations.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Fixed prices for traditional PPAs and a contract for differences or a fixed-for-floating swap for Virtual PPAs.
What term is typically agreed for the PPAs?	7 to 10 years.
Are the PPAs take-or-pay or limited volume?	Limited volume.
Are there any other typical risks?	Corporate buyers typically enjoy some protections against delays in construction in the form of liquidated damages and construction deadlines subject to extension for <i>force majeure</i> .

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	The offtaker typically receives some compensation for a consistent and material shortfall in performance.
Change in law	Agreements vary. The generator sometimes gets some risk-sharing or other protection for changes in law.
Increase / reduction of benefits	Neither party. Incentives or benefits such as tax credits or RECs are typically allocated to a specific party and any changes impact only the designated party.
Market liberalisation (if applicable)	Not applicable.
Credit risk	Each party bears credit risk as to the other party. For this reason, credit support or creditworthiness requirements typically apply.
Imbalance power risk	Varies by transaction type and delivery point.
Production profile risk	Buyer.

Balancing

Does your country operate a balancing responsibility scheme?

Not applicable.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

No information at present.



Zimbabwe

Last modified 21 September 2022

PPA structures and parties involved

To what extent are corporate PPAs presently deployed and what sort of structure do they take?

The electricity market structure in Zimbabwe comprises one utility company, the Zimbabwe Electricity Supply Authority (ZESA). This is a state-owned entity whose task is to generate, transmit and distribute electricity in Zimbabwe. The functions of ZESA are performed through the Zimbabwe Power Company (ZPC), the investment vehicle in the generation of electricity, and the Zimbabwe Electricity Transmission and Distribution Company (ZETDC), the body responsible for the transmission and distribution of electricity. The Zimbabwe Energy Regulatory Authority (ZERA) regulates the procurement, production, transportation, transmission, distribution, importation and exportation of energy derived from any energy source in Zimbabwe. ZERA is responsible for approving power purchase agreements (PPAs) between IPPs and ZETDC (the Utility) and it provides the criteria for tariff approval through a Tariff Code.

Corporate PPAs (cPPAs) in Zimbabwe are, on the balance, not widely deployed. They have been developed over time in an ad hoc manner, mainly by large corporate buyers (eg mines and cement plants) who wish to secure reliable electricity supply as a result of persistent power shortages for several years, resulting in regular and disruptive load shedding.

The most common structure for cPPAs in Zimbabwe is the Private Wire/Direct Wire structure, whereby the generator/IPP sells electricity directly to a corporate buyer, rather than being notionally passed through the national power grid.

Some projects have also been structured as Physical PPA/Wheeling PPA/Sleeved PPAs (or hybrid/substructure thereof), whereby the IPP/generator enters into an agreement with ZETDC to sell power to ZETDC and simultaneously, a corporate buyer enters into a contract with ZETDC to purchase all the power generated by the generator. ZETDC thus "sleeves" the power through the grid and "sells" power to the corporate buyer at its site. ZETDC will perform a balancing service under this PPA (renewable energy is intermittent) by topping up the renewable electricity with extra if needed (for example when the generator is not generating). ZETDC then charges a wheeling fee.

Alternatively, the corporate buyer and IPP/generator can negotiate a PPA directly and then present the PPA to ZETDC, the electricity supplier. ZETDC then:

- as the buyer, enters into the PPA with the IPP/generator (seller); and
- as the seller, enters into the same PPA with the corporate buyer but with a mark-up on the price to cover its cost.

These have been somewhat successful in helping ZETDC pay for imported electricity in foreign currency, which is currently in shortage.

Other IPPs and corporate buyers have also elected to structure their PPAs in the form of a hire purchase agreement, or equipment lease, with the underlying price being linked to the energy produced by the applicable system. This is mainly done to address the requirement of obtaining a license for the sale of power.

Note: As an alternative to entering into a PPA with a renewable generator, some corporates may also choose to build a renewable energy plant onsite eg on the rooftop of, or alongside, a factory or office. In this case, the corporate will self-fund the installation itself, or take out a loan.

Do the country's regulators allow corporate owners to purchase (1) directly from a facility, or (2) from a choice of suppliers?

Yes.

Other than the generator and the off-taker, are any third parties commonly party to the PPA structure (e.g. a utility or other market agent)?

Yes, the utility ZESA as outlined above. Currently, there is no government support given by the government of Zimbabwe. There is, however, proposals to involve those government entities who can guarantee balance of payments in foreign currency, eg the Ministry of Finance and Economic Development, and/or the Reserve Bank of Zimbabwe.

Is a generator permitted to sell electricity directly to an end user? If so, do they require a licence or other form of authorization?

Yes, in principle.

No license is required for electricity generation, transmission, distribution, or the supply of electricity if less than 100 kW.

On the other hand, in terms of the Electricity Act [Chapter 13:19], every undertaking which generates, transmits, distributes or supplies electricity in excess of 100 kw, is required to hold a generation license, transmission and bulk supply license or distribution and retail license. As a practise and policy, the Electricity Licensing Guidelines, 2015, are used to guide persons wishing to apply for a license to provide electricity utility services in terms of the Electricity Regulatory Act [Chapter 13:23] (ERA).

Challenges

What are some of the technical, political, financial or regulatory challenges to corporations adopting green energy in the short/medium term in your country and how have these challenges been overcome (or how can they be overcome)?

The National Renewable Policy published in August 2019 summarizes challenges facing IPP/generators and the whole energy sector, in particular renewable energy sector, as follows:

Financial

- Limited incentives like electricity banking, trading, net metering for third-party access.
- While solar products are duty free, the country does not have fiscal incentives in place for investors, such as feed-in tariffs, tax rebates and renewable energy certificates, which have proven to be key drivers of renewables in European markets.

Regulatory and Administrative

- Limited clear tariff structure for renewable energy projects. Without clear tariff structures for grid-connected green projects, conflict is always likely between IPPs and the Zimbabwe Energy Supply Authority (ZESA), which owns the grid and is also a competitor.
- Inadequate regulatory framework for third-party sale of power.
- Uncertainty with regards to PPA structures as well as the procurement framework.
- High production costs affecting the economic viability of renewable energy projects.
- Inadequate institutional structures dedicated to renewable energy projects.
- Absence of clarity on the approvals and timelines for development of renewable energy projects and the responsible agencies for the same.
- Lengthy and complex administrative approval processes (which may take as much as 12 months in some cases).
- Land acquisition related issues, especially for projects that need large tracts of land.

Other reported challenges generally are as follows:

- In general, Zimbabwe has a high political risk profile, which makes it an unattractive destination for IPPs who need foreign funding to undertake projects in Zimbabwe. Where such funding is available, the insurance risk premiums may be prohibitive.
- Technical challenges relating to poor quality of (mainly) solar equipment and technologies imported by IPPs, including lack of skilled installers of most green energy technologies, resulting in high failure of such equipment.
- Shortage of foreign currency in Zimbabwe in general has been an insurmountable challenge for many IPPs. First, a financial model not denominated in foreign currency (ie in local Zimbabwean currency) is difficult to justify when most investments require foreign currency. This is compounded by the fact that ZESA/ZETDC do not pay for power that has been supplied to them from domestic sources in foreign currency, notwithstanding that the tariff set in a PPA (in particular in Physical PPA/Wheeling PPA/Sleeved PPAs) is in foreign currency. As such, many PPAs have become “unbankable.”
- Due to lack foreign currency in Zimbabwe, there’s no guarantee for most investors that they will be able to repatriate their profits and capital from Zimbabwe.
- The above also gives rise to domestic currency to foreign currency convertibility issues, meaning that even if the investor has adequate local currency to import equipment, or repatriate its profits, there is simply no foreign currency liquidity in the market.
- Policy uncertainty regarding whether or not government will grant support to IPP power projects in the form of an IPP implementation agreement to guarantee balance of payments or payments in foreign currency. It’s reported that ZESA imports USD20 million worth of electricity from neighboring countries, mainly Zambia and Mozambique. Ironically, up to 30% of the imports come from IPPs in those countries, compared to only 1.5% domestic IPP contribution. This amount could be used to give IPPs the necessary guarantees in foreign currency they require to unlock foreign investor funding. This lack of support has, therefore, left many PPAs in limbo.
- There’s also a perception that because the utility is also a major player in the energy market, there’s a general difficulty with negotiating PPAs with them as they most often than not have entrenched positions based on the prevailing law eg refusal to pay for power in foreign currency.

Practical solutions

- As stated previously, cPPAs are seen as increasingly allowing IPP/generators the opportunity to negotiate directly with corporate buyers, thus bypassing some of these challenges mentioned above, particularly where the corporate buyer is an exporter and therefore has its source of foreign currency.
- Further, if government support were to be given to guarantee payments in foreign currency, that may unlock funding from investors who will have a recourse in case of non-payments.
- Codifying incentives in law may also assist in improving viability of renewable energy projects. For instance, the National Renewable Policy suggests the following incentives in respect of sale of power to third-party grid access:
 - Indiscriminative open access to the grid to be granted to renewable energy producers or beneficiaries.
 - Priority dispatch to be granted to renewable energy producers.
 - An Energy banking facility to be extended by the utility for solar and wind generators.
 - Utility and the IPPs to enter into wheeling-agreements based on agreed models. This is seen as a nod to cPPAs in their many varieties.
 - Any wheeling agreements to be approved by ZERA within four months from the date of notification of the policy.
 - A net metering facility to be extended to beneficiaries, namely the consumers availing net metering facility.

Regulatory changes

Are there any anticipated regulatory changes which will alter the regulatory landscape for corporate green energy and corporate PPAs?

As stated above, a National Renewable Energy Policy was published in August 2019 to signify the possible change in law that is contemplated with particular reference to renewable energy. The report can be accessed [here](#).

It's under consideration that the Utility and the IPPs will be able to enter into wheeling agreements based on agreed models. This is seen as a nod to cPPAs in their many varieties.

Incentives and benefits

What is the corporate appetite for green energy, including any political or financial incentives available to corporates to adopt green energy?

Incentives currently available in the energy sector for corporates in renewable energy are as follows:

- National Project Status (NPS), which is envisaged in term of section 141 of the Customs and Excise (General) Regulations, 2001 (SI 154 of 2001) and is obtainable for projects that have national impact, bring benefit to the economy and create employment. Incentives available under this regime include:
 - duty rebates on importation of raw materials;
 - a tax holiday and an exemption from non-residents tax on fees payable in respect of any services relating to the project;
 - leeway to motivate for and negotiate additional fiscal incentives with the Commissioner of Domestic Taxes at the Zimbabwe Revenue Authority (ZIMRA) as well as non-fiscal incentives with the various line ministries.
- Duty Free imports on solar panels, solar equipment, electric motors, energy savers and lithium-ion batteries; and net-metering.
- The recently enacted Zimbabwe Investment Development Act (ZIDA) further provides wholesale incentives available to investors licensed under Special Economic Zones (SEZ). Licensed foreign investors can obtain SEZ status for their investment project, including the following incentives:
 - zero-rated Corporate Income Tax for the first five years of operation of the SEZ with a corporate tax rate of 15% applying thereafter;
 - duty free importation of capital equipment;
 - special Initial allowance of 50% of cost from year one and 25% in the subsequent two years;
 - exemption from non-residents withholding tax on fees for services that are not locally available;
 - an exemption from non-resident's tax on royalties; zero-rated Capital Gains Tax; and
 - inputs which include raw materials imported for use by companies set up in the SEZs, are imported duty free.
- An industrial, commercial or residential customer who generates electricity from renewable energy sources and supplies that to the distribution network (the Participant) can obtain a reduction in their electricity bill in terms of the Electricity (Net Metering) Regulations Statutory Instrument 86/ 2018. The Participant's reduction is in the form of a credit of 0.9 kWh in each billing period for every kWh that the Participant exported to the grid. A Participant is not entitled to claim monetary compensation from the distribution licensee for energy (kWh) that has been exported to the Licensee.
- Furthermore, the reconciliation procedures and conditions for perpetual roll-over of excess generation or net exports are to be done on a monthly basis, allowing the licensee to roll over net exports from previous monthly billing periods and use these to offset any future consumption bills of the Participant.

What are the key local advantages of the corporate PPA model which can benefit our clients?

As mentioned above, the most common structure for cPPAs in Zimbabwe is the Private Wire/Direct Wire structure whereby the generator /IPP sells electricity directly to a corporate buyer, rather than being notionally passed through the national power grid. This is advantageous in that the challenges experienced with involving the Utility can be somewhat avoided. Corporate buyers can also receive long-term certainty on the costs of such a project.

With respect to the Physical PPA/Wheeling PPA/Sleeved PPAs (or hybrid/substructure thereof), given land acquisition related challenges, the structure does not require land at or near the customer's site to build the project.

There's also an option for multiple corporates to jointly development the project together, either as generators, or as buyers.

What subsidies are applicable to the generation and sale of renewable energy?

Please refer to [Political](#) and [financial incentives](#).

Does your country implement a national support scheme with tradable green certificates (such as guarantees of origins)?

No.

Typical PPA terms and risk allocation

To the extent corporate PPAs are deployed, how are prices, terms and risks affected?

Topic	Details
Do prices tend to be floating or fixed?	Fixed
What term is typically agreed for the PPAs?	10-25 years
Are the PPAs take-or-pay or limited volume?	Take-or-pay
Are there any other typical risks?	Non-payment due to shortage of foreign currency, and currency inconvertibility

To the extent corporate PPAs are deployed, in whose favour will the risks typically be balanced?

Type of risk	Details
Volume risk	Where a PPA is based on fixed volume, the producer bears the risk. Conversely, with a pay-as-produced PPA, the offtaker bears the risk – however, this risk may be balanced through the use of a sleeving agreement with an electricity supplier which may then cover any shortfall.
Change in law	The PPA will usually include change in law provisions, as this will usually prevent the PPA from being frustrated in the event of a significant change in law. The risk of such a change in law is balanced against the party receiving the GoOs or renewable benefit. However, a change in law clause seeks to rebalance the original economic intentions of the parties.
Increase / reduction of benefits	Given the private nature of contracts, it's difficult to generalize on this. However, where the reduction of benefits is caused by a change in law, this may be covered by a change in law clause.

Market liberalisation (if applicable)**Credit risk**

Given the private nature of contracts, it's difficult to generalize on this. However, depending on the relative strength of the parties, one party may wish to seek performance security from a party with lower creditworthiness. As low creditworthiness most strongly affects the party obliged to pay, the risk is balanced against the party expecting payment.

Imbalance power risk

This is likely to be a risk for the corporate buyer as the buyer is often forced (under structures typically in use in Zimbabwe, see above) to procure any required power in excess of that generated by the IPP from the utility (see above).

Production profile risk

In our experience, it's often the buyer who bears this risk, as it may be forced (under structures in use in Zimbabwe, see above) to procure any required power in excess of that generated by the IPP from the utility.

Balancing

Does your country operate a balancing responsibility scheme?

No.

If your country operates a balancing responsibility scheme, who is the balancing authority and do the generator and offtaker typically undertake balancing themselves?

Not applicable.

Significant transactions

What significant transactions/deals have taken place in the last 12-18 months?

One of the major solar energy generators is Distributed Power Africa, a subsidiary of Econet Wireless, the largest telecommunications company in Zimbabwe. It reports that it has undertaken the following projects in the last 18 months:

- Client: Surrey Group
System: 118 kW Roof Mount
Location: Marondera, Zimbabwe
Description: This project was commissioned in September 2019 with an installation of a roof mount PV solution. Their solar plant is grid tied with DG integration and powers the abattoir's processing plant.
- Client: Schweppes Willowvale
System: 1 MW Roof Mount
Location: Harare, Zimbabwe
Description: This project was commissioned in November 2019 at Schweppe's Willowvale plant. The system is engineered with over 2,000 panels and is hybrid with diesel generator integration to ensure 100% power up time. The plant is custom built to generate electricity to improve operational efficiencies in the manufacturing processes.
- Client: Luxaflor Roses Farm
System: 118 kW Ground Mount
Location: Mazoe, Zimbabwe
Description: This plant was commissioned in February 2020 with a grid tied PV solution, with diesel generator and battery backup. This

plant powers the flower grading process plant, irrigation equipment, cold storage rooms and Greenhouse equipment, and is custom built to generate a power saving of 30% on blended costs, while maximizing on daytime sunlight.

- Client: Tanganda

System: 1.8 MW Ground Mount

Location: Chipinge, Zimbabwe

Description: The solar plant was commissioned in October 2020 at the Ratelshoek estate. The system is generating electricity to power the tea processing plant and irrigation equipment. At commissioning, the plant was the largest PV plant built for self-consumption in the C & I sector in Zimbabwe.

- Econet Willowvale

System: 466 kW Roof Mount

Location: Harare, Zimbabwe

Description: Commissioned in April 2019, this was the 15th installation in the first two years of construction. The grid-tied system was then the largest Carport and Rooftop mount C & I solution in sub-Saharan Africa outside of SA. With an estimated 780 MWh in annual energy production, the plant is expected to reduce site's carbon footprint by 285,000 kg every year.

- UNESCO

System: 50 kW Carport Mount

Location: Harare, Zimbabwe

Description: This hybrid solar solution was constructed at UNESCO (United Nations Educational, Scientific and Cultural Organization) Regional Office for Southern Africa in June 2020. The solar system is designed to produce 89 MWh of energy annually and comes with 33 Wh of battery backup to ensure business continuity.

Other projects by other IPPs include:

- Developer: Solgas

System : 5 MW Solar Plant

Location: Cross Mabale, Hwange

Description:

- Phase 1: 5 MW AC ground fixed mount solar plant in Cross Mabale, Hwange
- Fully licensed by the Zimbabwe Energy Regulatory Authority (ZERA license number GC0046/2016)
- 100 hectares of land secured for future expansion to a 50 MW solar plant
- Grid Impact Assessment successfully completed with ZETDC
- Transmission interconnection agreement signed with ZETDC
- Environmental Assessment Studies completed and filed
- 25 Year Power Purchase Agreement secured with Zimbabwe Electricity Transmission & Distribution Company
- Granted National Project Status by Ministry of Finance and Economic Development Zimbabwe
- Granted Prescribed Asset Status by Ministry of Finance and Economic Development Zimbabwe
- Tariff Agreed
- Phase 1: Funding of USD7.5 million secured
- Engineering, Procurement and Construction in progress
- Phase 2: Fund Raise in Progress

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