

INTERNATIONAL RENEWABLE ENERGY CERTIFICATES: AN EXERCISE IN REDUNDANCY IN THE INDIAN MARKET?

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Taking long strides, the Indian renewable energy market is a fast-growing compliance market. Recently, India has also agreed to the issuance of international renewable energy certificates and signed agreements with the centralized issuer in this regard. These agreements were signed around the time trading in the power exchanges had been picking up pace. While India has both the domestic and international renewable energy certificate systems in place, numbers indicate that the latter has not gained sufficient traction amongst Indian power generators and users. In light of this, the authors explore the international renewable energy certificate system, and its ability to sit in tandem with the domestic renewable energy certification system. Further, the authors provide an in-depth understanding of the domestic renewable energy certificate trading system. Finally, they explore the success (or lack thereof) of the international renewable energy certification specifically in the Indian market.

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I. INTRODUCTION

Energy attribute certificates, which enable a consumer to identify and track the source of generation independent of the underlying electricity generated, are one of the many market-based solutions introduced to move further towards clean energy. For electricity generated from renewable resources, energy attribute certificates take the shape of a renewable energy certificate (“REC” or “RECs”), which certifies that each MWh of energy generated is from a renewable source. Originally introduced as a means of satisfying the purchaser’s renewable purchase obligations i.e., the obligation to ensure that a certain percentage of the gross total energy portfolio is derived from renewable energy sources, RECs can now either be purchased to fulfil the mandatory renewable purchase obligations (“RPOs”) or can be purchased voluntarily by any end consumer to increase consumption of electricity from renewable sources.¹

Globally, while there exists a very underdeveloped and fragmented framework to regulate renewable energy,² it appears that there are three energy attribute certification systems and their applicable regulatory frameworks (collectively, “EAC systems” and individually, an “EAC System”) that are widely understood as being consistent and reliable. These are the REC system of the United States of America (“USA”)³, the Guarantees of Origin scheme formulated by the European Union (“EU”)⁴, and the International REC system formulated by the International REC

¹See generally: Leslie Parker, ‘International law and the renewable energy sector’ in Kevin R. Gray, et. al. (eds), *The Oxford Handbook of International Climate Change Law* (OUP 2016).

²ibid.

³ The United States of America has in place the REC scheme, regulated both at the state and federal levels. The RECs issued are money market instruments that can be traded. Around thirty states have mandated that suppliers ensure a portion of the total electricity supplied to the end-consumer is generated from renewable resources, seven states have maintained the requirement to supply electricity generated from renewable resources to be a voluntary requirement, and the remaining thirteen states have not regulated the consumption of renewable power in any manner whatsoever. See: I-REC Standard, 'Understanding EAC Schemes and Roadmaps for Their Development' (*International REC Standard*, September 2020) <<https://www.irecstandard.org/what-are-recs/>> accessed 10 September 2020.

⁴ The energy attribute certification system adopted by the European Union, known as ‘guarantees of origin’ or GOI, is in essence electronic certification that guarantees the purchaser of electricity that electricity has been generated from

Foundation. Other nations, such as Australia, South Africa, and India have functional national renewable energy certification systems backed by a regulatory framework. The variation in EAC systems has resulted in a plethora of bilateral contractual arrangements, rather than a unified regulatory framework that is sufficiently flexible to accommodate unique features of national systems.⁵ This complete lack of uniformity, apart from those in the USA and EU and their questionable reliability⁶, led to the introduction of the International REC (collectively “IRECs” and individually an “IREC”) system, to facilitate global trading in IRECs.⁷

The IREC Foundation has opined that the similarities in national systems are more often than not limited to the terminologies used, and substantive differences may deter multinational corporations (“MNCs”) with a presence in more than one geographic market and/or jurisdiction from transitioning to clean energy.⁸ It has also opined that in the absence of a uniform and familiar system to purchase RECs, the time and monetary investment to shift to clean energy increases substantially for MNCs, thereby deterring them from transitioning to clean energy.⁹ While the IREC Foundation argues that RECs (USA) and GOIs (EU) represent best practices, particularly with respect to reliability and consistency, it has also admitted that RECs (USA) have displayed substantial variations and lack of standardization.¹⁰ Therefore, one ponders whether the key drivers of the IREC i.e., reliability and uniformity are actually reflections of a myopic view of EAC systems across the world. Along with an overview of the IREC, its functionality, trading, and redemption mechanisms, we assess its ability to facilitate the move to clean energy in Part II of this paper.

While India has in place its own REC System, it has also adopted the IREC, with the Green Certificate Company (“GCC”) as its issuer of IRECs. The Indian REC System is a compliance market i.e., where the supplier is required to ensure that a portion of the electricity supplied is

a renewable source, enables trading in the electricity generated, and increases transparency for the end-use-purchaser to know whether the electricity purchased has been produced from a renewable or non-renewable source of energy. *See*: The promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

⁵ I-REC Standard (n 4).

⁶ I-REC Standard, 'I-REC Guide – How I-REC Works' (*International REC Standard*, February 2015) <<https://www.irecstandard.org/about-us/>> accessed 10 September 2020

⁷ I-REC Standard (n 4).

⁸ *ibid.*

⁹ *ibid.*

¹⁰ *ibid.*

generated from renewable sources. We delve into the nuances of the Indian REC System, recent developments, and trading on the Indian power exchanges in Part III of this paper. The IREC is only slowly gaining recognition in India. However, whether this slow recognition is sufficient to establish a notable presence in India in the near future is questionable, thus leading us to consider in Part IV of this paper whether the IREC is actually an exercise in redundancy in the Indian market. Our concluding remarks are provided in Part V of this paper.

II. INTERNATIONAL RENEWABLE ENERGY CERTIFICATES: FACILITATING AN INTERNATIONAL MARKET

The IREC is very simply, an 'attribute tracking system' designed to track the quantum of renewable energy consumption for markets outside the EU and USA, and draws from the best practices of both of these jurisdictions.¹¹ It is a certificate issued for every 1 MWh of electricity produced from a renewable energy source. It is unique and can be obtained in addition to carbon offsets or emission reduction certificates issued for the same 1 MWh of energy for which an IREC is to be issued.¹² It facilitates a market for energy attribute certificates¹³, in a manner such that they can be redeemed in any country, subject to compliance with laws applicable in the country of redemption.¹⁴ For instance, IRECs issued in India (a registered issuer nation) can be redeemed by the purchaser of IRECs in Singapore, Dubai, Egypt, Australia, or Mexico. One of the key drivers behind the IREC was to enable MNCs to meet their renewable energy consumption quotas across

¹¹Bioenergy International, 'I-REC Documented Renewable Power Now Available in West Africa' (*Bioenergy International*, 5 February 2020) <<https://bioenergyinternational.com/markets-finance/companies-can-now-buy-renewable-power-in-west-africa> > accessed 20 September 2020.

¹²International REC Standard, 'The I-REC Code' (*International REC Foundation*, N.P.) <https://gcc.re/documents/The_I-REC_Code_v1.8.pdf > accessed 25 August 2020.

¹³International REC Standard, 'View on prices' (*International REC Foundation*, 20 August 2020) <<https://www.irecstandard.org/vision-for-market-development/>> accessed 25 September 2020.

¹⁴International REC Standard, 'View on Market Boundaries' (*International REC Foundation*, February 2020) <<https://www.irecstandard.org/vision-for-market-development/>> accessed 25 September 2020.

nations with reduced barriers.¹⁵ Tetra Pak’s purchase of IRECs in China, for instance, has resulted in a 13% increase in total renewable energy consumption across its global operation levels.¹⁶

However, unlike a GOI that has to be necessarily cancelled by the end of 18 months by the member nation issuing the GOI, an IREC is an everlasting certificate until redeemed by an end consumer or withdrawn due to an error in certification. Interestingly, a proposal was submitted before the IREC Foundation in December 2019 to introduce an annulment process, which allowed the issued IRECs to be cancelled and placed in an annulment account.¹⁷ The attributes of the cancelled IRECs could be claimed by the last owner of the IREC in a different accounting standard. However, on annulment, the underlying attributes and rights of the IREC stand released cannot be claimed by a beneficiary.¹⁸ Apart from the consideration that annulment and redemption could be used for the same 1 MWh of energy for which an IREC was granted, members did not find any significant risks associated with introducing an annulment system and did not find the perpetual validity of the IRECs to be an issue that merits an overhaul of the existing IREC Code.¹⁹ This proposal was ultimately rejected by the board of the International REC Standard Foundation. Therefore, it appears that the current system whereby an IREC remains valid in perpetuity until withdrawn or redeemed will continue to remain the *status quo*.

A. Issuing and trading IRECs

Issuing an IREC follows certain simple steps. First, the electricity generating device (“EGD”) must be registered with the IREC and detailed information on the EGD must be provided either by the ‘production device’²⁰ or ‘production group’²¹ or a registrant working on behalf of the EGD

¹⁵Bioenergy International (n 12).

¹⁶South Pole, ‘Case Study: Tetra Pak Reduces Climate Impact by Sourcing 100% Renewable Electricity in China’ (*South Pole*, N.P.) <<https://www.southpole.com/clients/tetra-pak-renewable-electricity-china>> accessed 25 September 2020.

¹⁷International REC Standard, ‘Overview Complete Annulment Consultation’ (*International REC Foundation*, August 2020) <<https://www.irecstandard.org/documents/>> accessed 10 October 2020.

¹⁸*ibid.*

¹⁹*ibid.*

²⁰ The I-REC Code defines a Production Device to mean ‘One or more related generation units of substantially the same technology capable of producing electricity delivered through an identifiable measurement point.’ *See*: International REC Standard (n 13).

²¹ The I-REC Code defines a ‘Production Group’ to mean ‘A group of generation installations (a single metering point that is a source of generation within a production group) of substantially the same technology capable of producing electricity delivered through a number of identifiable measurement points. Installations constituting a group can be geographically dispersed, but must all exist within a single Issuer’s country of service.’ *See*: International REC Standard (n 13).

for registration purposes. The information provided will be verified by an independent third party. Once the issuer organization is satisfied with the evidence provided, the registrant is recorded as a participant on the IREC registry.²²

The registrant then makes a request to the issuer to issue IRECs. Pricing an IREC is not a function of the IREC Foundation, but rather a factor of various attributes of the IREC such as “location, age, device, technology, size, subsidy support, sustainability labels and others”.²³ The IREC Foundation has amply clarified that it merely “facilitates a market for Energy Attribute Certificates (“EACs”) in many countries around the world”.²⁴ It appears that pricing is an unregulated market exercise. A nation may either establish an issuer organization of its own such as Singapore (issuer is the SP Group), or Dubai (issuer is the Dubai Carbon Centre of Excellence), or Russia (issuer is Goal Number Seven). Alternatively, nations can have IRECs issued by the GCC, which is the central issuer, or the Rest of the World issuer recognized by the IREC Foundation.²⁵ A producer in India can sign an agreement and register themselves as a registrant with the GCC (“**GCC Agreement**”). The GCC Agreement shall be valid at least for a period of 12 months from the date of signing.²⁶ A key feature is that a producer has to represent and warrant to the GCC that the energy units for which an IREC application is made has not and will not be sold unless the IREC granted accompanies such sale of energy units (including in the case of self-consumption), and such energy units have not been produced under any national renewable purchase obligation or similar arrangement whereby the consumers can purchase attributes.²⁷ The concerns that the warranties raises are further detailed in Part IV of this paper.

²²International REC Standard, 'The I-REC Code Subsidiary Document 04: Issuing I-RECs' (*International REC Standard*, N.P.) <https://gcc.re/documents/I-REC_CSD04_Issuing_IRECs_v1.7.pdf> accessed 7 October 2020.

²³ International REC Standard, 'I-REC Prices' (*International REC Foundation*, August 2020) <<https://www.irecstandard.org/documents/?wpdmc=market-information>> accessed 7 October 2020.

²⁴International REC Standard(n14).

²⁵ GCC is the issuer organization for the following nations: India, China, Costa Rica, Egypt, El Salvador, Guatemala, Honduras, Indonesia, Malaysia, Mexico, Nigeria, Philippines, Panama, Peru, Sri Lanka, South Africa, Vietnam, Taiwan, Turkey, and Uganda. *See*: International REC Standard, 'Authorized issuance countries' (*International REC Foundation*, September 2020) <<https://www.irecstandard.org/documents/>> accessed 15 November 2020.

²⁶International REC Standard, 'Standard Terms and Conditions for Registration and Issuing' (*International REC Standard*, N.P.) <<https://gcc.re/>> accessed 21 September 2020.

²⁷ *ibid.*

An IREC issued can either be traded by placing it in the trading account or redeemed by placing it in the redemption account, and cannot simultaneously exist in both accounts.²⁸ Once an IREC is placed in the redemption account, no action other than redemption can be undertaken by the IREC owner.²⁹ Similar to any other EAC system, the ‘green’ or ‘environmental’ attributes of the IREC can be claimed by the certificate owner only at the time of redemption (more commonly known as cancellation in any EAC system).

B. IRECs and national RE systems

In issuing an IREC, once the registrant of the EGD represents and warrants to the registrar that it is not a recipient of any energy production certificates (including IRECs), or is a part of a similar ‘attribute tracking system,’ then the registrant will be recorded as a participant on the IREC registry.³⁰ However, the IREC Code clarifies that a user that registers itself with a similar energy attribute tracking system, is not prohibited from registering with the IREC, provided that a declaration to such effect is made. At this juncture, one can observe a peculiar inconsistency in the IREC Code. While on the one hand, the Code permits an IREC to co-exist with another energy attribute tracking system on the condition that such registration is sequential, on the other hand, registration itself is contingent on the issuer being satisfied that the registrant is not a part of an attribute tracking system that is similar to the IREC, or has declared its registration with another similar energy tracking system. Given that the underlying principles of any energy attribute system are common across different jurisdictions despite any difference in legalities³¹, the Code appears to give the issuer complete discretion in deciding whether or not registration with an existing national level energy attribute tracking system will result in rejection of the application to register with the IREC. One may, therefore, argue that this inconsistency supports the claim that the IREC is most definitely, a redundant exercise where a robust national RE System is already in effect.

IREC is in essence a voluntary energy attribute certification system. The IREC Foundation has clarified that an IREC is strictly a ‘voluntary disclosure’ and cannot replace any existing certificate

²⁸I-REC Standard (n 7).

²⁹ibid.

³⁰International REC Standard and GCC, ‘Standard Terms and Conditions for Registration and Issuing’ (*International REC Foundation*, August 2020) <<https://www.irecstandard.org/registrants/>> accessed September 30, 2020.

³¹International REC Standard, ‘Understanding EAC Schemes and Roadmaps for Their Development’ (*International REC Foundation*, September 2020) <<https://www.irecstandard.org/what-are-recs/>> accessed 7 October 2020

system used to meet renewable purchase obligations (individually a “**RPO**”, and collectively “**RPOs**”) unless the law specifically recognizes IRECs as instruments that can be used for such purpose.³² Undoubtedly, one can conclude that the IREC can co-exist with a national RE System. Owing to the lack of sufficient data in this domain, the reliability of the IREC as a mechanism to transition to clean energy remains to be seen.

India, as earlier mentioned, has a national RE System, which also facilitates trading in the national power stock exchanges viz. Indian Energy Exchange Limited (“**IEX**”) and Power Exchange of India Limited (“**PXIL**”) (collectively, the “**Indian Power Exchanges**”). In the following section, we look at the renewable energy market in India and outline the regulatory regime that governs RECs and the Indian Power Exchanges.

III. RENEWABLE ENERGY: THE INDIAN MARKET

To test the viability of IREC in the Indian market, it is important to understand the current regulatory framework that governs RECs. Particularly, the Electricity Act, the National Tariff Policy and the role of Electricity Regulatory Commissions merit attention. This analysis provides a foundation for our assessment of the viability of IRECs in the Indian market.

A. Understanding the regulatory framework

1. The Electricity Act and the National Tariff Policy

The National Tariff Policy, 2006 (“**NTP**”) favours the twin mechanism of RPOs and RECs. The rationale for a twin mechanism appears to stem from the realization that any entity generating RE can trade in both the generated power as well as the evidence of contributing to the environment via the RECs, as RE production has resulted in a reduction in environmental harm caused by lower production of greenhouse gases and emissions. For every Mega Watt hour worth of electricity generated and added to the grid by the entity, it can be issued one REC, and it can subsequently sell to the obligated entities (via inter-state and intra-state transfers) both this power as well as the corresponding REC, the latter being used by the obligated entity to fulfill its RPO in turn in any

³²International REC Standard(n15).

state in India. In this way, even if a particular state does not have sufficient RE production capacity, the RPO of entities operating in that state can be duly satisfied.³³ The latest target set by the Central Government of increasing the national RE capacity to 175 GW by 2022 (comprising 100 GW from solar sources, 10 GW from bio-resource based sources, 60 GW from wind sources, and the remaining 5 GW from hydro-electricity of small capacity) appears to be indicative of the increasing stress that the production and use of RE is currently being subjected to, although based on available official data provided by the Power Ministry of the RPO trajectory, the total RE generation remains considerably behind the estimated target till date.³⁴

The concept of a RPO in the Indian context has been referred to in Section 86(1)(e) of the Electricity Act, 2003³⁵ (“**the Act**”), as well as in the NTP. In essence, it mandates that certain specified entities (referred to in the Act and the NTP as ‘obligated entities’) would have to purchase electricity up to a specific percentage of their total electricity consumption from renewable energy sources only. The aforesaid obligation is further classified into that pertaining to solar³⁶ and non-solar renewable energy sources. The NTP makes multiple references to compulsory renewable

³³Swati Paliwal, Vikas Singh Bhadoria and Piyush Sharma, *Renewable Energy Potential Assessment in Indian Perspective*, 6(6) (2013) International Journal of Engineering Research and Technology 801.

³⁴See Ministry of Power, Government of India, ‘Order No. 23/03/2016 – R&R’, available at <https://powermin.gov.in/sites/default/files/webform/notices/RPO_trajectory_2019-22_Order_dated_14_June_2018.pdf>accessed December 20, 2020, and Annual Generation Reports issued by the Central Electricity Authority for years 2011-2020 <<https://cea.nic.in/annual-generation-report/?lang=en>>accessed December 20, 2020.

³⁵ According to this section, “The State Commission shall discharge the following functions, namely...(e) promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee.” Failure to adhere to such provision would attract penalties under Section 142 of the Act of up to INR 100,000 (Indian Rupees one hundred thousand) for each instance of failure, and an additional penalty of up to INR 6,000 (Indian Rupees six thousand) per day for a continuing failure. Some of the other salient provisions of the Act that facilitate the promotion of renewable energy in India include the Preamble itself (referring to the need for promoting efficient policies benign to the environment), Sections 3(1) and 3(3) (empowering the Central Government to frame and revise in consultation with the states the National Electricity Policy and the National Tariff Policy to develop power systems reliant on *inter alia* renewable energy), Section 61(h) referring to the appropriate Commission keeping in mind generation and co-generation of power from renewable energy sources while determining tariff, Section 66 talking about the need to promote a market for activities such as trading in renewable energy, and Sections 86(1)(b) and 86(1)(e) empowering the State Commissions to regulate electricity purchase and procurement related conditions (including but not limited to pricing issues) and also transactions via power purchase agreements, as well as to provide for the necessary grid connectivity and sale conditions, besides determining the requisite proportion of total power generation and consumption that power generated from RE sources must comprise. Further, related references to RE generation, cogeneration, procurement, transactions, trading, and the need to facilitate the same may also be found in the National Electricity Policy, 2005, specifically in paragraphs 5.12.1-5.12.3 thereof.

³⁶ In particular, the State Commission is required under the NTP to affix a percentage of solar power purchase obligations in a manner such that it reaches 8% of the total energy consumption by 2022.

energy (“RE”) purchases –*inter alia*, the appropriate Commission has been entrusted with the determination of a certain percentage of the total power consumption in the area of a distributor licensee to be purchased from renewable sources. While fixing this amount, the Commission ought to take into consideration the extent of availability of such RE within that area concerned. Simultaneously, the total cost incurred by the said licensee to meet such RPOs should be considered by the relevant Commission while determining the appropriate tariff. Instead of buying electricity from specified RE sources, the obligated entities may also fulfil their RPO by purchasing RECs from the market. With regard to any RE-based intermittent power not obtained via competitive bidding, the price for such procurement would depend upon the ceiling prescribed by the Central Electricity Regulatory Commission (“CERC”). Further, any RE-based power purchased by an obligated entity in bulk package bundled with thermal power produced by a generating company (companies intending to set up coal/lignite-based thermal power stations are also required to develop a specified capacity to produce such RE) would be considered as part of the entity’s efforts to meet its RPO; this essentially bolsters the policy attempt to bring cogeneration from sources other than purely RE sources within the ambit of the RPO. In an additional attempt to encourage RE generation, the NTP also prescribes inter-state transmission of solar and wind-based power for sale purposes to be exempted from levies or charges.³⁷

2. Role of the Electricity Regulatory Commissions

The CERC REC Regulations and the CERC (Power Market) Regulations³⁸ are some of the most important instruments when it comes to the governance of the entire REC market segment. The

³⁷Paliwal, Bhadoria and Sharma (n 34).

³⁸ The Draft Power Market Regulations issued in July 2020 proposes to apply to the Power Exchanges, other market participants as well as the Over the Counter Market, besides seeking to regulate contracts traded on the Exchanges, contracts relating to RECs and Energy Saving Certificates, OTC market contracts and all other contracts approved by the regulatory authorities concerned. The Regulations also address conditions of eligibility for an entity to start a Power Exchange (demutualized company registered under the Companies Act, 2013, and having a net worth of at least INR 50 crores and allowed by its MoA to start such an Exchange), the permissible ownership structure and shareholding patterns of such Exchanges (shareholding of individual members and clients together with persons acting in concert limited to 5%, shareholding of other individuals limited to 25% total shareholding by members and clients limited to 49%), exit schemes for said Exchanges, management of risk by the Exchanges, clearing and settlement concerns, transaction fee, contracts dealt with, the applicability of the CERC (Open Access in inter-State Transmission) Regulations, 2008 to OTC markets, concepts such as market coupling, market oversight mechanism, regulatory intervention under specific circumstances and the ambit of regulatory power, to name a few. For further discussions about the Draft Regulations, *see* Kush Saggi and Aastha Bajaj, ‘India: Highlights Of The Proposed Power Market Regulations, 2020’ (*Mondaq*, 17 August 2020) <<https://www.mondaq.com/india/contracts-and-commercial-law/976634/highlights-of-the-proposed-power-market-regulations-2020>> accessed 30 December 2020.

auctions (with uniform pricing policy) and bidding that take place are usually anonymous in nature and subject to voluntary participation. The CERC has issued several orders over the past years modifying the design of the REC market³⁹, methodologies of discovering equilibrium prices,⁴⁰ etc. based on stakeholder feedback received. Studies have revealed that since 2015-16, the number of RECs being issued have decreased owing to the changes made in the eligibility conditions (of captive power plants in particular) referred to above, while the redemption of RECs has increased.⁴¹ A few years back, in 2017-18, RECs from non-solar energy sources had displayed a spike in their purchase, which corresponded to an initiative undertaken by multiple state commissions to enforce the RPOs in their jurisdictions.⁴² Overall, a sizable portion of the RECs (solar and non-solar) keep being retained by the respective generating entities for their RPOs.

The bulk of the purchase has been made by the distributor licensees, while the captive power plants and the open-access consumers usually account for the rest. According to a study conducted back in 2018, the states from where obligated entities of all categories have bought RECs the most since the launch of the scheme in 2011 would be Maharashtra, Gujarat, Delhi, Rajasthan, and Odisha respectively, whereas the states having bought the least would include Tripura, Manipur, Mizoram, Meghalaya, and Haryana.⁴³ In an interesting development, quite a few purchases have been known to have been made by entities as part of their respective corporate social responsibility mandates.⁴⁴

Apart from the CERC REC Regulations, the State Commissions also have got their own regulations mandating the obligated entities to buy specific percentages of RE power as part of their RPO (REC usually being considered as one of the avenues of discharging such obligations, as mentioned earlier). The various entities also have to pay periodical fees and charges for

³⁹See Order dated 26.10.2012 in petition 231/MP/2012, wherein the price-time priority methodology (ensuring that the supplier placing orders early can sell all its RECs successfully) was changed to accommodate the price pro-rata methodology whereby the participants quoting a price higher than the market price would be allotted RECs first and in pro-rata proportion thereon. The excess supply conditions prevailing in the market might have resulted in this stance.

⁴⁰See Order dated 06.07.2012 in petition 147/MP/2012 wherein the methodology accepted consisted of averaging the buyer's and seller's prices provided the supply and demand graphs end up overlapping each other, so as to provide a more equitable solution.

⁴¹See Central Agency, National Load Despatch Centre, Power System Operation Corporation Limited, 'Renewable Energy Certificate Mechanism in India: Key Learnings, Data Analysis and Way Forward', <https://posoco.in/wp-content/uploads/2018/08/REC_REPORT_17082018_fPRINT.pdf>accessed 31 December 2020.

⁴²ibid.

⁴³ibid.

⁴⁴ibid.

application processing, accreditation, revalidation, REC issuance, and annual charges to both the Central and State agencies concerned –this has been provided for by way of separate orders issued by the CERC in September 2010⁴⁵, February 2014⁴⁶, and December 2016⁴⁷, intended to support capacity building of said agencies with the proceeds.

B. Trading in RECs

Back in 2010, the Central Electricity Authority (“CEA”) had been authorized by the CERC REC Regulations to register any entity eligible to trade in RECs, issue RECs, and exercise power to make all account-related settlements for such trade, while maintaining a transactional repository of all such trade and associated activities.⁴⁸ The CERC REC Regulations also require a RE producer expecting to get registered for issuing and trading in RECs to first obtain accreditation from the concerned State Electricity Authority (“SEA”), not enter into any CERC approved power purchase agreement (“PPA”) involving selling power at a preferential tariff, and to sell the power produced by it to the concerned local distributor licensee of the area with prescribed price ceilings, or to any other licensee or open access consumer at market-driven prices. The CERC being empowered with the ability to periodically determine floor price⁴⁹ for the Indian Power Exchanges where trading in REC can take place is also a product of the CERC REC Regulations, as is the requirement of having compliance directors to report to the CERC about the degree of adherence by the entities generating RE and trading in RECs.⁵⁰ While originally, the RECs were supposed to

⁴⁵See CERC, ‘Order in Petition No. 230/2010 (Suo Motu)’(21 September 2010), <https://www.recregistryindia.nic.in/pdf/REC_Regulation/fees_and_charges_of_REC.pdf>accessed December 26, 2020.

⁴⁶See CERC, ‘Order in Petition No. 230/2010 (Suo Motu)’, (5 February 2014), <https://www.recregistryindia.nic.in/pdf/REC_Regulation/Fee_SO230_05.02_.14_.pdf> (Last visited on December 26, 2020).

⁴⁷See ‘CERC, Order in Petition No. 11/SM/2016’(28 December 2016)<https://www.recregistryindia.nic.in/pdf/REC_Regulation/CERC_Order_Fee_And_Charges_28.12.16.pdf>accessed December 26, 2020.

⁴⁸See ABPS Infrastructure Advisory Private Limited, *Report On Development of Conceptual Framework for Renewable Energy Certificate Mechanism for India*, (June 2009)<<https://mnre.gov.in/img/documents/uploads/3538e292967048c8b78f6db30bc2720e.pdf>> (accessed December 20, 2020).

⁴⁹ Floor price is determined by the difference between the viability requirement of the project and the average cost for purchasing power at a given location and forbearance price i.e. maximum price for which RECs can be traded.

⁵⁰For further details, one may refer to the provisions of the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 (“CERC REC Regulations”).

have a validity period of a year as per the CERC REC Regulations, the same has at present been extended to 1095 days.⁵¹

The first amendment to the Regulations in 2010⁵² kept RE generating entities that are existing parties to a PPA (a three year cooling-off period was prescribed in case the agreement was brought to an end before the scheduled expiry date) at preferential prices outside the ambit of eligibility for registering and issuing RECs. Similarly, captive power plants focusing on RE sources were allowed to participate in the RE framework so long as such plants choose not to avail any concessional or wheeling charge, benefits of banking facility, charge for promotional transmission, or exemptions from electricity duty.

The next amendment in 2014⁵³ introduced changes such as keeping RE obtained through a competitive bidding process and RE generating entities selling power to obligated entities as part of RPO fulfillment, out of the REC issue and trading scheme, but including co-generation plants to the extent of the capacity of their connected load as well as captive generation plants availing electricity duty benefit. Provisions for self-retaining RECs (*inter alia* for setting off against RPO) and revoking/recovering money paid for RECs issued/sold by entities registered under false information, and prescribing eligibility threshold for the distributor licensees to become part of the REC Scheme, were some of the other changes brought forth by this amendment.

The next amendment, given effect in 2015,⁵⁴ further extended the REC validity to the present 1095 days and also introduced the concept of new vintage REC multipliers. Subsequently, the 2016 amendment⁵⁵ sought to restrict REC supply conditions by removing RE generating entities choosing self-consumption from within the ambit of the REC scheme provided they did not get their plants commissioned before September 2010 or after March 2016 or not registered by April 2016

⁵¹ As per the 2015 Amendment brought to the 2010 Regulations.

⁵² For further details, one may refer to the provisions of the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (First Amendment) Regulations, 2010.

⁵³ For further details, one may refer to the provisions of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) (Second Amendment) Regulations, 2014.

⁵⁴ For further details, one may refer to the provisions of the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Third Amendment) Regulations, 2014.

⁵⁵ For further details, one may refer to the provisions of the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Fourth Amendment) Regulations, 2016.

and if the plant was already charging any concessional or wheeling charge, benefits of banking facility, charge for promotional transmission. Similarly, entities disposing power produced in open access form that were also levying similar charges had also been excluded.

One of the most significant contributions of the CERC in the trading of RECs in Indian Power Exchanges has been the orders passed by it determining the applicable floor and forbearance prices separately for RECs from solar and non-solar sources for such trading. From July 2020 onwards, the CERC has removed the floor prices for both solar and non-solar RECs completely, while the forbearance prices have been kept at INR 1000 (Indian Rupees one thousand) per Mega Watt hour.⁵⁶ While the removal of the floor price might have been in response to the dwindling trade volume in RECs that has been witnessed for over some time⁵⁷, such a step is not going to be without ramifications of its own. For instance, the price reduction may *prima facie* encourage entities to compensate for their unfulfilled RPO by purchasing more RECs instead of actively buying green energy⁵⁸; however, at the same time, given the absence of a strong enforcement mechanism and deterrent effect via the imposition of stiff monetary penalties, the entities might opt to wait instead, hoping for a further reduction in price that would not always result into the increase in trade volume of the RECs that a price reduction measure might have originally intended to produce⁵⁹.

While the REC framework in India is an operational reality as on date based on the discussions above, yet there are several obstacles⁶⁰ in its path that it must overcome to reach its true potential

⁵⁶See Team REConnect 'CERC announces new Forbearance and Floor Price for REC Framework, 2020' (*Reconnect Energy*, 2020) <<https://reconnectenergy.com/blog/2020/06/cerc-announces-new-forbearance-floor-price-for-rec-framework-2020/>> accessed December 30, 2020. This drastic reduction in floor price was opposed by many stakeholders, but the CERC chose to take this decision nonetheless without conducting any hearing. However, it has chosen to initiate a review mechanism for affixation of floor and forbearance prices keeping in mind market conditions and also possibilities and modalities of introducing suitable vintage and technology multipliers. Following this order, in response to appeals filed by the GEA, IWPA and TEECL, APTEL put a temporary stop to trading in such Power Exchanges under the revised pricing norms.

⁵⁷See for instance REC Trade Results, April 2020, <<https://reconnectenergy.com/blog/2020/04/rec-trade-result-april-2020/>> accessed 30 December 2020.

⁵⁸This might actually disincentivize the entities that had to fulfil their respective RPOs by buying green energy straight from the source at a higher price earlier.

⁵⁹Another factor that might compromise the significance of this move with regard to demand for RECs would be the capping of RPOs for captive power plants based on their commissioning date. This would lead to demand for RECs being restricted regardless of the drop in price. Therefore, the combination of seeking to rely on market forces, while at the same time trying to stage regulatory intervention by way of prescribing such caps might end up being counter-productive.

⁶⁰See Central Agency, National Load Despatch Centre, Power System Operation Corporation Limited (n 42).

for facilitating environmental sustainability and green energy usage. Some of these tests that it must face in the days to come include developing a stringent enforcement mechanism (with increasing level of participation and initiatives from the state commissions) for RPO compliance⁶¹, together with substantial financial penalties for deterrent effect, bridging the chasm between demand and supply insofar as RECs are concerned⁶², developing a robust market voluntary purchase of RECs⁶³, increasing efforts towards capacity building⁶⁴, phased reduction of floor and forbearance prices in the Power Exchanges⁶⁵, and modifying the REC market design to reflect changing attitude towards RE in general⁶⁶ and specific energy sources and availability and affordability thereof in particular.

1. The Indian Power Exchanges

The actual trading in RECs that can take place in the Indian Power Exchanges mentioned above, however, remains to be the culmination of a long process that starts with the concerned SEA providing accreditation to the project in question. The generating entity would register itself with the CEA (the SEA might provide recommendation in this regard) and then become eligible for getting RECs issued to it (either from the date of registration or from the date of commencing operations commercially, whichever is later) that should match with the quantum of energy that it contributes to the grid.⁶⁷ The entity may trade these RECs either on the IEX and/or PXIL (bidding

⁶¹ The RPO Compliance Cell created by the Ministry of New and Renewable Energy, dedicated towards coordinating efforts towards ensuring RPO adherence between central and state agencies and private entities is a good step towards this end.

⁶² A strong and effective price discovery mechanism needs to be put into use in all the approved Power Exchanges for this purpose; this would also ensure an increase in the overall volume of efficient trade in the long run.

⁶³ The Corporate Social Responsibility policies and norms should be redesigned to such end, bringing the purchase of RECs within their ambit and also make it an attractive option for Indian companies. In particular, directives to such effect can be made at the soonest with regard to all public sector undertakings.

⁶⁴ While Central and state agencies already conduct workshops for advocacy and dissemination of information, further sensitization about RPOs and the role of RECs is definitely necessary especially on the level of the open-access consumers and voluntary buyers.

⁶⁵ While the latest CERC directive has brought about a drastic change in the floor price and also a substantial reduction in the forbearance price, it still remains to be seen how the market reacts to such a sudden change and the outcome of the related pending litigation before the Appellate Tribunal for Electricity.

⁶⁶ The reduced cost of direct procurement, supply level excess, and regulatory intervention on pricing level have caused the generating entities' enthusiasm for the REC Scheme to dwindle over the years, to counter which, new policy level instruments, multipliers, and incentives to trade need to be introduced to modify the market design from the original one created a decade back.

⁶⁷ The matching is done on the basis of the Energy Injection Report prepared by the concerned State Load Dispatch Centre. See S.K. Soonee, et. al., Renewable Energy Certificate Mechanism in India' (16th National Power Systems Conference, December

might take place on a monthly basis by eligible obligated entities in this regard), whereupon the CEA would redeem said RECs (on receipt of confirmation of the transaction from the concerned Indian Power Exchange) from and to the respective accounts of the seller and the buyer, by extinguishing the RECs on a first-in-first-out mode.⁶⁸ Of course, any generating entity may also choose to retain its RECs towards fulfillment of its own RPO. In case any generating entity ends up placing more bids for sale than the RECs that are there in its account, then it might be considered as a defaulter (and included in the list dedicated to such category) and its bids would not be considered as part of the transaction by the concerned Indian Power Exchange.⁶⁹ The entire process is supported by the online portal established centrally including an online payment mechanism.

IV. IRECS: AN INDIAN PERSPECTIVE

While India has enabled purchase and redemption of IRECs, it is pertinent to note that there are certain conditions to be followed by the GCC while issuing an IREC to a producer –first, the attributes should not have been used already to satisfy any RPOs; secondly, no power should have been supplied under a long-term PPA towards any RPOs at the time the IRECs are claimed; thirdly, for the duration IRECs are claimed for a particular project, the same project cannot claim RECs as per the CERC REC Regulations; fourth, availing concessional open access benefits that render the project ineligible for RPOs is not permitted for the period in which the IRECs are claimed; and finally, if the project seeks issuance of IRECs for a specific time period of the total project duration, then such project can claim the renewable energy generation under IREC for such limited time period.⁷⁰

While these conditions are *prima facie* not onerous, they indeed give room to question the success of the IREC system in India. Given that India is an energy compliance market, the tendency of power generators to actually prefer the issuance of IRECs in addition to the CERC REC Regulations is unknown. However, a useful starting point to assess the extent of usage, and arguably, the popularity of IRECs, is the information provided by the IREC registry. A quick

2010)<https://www.recregistryindia.nic.in/pdf/Others/Renewable_Energy_Certificate_Mechanism_in_India_16th_NATIONAL_POWER_SYSTEMS_CONFERENCE.pdf>accessed 20 December 2020.

⁶⁸ibid.

⁶⁹ibid.

⁷⁰International REC Standard, 'Authorised Issuance Country List' (*International REC Standard*, 31 May 2021) <<https://www.irecstandard.org/download/authorized-issuing-countries/>> accessed 7 July 2021.

perusal reveals that India has progressively displayed enthusiasm towards IRECs, meriting a spot amongst the top five nations to use IRECs. In 2019, India was identified as one of the most active nations accounting for 25% of the total registrations with the GCC.⁷¹ Between June 2019 and May 2020, India saw a cumulative issuance of 1,075,842 IRECs.⁷² Statistically, 91 wind, solar, thermal, and hydel electricity projects have been registered as devices with the IREC registry. Data from the IREC shows that as of June 2021, India has recorded a registered capacity of 2,328.459 MW, with approximately 47% of the total capacity marked by registration for solar energy certificates. Despite having the highest registered capacity, solar devices have not been issued more than approximately 8% of the total IRECs issued. Hydel devices, on the other hand, have, despite the lower registered capacity, been issued around 76.59% of the total IREC certificates.

The following table provides a brief overview of the number of devices, total registered capacity, and certificates issued to RE generators in India, across different RE sources.

Parameter	Hydro	Solar	Thermal	Wind	Total
Registered Capacity (MW)	939.6	1,086.109	17.95	294.7	2,338.359
Devices	15	33	3	43	94
Certificates issued	4,087,746	434,350	44,207	778,840	5,345,143

Table (i) – IREC issuance in India⁷³

Amongst developing nations, however, India trails behind China and Brazil not only in terms of registered capacity, but also in the number of devices registered, and certificates issued. Tables (ii)

⁷¹GCC, 'Annual Review 2019' (GCC, N.P.) <<http://review.gcc.re/2019>> accessed 5 February 2021.

⁷²International REC Standard, 'Market Statistics June 2019 – May 2020' (*International REC Standard*, August 2020) <<https://www.irecstandard.org/wp-content/uploads/2020/08/StatsReport-2020-05-EE.pdf>> accessed 15 June 2021.

⁷³The columns broadly indicate the source of renewable energy. Specific aspects of each renewable source of energy, such as whether it is onshore or offshore wind energy, the solar panels are ground or roof mounted, or if hydro-electricity is generated from a dam, run of river or pumped hydro storage have been clubbed under the respective head of energy. Data provided herein is as on 12 July 2021. See: Evident, 'Evident Device Register' (*Evident*, N.P.) <<https://evident.services/device-register>> accessed 30 June 2021.

and (iii) present an overview of the number of devices, total registered capacity, and certificates issued to RE generators, across different sources of RE, in China and Brazil respectively.

Parameter	Hydro	Solar	Thermal	Wind	Total
Registered Capacity (MW)	2,708.3	433.382	90	8,329.35	11,561.03 2
No. of devices	43	11	3	95	152
Certificates issued	8,759,155	667,830	1,654,611	29,815,69 8	40,703,42 7

Table (ii) – IREC consumption in China⁷⁴

Parameter	Hydro	Solar	Thermal	Wind	Total
Registered Capacity (MW)	8,842.787	420.367	1,223.709	3,283.445	13,770.30 8
No. of devices	35	27	18	127	207
Certificates issued	3,149,634	262,628	553,051	8,585,116	12,550,42 9

Table (iii) – IREC consumption in Brazil⁷⁵

It is to be noted that no correlation can be established between the number of registered devices and certificates issued. While certain devices have been registered, they are yet to be issued any IRECs, be it in India, China or Brazil. The data from the IREC registry fails to throw any light on

⁷⁴ibid.

⁷⁵ibid.

the reasons for such non-issuance. Given that the IRECs are attributes that promote a voluntary RE market, one can only hypothesize the reasons for the non-issuance of IRECs. A variety of reasons may be attributed, ranging from a voluntary decision not to apply for the issuance of IRECs, to the lack of legislative clarity in the harmonious existence of IRECs and the national RE system. The CERC REC Regulations for instance, solely focus on the domestic RE system and do not expressly or implicitly address IRECs. The only source of clarity on the conditions for issuance of IRECs is as per the authorized issuer information issued by the IREC Foundation.⁷⁶

Typically, as a dualist nation, any international agreements ratified by India, are implemented by way of local or national law.⁷⁷ Legal compliance would necessitate the passage of a national legislation. However, with India's decision to accept the GCC as the issuer for IRECs, a unique situation has been created. No law formally backs this voluntary attribute tracking system. At the same time, it is an international RE instrument that is increasingly gaining recognition in India, which in turn is resulting in India becoming both compliance and voluntary RE market. One could argue that since the IREC is only an attribute tracking system, there is no requirement for the Ministry of New and Renewable Energy to issue any policy guidelines or prepare a draft legislation on the same. Both stakeholders viz. RE generators and purchasers stand to benefit from this line of thought. This can facilitate easy registration, issuance, and trading of IRECs for RE generators. For RE purchasers such as MNCs, the absence of any legislative guidance or obligations translates to increased speed, efficiency and possibly, reduced transaction costs. However, the need for legislative clarity outweighs the ease of issuing and trading IRECs for two reasons. *First*, an IREC can be issued and redeemed anywhere, subject to compliance with local laws. While there is no data available on whether IRECs have been redeemed in India, there is a clear absence of the compliance requirements to be satisfied with, before redeeming IRECs. *Second*, and more importantly, there is no clarity on whether or not it is a financial asset. It is possible to argue that the IREC is in essence only a manner of accounting for green electricity, and thus, eliminating the need for intervention from the Reserve Bank of India. However, given that the IREC is inherently structured as an instrument akin to any other capital market instrument, it may fall short of being determined as relevant only for the purposes of accounting. It remains to be seen whether the

⁷⁶International REC Standard(n 71).

⁷⁷art 246, Constitution of India, 1950.

Reserve Bank of India will intervene to determine asset classification of the IREC, and if doing so will turn the tables for IRECs in India.

V. CONCLUSION

With the slow move towards a dual electricity market viz. voluntary and compliance, it is imperative that the Indian government undertakes certain legislative measures to facilitate deeper integration of the IREC model with the existing Indian RE framework. Energies of the present government are strongly directed towards domestic RE policies, national schemes, and enhancing trading on the Indian Power Exchanges. While these policies address a wider target audience, promoting IRECs could also motivate MNCs, with a large Indian presence, to make a complete shift towards clean energy. As India slowly recovers from the woes of the COVID pandemic, and inches back towards normalcy, it is imperative to ensure that energy consumption, especially by corporate houses, is solely from RE sources. Much needed clarity on the use of IRECs, in the form of policy guidelines or a legislative framework can go a long way in preventing the IREC exercise from being rendered redundant in the Indian market.