VIRTUAL PPA- A PRIMER ON REGULATORY DYNAMICS

1. Introduction

India in this age is standing at the crucible of development where it is becoming the land of ideas, industry and innovation. To fuel these dreams of innovation and growth, as well as to forge them into reality, modern India is ramping up its demand of energy while balancing it with the temperance of sustainability. India has positioned itself as a leader in sustainability, as evidenced by its aggressive targets announced in the Nationally Determined Contributions (NDCs) under the United Nations Framework Convention on Climate Change (1992)[1], where it has pledged to reduce the emission intensity of its gross domestic product by 45% (forty five per cent) by the year 2030 and achieve 50% (fifty per cent)of cumulative electric power installed capacity from non-fossil fuels and become net-zero emissions country by 2070[2].

In its path to achieve these aggressive targets, India would need to leverage the potential of the commercial and industrial ("**C&I**") sector to a massive extent as this sector alone accounts for half of the country's total energy consumption[3]. The C&I sector is a fundamental keystone to transitioning to a cleaner and green industrial sector across India[4]. However, shifting an industry's entire energy consumption to renewable energy is a complicated process which requires compliance with various regulations, ensuring the bankability of projects for investors and requirement of strong technical ability to quantify and regulate the daily industrial energy consumption. Therefore, small industrial units or business entities which do not have the technical personnel at their disposal still prefer to purchase electricity through the local electricity distribution company ("**Discom**"). To help in the shift of the C&I sector towards greener pastures, the power industry has recently developed a unique model for offtake of green power through "*Virtual Power Purchase Agreements*" ("**VPPA**"). In the following sections we analyse the fundamentals of the traditional form of power purchase agreement ("**PPA**"), understand the key features of VPPAs and delve deep into the promising role of VPPAs as a crucial lever to alleviate problems faced by stakeholders in the renewable energy sector.

2. Basics of power purchase. What is a virtual PPA?

Traditionally a power purchase or power offtake arrangement involved signing a power purchase agreement between parties and thereafter physical supply of electricity from one party to another, where the buyer will get the ownership of the electricity, along with its attributes and the seller will be paid an appropriate tariff for the transmission of the said electricity. Such physical PPAs are more suited to

[1] See https://www.sciencedirect.com/topics/earth-and-planetary-sciences/united-nations-framework-convention-on-climate-change accessed on July 1, 2024 at 14:00 PM (IST).
[2] India's updated first nationally determined contribution under the Paris Agreement (2021-2030)
See https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf accessed on July 1, 2024 at 14:00 PM (IST).
[3] C&I category consumes more than half of the total electricity produced in India See https://www.fitchratings.com/research/infrastructure-project-finance/higher-corporate-renewable-power-purchases-in-india-to-benefit-key-stakeholders-02-11-2022 accessed on July 1, 2024 at 14:00 PM (IST).
[4] See https://jmkresearch.com/renewable-sector-published-reports/powering-up-sunshine-untapped-opportunities-in-indias-rooftop-solar-market/ accessed on July 1, 2024 at 14:00 PM (IST).

companies and industries which have a high electricity consumption, and which are adept at monitoring the quantum of energy consumed. In order to meet the needs of smaller renewable energy consumers, who are eager to jump onto the green energy bandwagon but couldn't do away with the reliability of electricity from a distribution company, the concept of VPPA was developed.

Before delving into the concept of VPPAs, we should first understand that a renewable power purchase transaction primarily consists of three constituents i.e. (i) electricity; (ii) tariff; and (iii) green energy attributes. While in traditional PPAs, the electricity and the green energy attributes were attached and were transferred to the same party, in a VPPA, the electricity is separated from the green energy attributes and sold separately.

In a VPPA the parties are not required to physically exchange the ownership of the electricity as,

(i) a generating company ("**RE Generator**") can sell the electricity generated from their plant to a third party, for example, in energy exchanges (*but this sale will be devoid of renewable energy attributes*);

(ii) the company purchasing renewable energy attributes ("**Consumer**") can procure electricity from any other source including a local Discom to meet their consumption; and

(iii) both the parties agree on the mechanism of hedging the risk of price fluctuation of renewable energy, and exchange of green energy attributes.

Thus, VPPAs provide a certain flexibility to both the RE Generators and the Consumers which was not available under the traditional model of physical PPA. VPPAs have thus introduced innovative solutions in pricing and settlement system as well as in vesting of green energy attributes. We will discuss these innovations and their benefits in the forthcoming sections.

2.1. Pricing and Financial Settlement System

Unlike physical PPAs, VPPAs do not involve the actual transmission of electricity, instead, the crucial ingredient of a VPPA is the strike price, which a fixed price to be paid by a Consumer to a RE Generator. Based on the strike price, the Consumer and RE Generator decide the payment mechanism under a VPPA. Generally, the payment mechanism under a VPPA can be categorized as: '**two-way settlement' or 'one-way settlement'** as specified below[5]**:**

(i) **Two-way settlement mechanism –** Under this payment settlement mechanism, if the strike price is more than the market price, the Consumer pays the RE Generator for the difference. Conversely, if the strike price is lower than the market price, the RE Generator pays the Consumer. This arrangement provides a desirable hedge against power price volatility. This kind of settlement is also known as "*Contracts for Difference (CfD)*" or "*Fixed for-Floating Swap*" and is particularly attractive for corporates as it allows them to plan for electricity expenditures even in a highly volatile energy market.

[5] WWF India-Virtual Power Purchase Agreement for C&I Consumers in India, Chapter 1. see https://wwfin.awsassets.panda.org/downloads/virtual_power_purchase_agreement_for_c_i_consumers_in_india__wwf_india.pdf accessed on July 1, 2024 at 14:00 PM (IST).

(ii) **One-way settlement mechanism-** Under this mechanism only the Consumer compensates the RE Generator when the market price is below the strike price.

2.2. Vesting of Green Attributes

Green attributes in common parlance refer to any and all credits, benefits, emission reductions, offsets, and allowances, which are entitled and attributable to energy generation from renewable sources. Manifestation of green attributes most commonly is done through energy attribute certificates, which identify, verify and track the primary source and quantum of renewable energy. The issuance and vesting of green attributes are crucial aspect under the structuring of VPPAs. Different jurisdictions across the globe provide for different certifications which have their own issuance and verification methodology, some examples of green attributes around the world are:

(i) "*Guarantees of Origin*" in Europe;[6] and

(ii) "*Renewable Energy Certificates ("**RECs**")*" in the United States of America ("**USA**") (*issued by the United States Environment Protection Agency)* and in countries like Australia[7] and South Africa.[8]

Globally green energy attributes are majorly governed by mechanisms facilitated by International Renewable Energy Certificate [9] ("**I-REC**") or Tradable Instruments for Global Renewables[10]**.**

India has a domestic REC mechanism facilitated by the provisions of Central Electricity Regulatory Commission (Terms and Conditions for Renewable Energy Certificates for Renewable Energy Generation) Regulation, 2022[11],which also provides for issuance of I-REC certified green attributes by the Green Certificate Company[12].

Unlike the traditional method of vesting green attributes in a physical PPA, under a VPPA the RE Generator sells the electricity on the power exchanges by stripping it of the green attributes. The Consumer is sold the green attributes separately and the ownership is transferred as per the provision of the VPPA. This separation of electricity from the green attributes enables the Consumer to procure conventional electricity from the Discom and simultaneously purchase and enjoy green attributes from a different source through a VPPA. This innovation enables the Consumer to meet their renewable purchase obligation and environmental compliance while having the stability of electricity supply from their regular Discom.

3. Advantages and Benefits of VPPA

[6] See https://www.statkraft.com/newsroom/news-and-stories/2020/guarantees-of-origin-ensuring-100-per-cent-renewable-power-in-europe/ accessed on July 1, 2024 at 14:00 PM (IST).
[7] See https://cer.gov.au/markets/renewable-energy-certificates accessed on July 1, 2024 at 14:00 PM (IST).
[8] See https://carbonzero.solar/rec/#the-south-african-rec-market accessed on July 1, 2024 at 14:00 PM (IST).
[9] See https://www.irecstandard.org/about-us/ accessed on July 1, 2024 at 14:00 PM (IST).
[10] See https://redex.eco/about-apx-tigrs/ accessed on July 1, 2024 at 14:00 PM (IST).
[11] See https://cercind.gov.in/regulations/REC-Regulations-2022.pdf accessed on July 1, 2024 at 14:00 PM (IST).
[12] See https://gcc.re/ accessed on July 1, 2024 at 14:00 PM (IST).

The salient advantages and benefits available to RE Generator, Consumer and Discom, through a VPPA and its unique structuring mechanism are discussed below in detail.

3.1. For a Consumer

(i) **Compliance with renewable purchase obligation and ESG regulations-** Through procurement of green attributes under a VPPA, the Consumer can comply with its renewable purchase obligations as mandated under Electricity Act 2003 ("**Electricity Act**") and National Tariff Policy[13], along with compliance with Environmental, Social, and Governance (ESG) regulations and compliance under Companies Act 2013 and SEBI (Listing Obligations (Listing Obligations and Disclosure Requirements) Regulations, 2015.[14]

(ii) **Renewable energy procurement on a cost-effective basis-** As the mechanism under a VPPA does not require an entity to enter into a captive transaction or invest in separate infrastructure for the evacuation of renewable energy, it is a cost-effective method to avail benefits of renewable energy as compared to traditional methods.

(iii) **Hedging mechanism against future price variation-** Under a VPPA since the parties negotiate and fix a strike price, the Consumer is safeguarded from rising energy costs in the future and risk of volatile costs in its operations.

(iv) **Ease of structuring-** As VPPAs do not involve physical transmission of electricity, a company can purchase VPPAs according to its needs and distribute it amongst its subsidiaries across the country. **This** allows the Consumer to avail benefit of green energy without any capital expenditure and appropriately catering to its small-scale operations as well.

3.2. For a RE Generator

(i) **Secured Long term tariff and improved bankability-** VPPAs provide a RE Generator with a fixed long-term revenue which is predictable, stable and independent of inflationary and market deviations and this helps in enhancing the ease of getting finance from lenders for the project.

(ii) **Expanded Market**- In the regular renewable power supply model, a RE Generator would typically work with Customers who require a quantum of electricity of at least 100 (Hundred) KW or above, as specified under Electricity (**Promoting** Renewable Energy Through Green Energy Open Access) Rules, 2022. However, under a VPPA, Customers who require green energy below this quantum can also procure its benefits.

3.3. For a Discom

(i) **Prevents erosion of customer base-** Due to steady rise of tariffs for commercial customers, C&I sector has steadily shifted to purchasing renewable energy through open access. If the industry shifts towards adoption of VPPAs, it will reduce the shift of customers from the Discoms as such

[13] See https://mnre.gov.in/solar-rpo-and-rec-framework/ accessed on July 1, 2024 at 14:00 PM (IST).

[14] See https://iclg.com/practice-areas/environmental-social-and-governance-law/india accessed on July 1, 2024 at 14:00 PM (IST).

customers can continue to procure energy from the Discoms while having the price stability through the hedging mechanism of VPPAs.

(ii) **Prevents technical challenges relating to grid constraints-** Since under a VPPA there is no actual transmission of **electricity** from a RE Generator to the Customer, the grid of the Discom will not be oversaturated with renewable energy and the local grid infrastructure will not be overburdened.

4. Regulatory Framework for VPPAs

In countries like UK and Spain, the regulatory requirements for VPPAs are simple and only require balance sheet recognition in compliance with accounting principles under rules of International Financial Reporting Standards ("**IFRS**")[15]. However, in the USA and European Union ("**EU**"), VPPAs are governed by rules applicable on derivative contracts and thus are governed by detailed reporting regulations. In the EU, VPPAs are governed under Market in Financial Instruments Derivate Regulations (2014) [16] while in the USA they are governed under the Dodd–Frank Wall Street Reform and Consumer Protection Act (2010)[17] which requires the parties to register themselves with the Commodity Futures Trading Commission and reporting of all transactions.

4.1. Regulatory Framework in India

(i) **VPPA's twin nature of power and derivative contract**

As we now understand, VPPAs are contracts which parties enter into in order to hedge the price risk posed by the rising power tariffs due to inflation and other market forces. Thus, the nature of a VPPA is similar to a derivative contract, as its value is dependent on the underlying asset i.e. electricity. Furthermore, similar to a forward or a swap contract, under a VPPA also the parties fix a pre-agreed price, and settlement takes place basis the final market price of the underlying commodity.

In India, all regulations pertaining to generation, transmission, distribution, trading and use of electricity are governed under the provision of Electricity Act and regulations framed by Central Electricity Regulatory Commissions ("**CERC**") and State Regulatory Commissions ("**SERC**"). On the other hand, all commodity derivate contracts are governed under the provisions of the Securities Contract Regulation Act 1956 ("**SCRA**") and are regulated by the Securities and

[15] WWF India – Virtual Power Purchase Agreement for C&I Consumers in India https://wwfin.awsassets.panda.org/downloads/virtual_power_purchase_agreement_for_c_i_consumers_in_india__wwf_india.pdf accessed on July 1, 2024 at 14:00 PM (IST).

[16] See REGULATION (EU) No 600/2014 on markets in financial instruments https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0600 accessed on July 1, 2024 at 14:00 PM (IST).

[17] The Dodd–Frank Wall Street Reform and Consumer Protection Act, commonly referred to as Dodd–Frank, is a United States federal law that was enacted on July 21, 2010, see https://www.cftc.gov/sites/default/files/idc/groups/public/@swaps/documents/file/hr4173_enrolledbill.pdf accessed on July 1, 2024 at 14:00 PM (IST).

Exchange Board of India. On September 27, 2016, the Ministry of Finance issued a notification[18], which brought electricity within the scope of commodities to be governed under the provision of SCRA, and thus began a tussle over governance of VPPAs as derivative contracts in the electricity sector.

(ii) **Tug of war for Jurisdiction**

A tug of war for jurisdiction over electricity contracts began when the Multi Commodity Exchange of India ("**MCX**") approached the erstwhile regulator of derivatives market, Forward Market Commission ("**FMC**")[19] for seeking approval to introduce electricity forward contracts, which was granted in the year 2009. The Power Exchange of India Limited challenged the approval before the CERC stating that CERC had exclusive jurisdiction to regulate over electricity matters. The CERC taking cognizance of the application, passed orders against MCX and FMC restraining them from dealing in electricity forward contracts. This restriction was challenged by MCX and FMC before the Bombay High Court in 2010 in the matter of ***Multi Commodity Exchange of India Limited v. CERC*** **("MCX Case")**[20].

In this case, the FMC claimed its jurisdiction over forward and the future contracts under relevant provisions of SCRA and argued that such contracts were not even covered under the Electricity Act. They further argued that since forward and future contracts were only financial in nature, they were outside the purview of CERC.

The CERC argued that the Electricity Act was enacted to unify aspects related to the production, transmission, distribution, trade, and consumption of electricity. Consequently, CERC asserted that it has the authority to introduce legislation to support the growth of the energy industry. By interpreting Section 66 and Section 178(2)(y) of the Electricity Act[21] together, CERC maintained that it could create regulations to promote the energy market, including trading activities. CERC contended that term "*trading*" encompasses all activities, including those related to electricity futures and forwards.

The Bombay High Court in the MCX Case ruled that,

"Both the regulatory authorities are functioning under different statutes and, therefore, neither of them can be said to be subject to the jurisdiction of other".

However, the above ruling failed to provide a clear demarcation in jurisdiction between the two regulators. Eventually, in the year 2021, the parties approached the Hon'ble Supreme Court of India in the matter of ***Power Exchange of India v. SEBI***[22]. While the Supreme Court was

[18] SEBI Circular dated September 28, 2016- List of Commodities notified by Ministry of Finance gazette notification dated September 27, 2016, see https://www.sebi.gov.in/sebi_data/attachdocs/1475059402243.pdf accessed on June, 10, 2024 at 14:00 PM (IST).

[19] In September, 2015 through the Finance Act, 2015 the FMC was merged with SEBI, thus all functions of FMC are now carried out by SEBI. https://economictimes.indiatimes.com/markets/stocks/news/sebi-fmc-merger-a-milestone-event-to-usher-in-reforms/articleshow/49142487.cms accessed on July 1, 2024 at 14:00 PM (IST).

[20] Multi Commodity Exchange of India Limited & Another v. Central Electricity Regulatory Commission & Ors. (*Writ Petition No. 1197 of 2010*)

[21] Electricity Act, 2003, § 66, 178, (India).

[22] Power Exchange of India Ltd. through Vice President v. Securities and Exchange Board of India etc. (*Civil Appeal Nos. 5290-5291 of 2011*).

deliberating on the issue of jurisdiction of SEBI and CERC, the Ministry of Power, on October 26, 2018 appointed the "*Committee on Efficient Regulations of Electricity Derivatives*"[23] to analyze the issue and bring to fore a common ground.

(iii) **Committee on Efficient Regulation of Electricity Derivatives and its recommendations**

The Efficient Regulation of Electricity Derivatives ("**MOP Committee**") was entrusted with the examining the technical, operational, and legal framework for electricity derivatives and to give recommendations in this regard. The MOP Committee submitted its report on October 30, 2019.

The MOP Committee proposed that all 'ready delivery contracts' and 'non-transferable specific delivery contracts' in electricity, as defined under the SCRA, entered into by members of power exchanges registered under the CERC (Power Market) Regulations, 2010, should be regulated by the CERC provided the below conditions are satisfied

(a) **Physical Delivery Requirement**: The contracts must be settled exclusively through the physical delivery of electricity, without any netting. This means that each contract must result in the actual transmission of electricity from the seller to the buyer without offsetting positions against each other to avoid physical delivery.

(b) **Non-transferability of Rights and Liabilities:** The rights and liabilities associated with these contracts cannot be transferred to another party. This ensures that the original parties **involved** in the contract retain their responsibilities and obligations until the contract is fully executed.

(c) **Prohibition of Non-delivery Settlements**: Contracts must not be executed in such a way that it allows the dispensation of actual delivery of electricity. This rule ensures that the **contracts** lead to the intended physical delivery and payment, maintaining market integrity.

(d) **Ban on Circular Trading**: Circular trading, where contracts are transferred or rolled over among parties to create an **illusion** of high trading volume, is not permitted. The rights and liabilities in specific delivery contracts must not be transferred by any means, ensuring genuine transactions.

(e) **Authorized Trading Only**: Trading on these contracts must be conducted only by authorized grid-connected entities or trading licensees acting on behalf of grid-connected entities. This condition **ensures** that only legitimate participants involved in the electricity grid can engage in trading, enhancing market reliability.

(f) **Contract Annulment Due to Technical Constraints**: Contracts can be annulled or curtailed without transferring positions if there are constraints in the transmission system or other technical reasons, as per CERC's guidelines. Once a contract is annulled, it cannot

[23] https://pib.gov.in/PressReleasePage.aspx?PRID=1761701 accessed on July 1, 2024 at 14:00 PM (IST).

be reopened or **renewed** to continue the same transaction, preventing manipulation or exploitation of technical issues.

(g) **Monitoring and Reporting**: All relevant information or returns related to the trade must be provided to CERC upon request. CERC will monitor the performance of these contracts to ensure compliance and proper functioning within the power exchanges.

The committee also suggested that commodity derivatives in electricity, other than Non-Transferable Specific Delivery ("**NTSD**") contracts as defined in the SCRA, will be regulated by SEBI. The Central Government shall retain the authority to impose additional conditions as needed. It was also suggested that a joint working group between SEBI and CERC shall be established, following the terms of reference outlined in the MOP Committee's report.

Based on these recommendations, both the regulators came to an agreement, wherein CERC agreed to regulate physical delivery based forward contracts and SEBI will have the regulatory purview over financial derivatives. The Ministry of Power issued an order on July 10, 2020, and the Supreme Court relying on the committee's recommendations issued the final judgement dated October 2, 2021, in the matter of ***Power Exchange of India v. SEBI*** mandating the two regulators to abide by the terms of the compromise and stated that *"SEBI will deal with the financial and derivative aspects of electricity whereas CERC will deal with the physical delivery based forward contracts."*, thus resolving the dispute in the year 2021.

5. Conclusion: Doubts, Uncertainty and Way Forward

Despite the above stated bifurcation of jurisdiction between SEBI and CERC there are certain issues pertaining to regulation of VPPAs which remain unresolved. VPPAs by their inherent nature are neither purely financial derivative instruments which are traded on exchanges nor are they contracts wherein physical delivery of electricity is provided. Thus, VPPAs still lie in a vacuum in the current regulatory ecosystem, devoid of effective management and requiring a streamlined strategic approach which addresses regulatory, procedural, and risk management for the entire chain of stakeholders. Some key recommendations and suggestions for addressing the lacunae faced by VPPAs in the current regulatory regime are provided hereinunder:

(i) **Regulatory Coherence-** VPPAs are customizable over the counter ("**OTC**") transaction instruments and thus are not governed by SCRA, which as per its Section 18[24] governs only those derivate transaction which are traded and settled on a recognized stock exchange. They are also not covered under Section 45V of the Reserve Bank of India Act, 1934[25], as VPPAs do not require to have a scheduled bank, or bank under Banking Regulation Act, 1949 as a party to the agreement. They are not regulated under the extant regulations of CERC as seen under the provisions of Regulation 43 of the CERC Market Regulations 2021[26] which allows generating companies and

[24] Securities Contracts Regulation Act, 1956, Section 18, (India) see https://www.sebi.gov.in/acts/contractact.pdf accessed on July 1, 2024 at 14:00 PM (IST).

[25] Reserve Bank of India Act, 1934, Section 45V see https://www.indiacode.nic.in/bitstream/123456789/2398/1/a1934-2.pdf accessed on July 1, 2024 at 14:00 PM (IST).

[26] Central Electricity Regulatory Commission (Power Market) Regulations, 2021) see https://cercind.gov.in/2021/regulation/161-reg.pdf accessed on July 1, 2024 at 14:00 PM (IST).

open access consumers to participate in the OTC transactions, yet Regulation 7(3)[27] (*Contracts Transacted in OTC Market*) mandates that such OTC transactions should only be settled by physical delivery of electricity. To resolve this, impasse wherein VPPAs are neither fully governed under the regulations of SEBI and CERC, the regulators need to have an extensive stakeholder consultation to make an overarching regulation which governs VPPAs and balances the entire gamut of risk and challenges posed therein.

(ii) **Creation of a standardized VPPA**- In addition to drafting a streamlined regulatory ecosystem, the CERC and SEBI should also aim to create a standardized VPPA document. This can help in mitigating the initial risks and conflicts faced by VPPAs in their adoption by industry, and will reduce the need for regulatory interventions at initial stages. This standardization would provide clear guidelines, create separate templates for various models and have checks and balances for all parties involved.

(iii) **REC Issuance and adoption of I-REC:** The current methodology for issuance and trading process for REC certificates under Regulation 11 of Central Electricity Regulatory Commission (Terms and Conditions for Renewable Energy Certificates for Renewable Energy Generation) Regulations, 2022[28] ("**REC Regulations**") only allows for certificates to be traded over exchanges or through traders. There is no mechanism currently in place which governs the trading of REC certificates in a bilateral transaction between a RE Generator and its Customer. CERC should clearly define the framework for bilateral REC transactions to facilitate the exchange of green attributes under VPPAs. Additionally, the REC Regulations under Regulation 4(2) of REC Regulations specifies that REC certificates can only be issued by RE Generators who (a) are not selling the electricity in a power exchange; and (b) who have not availed waiver or concession in transmission charges or wheeling charges. To promote VPPAs, these provisions would need to be modified and the concessions and waivers should be extended to such contracts. Furthermore, VVPA projects registration under the I-REC system should be promoted as it would allow consumers to utilize them across multiple jurisdictions which will allow fungibility of certificates and faster adoption of VPPAs in the industry.

(iv) **Comprehensive framework for adoption:** SEBI and CERC should establish a comprehensive framework for VPPA adoption, which may provide, among others, a single-window clearance system for ease of approvals. This would streamline the process for commercial and industrial consumers and simplify the procedural requirements to encourage wider participation.

VPPAs are gaining significant momentum globally, particularly in the USA[29] and Europe[30], where major corporations actively use them to meet their sustainability targets. In India, the VPPA market is still in a nascent stage. A recent transaction that is of note is the VPPA entered into by Cleantech Solar to generate 187 (Hundred and Eighty-Seven) GWh of green energy over the project's lifespan, and is registered under the I-REC mechanism, however besides the above, there are no details about the structure available in the

[27] *[ibid]*

[28] Central Electricity Regulatory Commission (Terms and Conditions for Renewable Energy Certificates for Renewable Energy Generation) Regulations, 2022, Regulation 11 see https://cercind.gov.in/regulations/REC-Regulations-2022.pdf accessed on July 1, 2024 at 14:00 PM (IST).

[29] See https://finance.yahoo.com/news/united-states-virtual-power-plant-150100565.html accessed on July 1, 2024 at 14:00 PM (IST).

[30] See https://www.spglobal.com/commodityinsights/en/ci/research-analysis/european-ppa-market-continues-to-grow-in-the-first-quarter-2023.html accessed on July 1, 2024 at 14:00 PM (IST).

public domain[31]. A recent report by the World Wide Fund for Nature titled "*Virtual Power Purchase Agreement for C&I Consumers in India*"[32] predicts that if provided with adequate impetus and reforms in regulations, the VPPA market can grow to help generate 402 (Four Hundred and Two) billion units of renewable electricity and 92 (Ninety Two) GW in the renewable sector for India.[33] VPPAs can significantly contribute to India's climate goals and hold the key to revolutionizing the power industry as well as green credit sector beyond India's borders through global energy adoption and fostering cross-border corporate sustainability. They can provide a lever to make small establishments go green and aid Discoms to stop the bleeding of C&I sector from their books. However, for this dream to come to fruition, there needs to be a comprehensive regulatory intervention and industrial joint effort so that the benefits of VPPAs stop being virtual and become a reality for a greener India.

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DISCLAIMER

[31] See https://cleantechsolar.com/cleantech-solar-announces-the-commercial-operation-of-its-maiden-virtual-power-purchase-agreement-vppa-amongst-the-first-in-india/ accessed on July 1, 2024 at 14:00 PM (IST)

[32] WWF India-Virtual Power Purchase Agreement for C&I Consumers in India, Chapter 3, see https://wwfin.awsassets.panda.org/downloads/virtual_power_purchase_agreement_for_c_i_consumers_in_india___wwf_india.pdf accessed on July 1, 2024 at 14:00 PM (IST)

[33] [*ibid*]