Global Procurement Update

Issue 6: December 2021

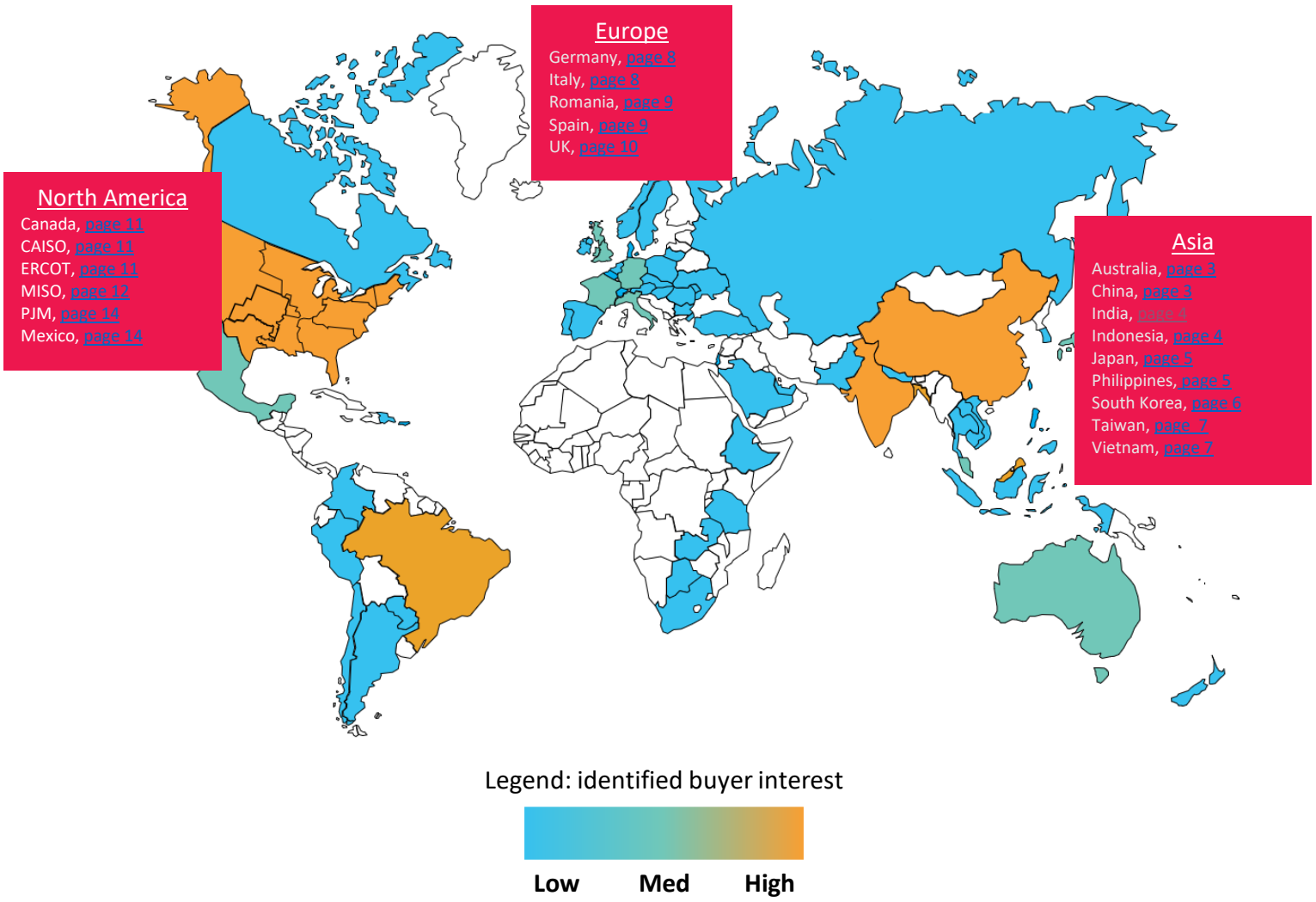
Introduction

Large-scale energy customers continue to drive the expansion of international clean energy markets as they look to reduce the energy impact of their operations and supply chain worldwide. The tri-annual **Global Procurement Update** (formerly the C&I Procurement Update) highlights international energy market updates, connects you with international organizations supporting sustainability practitioners, and communicates best practices implemented in the market to accelerate the procurement of renewable energy.

Table of Contents

The map below highlights the energy markets from which energy customers are interested in procuring renewable energy. Each issue of the Global Procurement Update will reflect relevant market updates.

You have the option to read through the update in its entirety *or* use the map to jump to the specific market of interest.



Global Procurement Update

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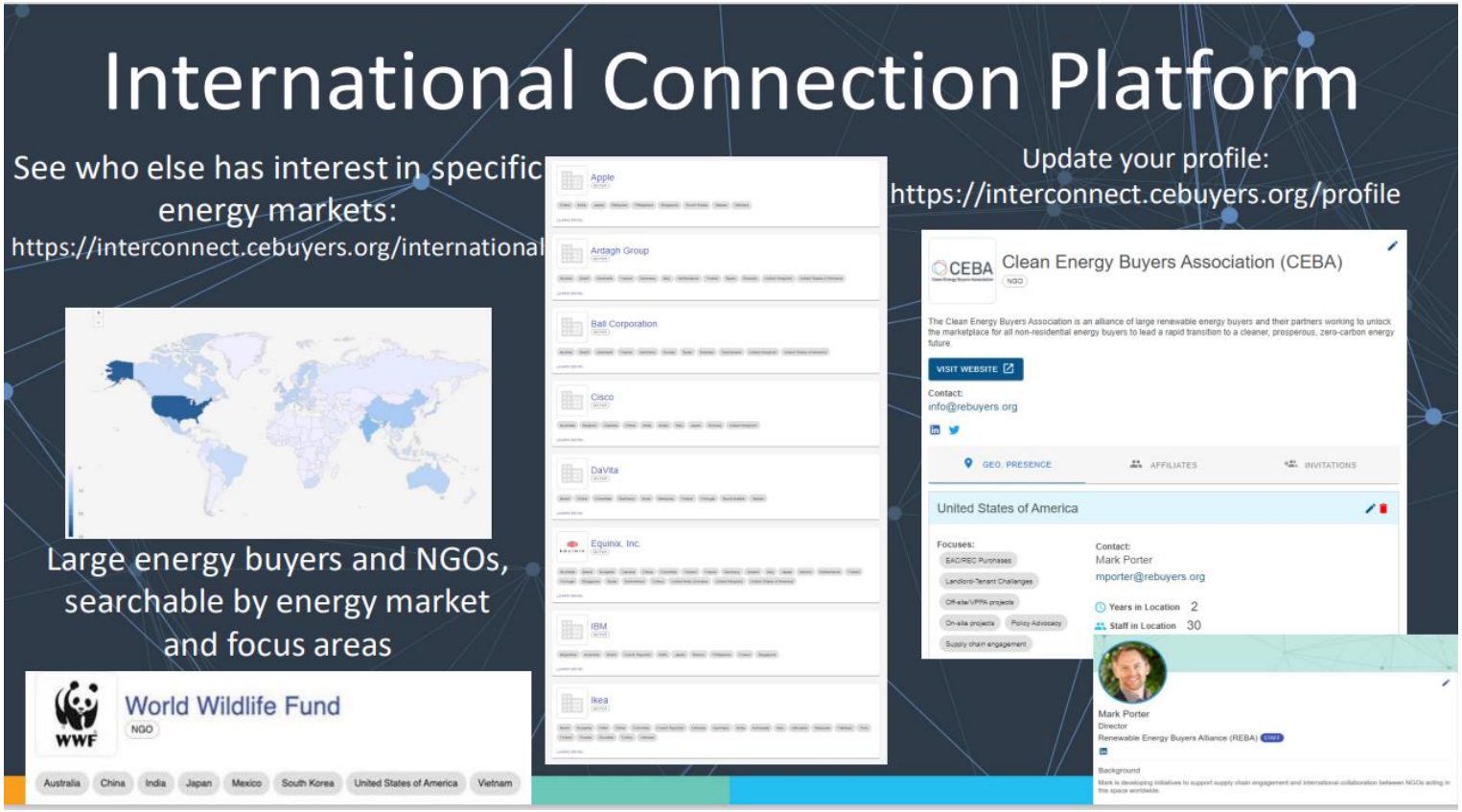
All buyer companies can connect with peers, worldwide

The International Connection Platform

The International Connection Platform (the Platform) has been built to enable connections and relationships among energy customers and NGOs to accelerate sustainable energy goals in any energy market worldwide.

Through the Platform, you can see who else has interest and experience in specific energy markets, create company profiles, and connect with others working in markets of interest.

The Platform is free to any energy customer and NGO acting to accelerate corporate procurement of renewable energy. To register and use the Platform yourself, visit: https://interconnect.cebuyers.org/international



We would like to thank the We Mean Business Coalition for investing in this unique connection tool and the many partners and members that have been involved in feedback and development of the Platform.

Worldwide Wednesdays: an international connection discussion series

Worldwide Wednesday is a monthly virtual discussion series to share the latest developments and opportunities in renewable energy procurement in international markets of interest. Sessions will be co-hosted by energy customers and NGOs with interest or experience in specific global energy markets. If your organization is interested in co-leading a session, please contact supplychain@cebuyers.org.

Future Updates

The Global Procurement Update is meant to supplement existing information and research on international markets for large-scale energy customers and should not be seen as comprehensive, covering all aspects of an energy market.

CEBA and all contributors welcome feedback on the content and will endeavor to expand market coverage pending interest.

To provide direct feedback, please contact the REBA team: supplychain@cebuyers.org

Contributor Acknowledgements

CEBA is proud to collaborate on the Global Procurement Update with peer NGOs and for-profit companies to support large-scale energy customers' journeys towards emissions reductions through the implementation of renewable energy and to accelerate the transition to a zero-carbon energy system.

The following collaborators supported the development of this Global Procurement Update issue based on areas of interest and activity as identified by corporate buyers. Please note, not all NGOs active in the energy sector were able to contribute.

Contributors: NGOs

Business Renewables Centre Australia
Business Renewables Centre Canada
Clean Energy Investment Accelerator
National Renewable Energy Lab

CEBA extends sincere gratitude to the NGOs that contributed and a special thanks to The We Mean Business coalition for supporting greater collaboration among NGOs worldwide and specifically the International Connection Platform.

Contributors: For profit companies

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Commodity Risk Solution
Edison Energy
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Mt. Stonegate Green Asset Management Ltd.
Pexapark
Schneider Electric

Asia

Australia

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With thanks to the Business Renewables Centre Australia

After a record year in 2020 for corporate renewable Power Purchase Agreements (PPAs) in Australia, 2021 has been a middling year. There has been a slowdown in corporate PPA activity alongside a slowdown in the installation of new renewable energy but deal volumes are still higher than in previous, slower years since the sector began around 2016. To date, around 400 MW of projects have been signed in 2021, headlined by:

- Growing interest in the energy and resource sector: In October, a PPA was finalized between energy and resource company BHP and a hybrid wind-solar project from Iderbola for the new Olympic mine in South Australia. This followed earlier PPAs by BHP in the state of West Australia and a PPA from BP Australia with a solar farm to supply its petrol stations in the state of New South Wales (NSW)
- Local government continues lead: A group of over 40 Victorian councils signed a PPA for 240 GWh p.a. in September 2021
- The three leading supermarkets – Aldi, Coles, and Woolworths – have all signed PPAs in 2021

One interesting trend appears to be a market shift away from wholesale (or virtual) PPAs to retail PPAs. Whereas Australia's corporate PPA sector has been a dual market with large corporates signing wholesale PPAs and mid-sized buyers signing retail PPAs, even large buyers such as BHP, Coles, and Woolworths are now signing retail PPAs. There is growth amongst both large-scale buyers negotiating PPAs with new projects via a retailer and amongst smaller buyers signing shorter-term PPAs with operating projects via a retailer.

Conditions have been relatively challenging for corporate PPAs in Australia during 2021. First, the high wholesale electricity prices that led to a surge of interest in corporate PPAs in 2018-19 have dissipated so the price drivers are much weaker. It is harder for corporates to make a business case to their CFOs in this context. In the Business Renewable Centre – Australia (BRC-A)'s annual survey of buyers, around two-thirds responded they were driven by non-price factors – e.g., greenhouse gas emissions or renewable energy targets, corporate social responsibility, or reputation. Only around 1/6 were motivated primarily by seeking lower electricity prices and a similar proportion by greater price certainty. Second, survey data collected by the BRC-A suggests a modest impact from Covid-19 which has reduced market certainty. Third, The State Governments in the three largest states of the National Electricity Market (NSW, Queensland, and Victoria) are currently developing programs for Renewable Energy Zones (REZs) to unlock investment in transmission and generation in the regional areas with the best resources. The design of the REZs is still under development which has a slowing effect as parties wait for policy certainty.

The maturation of the REZs is likely to support an upturn in corporate PPAs. In NSW, the design for the long-term electricity supply agreements – competitive auctions for an options contract with a guaranteed price – is still to be finalized but the government has signaled that the tender criteria will favor bidders that have already secured a PPA (and are therefore less likely to exercise the option). Retailers have not signed many PPAs with projects for their own portfolios in recent years but policy certainty over the remainder of this year and into 2022 is likely to see an upturn in activity and associated corporate PPAs.

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China

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With thanks to the Rocky Mountain Institute

On September 7, 2021, China officially released The Work Plan of Green Power Trading Pilot and launched the pilot program for green power trading, marking a solid step in the country's efforts towards a business-driven green

power market. The trading mechanism allows for transactions within and across the provinces, with direct purchase from green power project developers or local grids. Opening day witnessed the trading of 7,935 GWh amongst 259 companies, equivalent to around 40% of daily electricity consumption of the entire nation.

To support the trading, e-Trading, a mobile app, was introduced. The blockchain-based mobile commerce platform provides one-stop solutions to the market. With the help of blockchain technologies, buyers will get a Green Electricity Consumption Certificate (GECC) upon completion of each transaction, with clean environmental attributes. The non-tampering feature of blockchain allows e-Trading to trace the lifetime of green power, which helps to prevent double-counting of environmental attributes and secure the integrity of the system.

In line with the global trend to decarbonize the economy, these initiatives open new prospects and opportunities for the business world to play a role in transforming the system of energy production and consumption. As the focal point of global supply chains, the huge local demand for green power will be instrumental to position China's green power market on the trajectory towards becoming the world's largest green power market, as well as to contribute to global supply chain transformation.

For more information, please refer to the following press releases by two of China's main media outlets:

- China Daily: https://www.chinadaily.com.cn/a/202109/08/WS6137f32ba310efa1bd66dfa0.html
- XinhuaNet: http://www.news.cn/english/2021-09/07/c_1310173618.html

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India

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With thanks to Mt. Stonegate Green Asset Management

India has an ambitious goal to achieve 175GW of renewable energy capacity by 2022, with 100GW cumulative installment as of August 2021. The surge of COVID-19 cases in the country, combined with the introduction of the Green Term Ahead Market (GTAM), has stirred corporate power procurement decisions towards shorter-term contracts over periods of volatility.

The GTAM mechanism enables purchases of green power to fulfill both compliance (RPO) and voluntary obligations. Corporates who wish to attain their RE100 goals can meet their immediate demand through the GTAM mechanism. At the height of wind production season in June 2021, the Indian Energy Exchange (IEX) traded 412 million kWh of green energy under GTAM, a 15% increase compared to May.

In August 2021, ReNew Power announced India's first Round-The-Clock (RTC) electricity supply project, where 400MW RTC will require 900MW wind, 400MW solar, and additional battery storage capacities. Innovative deployments like this will push for more long-term renewable energy contracts at an affordable rate.

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Indonesia

Previous issues with content: 1 | 2 | 3 | 5

With thanks to the Clean Energy Investment Accelerator

In Indonesia, pathways for commercial and industrial (C&I) companies to procure renewable energy have been limited to date. To expand cost-effective, accessible clean energy options, the Clean Energy Investment Accelerator (CEIA) brought together over a dozen major companies to issue a Statement of Mutual Aspiration Supporting Renewable Energy Procurement for C&I Sectors in Indonesia. The Statement was launched on August 16, 2021, through a publication in one of Indonesia's prominent newspapers, Bisnis Indonesia, and a launch event on "Accelerating Indonesia's Renewable Energy Transition through Commercial and Industrial Sector Collaboration," featuring four of the Statement's 13 signatories and the Director of Energy from the Coordinating Ministry of Maritime and Investment Affairs.

The Statement of Mutual Aspiration is an open letter from corporations to encourage the Government of Indonesia to accelerate the renewable energy transition to support Indonesia's goal of achieving an energy mix of at least 50% renewable energy by 2045 while at the same time inspiring the government to enact forward-looking regulations on other corporate renewable energy procurement options, such as power wheeling and increasing clean generation capacity. The Statement received positive feedback from stakeholders such as Indonesia's national utility, PLN, the Ministry of Energy, and others. Follow-up discussions with government and utility stakeholders have begun to explore further analysis of corporate renewable energy procurement options. The 13 signatories are part of CEIA Indonesia's corporate coalition, which includes more than 35 companies and over 70 supply chain partners seeking to transition to renewable energy.

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Japan

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With thanks to the Apala Group

Japan's electricity market allows corporate buyers of renewable energy to meet their electricity and carbon reduction commitments through multiple procurement pathways, including onsite generation, retail renewable energy, corporate PPAs (CPPAs), and unbundled Environmental Attribute Certificates (EACs). Generally, renewable energy prices in Japan have been prohibitively high relative to other markets globally. As costs come down, offsite CPPAs and newly developed EAC trading markets will likely drive significant voluntary demand in the market in the coming years.

The latest policy shift in Japan's procurement market relates to EACs, known primarily in Japan as Non-Fossil Certificates (NFCs). 2021 is the starting year for two new unbundled certificate trading markets, both for buying and selling NFCs. The Non-FIT (feed-in tariff) NFC trading market began in late August 2021, and allows corporates to voluntarily purchase certificates from renewable energy developers not tied to government tariff schedules. The other market, for FIT NFCs, is planned to start in November 2021, with its new official policy being published no later than mid-October.

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Philippines

With thanks to the Clean Energy Investment Accelerator (CEIA)

In August, the Philippines released the final rules to enable implementation of the long-anticipated Green Energy Options Program (GEOP), a provision in the country's Renewable Energy (RE) Act of 2008, which has been stalled for more than a decade. This major step forward for RE procurement options in the Philippines is the culmination of years of government and private sector engagement by the Clean Energy Investment Accelerator (CEIA) and other market stakeholders. As recently as July, CEIA brought together leading companies in the Philippines to issue a Joint Statement to encourage full and rapid finalization of the GEOP implementation rules as a key tool to unlock private sector investment in support of the Philippines' national renewable energy and climate goals.

The GEOP is truly a game changer for clean energy procurement in the Philippines and is widely seen as a means to accelerate the addition of new RE, including variable RE like solar and wind, into the grid. The newly finalized GEOP is expected to be operational by December 2021 and allows qualified commercial and industrial (C&I) consumers with at least 100kW in monthly peak demand to source their electricity directly from qualified RE suppliers for up to 100% of their energy needs. Harnessing the Philippines' liberalized, decentralized power market to source power directly from RE suppliers will enable customers to access lower cost electricity. C&I stakeholders have also underscored the importance of being able to lock in long-term prices using RE-based electricity. This provides greater predictability in operational costs related to energy use and avoids otherwise highly volatile price fluctuations and reliance on incumbent utilities, whose power mix is often dominated by imported coal- and oil-based sources, in some cases by as much as 90%.

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South Korea

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With thanks to Mt. Stonegate Green Asset Management and Innergen Consulting Co.

South Korea has announced ambitious changes followed by implementation strategies for both the compliance and voluntary markets. The Ministry of Industry and Energy (MOTIE) made a pre-announcement to raise its Renewable Portfolio Standard (RPS) policy from the current 9% to 12.5% by the end of 2022, with an escalation to reach 25% by 2026.

On the voluntary side, the Korea Energy Agency opened a REC trading platform in 2021, in addition to the existing platform for the RPS compliance market. On September 3, the first three transactions totaled 649 MWh with an average price of KRW 49,454 (USD 42) per MWh. While the 4.2 million RECs traded under the RPS platform in August 2021 were settled at the average price of KRW 29,912 (USD 25.46) per REC.

MOTIE's K-RE100 initiative mentioned in the previous issue now has 30 participating corporations including SK Biopharmaceuticals, LG Display, Korea South-East Power, Korea Johnson & Johnson, and Chanel Korea. Many Korean conglomerates have announced their net-zero target by 2050 and as of now, 12 Korean companies have committed to RE100. While the government and institutions pick up the pace for transitioning into renewables, it is anticipated that the market will observe more upward trends in terms of the demand for RECs in South Korea.

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Taiwan

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With thanks to the Apala Group

Taiwan has been an early adopter of polices and market infrastructure to support corporate renewable energy transactions. The most recent major policy update, put into effect earlier this year, is Taiwan's Large Users Act which requires energy users over 5MW capacity demand to procure 10% of their capacity demand from renewable energy by 2025.

While price challenges exist for many procurement options, there are potential transaction opportunities in the market today that can support corporate and supply chain decarbonization efforts. On-site solar is one attractive option for both self-consumption and ownership of self-generated Environmental Attribute Certificates (EACs), known primarily in Taiwan as T-RECs. However, on-site renewables will face natural capacity limits and potentially significant capital requirements.

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Vietnam

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With thanks to Schneider Electric

The offsite Direct PPA (DPPA) pilot program is still yet to be launched although this is now expected to happen in Q1 2022. While called a DPPA, the program structure is actually that of a virtual PPA, with the additional requirement that participating buyers enroll their facilities in the program to pay the national utility, EVN, the wholesale price instead of the regulated tariff for electricity.

We have observed a marked increase in market activity in recent months, with a number of project developers entering the market for the first time as we get closer to the program launch. Interested buyers and sellers have a short time frame (45 working days) to register together for the program after it's officially launched and must have a signed term sheet at time of registration. When offsite procurement options will be available again after the pilot and in what form, is unknown. Hence, many interested buyers are now preparing to participate in the pilot even though many questions remain on the details of the program.

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Europe

Germany

Previous issues with content: 2 | 5

With thanks to Edison Energy

Corporate renewable energy purchases are a growing trend in Germany, as the federal government has ramped down its renewables procurement and developers have been motivated to market their projects to other offtakers. Companies with load in Germany and ambitious renewable energy goals have begun executing PPAs. The past three years have seen the greatest momentum in the corporate PPA market, with a surge to 612 MW last year.

Companies interested in pursuing a German renewables PPA will want to understand the market dynamics and their own load profile. The German electricity market is characterized by winter price peaks and more modestly priced summers. This profile aligns better with wind generation than solar. In fact, when evaluating the forecasted PPA cash flows from a buyer's perspective, solar PPAs in Germany are typically expected to have a captured value lower than the market average. Therefore, in order to receive the strongest hedge benefit from a PPA, buyers should select the technology that aligns most closely with their load profile.

A final item for prospective corporate buyers to take note of in the German market is national politics. The coalition government is still forming following recent elections, but the expected result is a government that is united in supporting the expansion of renewable energy. Corporate buyers can anticipate that this level of government support will result in a significantly larger volume of projects in the development pipeline, and streamlining of the permitting and interconnection process, which would increase buyers' likelihood of success in helping to bring new projects online.

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Italy

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With thanks to LevelTen Energy

Italian wholesale electricity prices are rising substantially as Europe continues to grapple with rising natural gas prices and increasing carbon prices. Even with the intervention of the Italian government — which has set aside more than €3 billion to curb wholesale prices during Q4 — natural gas prices in Italy are expected to rise by more than 14%, and residential electricity prices by nearly 30%, during the last three months of this year.

In stark contrast to Italy's wholesale electricity prices, Italian solar PPA prices have remained essentially flat over the last year, as shown in LevelTen's Q3 2021 PPA price data — evidence that Italian PPA prices can remain relatively unimpacted by wholesale fluctuations. With that said, the significant rising trend in wholesale prices may push Italy's electricity landscape into uncharted waters, and time will tell if PPA prices can remain indefinitely resilient in the face of continued wholesale price increases.

Wholesale prices aside, there are other factors that stand to impact the Italian PPA market in the coming months. While Italy's solar PPA market has experienced tremendous growth in recent years, the rate of that growth may be slowing. The share of Italian PPA offers as a percentage of total offers on LevelTen's European Energy Marketplace shrunk noticeably over the last six months, dropping from 31% in Q1 down to just 11% in Q3. Lengthy interconnection queues and difficult permitting procedures are slowing project development and may be shrinking the pipeline of new Italian projects. In May of this year, the Italian government passed a "Simplification Decree" designed to streamline the permitting process, but it will take time for these new processes, if successful, to accelerate the development of renewable projects in the country. Continued government support in making

renewable development easier will be critical as Italy strives to add as much as 70 GW of renewable capacity by 2030.

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Romania

With thanks to Pexapark

Romania is one of the newest kids on the corporate PPAs block, in line with the wider momentum we see in Central Eastern Europe. The merchant landscape has been changing rapidly, offering increased routes to market for interested shareholders. In September 2020, the country's National Energy Regulatory Authority issued a milestone order to allow the signing of directly negotiated bilateral PPAs outside its previous centralized model – something that had been banned in 2012.

The new measure applies to new projects commissioned after June 2020. Prior to the new order, PPAs were only available for existing assets, and needed to be regulated by the country's Energy Market Operator (OPCOM) and executed on its spot and forward markets.

Romania saw the first large-scale publicly announced PPA deal (for utility offtake) in August 2021, after Axpo signed a 7-year deal to offtake 50% of Macquarie's 600MW onshore wind portfolio in the country. The deal is on an existing asset, commissioned in 2012. On the other hand, corporate demand is set to skyrocket, as many corporations are moving their operations across the region and expect energy demand in the country to increase significantly. What remains to be seen is how fast the knowledge transfer will be from mature markets, and how quickly corporates, IPPs, and investors will reach the sweet spot for the country's long-awaited first corporate PPA enabling the financing of a new subsidy-free project.

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Spain

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With thanks to Schneider Electric

When considering PPA options across Europe, Spanish projects typically continue to rise to the top of the list in terms of potential economic returns. The market retains a strong pipeline across both wind and solar technologies and the developer community in general is familiar with the unique needs of the corporate buyer. We continue to see new deals being announced.

That said, the market is very dynamic, much like many countries across Europe. The recent price spikes across the continent have resulted in some reevaluation of policies and regulation at the government and EU level that are yet to play out. The recent Royal Decree and updates to it are creating a landscape that requires careful navigation. Add to this competition for supply from government auctions, utilities, and the large number of corporate buyers in the market and it is clear that evaluation and negotiation of PPAs in Spain requires an in-depth and dynamic view into the market.

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UK

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With thanks to Pexapark

The UK's PPA market traditionally has been dominated by corporates mostly driven by sustainability targets, putting price hedge as a secondary priority. The trend of moving from more familiar Physical PPA structures to Virtual PPA ones is advancing further, especially for those with their parent company based in the US.

Although demand from corporates is expected to go further upwards, so is competition. For investment grade corporates bidding processes competition can be steep, sometimes with more than 10 developers bidding in procurement processes. Second tier corporates, including industrials which is a significant segment of the British market, show improvement in familiarity with PPAs and the risks associated. However, the needs of simplification and proof of price gains are bigger, as long-term price hedge is becoming the priority. On average, PPA tenors span between 10 and 15 years, and are usually linked to Consumer Prices Index (CPI).

Offshore wind will catalyze further PPA demand. Projects in development are already opting for merchant tails, especially after Amazon's milestone move to contract 350MW of an unnamed project in Scotland. TotalEnergies and SSE Renewables, who are developing the 1.075GW Seagreen 1 farm in the area, have already announced they will be creating shorter corporate PPAs of blocks between 10MW or 100GWh per year, of a less than 5-years tenor to increase the reach of the corporate PPA market.

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North America

Canada

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With thanks to Business Renewables Centre - Canada

On September 20, EDP Renewables and TC Energy announced a PPA for a 15-year long-term agreement to add a 297 MW wind farm. This agreement will cover 100% of the project's output and close off the third quarter of 2021 with Alberta's most significant purchase agreement for wind energy to date. The corporate procurement agreements announced in Q3 of 2021 add 492 MW of total contracted capacity of renewable energy, more than all the deals through 2020 combined. All publicly disclosed corporate renewable energy deals in Canada can be found in our BRC-Canada Deal Tracker, which is updated quarterly.

On July 22, Cenovus announced a partnership with Cold Lake First Nations and Elemental Energy to buy solar-power-produced electricity under a 15-year PPA. This partnership will not only mitigate emissions but shows a commitment to Indigenous reconciliation through economic engagement. This quarter also welcomes the first-ever buyer from the chemical manufacturing industry, as Capital Power announced a long-term renewable power purchase agreement with Dow Chemicals on September 15. The 15-year contract between Capital Power and Dow Chemicals will be for a total of 25 MW on its Whitla Wind 2 project in southeast Alberta.

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United States (CAISO)

Previous issues with content: 2 | 4 | 5

With thanks to Schneider Electric

Over the last two years, the CAISO market has become increasingly attractive for corporate PPA buyers. While new-build wind in the region is virtually non-existent due to strict permitting and environmental regulations, CAISO offers some of the cheapest new-build solar PPA rates in the country. Given the competitive economics compared to other US markets, an increasing number of corporate buyers are shifting their focus to California. Additionally, there are over twenty different community choice aggregators ("CCAs") that aim to provide cleaner sources of power compared to the traditional investor-owned utilities. These CCAs are also extremely active in the market for sourcing PPAs. High demand for California projects means that corporates wanting to transact there will be in competition with a large variety of other types of offtakers.

Given the tremendous build-out of solar over the last 10 years and the continued expectations for growth, there are increasing concerns about the evolution of the so-called "duck curve" in CAISO, in which power prices tend to be the lowest during the middle of the day when solar production is at its peak. In response, many renewable energy developers are now able to offer PPAs with innovative solar + storage solutions that shift solar production from the afternoon to the evening in order to capture higher market prices and reduce this renewable saturation risk to buyers within PPAs.

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United States (ERCOT)

Previous issues with content: 2 | 3 | 4

With thanks to Edison Energy

Electric Reliability Council of Texas, Inc. (ERCOT) continues to be a hot market for corporate renewable energy customers, though prices have increased significantly. Based on Edison Energy's market data, as reported in Edison

Energy's Q2 2021 Renewables Market Update, ERCOT p25 solar pricing saw an uptick of $2/MWh between Q2 to Q3 2021, landing at approximately $30/MWh for a standard, non-escalating, unit contingent PPA. Similarly, p25 wind pricing saw an uptick of $2/MWh in the same timeframe, coming in at around $24/MWh.

Edison Energy sees a robust pipeline of projects in ERCOT today, though module supply challenges are a risk for this solar-dominant market. In Q3, 8 GW of renewables were marketed to prospective corporate buyers. About 75% of marketed capacity was solar, and the other 25% wind. ERCOT has the fewest hurdles to overcome in project development, and can be a fit for buyers who need to bring projects online in the near term. However, interconnection timelines and congestion can present a risk to ERCOT projects. Further, severe challenges in module supply are likely to impede progress in solar project contracting in the near term.

A final item to flag in the ERCOT market is regulatory uncertainty, a risk that developers are asking buyers to share in contracts today. In response to Winter Storm Uri, which happened in February 2021, energy policy reform is pending at the Public Utility Commission of Texas. Several of the proposed reforms would place undue financial burden on renewable energy assets. CEBA members have taken a stand, writing to the Commission, "These proposed actions will harm future projects, making it more difficult and more expensive to power the Texas economy." Until the market redesign effort is resolved, prospective buyers in ERCOT can expect that change in law will be an important focus in PPA negotiations.

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United States (MISO)

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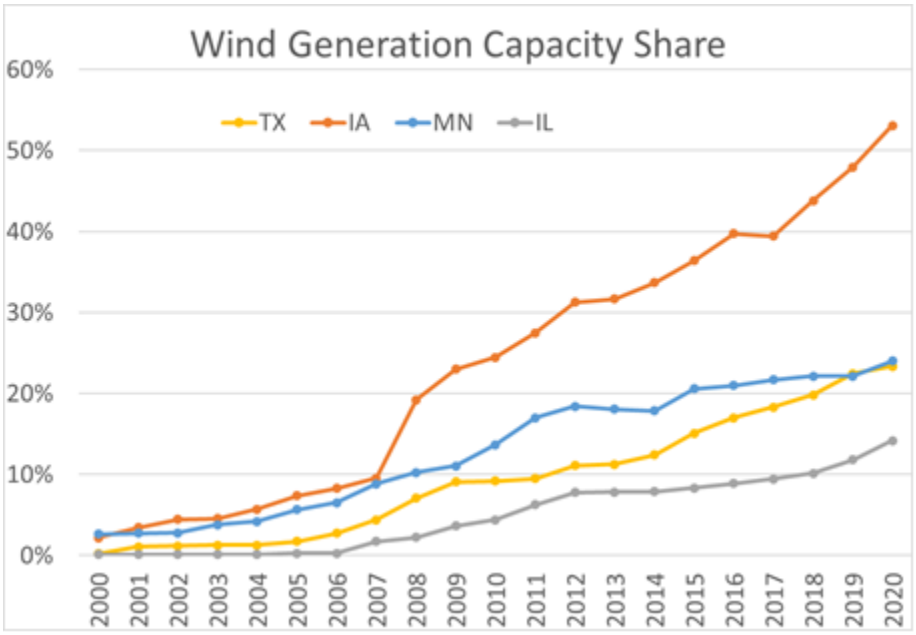
With thanks to Commodity Risk Solution

We have a positive view on the Midcontinent Independent System Operator (MISO) market particularly in the central region for a number of reasons and believe it is productive for corporate renewable energy customers, especially those with operations in the Midwest, to look at this market carefully.

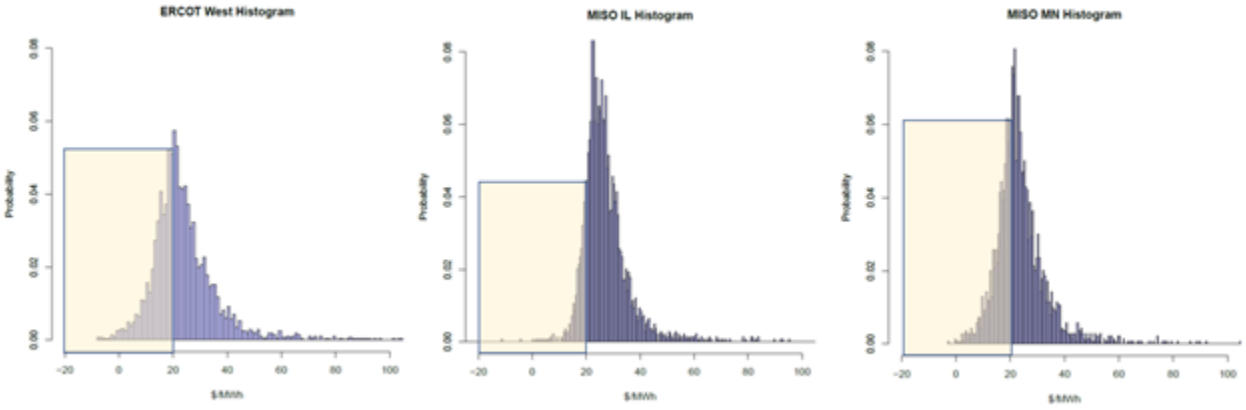
Coal-generated electricity still plays an important role in the MISO generation mix and provides the opportunity to offset more carbon per MWh of renewable energy. SERC Midwest (Illinois and Missouri) followed by MRO East (Wisconsin) have the highest CO2 intensities of all 22 eGRID regions in the continental US (source: EPA eGRID).

As we have experienced firsthand, development risk is a significant challenge in MISO and should be carefully managed and addressed. On the other hand, projects with clear permitting visibility and approvals have the competitive advantages in a market with less competition and, in the case of wind, a high-yield renewable resource. Within the MISO grid, Illinois has a lower wind generation capacity penetration (14%) in comparison to neighboring Midwest states, Iowa (53%) and Minnesota (24%). For additional context, Texas (ERCOT) has a wind capacity share of 23% (source: EIA).



[1]

With a lower wind generation share of total market capacity, Illinois has comparatively fewer intervals with wind being the marginal generator. This is significant because it means fewer occurrences with market prices set by zero marginal cost generation assets. For this reason, one could expect fewer downside price shocks in the historical data for MISO Illinois Hub in comparison to MISO Minnesota Hub and ERCOT West. Evaluating the 2014-2021 historical daily price distributions, we can see just that: 14% of the days in MISO Illinois averaged $20/MWh or lower in comparison to 39% for ERCOT West and 34% in MISO Minnesota. Historically, MISO Illinois exhibited a lower downside risk profile.



[2]

Energy price correlations to most of the key energy markets for the Midwest manufacturing hubs can provide for an effective hedging opportunity between generating assets and electricity loads in MISO and PJM. Furthermore, we see a nice additional benefit, given these correlations and MISO's density and breadth of manufacturing and industrial operations, for renewable energy leaders to participate in procurement consortiums between supply chain partners, especially as scope 3 emissions are increasingly integrated into sustainability plans.

[1] Sources: EIA, MISO and ERCOT data
[2] Sources: EIA, MISO and ERCOT data

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United States (PJM)

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With thanks to LevelTen Energy

PJM Interconnection LLC (PJM) continues to be one of the most dynamic markets in the US, with increasing demand for renewables from corporate, utility, and retail supply buyers and a shortage of available supply from project developers due to interconnection, permitting, and regulatory headwinds.

Interconnection queues in PJM are extremely backlogged, and PJM simply cannot keep up. Reports of interconnection study results coming in more than a year late are not uncommon, creating a lack of clarity around responsibility and cost allocation for any potential interconnection facility upgrades a project may — or may not — require. For developers with projects early in the development process, waiting in limbo for interconnection study results impedes their ability to commit to a binding PPA price and to estimate COD timelines. Permitting challenges further constrain project availability.

As a result, buyers will increasingly find developers requiring PPA termination rights if the project does not receive necessary interconnection or permitting approvals, meaning buyers often need to accept some level of development "risk." Providing a developer with a PPA exit ramp or reopening PPA price negotiations (or both) may be necessary to maximize the likelihood of successful PPA execution. Consequently, developers with mature projects that have a line of sight to COD are in advantaged positions, with abundant contracting optionality.

With a revised "focused" MOPR taking effect September 29th following a stalemate on the matter between FERC commissioners, renewable developers once again have certainty around capacity market participation without a price floor constraint. However, MOPR represents only one of many complexities and difficulties that are causing significant amounts of uncertainty in PJM. Whereas the MOPR functioned as a price floor for capacity market bids, a Market Seller Offer Cap (or MSOC) has been approved by FERC and will be implemented in PJM's upcoming capacity market auction in January. In addition to imposing price caps, PJM will be updating the level at which renewables can participate in the capacity market through a construct known as an Effective Load Carrying Capacity (or ELCC) mechanism. Both the MSOC and ELCC have the potential to limit project revenue from capacity markets. One might expect developers to increase PPA prices to compensate for this loss of revenue and account for broader market uncertainties, and indeed, LevelTen's Q3 PPA Price Index shows that P25 solar prices in PJM rose 4.5% quarter over quarter, while P25 wind prices jumped by 26.5% in Q3.

PJM is a dynamic and complex region, and both developers and buyers alike must be as informed and prepared as possible to cope with its regulatory fluctuations and market uncertainties.

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Mexico

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With thanks to Clean Energy Investment Accelerator

Companies in Mexico remain committed to procuring clean energy, despite recent announcements made by the federal government. In September, the Science Based Targets Community of Practice in Mexico discussed options for decarbonizing energy consumption during Energy Week. Together with WWF, the Clean Energy Investment Accelerator (CEIA) Mexico team hosted an Energy Week webinar with more than 100 participating companies to explore electricity market opportunities and how to work with electricity suppliers to effectively buy clean energy and achieve their goals.

On the policy side, the federal government recently proposed new regulatory modifications aimed at bolstering the national utility (CFE). Private sector stakeholders in Mexico have expressed serious concerns about the proposed changes and their potential implications on Mexico's clean energy procurement landscape. Among other provisions, the proposed modifications include the complete cancellation of: Mexico's Clean Energy Certificate regime; the government-run, utility-scale, long-term clean energy auctions; and the issuing of permits for off-site renewable "self-supply" projects. The reform does not dismantle the wholesale electricity market, but the modifications propose eliminating the National Energy Control Center (CENACE), the current wholesale market operator, as well as limiting the private sector's market share in power generation to only 46%. As a result, the future of power purchase agreements (PPAs) in Mexico is uncertain, and even legacy "self-supply" contracts could potentially be cancelled. So far, none of the modifications address distributed generation. The proposed reforms will require the approval of 75% of the Senate to pass and move forward into implementation. The Lopez-Obrador administration may be able to secure sufficient Senate support for these reforms, due to fragmentation within one of the opposition's political parties (PRI).

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Contact us

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About CEBA

We are a community of nearly 300 energy customers and partners committed to achieving a 90% carbon-free U.S. electricity system by 2030.

Learn more about CEBA

Upcoming NGO-hosted events

Dates	Event	Location
May 16 – 18, 2022	Spring Summit – Registration is now open!	Detroit, Michigan

Check the events schedule on InterConnect to stay up to date with our 2022 Worldwide Wednesdays, soon to be announced!

Global Procurement Update market coverage

The following energy markets have been discussed in the Global Procurement Update series

Energy market	Issue 1	Issue 2	Issue 3	Issue 4	Issue 5	Issue 6
Asia						
Australia	✓	✓	✓	✓	✓	✓
China (National)	✓	✓	✓	✓	✓	✓
China (Guangdong)			✓			
China (Jiangsu)	✓					
China (Sichuan)	✓					
India	✓	✓		✓		✓
Indonesia	✓	✓	✓		✓	✓
Japan	✓	✓	✓	✓	✓	✓
Malaysia					✓	
Philippines						✓
Russia	✓	✓	✓			
Singapore			✓			
South Korea				✓	✓	✓
Taiwan	✓		✓	✓	✓	✓
Vietnam	✓	✓	✓	✓	✓	✓
Europe						
Demark			✓			
Germany		✓			✓	✓
France			✓			
Ireland				✓	✓	
Italy	✓	✓	✓	✓	✓	✓
Poland	✓	✓	✓	✓	✓	
Romania						✓
Spain	✓	✓	✓	✓		✓
Sweden				✓		
UK	✓	✓	✓	✓	✓	✓
North America						
Canada	✓	✓	✓	✓	✓	✓
Mexico		✓	✓	✓	✓	✓
United States (CAISO)		✓		✓	✓	✓
United States (ERCOT)		✓	✓	✓		✓
United States (ISO NE)	✓		✓	✓		
United States (MISO)	✓	✓	✓	✓	✓	✓
United States (NYSO)				✓		
United States (PJM)	✓	✓	✓	✓	✓	✓
United States (South Carolina)				✓		
United States (SPP)			✓		✓	
South America						
Brazil	✓	✓				
Colombia	✓	✓		✓	✓	