Corporate Renewable
Power Purchase Agreements

RE scale

wbcsd

Scaling up globally

Foreword

In 2015 the world's leaders set an ambitious vision, with the Paris Agreement and the Sustainable Development Goals committing us all to achieve zero emissions and zero poverty in little more than a generation.

Rapidly scaling up renewable energy is one of the key tasks that falls to business, and it can be done right now. Renewable energy is cost competitive in an ever growing number of markets around the world as technology costs fall and infrastructure capital costs remain at historically low rates.

Because of this, many companies want to decarbonize their electricity use faster than the national grids will allow. Power Purchase Agreements (PPAs) are a simple way to achieve this, by enabling companies to contract directly with producers of renewable energy.

At Unilever we are successfully using PPAs to deliver renewable electricity to our sites across the world. In fact, as part of our Carbon Positive by 2030 ambition, we have set a target to purchase 100% of our grid electricity from renewable sources by 2020, and we are almost two thirds of the way there. We have established PPAs in markets as diverse as India, Mexico, the USA and Germany, showing that this can be a truly global solution.

This guide, prepared by members of the World Business Council for Sustainable Development, shares the knowledge and experience from many leading companies – both producers and buyers of renewable energy – and I hope will help guide your company in its journey to 100% renewable energy.

Paul Polman
CEO at Unilever

Executive Summary

Corporate PPAs as part of a renewable energy strategy

Organizations are increasingly looking to reduce their environmental footprint and energy costs. While reducing energy consumption is often the most obvious way to reduce impact on the climate, companies need to maintain continuous business operation. As a result, **many private companies are procuring energy from renewable generation sources** as part of their plans to reduce carbon emissions in their sustainability strategy. The role that renewable energy plays in a company's energy strategy is increasingly elevated from an operational and technical exercise to a **strategic and commercial priority.**

There are a number of ways for companies to adopt a renewable energy strategy, for instance through renewable electricity, heat or transport, all of which have associated benefits. The most accessible solutions in terms of carbon emission reduction for many industries are currently centered around renewable electricity.

Renewable electricity strategies vary from investing directly in a generation asset, or purchasing the power from a third party's project to buying renewable certificates. This report focuses on **a company purchasing electricity from an off-site renewable electricity project via a Power Purchase Agreement** (corporate renewable PPA) - Option 2a on the right hand side. Corporate PPAs are a suitable instrument to address off-take risk for developers and financing parties and therefore can significantly help to increase and accelerate the deployment of renewables – the objective of WBCSD's REscale business solution.

Options to implement a renewable electricity strategy

1 On-site and near-site generation

a)	b)
Purchasing from an on-site or near-site project with a behind-the-meter corporate PPA	Investing directly in an on-site or near-site renewable power asset

2 Off-site generation

a)	b)
Purchasing from an off-site project with a corporate PPA	Investing directly in an off-site renewable power asset

3 Purchasing renewable certificates

4 Procuring green tariffs

What is a corporate renewable PPA?

A PPA is a contract between the buyer (off-taker) and the power producer (developer, Independent Power Producer, investor) to purchase electricity at a pre-agreed price for a pre-agreed period of time. **The contract contains the commercial terms of the electricity sale:** contract length, point of delivery, delivery date/times, volume, price and product. The electricity sold under a PPA can be from existing renewable energy supply or a new build project.

Given the requirements to finance new build projects, PPAs for those projects often have more stringent criteria - for example, a duration that covers at least the debt term of the project finance. Whilst much of this report's content is applicable to any corporate PPA (e.g. short term, or for existing assets), it concentrates on challenges and solutions for corporate PPAs concerning new renewable electricity projects.

These new build project deals are typically structured as long term (10+ years) PPAs. The pricing structure can be based on either a fixed price or a discount pegged to the wholesale market price with a fixed floor, with many variations on both of these structures.

The drivers for corporate renewable PPAs

The business case for corporate buyers:

1. **Economics** – long-term cost affordability and improved price visibility;
2. **Sustainability** – reductions in carbon emissions and progress towards renewables targets;
3. **Brand and leadership** – recognition for renewable electricity achievements and climate leadership.

The business case for developers:

1. **Risk mitigation** – management of off-take risk and diversification of revenue streams;
2. **Bankability** – predictable and long-term income streams unlock finance and ease bankability with financial institutions;
3. **Business development** – additional demand creation and development of standard terms and conditions (through establishing partnerships).

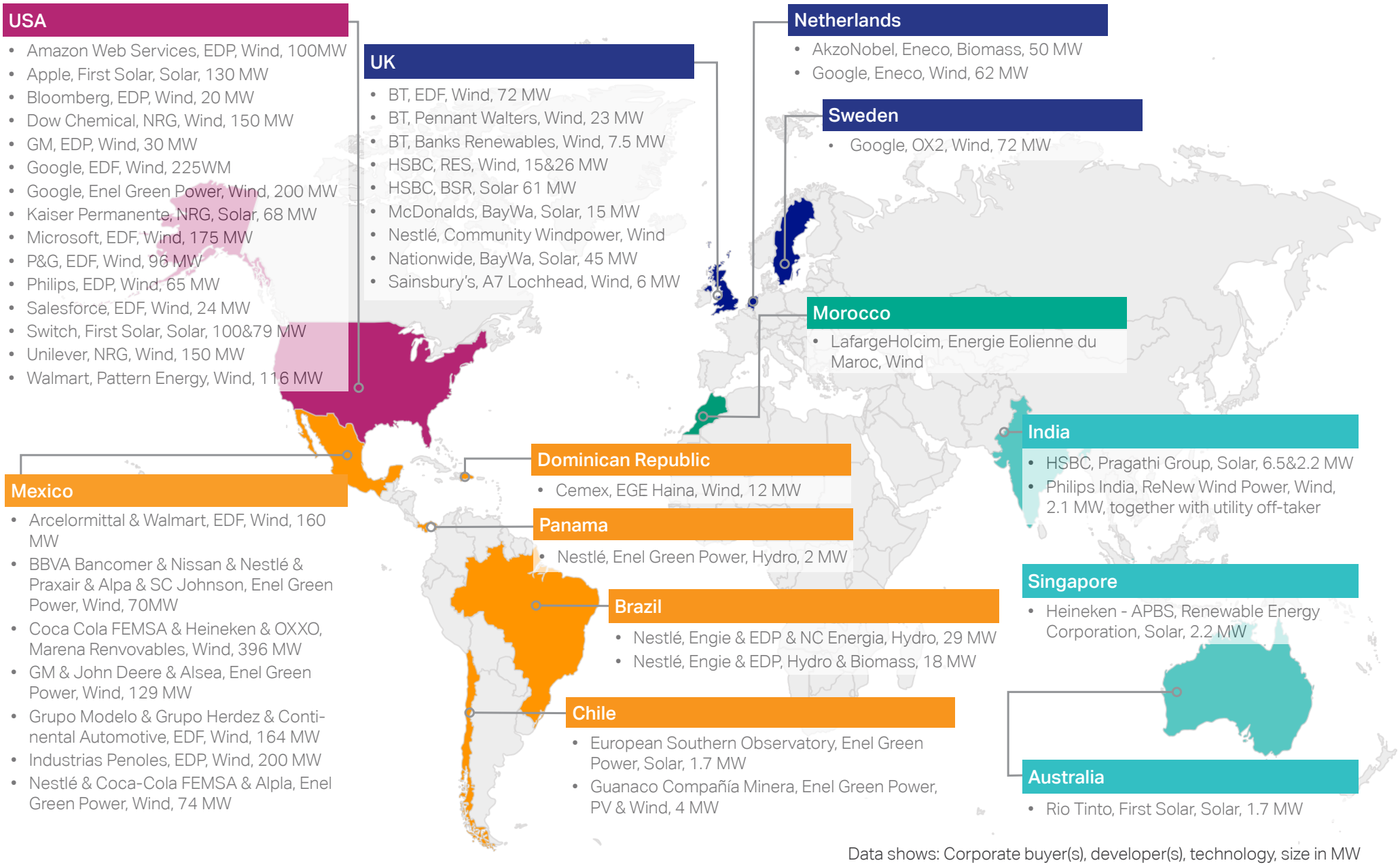
Different corporate buyers will place different emphasis on the above drivers. Sustainability aspects in particular are very company-specific. For example, some exclude hydropower and biomass from their definition of renewable, narrowing the pool of projects they might consider for a PPA. Others might not require the asset to be a new build, and this can broaden the pool of projects available to include already operational plants.

The economics of a project depend on its location. Some geographies (for example, the US, UK and Mexico) have seen significant increases in corporate PPAs in the past years. This is the result of a series of factors, including but not limited to:

1. A compatible renewable subsidy;
2. High and volatile wholesale electricity prices;
3. Availability of renewable resource;
4. Electricity demand growth from company operations.

Based on these identified factors, many countries have potential to be **the next 'hot spot' for corporate PPAs.** Using sample deals, the world map on the next page highlights how corporate renewable PPAs are growing globally to Latin American countries such as Chile and Brazil. Other growth markets are Norway, Sweden and the Netherlands in Europe as well as India and Singapore in Asia.

Examples of corporate renewable PPAs around the globe



USA

- Amazon Web Services, EDP, Wind, 100MW
- Apple, First Solar, Solar, 130 MW
- Bloomberg, EDP, Wind, 20 MW
- Dow Chemical, NRG, Wind, 150 MW
- GM, EDP, Wind, 30 MW
- Google, EDF, Wind, 225WM
- Google, Enel Green Power, Wind, 200 MW
- Kaiser Permanente, NRG, Solar, 68 MW
- Microsoft, EDF, Wind, 175 MW
- P&G, EDF, Wind, 96 MW
- Philips, EDP, Wind, 65 MW
- Salesforce, EDF, Wind, 24 MW
- Switch, First Solar, Solar, 100&79 MW
- Unilever, NRG, Wind, 150 MW
- Walmart, Pattern Energy, Wind, 116 MW

UK

- BT, EDF, Wind, 72 MW
- BT, Pennant Walters, Wind, 23 MW
- BT, Banks Renewables, Wind, 7.5 MW
- HSBC, RES, Wind, 15&26 MW
- HSBC, BSR, Solar 61 MW
- McDonalds, BayWa, Solar, 15 MW
- Nestlé, Community Windpower, Wind
- Nationwide, BayWa, Solar, 45 MW
- Sainsbury's, A7 Lochhead, Wind, 6 MW

Netherlands

- AkzoNobel, Eneco, Biomass, 50 MW
- Google, Eneco, Wind, 62 MW

Sweden

- Google, OX2, Wind, 72 MW

Morocco

- LafargeHolcim, Energie Eolienne du Maroc, Wind

India

- HSBC, Pragathi Group, Solar, 6.5&2.2 MW
- Philips India, ReNew Wind Power, Wind, 2.1 MW, together with utility off-taker

Mexico

- Arcelormittal & Walmart, EDF, Wind, 160 MW
- BBVA Bancomer & Nissan & Nestlé & Praxair & Alpa & SC Johnson, Enel Green Power, Wind, 70MW
- Coca Cola FEMSA & Heineken & OXXO, Marena Renvovables, Wind, 396 MW
- GM & John Deere & Alsea, Enel Green Power, Wind, 129 MW
- Grupo Modelo & Grupo Herdez & Continental Automotive, EDF, Wind, 164 MW
- Industrias Penoles, EDP, Wind, 200 MW
- Nestlé & Coca-Cola FEMSA & Alpla, Enel Green Power, Wind, 74 MW

Dominican Republic

- Cemex, EGE Haina, Wind, 12 MW

Panama

- Nestlé, Enel Green Power, Hydro, 2 MW

Brazil

- Nestlé, Engie & EDP & NC Energia, Hydro, 29 MW
- Nestlé, Engie & EDP, Hydro & Biomass, 18 MW

Chile

- European Southern Observatory, Enel Green Power, Solar, 1.7 MW
- Guanaco Compañía Minera, Enel Green Power, PV & Wind, 4 MW

Singapore

- Heineken - APBS, Renewable Energy Corporation, Solar, 2.2 MW

Australia

- Rio Tinto, First Solar, Solar, 1.7 MW

Data shows: Corporate buyer(s), developer(s), technology, size in MW

Buyers and developers are facing challenges – and are developing solutions

Corporate buyers will need to take a number of decisions and actions in order to complete a PPA. **This report provides guidance on key considerations** ranging from more practical issues such as investing time and resources or securing internal approvals, to financial and regulatory matters such as understanding pricing and accounting, and competition law issues.

A number of developers have been active in nurturing the growth of corporate PPAs in key markets and are now moving into new international markets. Challenges for developers include matching corporate buyer demands and project availability, balancing the often competing requests of lenders and corporate buyers, and reconciling differing priorities with respect to issues such as pricing and creditworthiness.

The outcome of our experience is that **there are usually strategies and solutions that can be put in place in order to achieve a favorable PPA structure for corporate buyers and developers alike.**

Understanding the bankability of PPAs

The majority of new, large-scale renewable electricity projects are financed on a project finance basis. Most of the funding for the project will come from long-term debt provided by senior lenders or third party equity, which can often have debt-like features. The cash flows of the project are the primary means for repayment of that debt. As such, the project and its key contracts must sufficiently mitigate default risks to those cash flows. It is important for corporate buyers and developers alike to know what lenders look for in a bankable project and what issues are likely to arise during PPA negotiations including price certainty, credit support and currency risk.

Sharing risk with other corporate buyers

Corporate buyers with lower energy demand and / or less experience of entering into corporate PPAs may want to join forces with other buyers through multiple buyer structures. Some approaches involve multiple PPAs for a single project, where each PPA is with a different buyer. Others involve the development of a buying group which will enter into a single PPA for the benefit of all participating buyers. These risk-sharing solutions are increasingly attractive options for some corporate buyers. Potential termination rights and different accounting treatments are also leading corporate buyers towards using multiple buyer structures.

The way forward: The inclusion of corporate PPAs in national electricity regulation

Corporate PPAs can increase the speed and scale of the deployment of renewable energy projects. They help to deliver Government targets for renewable energy in the country of their location. Policy makers looking to harness these benefits for their jurisdictions should **facilitate the best business conditions for success.** Key recommendations include removing direct and indirect regulatory barriers for corporate PPAs, designing compatible renewable support schemes, ensuring the set-up of renewable certificate systems, and creating dialogue between interested parties to foster mutual understanding of the solutions.

"With RE100, we are seeing PPAs becoming an increasingly popular choice for businesses transitioning to 100% renewable power – they offer security of supply at an affordable price, helping to deliver on renewable energy goals. It's great that WBCSD has recommended solutions to some of the challenges facing companies that are pursuing corporate PPAs – this is a helpful read for all RE100 members."

Damian Ryan
Acting CEO at The Climate Group

Introduction

Renewable energy is reliable and increasingly cost competitive with conventional generation sources. Through WBCSD's REscale business solution, leading energy and technology companies are working together on solutions to accelerate the deployment of renewables and the transition to a low-carbon electricity system. The success of limiting climate change caused by greenhouse gas (GHG) emissions will depend on the scale and speed at which renewables will be deployed worldwide.

Demand for renewable assets from investors and corporates is constantly growing, but considerable acceleration is needed to limit global temperature rise to under 2˚C. The main challenges identified are access to finance, ensuring bankability of renewable energy projects and improving integration of growing levels of renewables into electricity markets.

A secure income stream for the electricity generated by a renewable project is a key consideration for bankability and financing of projects. To address this off-take risk, developers are turning to companies as new counterparties to manage and diversify income streams. Similarly, many companies are actively pursuing renewable electricity procurement for both economic and environmental reasons.

This report helps electricity buyers of any industry understand the role and benefits renewable Power Purchase Agreements (PPAs) have within an overall energy procurement strategy. Most importantly, it explains contractual options and provides guidance on key aspects electricity buyers and project developers should consider.

The interactive navigation on page 10 outlines the structure of this report.

WBCSD's REscale business solution

To raise the visibility of solutions available that scale renewable deployment, REscale is publishing three reports - all directly addressing crucial barriers to fully unlock the potential for renewables:

- The 'REscale – Pathways to scale finance for renewable energy' report focuses on how deploying new financing vehicles and engaging a broader range of investors can facilitate the investment volumes required for a 2˚C world (forthcoming in November 2016);
- This report on 'Corporate Renewable Power Purchase Agreements – Scaling up globally' highlights the benefits of the business model and the critical role it plays to improve bankability of renewable projects;
- The '*Business Case for Low-Carbon Microgrids*' report demonstrates the viability of low-carbon microgrids using real project examples to raise awareness and promote market growth of renewables in decentralised systems.

Interactive Navigation

How to navigate this publication:

You can always access this main navigation page by clicking the home button

Click on the circle of a chapter and the sub-chapters will appear.

Clicking again on the circle or a sub-chapter heading will take you directly to your destination.

Click on the close button to close a circle's sub-chapters.

You can also use the tab section on the right-hand side to jump to the desired chapter.

You can of course also use the arrow keys or roll the mouse to move through the report.

1. The rise of renewable energy sourcing

What can a renewable energy strategy look like?

1. Drivers for developing a renewable energy strategy
2. Implementing a renewable electricity strategy

1.1 Drivers for developing a renewable energy strategy

Organizations are increasingly looking to reduce their environmental footprint and energy costs. The aim to decrease carbon emissions is a result of more stringent policy and regulation both locally and nationally, as well as enhanced requirements from the investment community and a more 'environmentally savvy' consumer audience.

The increasing number of organisations that include carbon reduction, energy efficiency, and renewable energy targets in their annual reports are proving this shift in focus. Private companies are setting themselves challenging long term energy and sustainability targets and are making these commitments public by signing up to high profile initiatives such as RE100[1]. They are seeking to demonstrate credibility through the use of science-based climate change targets, and assessing GHG emissions across the whole value chain.

While reducing energy consumption is often the most obvious way to reduce impact on the climate, companies need to maintain continuous business operation. As a result, many private companies are procuring energy from renewable generation sources as part of their plans to reduce carbon emissions in their sustainability strategy. The role that renewable energy plays for a company's energy strategy is increasingly elevated from an operational and technical exercise to a strategic and commercial priority.

1. *RE100* is a collaborative, global initiative of influential businesses committed to 100% renewable electricity, working to massively increase demand for - and delivery of - renewable energy.

Drivers for developing a renewable energy strategy

Energy and resource optimization has risen up company management agendas as they seek to:

- Meet publicly announced sustainability commitments and enhance reputation and branding;
- Increase efficient use of energy resources and reduce energy costs;
- Improve cost predictability through ability to fix prices for all or a proportion of exposure;
- Gain a competitive edge through innovative and low-carbon products and processes;
- Avoid long term carbon and environmental penalties by complying with current and future regulatory requirements.

Companies committing to renewable energy targets

More than 40% of Fortune 500 companies and at least 60% of Fortune 100 companies now have targets relating to renewable energy procurement, energy efficiency or cutting GHG emissions[2]. Examples from WBCSD members include[3]:

- Apple: work with suppliers to install more than 4 GW of new clean energy worldwide, including 2 GW in China by 2020;
- Bank of America Corp.: become carbon neutral and purchase 100% renewable electricity by 2020;
- BMW: procure 100% of electricity from renewable sources for its operations with an interim target to source more than two thirds of its electricity from renewables by 2020;
- Dow Chemical: use 50% zero carbon energy by 2050, and to use 750 MW of renewable power by 2025;
- Procter & Gamble: achieve 30% renewable energy use by 2020 and 100% as long term goal;
- Walmart: produce or procure 7,000 GWh of renewable energy globally by the end of 2020 and go 100% renewable as long term goal.
- IKEA: turn 100% Renewable by 2020. IKEA Group has committed to producing as much renewable energy as it consumes in its buildings by 2020;
- Coca-Cola Enterprises: power all of its operations with 100% renewable electricity by 2020;
- Unilever: using only renewable energy by 2030 and stop using energy from coal by 2020.

2. Source: Power Forward 2.0 – WWF, Ceres, Calvert Investments, David Gardiner and Associates, 2015.

3. Sources: *RE100 website*; Company websites

1.2 Implementing a renewable electricity strategy

There are a number of ways for companies to adopt a renewable energy strategy, through renewable electricity, heat and transport, all of which have associated benefits. The most accessible solutions in terms of carbon emission reduction for many industries are currently centred around renewable electricity - the focus of this report.

Some different renewable electricity strategies, roughly in order of perceived 'greenness', are set out on the next page.

The extent to which one or more of these strategies will be appealing to businesses depends on a variety of factors, including their level of electricity use, prevailing electricity tariffs, their environmental objectives, their risk tolerance, and the degree to which they want direct control over electricity generation activities.

This report focuses on a company purchasing electricity from an off-site renewable electricity project via a Power Purchase Agreement (corporate renewable PPA) – Option 2a on the next page. Corporate PPAs are a suitable instrument to address off-take risk for developers and financing parties and therefore can significantly help to increase and accelerate the deployment of renewables – the objective of WBCSD's REscale business solution.

1. On-site and near-site generation

- Companies can invest directly in a renewable electricity generation asset on or near their own site; or alternatively commission the construction of the asset by a third party. Near-site assets may connect the electricity generation to the company by a 'private wire', by-passing the grid.
- On-site or near-site generation provides the most direct link between renewable generation and site consumption and can avoid network charges where regulations allow.
- This approach can be constrained by site requirements, space availability[4] and site conditions for the relevant renewable source.

1a. Purchasing from an on-site or near-site project (with a behind-the-meter[5] corporate PPA)

- By outsourcing to a third party and buying the power through a behind-the-meter PPA, the corporate buyer is not responsible for the financing, installation or maintenance. This removes the initial capital requirement and operational risk but can still require accounting considerations.

1b. Investing directly in an on-site or near-site renewable power asset

- Owning the asset requires the company to make the initial capital investment with a payback period (technology and location dependent). On-going maintenance, risk of cost overruns and sub-design performance would be the responsibility of the contractor.

2. Off-site generation

- This can avoid site-level constraints (such as size, layout or limited available renewable resource) providing the opportunity to use fewer, but larger assets to provide larger scale volumes of power for the company to meet its consumption and reduce costs through economies of scale of larger plants and through maximising of renewable resources.
- The project is connected to the grid, therefore incurs network charges, but has the added advantage over behind-the-meter PPAs that is has alternative routes to market and is less reliant on the corporate buyer.

2a. Purchasing from an off-site project with a corporate PPA

- Via a PPA, the corporate buyer purchases all or part of the electricity from a project which is built, owned or operated by a third party.
- Purchasing from an external party removes many of the risks and allows electricity procurement to remain an operational rather than capital expense. In some projects it may require the corporate buyer to enter into a fixed price contract (e.g. 10+ years) for the electricity output. In return the corporate buyer benefits from power price certainty.

2b. Investing directly in an off-site renewable power asset

- This option gives the company the opportunity to benefit or share from the returns from the project. As for all direct investment, this option may provide attractive returns. However, like the on-site option, the company will take on exposure to development, construction and operational risk, and will manage that the initial capital costs and payback period may not align with corporate objectives.

4. Space availability could restrict to small-scale projects that only supply a small proportion of the site's requirements.
5. Also known as a private wire PPA.

3. Purchasing renewable certificates

- In some markets renewable certificates are produced alongside physical electricity output from a generation asset and can be sold to corporate buyers separately from the physical power ('unbundled'). Purchasing these certificates from a verified asset can allow the corporate buyer to claim renewably sourced power (the equivalent in the carbon market is purchasing carbon offsets).
- As a renewable solution, certificates have a much lower associated risk than on-site or off-site generation, and are easier to source and implement. They may also be easier to align alongside a company's existing energy procurement strategy and can complement existing power supply.
- The initial capital outlay is limited compared to investing in own generation and commitment periods are typically shorter than PPA options, limiting price and transactional risks.
- Renewable certificates come at an additional cost and can have lower reputational benefits than other sources of renewable power. Additionally, pricing risks can increase over time as competition for certificates increases.

4. Procuring green tariffs

- Some markets (and the utilities active in them) allow consumers to purchase green electricity through a special supplier tariff. Green tariffs are often a silent part of a company's strategy as it can be more difficult to associate renewable assets with physical supply. However increasing uptake of green tariffs does send signals to the market that additional renewable development could be needed in a certain region.
- Contracts usually come at a premium above 'brown' electricity supply. Furthermore, if there are no bundled certificates, the carbon benefits are uncertain.
- Whereas most green tariffs are bought via short term supply agreements and the power is not from specific assets, recently there have been a few long term green tariff contracts with specific projects. In this structure the utility contracts with the developer while the corporate buyer contracts with the utility6.

6. Examples of this green tariff structure in early 2016 from the US market include Walmart purchasing through Alabama Power from an Origis Energy project. Also, Apple and Switch contracted through NV Energy from SunPower and First Solar projects.

2. Corporate renewable PPAs and their benefits

What is a corporate renewable PPA and what are the benefits?

1. Contract structures
2. Pricing structures
3. Drivers for corporate renewable PPAs
4. Benefits of corporate renewable PPAs
5. Renewable attributes of corporate renewable PPAs

A PPA is a contract between the buyer (off-taker) and the power producer (developer, investor, Independent Power Producer (IPP)) to purchase electricity at a pre-agreed price for a pre-agreed period of time. The contract contains the commercial terms of the electricity sale: contract length, volume, point of delivery, delivery date/times, price and product.

A corporate PPA refers to a PPA where the off-taker is specifically a company buying electricity (rather than a utility, government, local authority). The traditional structure of a power purchase agreement is a contract between the developer and/or owner of a generation asset and an electricity utility[7]. In many markets developers have only been able to enter into contracts with utilities as they were the only counterparties offering acceptable contracting terms. The incumbent utilities have generally had strong balance sheets and entering into such contracts is their core business activity.

Today many companies represent an attractive alternative off-taker for developers of renewable electricity projects. Corporate PPAs can help a developer diversify project income streams away from traditional utility off-takers and unlock finance for renewable projects. For corporate buyers, PPAs offer environmental benefits, below-market rates (in some markets) and a hedge against price volatility and possible price rises. The electricity sold under a PPA can be from an existing renewable energy supply or a new build project. In some jurisdictions, corporate PPAs are not possible due to the regulatory environment. In these situations, some of the other options outlined in Section 1.2 may still be viable.

7. Utilities will typically purchase power from various sources to sell this on to end consumers. They will register the user's meters, manage billing and take on any balancing risk.

This report focuses on corporate PPAs for new build renewable electricity projects in line with the REscale LCTPi. Given the requirements to finance new build projects, PPAs for those projects often have more stringent criteria - for example a duration that covers at least the debt term of the project finance. Whilst much of this report's content is applicable to any corporate PPA (e.g. shorter term or for existing assets), some benefits and challenges would be different to the ones discussed below.

2.1 Contract structures

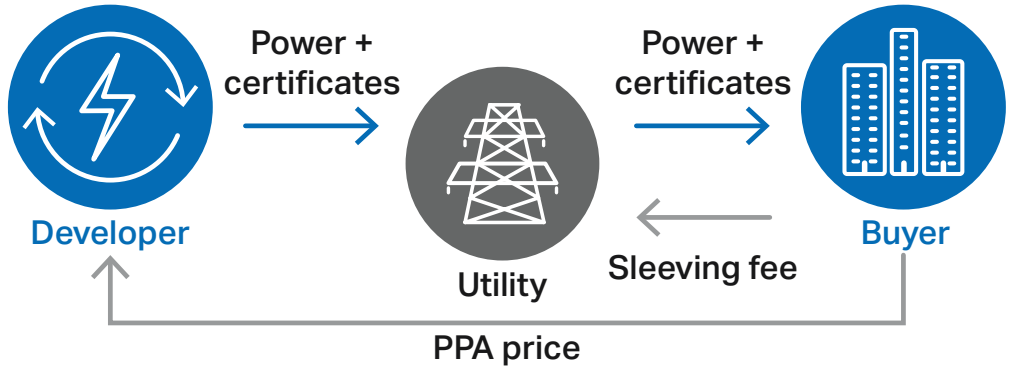
There are many different types of PPA structures a corporate buyer can enter into. The exact structure of a corporate PPA will depend on the regulatory design of the relevant electricity market, the corporate buyer strategy and the capability of the off-taker.

Corporate PPAs for new build projects are typically structured as long term virtual or sleeved PPAs.

2.1.1 'Sleeved' or 'Physical' structure

Where there is no direct connection to the generation asset available, but the asset is on the same grid network as the company's off-take point, the corporate buyer can enter into the PPA and appoint a licensed utility to physically deliver power on its behalf. The action of transferring the electricity through the utility is typically known as sleeving because the electricity is sleeved by the utility from the generation asset to the buyer. In this type of arrangement, the buyer will generally want to ensure that any terms in the corporate PPA contract with the developer (and transfer of renewable benefits) match those in a separate contract between the corporate buyer and the utility, in order to avoid introducing any additional risk .

Sleeved PPA structure (example with renewable certificates)



1. Buyer agrees a PPA (fixed* or discount-to-market) price with the developer to purchase the electricity it will generate. It will also agree the renewable certificates;
2. Buyer enters into a back-to-back PPA to sell the electricity to the utility;
3. Generator will transfer the electricity to the utility, which will sleeve it through the grid to buyer consumption sites.

*Fixed prices are typically index-linked to factor in inflation

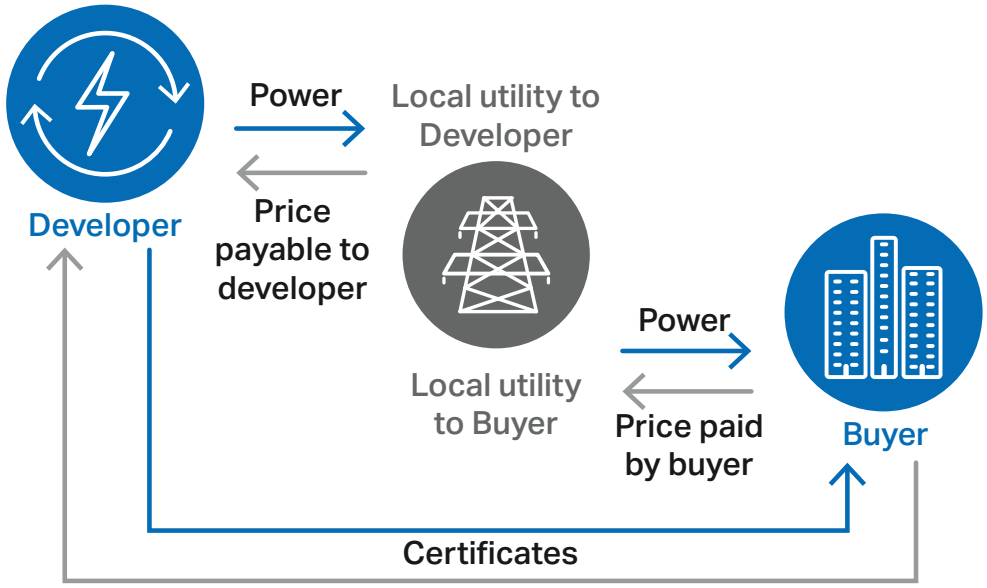
2.1.2 'Synthetic', 'Virtual' or 'Financial' structure

Virtual PPAs are more flexible in their structure – developers and off-taker do not have to be connected to the same network provider. Virtual PPAs are the norm in a range of markets such as the US and UK. This structure is also adopted in many other markets around the world. It is used to build plants where the renewable resource is strongest, where there is an inability for the corporate buyer to procure wholesale power, or the corporate buyer wants to avoid a sleeving fee.

A virtual approach replaces the physical PPA model with a financial structure that creates a similar economic effect as a physical PPA for both parties, without the sleeving fees.

It is important to note that there may still be a physical transfer of renewable electricity certificates if those form part of the transaction. That would cover either the certificates issued in respect of the actual project or an equivalent volume.

Synthetic PPA structure (example with renewable certificates)



1. The corporate buyer agrees a PPA price with the developer and a price for renewable certificates;
2. Developer delivers renewable energy to the grid and is paid by a utility a variable spot price;
3. The developer and the corporate buyer settle the difference between the variable market price and the strike price and the developer delivers renewable certificates to the buyer; and
4. The buyer continues to buy its power from the utility at the variable market price, which is now hedged by the synthetic PPA.

Scheduling and balancing

One of the challenges of purchasing renewable power directly from off-site developers is how to handle the physical power produced. For renewable generation assets, especially wind and solar, the challenge is that it becomes more difficult to forecast and guarantee generation fluctuating with weather conditions.

Scheduling risk is applicable to all types of generation and relates to the deviations between submitted physical nominations of expected power production by generators to network operators and the actual outturn production. Typically, this risk is borne by the network operators who charge a fee for their services.

Balancing risk relates to the continuous supply of electricity to the corporate buyer. Security of supply at a particular load point is irrespective of PPA contracts in place. With a PPA contract the corporate buyer might change the provider they chose to ensure a continuous electricity supply at an affordable cost.

The corporate buyer has a number of options to mitigate this risk – it can choose to purchase balancing power itself (e.g. by setting up a wholesale trading desk), through a third-party provider (which can potentially be contracted through the developer of the PPA) or through the electricity utility whereby the renewable supply is topped up with other electricity to provide the required electricity supply to the corporate buyer. Third parties or utilities typically charge a management or sleeving fee to compensate for managing balancing.

Sometimes balancing arrangements are already defined by local legislation (e.g. Mexico, India, Morocco) requiring the network operators or utilities to take on the responsibility. Additionally, if the electricity market is structured with a mandatory power pool (which requires all wholesale sellers and buyers to sell to/buy from the pool) this can lead to reduced balancing costs as the pool performs some of the balancing function.

Under the arrangements of the sleeved corporate PPA, the corporate buyer gets the benefit of the relationship with the renewable generator whilst ensuring that all of its electricity demand will be satisfied whatever the generation of the asset is.

Basis risk

In virtual PPA structures, if the buyer and developer are located in different markets and the PPA payments are linked to the wholesale price in the market local to the developer (not the buyer), the buyer is opening themselves up to the 'basis risk' in wholesale price movements. If the retail price in the buyer's market(s) and the wholesale price in the developer's market do not move in tandem this would lead to the virtual PPA providing an imperfect hedge – and thus continued exposure to volatility in retail power purchasing. Therefore, when deciding on a virtual PPA, the buyer will need to evaluate the price correlations between the two markets, if overall power price stability is a key objective. However, this risk can be borne by the developer or alternatively, other ways to structure the contract could be found.

2.2 Pricing structures

PPAs can be driven by a variety of pricing mechanisms. If the PPA is for a new build asset, it is likely to require at least a proportion of the revenue per MWh to be agreed up front, to provide certainty to the developer that enough revenue will be generated to meet their return requirements on their initial investment. The two most common mechanisms are as follows:

1. Fixed-price PPA: This structure involves an upfront agreement on how the price will move (or not) over the life of the contract. Examples include:
    a. Agreed price per MWh with no escalation (i.e. decreasing in nominal terms over time);
    b. Agreed price per MWh with increases linked to inflation;
    c. Stepped price per MWh involving agreed escalations in real terms. This price could also be linked to inflation.
2. Discount to market PPA: This structure could only apply in markets with a fluctuating wholesale power price. The mechanism involves three main components:
    a. The parties agree a fixed percentage discount to the wholesale power price per MWh up front. The power price would be taken from an agreed market index which provides up to date price information;
    b. A floor amount per MWh which provides the developer with a minimum level of revenues. If the wholesale price drops below this amount, the corporate buyer will still be required to pay the floor amount to the developer;
    c. A cap amount per MWh which provides the corporate buyer with a maximum level of costs. If the wholesale price increases above this amount, the corporate buyer only has to pay the cap amount to the developer.

Picture courtesy of EDF

2.3 Drivers for corporate renewable PPAs

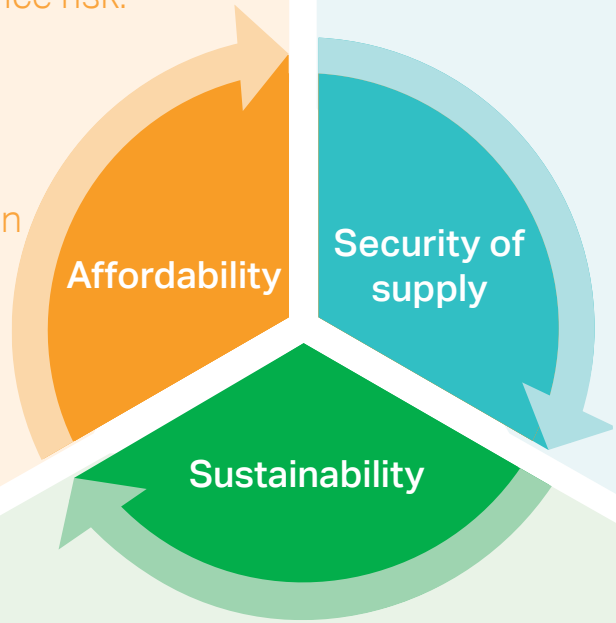
Drivers for companies to enter into corporate PPAs vary between organisations. There is wide diversity in risk management strategies, sustainability targets, governance, energy intensity, countries of operation and history in renewable purchasing.

In general, when developing a renewable energy strategy, businesses are trying to find the optimal solution to the energy trilemma of security, sustainability, and affordability. Long term corporate PPAs can help to achieve a balanced solution by delivering on each of these challenges.

Energy Trilemma

Corporate PPAs for new built projects are typically for a duration of 10+ years, so they act as a long term hedge to counter price volatility. Additionally, sourcing renewable generation rather than fossil fuelled power, removes exposure to carbon price risk. While renewable projects are capital intensive, their operating costs are low and stable – so can provide the required price stability and cost reduction in the long run.

A corporate PPA can diversify supply sources across multiple technologies and contractual structures and as such prevent potential issues around energy availability.



A corporate PPA can be an important tool for showing performance against a company's sustainability goals related to GHG emissions reduction and renewable energy consumption.

2.4 Benefits of corporate renewable PPAs

There are a number of benefits both for corporate buyers and developers in contracting corporate PPAs. Corporates buyers use renewable PPAs as a means to increase cost visibility, reduce electricity costs and meet sustainability goals. Developers aim for risk mitigation, enhanced bankability and increasing the pool of potential customers. Some of the benefits set out on the next page are applicable to longer term PPAs in general, whilst others are specifically related to fixed price structures.

"Long term Power Purchase Agreements (PPAs) bring predictability, reduce risk and allow renewable energy developers throughout the energy system to plan, manage and finance the new projects. These factors help drive new projects, bringing more and more renewables into the energy system."

Craig Cornelius
President, NRG Renewables

The business case for corporate buyers

Economics

- Allows corporate buyers to lock in a fixed electricity price, or fixed cap, with no upfront capital requirement
- Provides visibility over future electricity costs
- Hedges against fuel and electricity price volatility
- Reduces risks related to potential future changes to carbon pricing
- Removes requirement for operational and management costs, and operational risk sits with the developer

Sustainability

- Aligns with SDG 12 - Ensuring sustainable production patterns
- Helps with progress towards renewable energy or GHG emissions targets
- Some countries legislate or encourage private companies to improve their renewable footprint to receive regional development bank support

Brand and leadership

- Increases recognition for renewable electricity achievements

Leverage

- Allows for the development of partnerships with a small number of reliable and experienced counterparties
- In comparison to owning generation assets, PPAs allow a business to remove focus from non-core areas

The business case for developers

Risk mitigation

- Can unlock a lower cost of capital through guaranteed offtake(s)
- Diversification of revenue stream away from traditional utility off-takers
- Development of an investment pipeline becomes less risky through nurturing off-take relationships
- Diversifies the risk of payment default (in the case of multiple-buyer PPAs)

Bankability

- A stable and long term income stream allows for easier bankability with financial institutions
- Allows contracting with a high credit counterparty (in general)

Brand

- Transactions with like-minded corporate buyers can have a tangible effect on stocks
- Active involvement in development of a sustainable energy system

Business development

- Increases pool of potential off-takers and creates additional demand
- Can ease the expansion into geographically new markets (through establishing trusted partnerships with corporate buyers)
- Reduces development cost by allowing the development of standard terms and conditions (through establishing partnerships)

2.5 Renewable attributes of corporate renewable PPAs

Sustainability aspects are very company-specific. Two key factors are typically clarified by companies when considering corporate PPAs as part of a renewable energy strategy: 1) the renewable nature of the generation, and 2) whether the project is 'additional'.

2.5.1 What is renewable?

RE100 defines renewable electricity as "electricity generated from biomass (including biogas), geothermal, solar, water and wind electricity sources"[8]. Depending on the context, there may be a need to consider further criteria regarding large scale hydropower and biomass. For example, the social and environmental impact of large scale hydropower can be a relevant consideration – with entities such as the World Commission on Dams[9] providing guidance on such issues. Similarly, the sustainability ability of fuel for biomass generation can be subject to different perspectives and criteria.

Often companies themselves define what they consider to be renewable, e.g. excluding or including hydro or biomass plants.

2.5.2 How to prove renewable supply?

Different methods of certification have been implemented in order to ensure that renewable power is in fact renewable and meets other social and environmental criteria. Examples of certificates include Renewable Energy Certificates (RECs) in the US, Guarantees of Origin (GoOs) in the EU and International-RECs (I-RECs) in other regions.

Corporate Renewable PPAs do not need to include certificates, however they can be used for a wide variety of purposes, including as evidence of supply of renewable electricity, compliance with renewable portfolio standards and mandatory disclosures, and for assessing compliance with various supplier levies.

Electricity buyers can implement a variety of strategies in respect of green certificates in order to demonstrate the veracity of the renewable claims that they seek to make. For example, an environmentally stringent approach is for RECs to be retired or cancelled (which means that they can no longer be sold i.e. ensuring no double-counting) upon purchase of the renewable electricity from specific projects by a corporate buyer. Alternatively, certificates from other projects equivalent to the volume of purchased electricity can be retired or cancelled. This only applies if the certificates are from the same national market or (more rarely) a truly cross border international market (e.g. as applies between Norway and Sweden). However, in some instances, certificates are sold on in the market and/or not retired or surrendered as part of a corporate PPA structure. This is likely to give rise to questions about the environmental integrity of the purchase of green power, and of potential 'double counting' of renewables. For example, WRI Green House Gas Protocol would not allow renewable use or GHG reduction claims from the power purchased under the PPA if the RECs are sold on.

8. *http://there100.org/reports-briefings: Making credible renewable electricity usage claims*

9. *https://www.internationalrivers.org/campaigns/the-world-commission-on-dams*

In certain markets, the role of carbon credits may also need to be considered. If a project has been developed in a market where certificates are awarded for emission reductions arising from that project, a corporate buyer could consider whether those certificates should also be acquired and retired.

2.5.3 What is 'additionality'?

Additionality can be a consideration for companies when choosing PPAs as it can be viewed as enhancing their sustainability image.

There is no single definition of additionality. Each company will have different views of the criteria a project or agreement would need to meet to be considered additional. However, it can be characterised using a 'but for' test. In the context of a corporate PPA, would the renewable electricity have been generated 'but for' the fact that the corporate PPA was put in place?

Companies may see a reputational boost from being associated with projects that can prove additionality where they are engaging stakeholders that understand the renewable energy landscape. However, it should be noted that the GHG reporting protocol does not mandate additionality in order for renewable electricity to be recognised as zero carbon, nor does RE100 require additionality. As the market matures, more companies will develop frameworks on what additionality means to them and how to select their projects.

The broad question of whether a project would have been developed 'but for' the corporate PPA can be satisfied via a physical PPA or a virtual PPA. In each case, the price payable by the corporate buyer can establish the viability of the project by providing a certain revenue stream for the developer.

It should also be noted that discussions of additionality need not be limited to new projects. It could be that where a developer has a limited amount of capital available for development, the re-financing of existing assets to free up capital for further developments is critical. Corporate PPAs can play a role here by enabling re-financing and thereby facilitating further project developments. Here, 'but for' the corporate PPA the developer would not have been able to build an additional project.

"Corporate renewable energy procurement is a crucial part of advancing early and affordable action in markets around the world. WRI is seeing customers ask tough questions about whether their purchases are having the maximum positive impact on the grid – whether they're working with their utilities or directly with developers."

Andrew Steer
President & CEO at the World Resources Institute

3. The growth of corporate PPAs and current global hot spots

Where are the global hot spots for corporate renewable PPAs?

1. What has made corporate renewable PPAs attractive?
2. Where will corporate renewable PPAs become attractive?

Key growth drivers have led to an uptake of corporate PPAs in some markets over recent years. Using those drivers, a number of markets have been identified where conditions for future growth exist. Examples of deals that have been already occurring in these established and growth markets are depicted at the end of this section.

"EDF is fully committed on climate pledge, acting responsibly for the reduction of carbon emissions. Lately we've seen unprecedented momentum in the fight against climate change. Corporations like Google, P&G and Microsoft have recently joined our Corporate Buyers portfolio. This is just the beginning: this trend, supported by renewable energies' competitiveness, technological progress and adequate regulatory changes will quickly spread out from the US, where it first emerged, to the global marketplace." -

Antoine Cahuzac
Executive Vice President Renewable Energies at EDF Group

3.1 What has made corporate renewable PPAs attractive?

The market development for corporate PPAs needs to be driven both from the developer and the corporate buyer side to prosper. The market should support renewables in general to ensure sufficient supply of projects, as well as being attractive for corporate buyers to ensure there is sufficient demand. Some key factors are outlined below.

What makes a market attractive for corporate PPAs?

 Driver for renewables

 Driver for corporate PPAs

General considerations

Attractive market economics such as political and currency stability as well as robust sovereign credit rating

Attractive business environment including corruption perception, ease of doing business, strength of investor protection and transparency of policy making

Clear national commitment to diversify electricity mix towards renewable power

Lack of material regulatory barriers to a corporate PPA model

Renewables cost competitive with grid – enables market and PPAs

Sufficiently large electricity demand – from company operations

Sufficient grid infrastructure for transmission and balancing

Developer

- **A supportive renewable subsidy regime** that does not 'crowd-out' the role of PPAs (e.g. Feed-in-Tariffs can be seen to limit corporate PPAs)
- **Reduction / Removal of stable government subsidies** can drive developers (and investors) to seek stable revenues from corporate PPAs
- **Unavailability of alternative long term power contracts** from government / utilities meaning that corporate PPAs can offer developers the best economic deal
- **Significant presence of corporate buyers** who are suitably large and credit worthy
- **Availability of renewable resource** (solar, wind, biomass, hydro, geothermal) and projects
- **Increasingly lower equipment and labour costs**, supporting strong local supply chain for renewables and promoting local economy
- **Large market size** (in population and economy terms) tend to offer greater opportunities for economies of scale
- **Established project finance markets** can ease implementation of projects

Corporate buyer

- **High and volatile market prices** can encourage consumers to seek lower fixed price corporate PPAs
- **Markets with large operational footprints** or corporate buyers with publicly stated renewables or carbon reduction targets
- **Reputation-led or government-led pressure** for corporate buyers to source electricity from renewable sources (such as mandated renewables targets on corporate buyers, or mandated carbon pricing)
- **Actual or forecast electricity demand growth** can encourage fixed price PPAs to limit exposure to potentially increasing power costs
- **Proven developer / utility experience** in structuring corporate PPAs in country (navigating regulatory landscape)

The impacts of subsidy regimes on the attractiveness of corporate PPAs

In many places, renewable projects benefit from support regimes to encourage new investment. The structure of these incentive regimes can have a marked impact on the development of a corporate PPA market. For example, where such incentives provide a fixed price for exported electricity (such as under a Feed-in Tariff or Contract-for-Difference model), developers are less likely to be incentivised to seek corporate off-takers. In contrast, Renewable Portfolio Standards largely increase uptake of corporate PPAs, through mandating utilities or corporate buyers to source more renewable power, while other subsidies such as Tax Credits increase PPAs through facilitating lower priced power.

Common support mechanisms include the following:

Feed-in Tariffs (FiTs) are direct payments from the government/ electricity market regulator/ utility to developers for supplying renewable electricity to the grid. FiTs are a payment per MWh and as such, do not expose to wholesale market prices. They were created to support technological development and encourage widespread adoption and cost reductions. Nowadays, however fixed FiTs are being reduced significantly or turned into variable FiTs, since renewables are becoming competitive in an increasing number of regions. Government-backed fixed FiTs at a premium to the wholesale market mean a lack of incentive for developers to sign corporate PPAs, so their decline is expected to increase the appetite for corporate PPAs.

Contracts for Difference (CfDs) for grid-supplied renewables use strike prices that are set by the government, regulators or auctions for each renewable generation asset type. CfDs can be one-way or two-way: When wholesale prices drop below the strike price, the price paid to the developer is topped up to the pre-determined level. When market prices are above the strike price, projects repay the difference.[10] For a two-way CfD both applies, for a one-way CfD only the first payment is relevant. Similar to FiTs, CfDs do not provide a strong incentive for developers to contract with corporate buyers.

Renewable Portfolio Standards (RPS) are quotas placed on utilities to source a certain amount of electricity from renewable sources. Where a utility does not have enough certificates to meet its obligation from their own generation assets, it is required to purchase these from the electricity market regulator, or pay renewable generation assets for these, often at an inflated price. RPS can also be applied to large consumers (as seen in Argentina, Mexico and India) and in this case are likely to lead to a higher uptake of PPAs.

Production Tax Credits (PTC) and Investment Tax Credits (ITC) are the primary incentives available in the US. The PTC currently applies to electricity production from wind, biomass, and geothermal projects, while the ITC applies to solar, fuel cells, and cogeneration projects. Both schemes were extended to new projects commencing construction by end 2016 with the subsidy decreasing over the subsequent 4 years. The PTC and ITC have led to developers being able to offer more attractive PPA prices to off-takers.

10. Note that this model applies where the developer is selling to the grid. CfD structures also exist within synthetic/virtual corporate PPAs, but the support mechanism described here is a government-backed model.

3.1.1 United States

Statistics around contracted volumes of corporate PPAs are not aggregated as yet on a global level, however one market that has seen significant growth in corporate PPAs is the US. Data from the Rocky Mountain Institute's Business Renewable Center shows that publicly announced annual contracted capacity for corporate PPAs, green power purchases, green tariffs and outright project ownership increased from 0.05 GW in 2012 to 3.44 GW in 2015 (see chart on the next page). Understanding the drivers in this market is useful to determine regions where replication of this growth is more likely to occur in the near term.

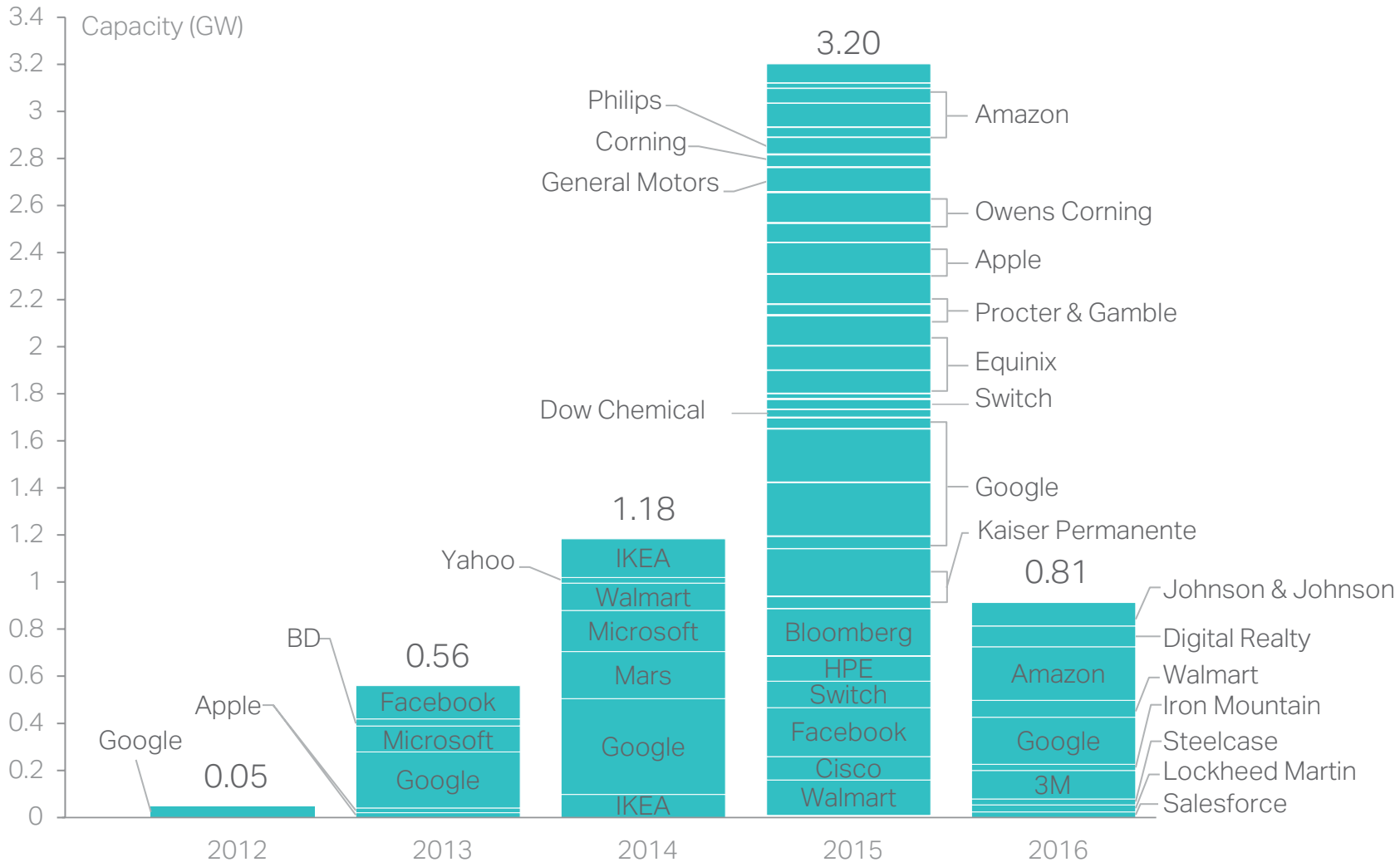
The key factors listed in Section 3.1 have led to the increased attractiveness of the US as a market for corporate PPAs, both from a developer and a buyer perspective:

- Many American companies have made significant commitments to increasing procurement of renewable electricity;
- There is a plentiful supply of different kinds of renewable electricity projects;
- There is wide availability of expertise in structuring electricity transactions and working across different states, as well as a buoyant project finance market;
- Municipalities and other large consumers outside the typical corporate buyer world are also actively engaged with the procurement of power;
- At the same time, electricity suppliers did not always offer long term PPA pricing that developers needed, and as such, projects shifted to corporate buyers as off-takers;
- The sharp increase in 2015 was mostly due to an expected expiration of PTC/ITC subsidies, which were then subsequently extended to beyond 2020. The acceleration of projects into 2015 and low wholesale market prices have meant that the first two quarters of 2016 have seen fewer PPAs. By the end of Q2 2016, 586 MW of renewables had been contracted by corporate buyers[11].

There have also been challenges to overcome in the US – the vast land area means that generation assets and consumption sites could well be dispersed across a number of separate grid networks and utility suppliers, and as such, virtual PPA structures are often used (Section 2.1.2) to aggregate volumes into one contract. The demand for corporate PPAs has been led predominantly by technology companies such as Apple, Google and Amazon, but the market is now opening up to other sectors as well – such as heavy-industry companies with a high power demand. Traditional monopoly utilities are also beginning to find ways to enable access to PPAs for their largest customers, further supporting this trend.

11. Rocky Mountain Institute's Business Renewable Center, 21 July 2016

Corporate Renewable Deals 2012 – 2016



Publicly announced contracted capacity of corporate Power Purchase Agreements, Green Power Purchases, Green Tariffs, and Outright Project Ownership in the United States, 2012 – 2016. Excludes on-site generation such as rooftop solar PV. Last updated: October 10, 2016.

Data courtesy of Rocky Mountain Institute's Business Renewables Center (*http://www.businessrenewables.org/*)

3.1.2 United Kingdom

The level of deregulation in the UK market has meant that corporate PPAs started to gain traction in around 2011 - with contracted capacity in the 100 MWs per year throughout the last 5 years[12]. The interconnectivity of the UK power market via one centralised transmission grid network has meant that sleeved agreements have been the norm.

The attraction for developers towards corporate PPAs rather than direct utility agreements has been supported by the main subsidy regime - a Renewable Portfolio Standard requirement. This has provided a significant portion of revenue certainty for projects via Renewable Obligation Certificates (ROCs). This stable ROC revenue is added to a volatile wholesale market price, so developers have been keen to contract fixed price corporate PPAs (instead of variable market price) and reduce their cost of capital through the reduced market exposure and increased revenue certainty. Combining large market price volatility with an active project finance market for large renewables projects created the conditions for increasing uptake of corporate PPAs.

However, the ROC support regime is currently being phased out (by end March 2017) in favour of a Government-backed Contract for Difference model. While the CfD regime would mean developers are less likely to seek out corporate PPAs for revenue certainty, onshore wind and solar PV projects have recently been excluded from future CfD auctions so the primary route to market is on a merchant basis. As a result, developers are now keen to contract for fixed price corporate PPAs.

3.2 Where will corporate renewable PPAs become attractive?

Following the successful market developments in the United States and the United Kingdom, and noting the drivers in Section 3.1, possible future growth markets for corporate PPAs have been identified. These are markets that exhibit some of the required qualities, but the list is by no means exhaustive - others are bound to emerge. Mexico, Chile, Brazil, China, India, South Africa and Sweden

"Power Purchase Agreements are a tool that corporations are increasingly adopting and that are becoming pervasive in several regions of the world, even in areas where a supporting regulatory framework is still lacking, demonstrating that renewable energy is more and more competitive, reliable and convenient, also for industrial customers. The private sector is leading the race of renewables, regardless of policies or targets, because they make a strong business case by themselves."

Francesco Venturini
CEO at Enel Green Power

12. Public statistics are not readily available in the United Kingdom. This view is based on capacity of projects with corporate PPAs that Norton Rose Fulbright LLP has directly advised on.

highlight some of the attributes to look for. Using sample deals, the world map on page 42 highlights how corporate renewable PPAs are growing globally.

3.2.1 Latin America

Latin America is quickly becoming a growth region for renewable electricity deployment. Within the range of countries pushing forward, Mexico has seen a number of deals for many years, while Chile is demonstrating clear drivers for growth. Others are earlier in their development of corporate PPAs, such as Brazil and Argentina.

Case Study: EDP Renewables' Move to the Mexican market

Going into 2013, EDP Renewables North America (EDPRNA) had predominantly built projects in the United States and had recently been pursuing opportunities in Canada. However, due in part to the historical lack of consistency with regards to the renewable energy tax incentives in the U.S. and coupled with an expected increase in energy demand, EDPRNA began to consider Mexico as additional location for its growth. At the time, the market for corporate PPAs in Mexico was considerably different than the U.S. Bilateral transactions were completed through what is known as the self-supply regulatory scheme, which required that the power customer own a portion of the generation asset. While tax equity financing structures in the U.S. involve bringing on an investor as a partner in a project, including a PPA counterparty in the ownership structure was a unique challenge. Nonetheless, EDPRNA found a partner in Industrias Penoles, a large Mexican mining company owned by Grupo Bal. In April 2014, the two parties executed an agreement for the Eolica de Coahuila project, a 199.5 MW wind farm that is currently being built on land owned by Penoles. Since the execution of this PPA, the Mexican energy market has changed significantly due to market reform and the change to an auction-based structure, but the initial move into Mexico allowed EDPRNA to capture its second global corporate PPA.

Mexico

Corporate PPAs have been feasible, if not popular for some time in Mexico. The increase in take-up of corporate PPAs (especially in groups of buyers) has been driven by legislation and corporate need, rather than developers' requirements - while residential rates are subsidised, industrial rates are not, meaning Mexico's largest businesses have seen power costs more than double over the past decade. Historically, Mexico's relatively expensive natural gas and oil-powered generation fleet combined with ageing transmission lines have contributed to increasing electricity costs, pushing companies to source electricity through direct PPAs.

Now, the country is entering a new growth period given additional drivers that have appeared. Recently market prices fell due to cheaper gas imports from the US, Government renewables auctions in April 2016 and other macro-economic factors. This has made some older PPAs uneconomic, while offering attractive pricing on new PPAs.

However, the Mexican experience demonstrates that timing is critical. Mexico is currently undergoing a second significant energy market reform, and one of the changes is to modify the way corporate PPAs can be contracted. Previously, under the self-supply rules any capacity contracted would have been subject to a relatively small 'postage stamp' fixed wheeling (transportation) cost. Some of these legacy projects are still available for new PPAs, but require PPAs and financial commitments to be complete by the end of 2016. From 2017 onwards, Qualified Users (>1 MW demand) will be able to sign bilateral contracts directly with developers. Projects will have to issue clean energy certificates (which will count towards organisations' clean energy obligations from 2018) and the transmission and distribution costs will vary based on voltage and region. This increases the uncertainty in total pricing – and at least in the medium term, market participants are expecting to see an increase in power prices.

Brazil

Brazil's market is made up of a regulated and non-regulated element. Large consumers participating within the non-regulated market are able to negotiate contracts with independent producers, traders and importers of electricity. The volatility increases in spot prices during 2014 and early 2015 (due to severe droughts putting a strain on Brazil's largely hydro-focused generation), led to a trend in large electricity consumers migrating towards the non-regulated contracting environment.

High wind capacity factors and strong irradiation potential compared to other markets have meant that Brazil is a prime candidate for wind and solar power generation, although there is currently a large pipeline of contracts awaiting grid connection. Immediate challenges for corporate PPAs include currency risk, grid access, lack of local suppliers for some technologies such as solar panels, and dealing with variability of generation in the non-regulated market. However, with a general trend towards deregulation of electricity markets across Latin America, countries like Brazil are likely to become significantly more interesting from a corporate PPA perspective in the near future.

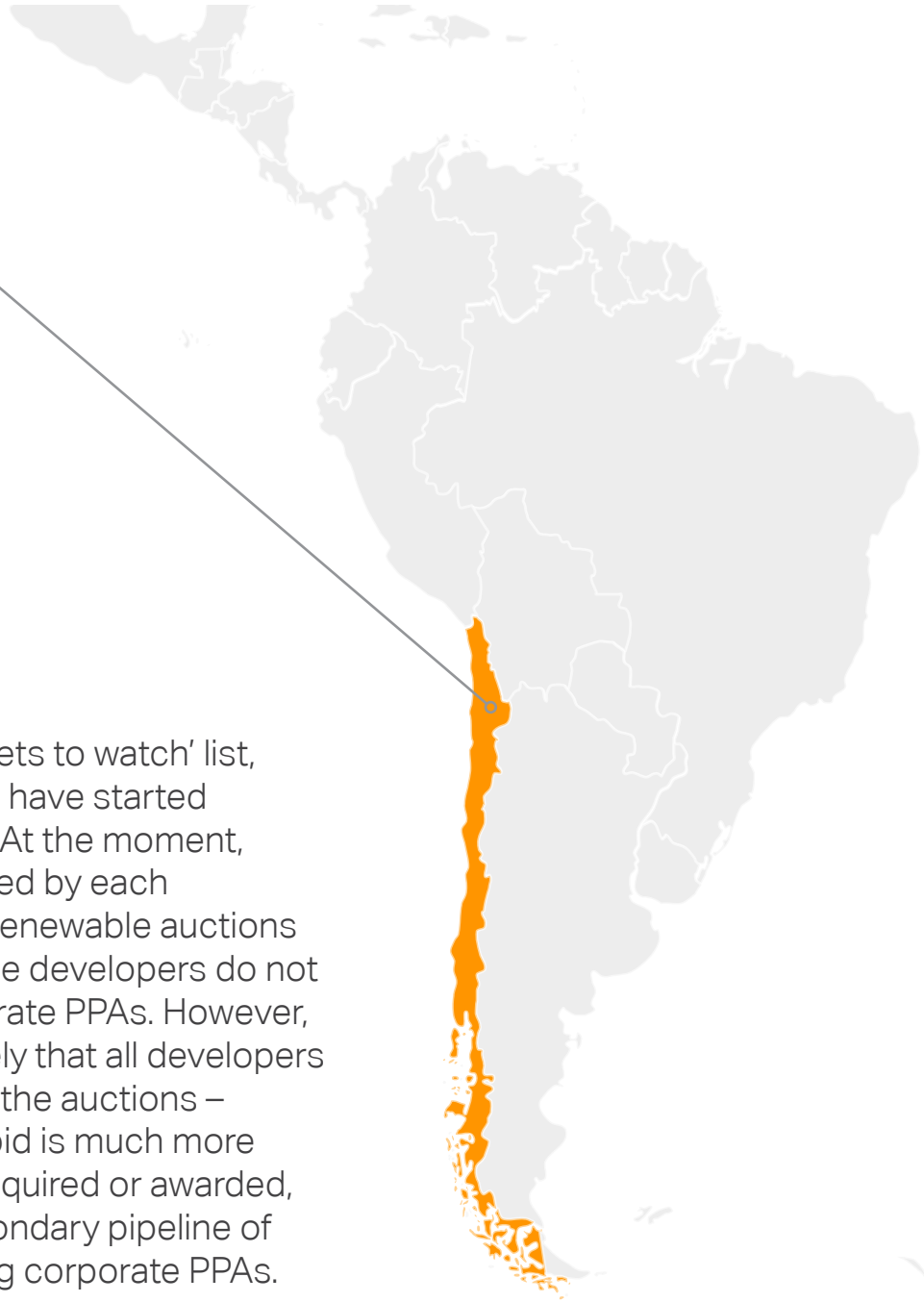
Chile

Chile is an attractive market for renewable electricity with 1.1 GW of solar generation installed by April 2016. It brings together perhaps the best example of an alignment of drivers that are likely to support the growth of corporate PPAs:

- Abundance of natural resource enables renewables projects to compete unsubsidised in auctions with conventional power, winning 50-100% of capacity purely on price;
- Chile has very high wholesale prices in general, amongst the highest in Latin America, and this creates a strong driver for corporate buyers to look into an electricity hedge.

There is also demand from the public sector: for example, in May 2016, the Metro system operator in Santiago announced that it was entering into a PPA with SunPower to purchase 300 GWh of power annually from the 100 MW El Pelícano Solar Project, which will commence operations in 2017.

On the 'power markets to watch' list, Brazil and Argentina have started to come into focus. At the moment, the certainty provided by each government's own renewable auctions may mean that some developers do not actively seek corporate PPAs. However, it is extremely unlikely that all developers will win contracts in the auctions – often the capacity bid is much more than the capacity required or awarded, thus creating a secondary pipeline of projects still needing corporate PPAs.



Argentina

Argentina's new government updated the country's renewable electricity ambitions in 2015, mandating the country to source 8% of its electricity from renewables by the end of 2017 and 20% by the end of 2025 (up from the current 1.8%). All consumers with demand over 300 kW will have to comply with these targets, however they will be able to opt out of the government's regulated pool and source directly from a developer (via corporate PPAs), through a trader/ distributor or via self-generation projects / cogeneration of electricity from renewable sources.

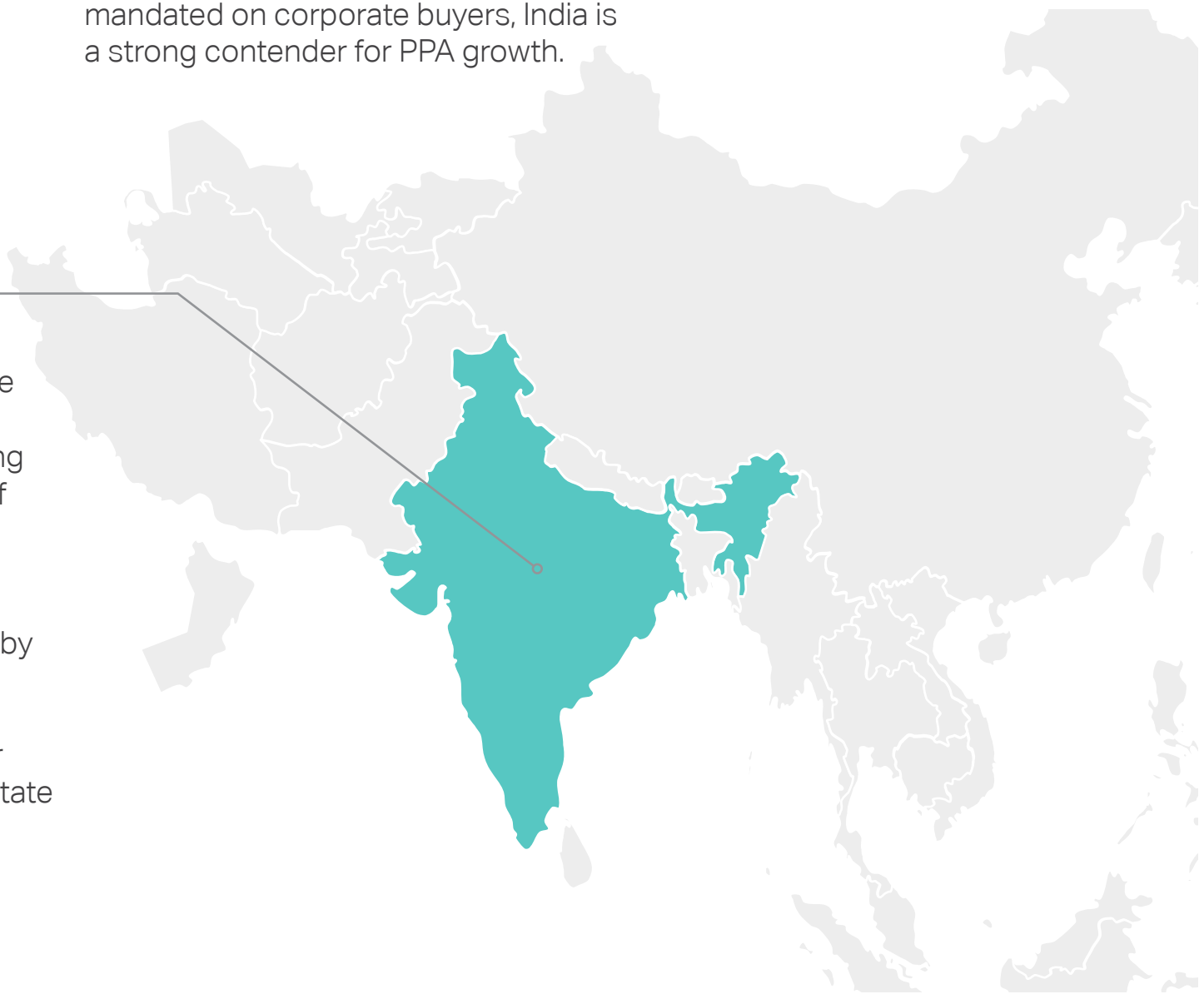
The details of the new regulations are not yet finalised, however it is expected that the renewable energy sourcing targets will support the growth of a corporate PPA market, (albeit organisations need to be aware that they will need to continue to meet the mandated renewables quotas through any PPAs they contract directly with developers). In the first government tender round in Aug/Sep 2016, offers totaling 6,366 MW were received, six times more than the 1,000 MW originally tendered, meaning that a large number of projects will still be available for corporate PPAs after the tender.

3.2.2 Asia Pacific

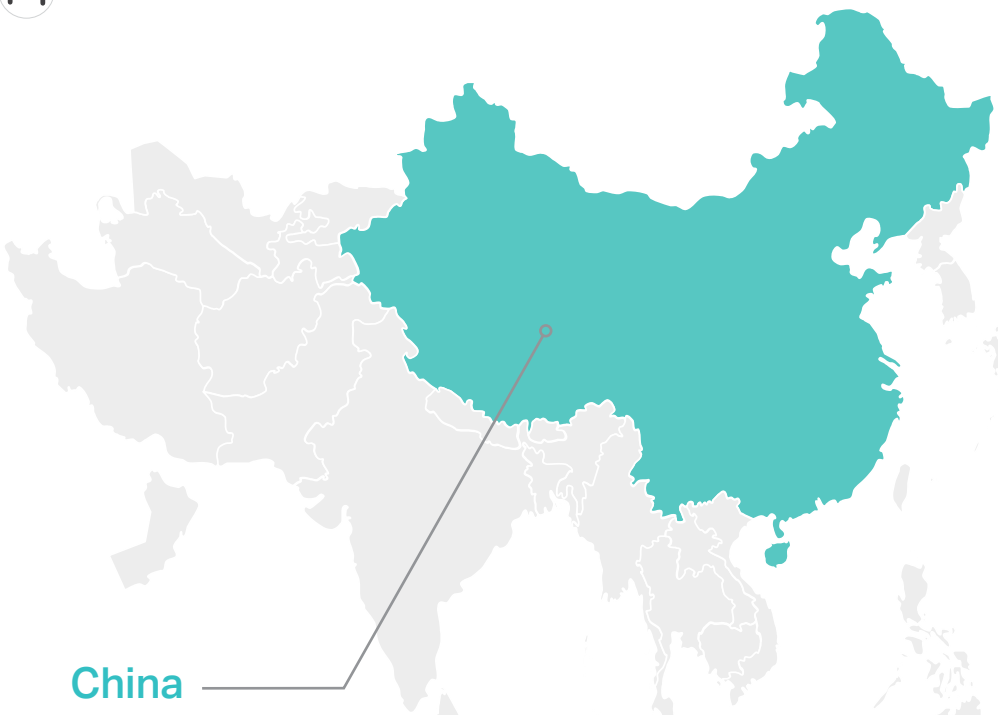
Generally speaking, Asian markets are relatively underexploited in respect of opportunities for corporate PPAs. However, with a large number of organisations increasing their operations there due to the region's strong economic growth, there has been an increasing focus on being able to purchase power from off-site projects or purchase renewable certificates to 'green' operations.

India

India's typically higher prices of PPAs[13] compared to grid prices have historically limited the growth of the corporate PPA market; however, rising grid tariffs and falling capital costs of renewable generation have recently led to increased attractiveness of the PPA market. Some states have further incentivised corporate PPAs by reducing or waiving off-grid charges on renewable generation, which has made corporate PPA prices cheaper than grid prices. Lack of subsidy in state tariffs for corporate buyers (despite heavily subsidised costs for residential consumers) is also likely to support the attractiveness of corporate PPAs. As current existing FiTs are to be replaced by auctions for wind projects and ambitious renewables targets are being mandated on corporate buyers, India is a strong contender for PPA growth.



13. This is due to high network usage and other grid charges.



"We have built around 3,000MW of renewable energy capacity in India and China based on PPAs that have been typically signed with electricity distribution or grid companies. They give investors the predictability needed to underpin these investments. Regulatory changes have now opened up opportunities for the wider business sector to enter into PPAs for renewable energy. This will not only help companies directly access renewable energy, but will also help to scale up renewable energy development in Asia."

Richard Lancaster
CEO at CLP

China

China, with its vast land area and strong natural resource potential for renewable generation, is currently undergoing market reforms which aim to develop a commodity electricity market where prices more closely reflect costs. In the current model electricity supply is heavily regulated, and PPAs directly with electricity generators are mostly restricted to large industrial consumers. The contracts are often tripartite agreements between the buyer, developer and state-owned grid company such as the 2014 deal between Heyi Nickel Chromium Composite Materials and a member of the Huaneng Group in Inner Mongolia[14].

With the current surplus supply and evolving nature of the market reform, clear and well-defined market rules will be key to further development of PPA in the near term. The Chinese government is running pilots in various cities and provincial power grids to establish approved transmission and distribution (T&D) fees. Having certainty on these T&D costs and more policy clarity on which corporate buyers are eligible to contract off-site PPAs will make it easier for corporate PPAs to become established in the country. Corporate PPAs are strongly encouraged by the Government in those provinces where curtailment is an issue. Furthermore, at present, current regional FiTs for renewable power projects are keeping PPAs above market rates, whereas over the next couple of years, the FiTs are expected to reduce or be removed altogether, enabling corporate PPAs to become competitive.

14. *http://www.cpnn.com.cn/dljg/201411/t20141104_764203.html*

3.2.3 Europe

Growth markets in Europe outside of the United Kingdom show a mix of drivers, making it more difficult to identify near term significant growth markets. However, as FiT regimes across Europe reduce or lose their high fixed rates, those markets are likely to see increased appetite for corporate PPAs. For example, countries like Ireland, France, Germany and Poland may well see a surge in interest from 2017 onwards.

Sweden

Sweden provides a good example of this mix of drivers. The renewable support regime is a quota system, but without government mandated controls to ensure renewable electricity certificates retain value, the price of certificates is driven by market forces. This has led to a collapse in value of certificates through over-supply. This, combined with low wholesale electricity prices due to a large source of cheap electricity (nuclear and hydro), has meant that corporate PPAs have not been attractive. Despite these barriers, there has been some activity: for example, Google entered into a 10-year fixed price deal in 2013 for a 72 MW windfarm and a further 10-year fixed price deal in 2014 in respect of four windfarms with an aggregate capacity of 59 MW.

Against this backdrop, there is evidence of developments that could markedly change the Swedish landscape for corporate PPAs:

- Incremental reform of the renewable support system to address over-supply will improve the business case for new renewable developments, as well as reducing pressure on the required pricing under a PPA;
- There are experienced financiers with a history of supporting Swedish wind projects, many of which will be focused on hedging price volatility risks in light of past experiences with merchant projects;
- The continued presence of corporate buyers looking beyond pure economic drivers towards long term sustainability.

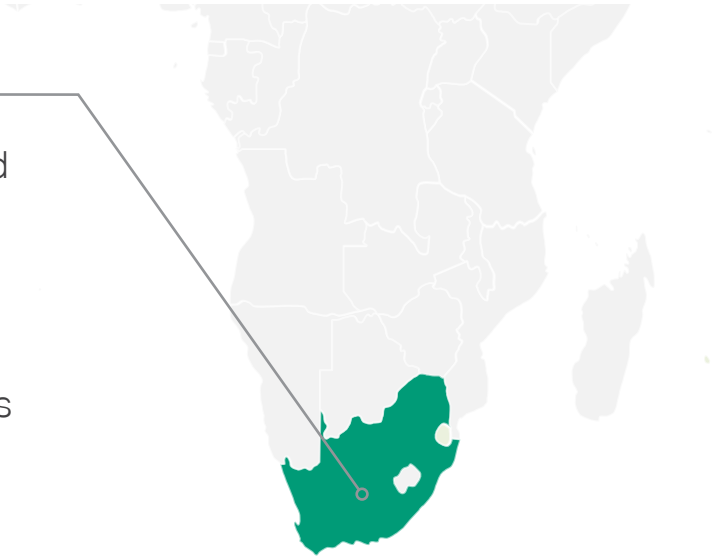
South Africa

Since 2011 and the launch of the much lauded REIPPP program by the Department of Energy, South Africa has seen a rapid and sustained development of renewables, growing from a handful of MW in 2011 to over 6 GW installed in 2016, all set to sell power to the national utility Eskom under 20-year PPAs. In South Africa the national utility Eskom acts as the single buyer with tariffs set by the national regulator. The REIPPP program favors large projects (> 100 MW for wind and > 70 MW for PV) as their scale achieves lower bidding tariffs (latest bid tariffs were 51 €/MWh for PV and 40 €/MWh for wind). As a result, many small to medium-sized projects have been abandoned or mothballed by developers as they couldn't compete in the REIPPP. These projects' prices, however, can compete with the increasing grid tariffs, in particular in municipalities were average tariffs for industrial users can reach over 60 €/MWh - municipalities use the electricity tariff to subsidize needs of the communities, e.g. water reticulation.

These high grid tariffs have stimulated significant interest from corporate buyers (mostly in the mining and automotive industry).

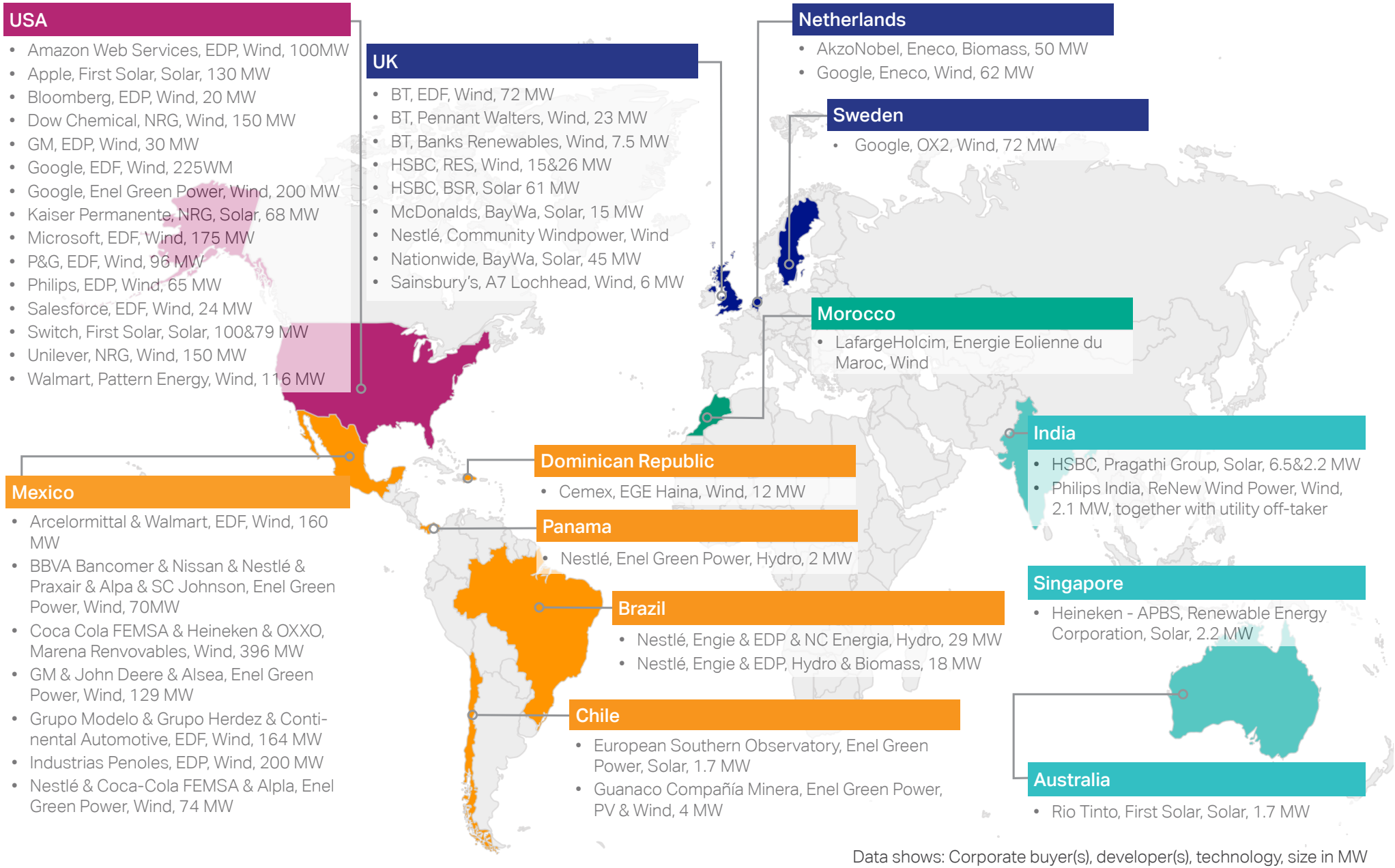
Although the National Electricity Regulator´s (NERSA) 'Regulatory Rules on Network Charges for Third Party Transportation of Energy' drafted in 2012 are currently under review, the South African Electricity Regulation Act does in fact make provision for distribution and transmission operators to allow third-party access to the network. Eskom has developed a set of guidelines to deal with 'wheeling' in 2012 and to date a few IPPs have successfully established such an agreement and have plants operating under a bilateral trading agreement.

The main barrier to the development of corporate PPAs in South Africa today is policy delay. The Integrated Resource Plan does not make provisions for bilateral electricity trading, but determines the type of capacity required - baseload, mid-merit, peaking. The Minister of the Department of



Energy then decides who this new built capacity is allocated to. As such, bilateral electricity trading outside of the REIPPP is subject to a Ministerial Determination in order for a generation license to be granted from the regulator (this requirement however falls away in the case of on-site generation which is not connected to the public network). However, there is currently no process in place on when or how this decision will be taken. By creating a clearer policy framework for bilateral electricity trading including timelines and processes, the Department of Energy could stimulate corporate renewable PPAs in South Africa.

Examples of corporate renewable PPAs around the globe



USA

- Amazon Web Services, EDP, Wind, 100MW
- Apple, First Solar, Solar, 130 MW
- Bloomberg, EDP, Wind, 20 MW
- Dow Chemical, NRG, Wind, 150 MW
- GM, EDP, Wind, 30 MW
- Google, EDF, Wind, 225WM
- Google, Enel Green Power, Wind, 200 MW
- Kaiser Permanente, NRG, Solar, 68 MW
- Microsoft, EDF, Wind, 175 MW
- P&G, EDF, Wind, 96 MW
- Philips, EDP, Wind, 65 MW
- Salesforce, EDF, Wind, 24 MW
- Switch, First Solar, Solar, 100&79 MW
- Unilever, NRG, Wind, 150 MW
- Walmart, Pattern Energy, Wind, 116 MW

UK

- BT, EDF, Wind, 72 MW
- BT, Pennant Walters, Wind, 23 MW
- BT, Banks Renewables, Wind, 7.5 MW
- HSBC, RES, Wind, 15&26 MW
- HSBC, BSR, Solar 61 MW
- McDonalds, BayWa, Solar, 15 MW
- Nestlé, Community Windpower, Wind
- Nationwide, BayWa, Solar, 45 MW
- Sainsbury's, A7 Lochhead, Wind, 6 MW

Netherlands

- AkzoNobel, Eneco, Biomass, 50 MW
- Google, Eneco, Wind, 62 MW

Sweden

- Google, OX2, Wind, 72 MW

Morocco

- LafargeHolcim, Energie Eolienne du Maroc, Wind

India

- HSBC, Pragathi Group, Solar, 6.5&2.2 MW
- Philips India, ReNew Wind Power, Wind, 2.1 MW, together with utility off-taker

Mexico

- Arcelormittal & Walmart, EDF, Wind, 160 MW
- BBVA Bancomer & Nissan & Nestlé & Praxair & Alpa & SC Johnson, Enel Green Power, Wind, 70MW
- Coca Cola FEMSA & Heineken & OXXO, Marena Renvovables, Wind, 396 MW
- GM & John Deere & Alsea, Enel Green Power, Wind, 129 MW
- Grupo Modelo & Grupo Herdez & Continental Automotive, EDF, Wind, 164 MW
- Industrias Penoles, EDP, Wind, 200 MW
- Nestlé & Coca-Cola FEMSA & Alpla, Enel Green Power, Wind, 74 MW

Dominican Republic

- Cemex, EGE Haina, Wind, 12 MW

Panama

- Nestlé, Enel Green Power, Hydro, 2 MW

Brazil

- Nestlé, Engie & EDP & NC Energia, Hydro, 29 MW
- Nestlé, Engie & EDP, Hydro & Biomass, 18 MW

Chile

- European Southern Observatory, Enel Green Power, Solar, 1.7 MW
- Guanaco Compañía Minera, Enel Green Power, PV & Wind, 4 MW

Singapore

- Heineken - APBS, Renewable Energy Corporation, Solar, 2.2 MW

Australia

- Rio Tinto, First Solar, Solar, 1.7 MW

Data shows: Corporate buyer(s), developer(s), technology, size in MW

4. Challenges and solutions from a corporate buyer's perspective

Corporate buyers will need to take a number of decisions and actions in order to complete a PPA. This section provides guidance on key considerations for corporate buyers ranging from more practical issues such as investing time and resources or securing internal approvals, to financial and regulatory matters such as understanding pricing and accounting, and competition law issues. Different types of PPAs (short or long term, fixed price or discount-to-market) have different potential benefits, corresponding risks and options to manage those risks. The outlined topics will as such have different relevance to each considered PPA.

4.1 Allocating time and resources to a non-core area

Electricity procurement is often managed as part of corporate procurement. The degree of proactive electricity procurement varies widely across organisations, typically being greater in high electricity demand sectors and high electricity cost geographies. In such sectors and geographies, electricity prices can make a material difference to the company's overall profitability and can help secure an advantage over competitors.

To develop a renewable electricity procurement strategy, a company may need additional resources – depending on the available in-house capabilities – to:

- Understand relevant aspects of the electricity sector in its key operating countries and the resulting PPA opportunities;
- Determine what the optimal PPA structure would be for their electricity usage, operational locations and business needs;
- Manage a competitive procurement process to identify, evaluate, and select the most suitable developers, projects and PPAs;
- Engage with other stakeholders in the business to ensure the procurement is a success.

Companies can choose the extent and complexity of the renewable electricity procurement strategy they want to implement. Developing a renewable electricity procurement strategy may require more internal resource than 'business as usual' electricity management initially, in order to ensure that any strategy is implemented smoothly. One approach if internal expertise is not available, it to manage this issue by using advisers or when looking at new markets, whilst developing in-house capability over time.

4.2 Entering into a long term contract

Whilst not all corporate PPAs are long term, those that are usually offer price security and cost savings over 10+ years. Therefore, for some, a corporate PPA may be the longest duration contract their business as a whole will enter into. This may trigger the need for internal approvals that have not previously been needed for electricity procurement.

One issue to consider in this context is the corporate buyer's estimated future electricity demand and the relevant decision makers' views on it. Business models and resulting power needs can shift markedly over time[15]. Many companies are conservative in the assumptions about their long term needs. To mitigate the risk of reductions in future electricity consumption over time, procurements can be run for a portion of electricity demand that is less than the comapany's current estimated

15. For example, some retail corporate buyers have seen their peak load electricity usage reduce in recent years as a result of the move to online business and fewer retail outlets. Production process efficiencies in the manufacturing sector may lead to a change in usage patterns. On the other hand, business growth may see corporate buyers' electricity consumption increase substantially.

demand, or alternatively decide a short term corporate PPA is more suitable. Other ways to manage this issue include allowing the corporate buyer to assign its rights and obligations under a PPA to another party, pre-agreeing exit fees or allowing for an adjustment of volumes in circumstances of severe changes of demand.

4.3 Understanding power price forecasts

While deciding whether to enter into a long term fixed price corporate PPA, companies consider what their long term view on power prices is, for example for 5-10 years into the future, in order to understand the financial implications of a deal. In jurisdictions with wholesale electricity exchanges there is usually a good indication of power prices for the next 1-3 years, but generally no further. Organisations therefore typically have to rely on power price scenarios provided by market experts.

As with all forecasts, they are an assessment of the most likely

Case Study: BT powers on towards global green energy target

BT has announced aims to purchase 100% renewable energy across the globe by 2020 where markets allow. This follows from BT buying 100% renewable electricity in the UK since 2012 and being a founding member of the RE100 group.

BT is one of the UK's biggest consumers of electricity. It uses around one per cent of the UK's energy to power its national networks, data centres and offices. Energy company npower supplies BT with electricity from renewable sources and as part of the contract, npower gives BT clear visibility of the carbon impact of the electricity it purchases. It provides the company with an A-G rated electricity source label which certifies that all energy bought is A-certified (A has the lowest carbon content while G has the highest). Having visibility of the carbon content in electricity was an innovative move that stimulates demand for more low carbon A-rated electricity. This encourages energy companies to invest in renewable energy infrastructure which helps to drive down overall carbon emissions in the UK.

BT became one of the first sizable commercial power users in the UK to strike large scale, long term PPAs. In a series of deals worth £440 million, BT secured 15 years of energy output from three UK wind farms. PPAs are just another way of buying energy, often supporting new renewable generation. BT's experience helps demonstrate that PPAs work well alongside buying from energy suppliers to provide 100% renewable electricity.

development of power prices using fundamental supply and demand analysis and often include some downside and upside sensitivities. There is a risk that the forecasted movement of electricity prices in, for example, 15 years' time is wrong.

During 2015, many regions such as Europe and the United States experienced an unexpectedly large decrease in wholesale electricity prices, which had not been predicted by forecasts that have underpinned a number of project financed renewable electricity projects. As such, some corporate buyers which entered into fixed price PPAs near the wholesale market price are now paying a premium well above the current wholesale price. However, the reverse can equally be true, depending on the prevailing market conditions in any jurisdiction. The important issue is the extent to which actual prices deviate from the forecasts used in a corporate buyer's business case.

When valuing a corporate PPA, the fixed PPA prices should be compared to expected market prices over a long period, (such as the next 5-10 years). Short term periods of price premiums are more likely to be compensated for over this long term timeframe. Corporate buyers will also have enjoyed the benefit of price certainty in the interim.

4.4 Securing internal approvals

The process of putting a corporate PPA in place can involve many different functions within a company, including:

- Procurement teams;
- Operations and supply chain management;
- Facilities and energy management teams;
- Corporate social responsibility and environmental management teams;
- Marketing and communications;
- Finance and / or treasury functions;
- Legal teams;
- Board of Directors.


Picture courtesy of EGP

Proactive and clear communication of the benefits of corporate PPAs involving all relevant functions is key. For example, whilst the procurement team may be familiar with the advantages of PPAs, operation personnel may have concerns about the extent to which existing power supply arrangements might be impacted and technical difficulties in integrating a corporate PPA. Section 4.10 discusses how such concerns can be addressed by taking examples from the heavy-industry sector.

In aggregate, securing internal approvals from all relevant stakeholders is essential to avoid delays. Techniques that can help to succeed include:

- Mapping relevant departments and / or managers which will be required to sign off on key aspects of a corporate PPA (such as price, tenor, accounting);
- Designing an integrated approval process so that issues are raised and decided upon in a single process with all relevant stakeholders involved;
- Holding workshops early in the process which include representatives from corporate buyers that have experience of PPAs in order to internally promote understanding.

It should be noted that shorter-term PPAs may require fewer internal approvals than longer term PPAs.

4.5 Finding suitable projects

If a buyer has decided to enter into a corporate PPA, it will need to initiate a process to find a developer and a project that suits the corporate buyer's requirements. This will depend on the corporate buyer's overall electricity strategy, including the kind of renewable technologies they are targeting, price considerations and the location of the project. In some jurisdictions (especially where the corporate PPA market is still in the early stages of development), the number of projects available may not meet all of the preferences of the corporate buyer. It may be difficult to easily identify projects that are under development and initiate discussions.

"Our PPAs are a vote of confidence in renewable energy. They support BT's environmental ambitions and give us long term price certainty. We are well on our way to 100% renewables worldwide. We use our experience to help our partners and suppliers. Our #go100percent campaign is inspiring sports fans around the world to take action for a more sustainable world and we are encouraging our customers to switch to renewables."

Niall Dunne
Chief Sustainability Officer at BT

There are also tools available to find projects. This will differ from country to country. There are increasing numbers of public and private databases which aim to map and track renewable electricity projects under development[16].

4.6 Benchmarking prices via tenders

Different corporate buyers will have different views on what constitutes good value for money for them, depending on the currencies they are exposed to, their view of future costs and their risk appetite. Corporate PPAs are not a standardised commodity, and there is no benchmark price for the electricity purchased through them. They are influenced by factors such as technology choice, investment costs, cost of capital, tenor of the contract, profit margin and O&M costs throughout the contract duration.

In order to identify a competitive price level in a country, a corporate buyer can conduct a tender process to compare bids from multiple developers for similar

16. For example, Bloomberg New Energy Finance project database, BMI / BRC for US projects and BEIS's Renewable Energy Planning Database for UK projects.

Case Study: Nestlé UK & Ireland going 100% renewable electricity

Nestlé has committed to procure 100% of its electricity demand from renewable sources within the shortest practical timescale – being a member of RE100 and Nestlé's CEO endorsing the six climate action initiatives of the CDP, buying renewable electricity is a key part of Nestlé's sustainability strategy. Building on the already achieved reduction of GHG emissions per tonne of product of almost 45% by 2015 (versus 2005), Nestlé has set a new target to reduce GHG emissions per tonne of product by 35% until 2020 (versus 2010).

To achieve these aims Nestlé UK developed a strategy focused on driving energy efficiency across operations and switching to renewable electricity supply.

From April 2016, 100% of Nestlé UK's grid supplied electricity has been procured from a REGO (Renewable Energy of Guaranteed Origin) backed green portfolio. To enhance security of supply and deliver cost benefit over the long term, Nestlé UK has also structured a long term PPA based arrangement which will bring new renewable generation capacity onto the market. This new deal, an initial 15-year partnership with Community Wind Power, will see a brand new nine turbine wind farm open in Dumfries and Galloway in the second half of 2017. It will produce approximately 125GWh of power per annum to initially cover half of Nestlé UK electricity needs; this is equivalent to the annual demands of 30,000 homes in the UK.

Nestlé UK has also invested in on-site renewable energy solutions, where appropriate. These include an Anaerobic Digestion plant which converts liquid effluent and unavoidable waste residues into biogas, which is itself converted into electricity and heat used by the site; a biomass boiler which uses coffee ground residues to create thermal energy; and two 0.5MW of site solar PV installations.

The combination of energy efficiency improvements combined with the switch to renewable solutions, will mean that Nestlé UK will significantly exceed the GHG target of 35% reduction per tonne of product in 2017, whilst enhancing security of supply and delivering economic benefits back to the business.

projects. Tenders should specify the required characteristics of the PPA (e.g. output, duration, region) but also ensure the scope is wide enough to receive a sufficient number of bids. Evaluations can take account of factors such as price, project viability, developer capability / track record and the creditworthiness of the owner of the renewable project. To ensure the long term success of the project and to meet overall sustainability and marketing objectives, developer capability and developer track record should be closely scrutinized.

A corporate buyer can also look to identify indirect sources of information. For example, public results of large government tenders for direct procurement of long term fixed price renewable electricity contracts provide evidence of consistent reduction in the capital costs of solar or wind projects. Various organisations provide high level analysis of the levelised cost of electricity from renewable technologies.[17] In developed markets such as the United States, there is also more specific analysis set out in various publicly available reports.[18]

4.7 Clarifying accounting treatment

The accounting implications of entering into a long term corporate PPA can (as is the case with other long term contracts) be significant, depending on the contractual wording of the final agreement and prevailing accounting regulations. The appropriate accounting treatment will depend on a variety of specific clauses in the PPA, and it is recommended that specialist internal or external advice is sought.

Under certain circumstances, the agreement may constitute a lease under the International Financial Reporting Standards (IFRS).[19] The application of the rules is fact specific and cannot be readily generalised. Whilst the drafting is aimed to make contract and lease classification clear, there is no specific guidance from the International Accounting Standards Board (IASB) on what this means in the context of PPAs. Should the assessment conclude that a PPA contains a lease, further analysis will determine if this is a finance or operating lease. A finance lease outcome would require the entity to record a liability (and asset) on the balance sheet. This may lead to knock on effects on the company's gearing ratios and debt covenants or other KPI's. Operating leases however, do not lead to any balance sheet liability; instead they result in a flat cost profile over the project term reflecting the underlying rent payments.

IFRS 16 will remove the distinction between operating and finance leases at the latest in 2019[20]. Under the new standard, all leases will be treated similarly to finance leases under the old standard. The new standard also includes examples related to PPAs and has other changes which may impact whether or not an agreement is classified as a lease. New contracts might not receive the same classification that was given to similar agreements under the old guidance.

As such, where an agreement contains a lease running beyond 2019, the balance sheet impact will depend on the value of any fixed amounts that the

17. See for example, Projected Costs of Generating Electricity, International Energy Agency 2015 which covers such costs in 22 countries.

18. See for example: Utility Scale Solar – an empirical analysis of project cost, performance and pricing trends in the United States, Lawrence Berkeley National Laboratory (September 2015)

19. *http://www.ifrs.org/Pages/default.aspx*

20. The IAS 17 definitions of leases are as follows:
"A lease is an agreement whereby the lessor conveys to the lessee in return for a payment or series of payments the right to use an asset for an agreed period of time"
"A finance lease is a lease that transfers substantially all the risks and rewards incidental to ownership of an asset"
"An operating lease is a lease other than a finance lease"

corporate buyer must pay the developer for energy, such that smaller fixed amounts generate lower assets and liabilities.

For a virtual PPA, it is likely that derivative accounting may be required to record the contract on the company's balance sheet at fair value with respect to the prevailing power prices. This is likely to introduce income statement volatility unless hedge accounting can be applied. Very early in the project development stage, corporate finance and accounting should be engaged to ensure appropriate conditions are negotiated.

4.8 Engaging a utility to sleeve the corporate PPA

If a sleeved corporate PPA is chosen, the buyer will need to check that their utility provider is able to offer sleeved PPA contracts, and if not, may need to run a specific tender to find a sleeving utility provider.

Some utilities are more efficient and cost effective at sleeving corporate PPAs than others. Utilities may also vary in the level of balancing risk (see Section 2.1) they can take. An experienced sleeving utility can significantly reduce the administrative burden on the buyer during the procurement process and is typically involved in the latter stages of PPA negotiation to ensure that any risks are minimised 'back-to-back' with the developer PPA contract.

4.9 Assessing regulatory restrictions and competition law

Previous sections have mentioned some of the regulatory issues that may impact on the structure of corporate PPAs, such as where there are legal restrictions on a non-utility directly purchasing electricity from the owner of a generation asset.

In jurisdictions where corporate PPAs are less common, but possible, it is likely regulatory issues will need to be addressed on a case by case basis, until a set of common, accepted practices have been developed.

This case-by-case assessment might require an on-going dialogue between developers, buyers, lenders, external advisers, regulators and local electricity suppliers. Navigating through such regulatory issues can give rise to delay. It is therefore recommended to consider them early in conjunction with above parties.

Competition law restrictions can equally be a challenge for buyers and developers. This will also be jurisdiction specific. However, many regimes that have been designed to ensure competition in the electricity sector have restrictions on large consumers exclusively committing to a single supplier for a majority of their demand over an extended period. These situations will always require analysis, as such restrictions will have been drafted for different circumstances and may well be able to be waived for a corporate PPA.

4.10 Challenges in specific sectors: heavy-industry renewable PPAs

Different sectors face particular challenges in respect of corporate PPA procurement. The heavy-industry sector is a good example for exploring those. Companies in this sector have certain requirements e.g. in regards to their continuous power supply. How PPAs can still be a suitable option for their renewable strategies is explained on the next page.

"Consumer demand and attractive economics are increasingly drawing smart corporates to renewable energy PPAs. Our focus is to help corporates understand their options, structure win-win deals, and execute successful projects. We want to ensure that corporate buyers are satisfied and the market continues to grow sustainably."

Mark Widmar
CEO at First Solar, Inc

Concern	Solutions
Heavy industry processes are energy intensive. This makes changes in electricity prices a particularly sensitive issue for competitiveness in this sector. A fixed price corporate PPA could therefore be inappropriate in this sector.	• Where fixed price PPAs are being considered, these could be used only in respect of a portion of the corporate buyer's demand. This minimises the impact of market price moving below fixed PPA prices. • Price recalibration points can be agreed that allow the corporate buyer and developer to renegotiate lower prices if wholesale rates drop by more than an agreed percentage. • Floating price structures (such as a discount to market) that provide greater responsiveness to movements in the market are also an option.
If production processes do not match the output profile of a renewable power plant it will mean that by contracting via corporate PPAs, sites will be exposed to intermittent electricity supply or will have to pay higher balancing charges.	• Usually, this risk of variable generation is transferred away from the corporate buyer and the developer. • In sleeved corporate PPA structures this risk is normally fully mitigated by the corporate buyer entering into a 'back to back' electricity supply agreement with an electricity supplier to make sure that the corporate buyer is in receipt of a continuous and steady electricity supply. The electricity supplier, and not the corporate buyer, takes the risk of the intermittency of generation, known as balancing risk. • Some jurisdictions allow for 'net metering' agreements where the project's generation profile is monitored by the grid operator over fixed periods of time that nullify the impacts of within-day generation volatility (e.g. day, week, month). In this type of markets, the grid operator takes on the balancing risk. • Corporate buyers may in some instances set up an internal balancing/ trading team or contract specialist services from an external party to ensure constant supply of electricity.
The financial case for PPAs is weaker for heavy-industry which is connected to the high voltage network, where electricity costs are lower than for most companies connected to lower voltage networks.	• Whilst an offsite PPA could be more expensive, an onsite generation asset (funded either via a PPA or direct investment) which avoids grid costs could provide a more economic route to market for heavy industrials.

5. Challenges and solutions from a developer's perspective

Which aspects are relevant for project developers?

1. Bridging the knowledge gap
2. Expanding the pool of buyers
3. Assessing counterparty strength
4. Determining pricing and transaction costs
5. Meeting lenders' and corporate buyers' opposing needs
6. Developing established positions and templates
7. Providing renewable certification
8. Forming a public Image
9. Entering into new markets

Developers have been active in nurturing the growth of corporate PPAs in many markets. This section considers the challenges for developers as they move into new international markets and how collaboration with corporate buyers can help to overcome those for mutual benefit. Challenges for developers include matching corporate buyer demands and project availability, balancing the often competing requests of lenders and corporate buyers, and reconciling differing priorities with respect to issues such as pricing and creditworthiness.

"EDP set an ambitious commitment of reducing its specific CO2 emissions by 75% before 2030 (with 2005 as a baseline). To pursue our strategy, we believe that Corporate Power Purchase Agreements are an appropriate framework to promote the necessary market signals (stable and predictable remuneration) to encourage investment in renewables and ensure clean and competitive energy to the end consumer."

António Mexia
CEO at EDP

5.1 Bridging the knowledge gap

As the corporate PPA market grows, developers see increasing numbers of new corporate entrants looking for projects. This diversification is a very positive development. For new entrants with little prior experience in financing of energy projects, there will be an initial period of working together to raise awareness of the preferred risk allocation between the two parties, including showing successful solutions that have worked previously. This will also involve the developer building an understanding of the corporate buyer's procurement policies and commercial expectations.

This process can add time to an initial PPA transaction. For developers, extended periods of delay can reduce the net benefits of engaging with a corporate buyer.

As the market for corporate PPAs expands, there is a growing number of sources of information that will enable corporate buyers to access previous lessons learned. Both parties can support collaborative initiatives such as WBCSD's Corporate Renewable PPA working group, the Rocky Mountain Institute's Business Renewable Center working on the US market and workshops and webinars organised by RE100.

5.2 Expanding the pool of buyers

The number of corporate buyers with the appetite for corporate PPAs is growing but still relatively small. Furthermore, if a long term fixed price contract is considered by a corporate buyer as part of a wider renewable energy procurement strategy, they may only implement long term PPAs for a portion of their overall electricity demand.

For big projects seeking a single corporate buyer, the pool of buyers diminishes further. Corporate PPA structures involving multiple buyers, or a combination of buyers and utilities, could be one way to increase appetite for large projects where one single buyer is not available. This is discussed in more depth in Section 7.

This issue will become less significant over time as more corporate buyers enter the market. In the interim, developers can work to broaden the market by closing deals with as wide a selection of corporate buyers as possible.

5.3 Assessing counterparty strength

The profitability and robustness of a developer's project will partly be determined by its access to a creditworthy corporate buyer. Finding corporate buyers with good credit ratings helps developers create bankable PPAs that are attractive to lenders. Utilities were historically very attractive counterparties for developers as they had very strong balance sheets and had an appetite for entering into longer-term contracts. In more recent times and depending on the jurisdiction, traditional utilities' credit ratings have come under pressure, which can enhance the attractiveness of contracting with large corporate buyers outside of the traditional electricity sector.

Developers can look to improve the creditworthiness of off-takers by requiring credit enhancements such as parent company guarantees. Bankability issues are discussed more in Section 6.

5.4 Determining pricing and transaction costs

Pricing is addressed from a buyer's perspective in Section 4.6. Developers are likely to have an existing minimum price that they need to achieve to develop their projects. However, a range of factors can lead to changes in the required price of developing projects over time, which can have negative consequences for pricing negotiations. When trying to lock in pricing over long periods, negotiations can also be hampered by shorter-term factors such as periods of very low electricity prices.

Third party sources of information regarding pricing movements can form an objective starting point for discussions, although developers and buyers usually form their own view of future price direction.

One of the key challenges for a developer building a portfolio of smaller generation assets is the lack of economies of scale which can lead to internal price increases. If all of the issues that can arise in developing a large scale asset are repeated for each smaller transaction, transaction costs can become excessive.

5.5 Meeting lenders' and corporate buyers' opposing needs

As a general rule, developers will be aligned with lenders on key risk issues under a PPA. Risk mitigation is often as relevant to the equity owners of a project as it is to lenders. However, one of the challenges for a developer in any PPA negotiation is managing the opposing demands of the lender and corporate buyer. Both will often look to the developer to find a solution that works for all. For example, lenders (and therefore developers) will often seek to match the term of a PPA for a new built project to the debt term of the financing. These bankability issues are explained further in Section 6.

Finding a compromise can take time and is often resolved by the developer bringing all parties together to find workable solutions.

5.6 Developing established positions and templates

Utilities usually have a greater experience of entering into PPAs and have long-established positions on key areas of contractual negations. This can simplify the contracting process. The corporate PPA market is still developing - therefore there is less of a history of established positions and preferred form templates. Both developers and corporate buyers may be unfamiliar with the terms that are most important to their counterparty.

Developers can help to overcome this potential difficulty by working with corporate buyers from the outset and agreeing key issues in advance of entering into detailed negotiations.

Developers have been trying to address the lack of standardisation, higher transaction costs and business development issues by developing

a template PPA or at least a common strategy on recurring issues. Rolling out template PPAs on relatively similar commercial terms, taking account of jurisdictional issues, is a good way of trying to implement corporate PPAs strategies at scale. Flexibility will always be needed on a case by case basis. However, templates can form the basis of similar deal structures between a developer and a corporate buyer in multiple markets.

5.7 Providing renewable certification

As part of meeting buyers' needs in regards to renewable certification, developers are likely to be required to provide off-takers with evidence of volumes of clean electricity delivered. Understanding corporate buyers' needs in respect to additionality from the outset of negotiations will be key.

Although the approach can vary dramatically depending on the corporate buyer, any approach is likely to need some degree of contractual protection regarding the qualification of the renewable attributes to be provided to the corporate buyer.

5.8 Forming a public image

In the same way that corporate buyers can seek to enhance their public image by entering into corporate PPAs, developers can seek to capitalize on the benefits of transacting with well-known and respected corporate buyers (to the extent that the corporate buyer is open to that level of disclosure).

5.9 Entering into new markets

As discussed in Section 3.2, corporate PPAs are expected to rise in number and volume in many markets. Moving into new markets can be challenging for developers. This is particularly the case where support systems for renewable electricity projects are new or recently reformed.

Forming an ongoing relationship with a corporate buyer with operations in multiple countries can help developers to enter new markets. The right partnership can offer benefits such as:

- Price certainty when subsidy regimes or other income streams are not certain;
- Speed of deployment through replication of key commercial principles for new projects;
- Greater combined brand presence to enable access to policy makers.

Issues encountered by first movers are often resolved over time as market practice develops. Developers are likely to need to work with regulators to overcome regulatory hurdles and in some instances regulations or codes may need to be amended to allow for corporate PPAs to be implemented.

6. Bankability requirements for new built projects

Why are banks' views important?

1 What is 'bankability'?

2 Examples of bankability issues

6.1 What is 'bankability'?

The majority of large-scale new renewable electricity projects are financed on a project finance basis. It is therefore important for corporate buyers and developers alike to understand what lenders look for in a bankable project and what issues are likely to arise during PPA negotiations including price certainty, credit support and currency risk.

Under project finance deals, the majority of the funding for the project will come from long term debt provided by senior lenders or third party equity, which can often have debt-like features. The cash flows of the project are the primary means for repayment of that debt. Therefore, the project and its key contracts must sufficiently mitigate default risks to those cash flows. A bankable project has a sufficiently balanced risk profile so that lenders are willing to finance the project. This means mitigating project risks to an acceptable level, whether those be construction risks, technology risks or power off-take price risk. In markets where there is uncertainty about the robustness of long term power revenues, a long term fixed or minimum price PPA may be one of the most attractive features as it protects project revenues.

Lender requirements will not always remain the same. The level or structure of equity investment in a project can influence the lenders' risk perspective. Requirements can also change due to wider changes in market practice, risk appetite of the lender or deal specific issues, such as the location of the project. That said, there are common risks that PPAs need to address for project financed renewable electricity developments. Whilst nuances will always arise from project to project and country to country, understanding these common issues can assist corporate buyers prepare for PPA negotiations. Corporate buyers need not accept past solutions as the required approach in the future but understanding the issues and previous solutions accepted by lenders is an important first step.

6.2 Examples of bankability issues

This section discusses some areas which lenders typically focus on and often are managed through the terms of a PPA. Generally, corporate buyers will need to explain to the lenders their commitment to the project and the PPA has to be agreed before / at financial close for a project.

6.2.1 Duration

Traditionally, lenders will expect a PPA to be in place for at least as long as the tenor of the debt. There can be exceptions to this where, for example, local power prices are high enough to provide lenders strong comfort. Moreover, key terms that support bankability of the PPA need to be in place for the full tenor of the PPA.

A long term corporate PPA will assist the cost of financing a project. Shorter term PPAs can still be bankable but would impact on the level of debt made available or the cost of that debt. If lower financing costs can be achieved via a longer term commitment, then this should be reflected in a lower price payable by a corporate buyer.

6.2.2 Credit support

Credit support is a general term to describe the provision of additional financial comfort regarding the ability of a party to meet its payment obligations under a contract (for example, providing a parent company guarantee). Lenders will apply a relatively stringent credit assessment on the corporate entity that will be a party to the contract, including net asset tests and size measures for non-rated entities - the 'size' of the PPA needs to be in line with the size of the entity. In most cases, they will look for a rated entity or a parent company guarantee from such an entity. If that is not available, then the discussions will likely focus on alternative support such as a bank guarantee. Liability caps for corporate buyers may also be incorporated in the PPA.

Whether credit support is needed, is perhaps one of the most common issues that arises in corporate PPA negotiations. In many cases, this arises from a miss-match between the expectations of the corporate buyer's procurement policies and those of the lenders. Although many corporate buyers are used to providing credit support under most of its supply contracts, these exact conditions may differ from contract to contract.

Whilst it is helpful if the corporate buyers can be flexible in meeting lender requirements, lenders themselves can also develop new approaches towards credit support. For example, in multiple buyer structures where there is a single buyer representing the aggregated demand of those buyers, lenders could consider a bespoke rating. The buyers could be a mix of rated and non-rated entities (potentially including private and public companies). In these circumstances, lender assessment can look to develop an internal credit rating for the blended buyer vehicle rather than solely rely on third party credit support. For such rating, the granularity of the group is important - when one corporate buyer (or several) is leaving the group, the structure and credit profile needs to stay intact and mechanisms to ensure this need to be agreed.

In discussing credit support it is important to note the role of credit triggers. Lenders will expect that a PPA or credit support document such as a parent company guarantee includes triggers that require initial or additional credit support if there is deterioration in the financial standing of the company below a certain threshold.

6.2.3 Change in law risk

For lenders, change in law risk assessment focuses on what circumstances could allow either party to pass through costs arising from a change in law. For many lenders, the starting point will be that this should be a buyer risk on the basis that:

- A buyer of electricity is usually exposed to change in law risks as changes in law that impact the generation sector generally will tend to be reflected in increases in wholesale electricity prices;
- Where a long term fixed price has been agreed, the developer does not have the ability to mitigate the risk of increased costs driven by change in law that affect generators generally[21].

Against this, from the corporate buyer's perspective, one of the objectives of taking the risk of entering into a long term electricity hedge is to lock in a firm price.

How these issues are resolved will be influenced by the extent to which the project's viability is reliant on the income from the corporate PPA. Where it is, lenders will push for the comfort provided by the long term price to be preserved even where there is a change in law. Solutions have been found in the past by focusing on the triggering conditions before relief can be claimed and limiting the amount by which the price can be altered.

6.2.4 Currency risk

Currency risk can increase the costs of financing a project. For example, if the debt is nominated in USD, but the long term power revenues are paid in a local currency that is likely to be at a greater risk of fluctuation, then the project will have higher currency risk. This can be hedged to a degree, for a cost. If, in this example, the PPA payments

21. The developer would otherwise be able to mitigate the risk if selling into the market, as changes in law would change costs of generation and wholesale market prices.

Picture courtesy of Nestlé

could be made in USD instead, the risk profile of the project will be improved as the currency risk is transferred to the buyer. This of course, may not be acceptable for the buyer, depending on their ability and experience to manage currency fluctuations. Depending on the market, there may be other solutions to mitigate currency risk. Some developing markets may have products provided by development agencies or national government to mitigate the risk.

Corporate PPA buyers can potentially offer more flexible solutions for this issue than other counterparties such as local state owned utilities. Global corporate buyers will be well-practiced in managing revenue streams in different currencies. As such, depending on the country, they may be more willing to take on or at least share the currency risk. This is more likely to be the case if national energy prices are linked to US Dollars. The corporate buyer will most likely need to explain to the lenders how they are managing the risk in-house. The critical question for the PPA negotiation is to determine the extent to which the resulting benefit for the developer is reflected in the PPA price.

6.2.5 Price certainty

Most bankable PPAs provide long term price certainty through a fixed price or a price with a pre-agreed escalator. Where this price is backed by a credit worthy buyer, it provides lenders with a high degree of comfort. This can lead to lower financing costs and potentially a lower PPA price.

Relatively simple fixed pricing structures are not always the norm. Other types of deals may provide for partial floating price structures (e.g. a mix of fixed price volume and discount-to-market price volume) or other mechanisms such as put-call options to manage the risk that a corporate PPA gets out of the money if market prices fall. In these circumstances, corporate buyers may be asked to consider providing minimum or floor price structures to support the bankability of the project. Mechanisms must also be agreed to deal with underlying electricity price movements in the event of a delay in the project as well as step in rights for replacement of project suppliers or developers.

Picture courtesy of EDF

7. Corporate renewable PPAs with multiple buyers

7 What to consider in multiple buyer PPAs?

1 Drivers for multiple-buyer PPAs
2 Structuring multiple-buyer PPAs

Corporate buyers with lower energy demand and / or less experience of entering into corporate PPAs may want to join forces with other buyers through multiple buyer structures. These structures are becoming more widely used – particularly in Mexico over the past few years. Some approaches involve multiple PPAs for a single project, where each PPA is with a different buyer. Others involve the development of a buying group which will enter into a single PPA for the benefit of all participating buyers. Delivering these can take more time than a single buyer model as there are more parties involved, each with potentially different perspectives to common issues. These risk-sharing solutions are increasingly attractive options for some corporate buyers. Potential termination rights and different accounting treatments are also leading corporate buyers towards using multiple buyer structures.

7.1 Drivers for multiple-buyer PPAs

This section discusses the drivers that make multiple-buyer structures an increasingly attractive option for corporate buyers that may make it worthwhile investing the time.

7.1.1 Enabling risk sharing for buyers

Several buyers of power can join forces and form a consortium or buying club. This is a useful risk-sharing structure that enables corporate buyers to access the benefits of the corporate PPA model without concentrating risk – e.g. because buyers can diversify their purchasing options. Particularly when buyers are entering into their first corporate PPAs, they may feel more comfortable in partnership with other corporate buyers.

There has also been an uptake in examples of government agencies or organisations combining with private sector buyers to deliver large scale transactions. They often:

- Represent significant aggregated demand across multiple departments or agencies;

- Have the political backing to be a market leader by driving forward a renewable electricity procurement program.

The City of Melbourne led Melbourne Renewable Energy Project (MREP) is one such example. In this case, the municipal took a leadership role and also worked closely with private sector buyers to deliver a large scale project. The MREP effectively acts as a coordinator, bringing together major government, university and private sector consumers into a buying group to procure 110 GWh of renewable generation through a 10-year PPA. The City of Melbourne led this initiative at a time when State and Federal policy on renewable energy was lacking. They were able to mobilise a number of public and private sector off-takers who may have otherwise hesitated to procure from a renewable energy facility alone, or had reservations given the early stages of deployment of this business model in Australia.

7.1.2 Enabling risk sharing for developers

Developers may struggle to find single corporate buyers in respect of larger projects. They may also be reluctant to take credit risk on a single purchaser. Contracting with multiple corporate buyers can help reduce counterparty credit risk and potentially expands the pool of off-takers.

7.1.3 Increasing flexibility for corporate buyers

Corporate buyers may not want to commit to the term of off-take that developers are looking to put in place with just one off-taker. Having multiple corporate buyers which can opt in or out of a consortium at different times (subject to appropriate controls and fees) can make the prospect of entering into a corporate PPA more appealing.

7.1.4 Improving bargaining power

Consortia with a significant aggregated electricity demand are likely to be in a better bargaining position than smaller individual buyers. This can lower the cost of electricity procurement.

7.1.5 Accessing accounting advantages

Entering into a PPA with multiple corporate buyers can allow each party to reduce their individual balance sheet liability in respect to the contract. Based on the considerations noted in Section 4.7, this opportunity is maximised where:

- The individual corporate buyer is off-taking a less significant amount of the project's electricity output;
- The individual corporate buyer has smaller / no minimum payment obligations towards the developer.

7.2 Structuring multiple-buyer PPAs

In terms of documenting multiple buyer structures, this can involve separate PPAs with each corporate buyer for a project or the creation of a buyer vehicle which acts on behalf of all participating buyers. Of the two approaches, the creation of a buyer vehicle is likely to be the more challenging in terms of documentation. Separate PPAs with each corporate buyer can be simpler and more flexible as not all buyers need to purchase power on the same terms. Some of the issues that arise include break rights and competition issues.

7.2.1 Competition issues

Another area to consider with group buying structures are competition laws. Those could, for example, come into play if the buyers were all from the same competitive sector (thus raising concerns that the buyer group may be acting in an anti-competitive way) or where the size and tenor of the buyer group's purchases would impact on competition in the electricity market.

Case Study: Melbourne Renewable Energy Project

In April 2016, a consortium of major institutions led by the Melbourne City Council launched a renewable electricity tender to procure 110 GWh of electricity via an aggregated group purchase structure. By aggregating the demand, the consortium members are able to procure a larger volume of electricity whilst still remaining accountable for their individual supply requirements with the retailer.

Due to the competition concerns regarding such a group tender, Australia's competition regulator (Australian Competition and Consumer Commission (ACCC)) provided interim authorisation for the consortium to proceed in April 2016. The ACCC is currently in the process of confirming that interim authorisation as final. The proposed approach by the ACCC highlights that competition laws are not necessarily an impediment to the development of innovative strategies such as the Melbourne Renewable Energy Project.

7.2.2 Break rights

Section 6 explained the importance of having long term revenue certainty in order to under-pin project finance for new projects. One issue that can arise with a multi-buyer approach is how to maintain that certainty while new buyers may come in or existing ones leave.

It is worth noting that this approach would potentially need adjustment in the context of contracting with a project that is subject to limited recourse project financing because each corporate buyer will have a different credit rating. However, as discussed in Section 6, lenders could develop a bespoke rating for the blended buyer vehicle, which might only change insignificantly as single buyer leave or enter the multiple-buyer PPA.

Case Study: Enel Green Power's Dominica Windfarm powering four off-takers

The Dominica windfarm was developed in two different stages, 100 MW each that achieved commercial operation in November 2014 and July 2015 respectively. The project sells its production to four different off-takers of diverse nature. From manufacturing plants for the automotive industry, bottling facilities of Coca-Cola FEMSA, 300 bank branches of Banamex (Mexican subsidiary of Citi Group) to hundreds of pharmacies and convenient stores (OXXO) of Grupo FEMSA. Given the characteristics of each of the off-takers, their unique business cycles and energy requirements, each PPA supply structure was tailored individually with each client and negotiated independently, therefore eliminating the need of cross-default liabilities.
By executing simultaneously diverse PPAs at once Enel Green Power (EGP) reduced its risk exposure. The value generated by the portfolio effect enabled EGP to offer its clients to benefit from specific flexibilities which would have been otherwise hardly possible. However, the two steps development aimed at reducing the risk of executing too many PPAs at once, which would have been necessary to make the overall 200 MW investment decision. Evidently, EGP's confidence in its ability to execute the remainder of the PPAs in a timely manner for the second stage of the windfarm was of the essence to provide construction synergies and thus additional value.

8. Enabling policy frameworks: The inclusion of corporate PPAs in electricity regulation

Corporate PPAs can increase the speed and scale of the deployment of renewable energy projects. They deliver a higher renewable electricity generation for the country of their location and support Government targets for renewable energy. Additionally, they often diversify national or regional power markets. Policy makers looking to harness these benefits for their jurisdictions should facilitate the best business conditions for success. Some recommendations are set out here.

1. To the extent that they are in place, barriers to entering into third party PPAs should be removed. These include direct prohibitions, such as a restriction on purchasing power from anyone except a centralised and vertically integrated national power company, through to indirect prohibitions, such as electricity market structures that makes corporate PPAs difficult to implement, e.g. via fees and charges. Solutions can range from implementing full direct access models, to utility enabled access to PPAs (e.g. long term green tariff contracts).
2. Renewable incentives should be predictable, preferably long term, consistent, and designed to cost-effectively support the development of renewable electricity projects but without removing the drivers for a corporate PPA model. This recommendation applies equally to when governments are reforming existing renewable electricity incentives which had proven success in driving corporate PPAs.
3. Regulators should seek to enable transmission of renewable power from generation to buyers through supportive low cost wheeling arrangements.
4. Policy makers can, by taking a leadership role and arranging on-going workshops and other forums, encourage corporate buyers to adopt and increase renewable electricity procurement goals and to

integrate corporate PPAs into their broader renewable energy strategies. They should also encourage the disclosure and reporting of such strategies.

5. Competition regulators should adopt balanced approaches to buyers seeking to form procurement clubs for electricity, and consider issuing guidance that reassures corporate buyers that by buying electricity together, at levels that do not impact on the market, they will not breach competition law.

6. Government agencies can enter into PPAs for renewable electricity in order to advance understanding and encourage the uptake of PPAs and help to green government procurement of energy.

As corporate renewable PPAs become a widely used procurement vehicle for private companies around the world, Governments will have an increased interest to foster an enabling environment in their countries.

Picture courtesy of EGP

Acknowledgements

WBCSD's REscale business solution has brought together companies from different industries and markets to collaboratively develop this report. We wish to thank the following people for their contributions and thought-leadership:

BT: Gabrielle Giner

CLP: John Cheng & Jeanne Ng

DNV GL: Lars Landberg

EDF: Jacob Susman & Carmelo Scalone

EDP: Thomas Greer & Sara Gourlatt

Enel: Adrien Coudurier

Eskom: Mandy Rambharos

First Solar: Bill Thomas & Brian Maul

Nestlé: Cyndi Kohuska

NRG: Charlotte Blommestijn

Schneider Electric: John Hoekstra

Unilever: Thomas Lingard & Andrea Rickert-Pulvermann

CEM: Tracey Crowe

RE100: Emily Farnworth

WRI: Letha Tawney & Mary Sotos

The REscale business solution currently consists of the following companies:

This report was drafted by Ernst & Young LLP and Norton Rose Fulbright LLP. The authors note that the report has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax, legal or other professional advice. We thank the following co-authors:

NORTON ROSE FULBRIGHT

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EY Building a better working world

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Disclaimer

This publication is released in the name of the World Business Council for Sustainable Development (WBCSD). This document is the result of a collaborative effort between WBCSD, E&Y, Norton Rose Fulbright and representatives from companies participating in the REscale business solution.

A wide range of REscale members reviewed the material, thereby ensuring that the document broadly represents the majority view of the REscale business solution. It does not mean, however, that every company within the working group agrees with every word.

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