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TPTCL'S E-NEWS LETTER

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Power Market News

CEA Amends Norms to Offer RTM For Cross-Border Power Trading

The Central Electricity Authority (CEA), in its recent order, has amended the procedures for approval and facilitation of the import and export of electricity with neighbouring countries. The order said that the move was taken to accommodate the participation of the Real-Time Market (RTM) segment in addition to the existing Day-Ahead Market (DAM) for electricity trading.

The order said the ministry, on July 26, 2023, conveyed the participation of entities of neighbouring countries in the RTM segment of the Indian Power Exchange. The latest order, issued by the Central Electricity Authority (CEA), said that to facilitate the transfer of power through the RTM segment of the Indian Power Exchanges, it amended the "procedure for approval and facilitating import/export (cross border) of electricity by the designated authority" norms, issued on February 26, 2021.

The new order proposed to delete Clause 6.5 (ii) of the 2021 order, which talked about the eligibility of the power exchanges which can operate in cross-border electricity transactions. This clause talked about the eligibility of Indian entities trading in the Day-Ahead Market (DAM) and made them eligible for cross-border power transactions.

The new order also proposed changes in Clause 6.5 (iv), which discusses the eligibility of participation in Indian Power Exchanges. At the same time, the older norms used the term "Indian Power Exchange" to facilitate cross-border power trading. The new norms changed eligibility and terms to "power exchanges (DAM/RTM or both DAM and RTM segment."

The amended Clause 6.5 (iv) said, "Any Indian power trader, on behalf of any Entity of neighbouring country, may trade in Indian Power Exchanges (DAM/RTM/Both DAM and RTM segment), after obtaining approval from the Designated Authority, up to specified quantum (MW) and duration, provided, however, that the entity on behalf of where the Indian Power Trader is trading belongs to the neighbouring country which has an agreement on cooperation in the power Sector with India, and the generating asset from which power is being traded is also owned/controlled by the said country having agreement on Power cooperation with India."

Indian Power Exchanges like the IEX are involved in trading electricity with some neigbouring countries. Some of the country's power exchanges have already made development of power trading with some of them and works are on to expand it too. Some of the targeted countries for this currently are Nepal, Bhutan and Bangladesh from the perspective of Indian power exchanges. ***Source***

India, Sri Lanka renew bid to link power grids

India and Sri Lanka are giving a fresh push to the long-pending power grid connectivity between the two countries to trade electricity. Work has started on updating a detailed project report for the connectivity either through overhead line or undersea cable in the sea portion of the connectivity, following a meeting on the proposal last month, said people familiar with the matter.

The timeline for a draft detailed project report is September 15, after which it will be discussed between the two sides for finalisation, they said. Sri Lanka will carry out the necessary load flow studies for 2027-28 time frame of its network, considering 500 MW exchange from India through the proposed link, according to the people. India will study the necessary load flow studies on the combined network data based on the inputs from the Sri Lankan side. This is likely to be completed by August 21.

The reports will then be discussed with the officials in the joint technical team, comprising members from the Central Electricity Authority, Power Grid Corporation of India Ltd and the Ceylon Electricity Board (CEB)

formed in 2016. The cross-border interconnection plan has been under discussion for nearly two decades now. It was marred by high project cost, making it unviable, according to people aware of the matter. ***Source***

NPC favours offering incentives for buying & selling power on PUShP portal

The National Power Committee (NPC) has asked States to provide suggestions for offering incentives to buyers and sellers on the surplus power portal, PUSHp, to encourage wider participation, which has been found missing. The portal is a national-level generating capacity utilisation mechanism to help States, which are facing power cuts, buy power. The tariffs are regulated and determined by the concerned regulatory commissions. Power crisis is generally observed during the months of April, May, September and October.

The NPC, which met on July 5, decided that regional power committees (RPCs) may provide suggestions for improving PUSHp portal to make it more attractive in terms of offering incentives to buyers and sellers, especially for units under reserve shut down (RSD) and intimate NPC for taking up with Power Ministry for modification in the scheme.

PUSHp portal, which was launched on March 9, 2023 and began power transactions on April 3, has seen 17 States utilising it. So far, 14 requests have been processed and the power has been reallocated to the new beneficiaries. The high level panel, which is headed by Central Electricity Authority (CEA) chairman, pointed out that there is a lack of participation from the States of northern region (NR), eastern region (ER) and limited requisition to avail the surplus power available on the portal from all regions.

On enhancing participation of States, the panel decided that eastern region power committee (ERPC) and northern region power committee (NRPC) may encourage states to utilise the portal. On discussions over participation of States in the portal, The NRPC Chairperson said that Discoms hesitate to sell power in the open market due to PPA restrictions.

Last year (2022), Haryana Discoms began making profits and started buying power from the open market, resulting in State Generating Stations (SGS) units with sufficient coal storage remaining under RSD due to low scheduling, as cheaper power is available in the open market. These SGS units with sufficient coal storage, under RSD, could be made to assist in meeting the peak demand of other States and national grid.

To which the CEA Chairperson suggested that such SGS can declare their surplus power on the PUShP Portal and, these plants can be revived from reserve shutdown to meet the demand of other states/regions of the country.

Besides, it also decided that generating units of central generating stations (CGS), inter state generating stations (ISGS), SGS and independent power producers (IPPs) that are currently under RSD due to low schedule/ demand can declare their surplus power on the PUShP Portal. “Such plants may be revived from reserve shutdown to meet the demand of the other states/ regions of the country. Provisions may be made to allow buyers to put their requirements on the portal,” it added. ***Source***

India, Nepal & Bangladesh working on a first-of-its-kind tripartite electricity trade deal in South Asia

In a first, India, Nepal and Bangladesh are working on a tripartite power trade deal under which Nepal will supply up to 500 megawatts (MW) of hydropower to Bangladesh using India’s transmission line, a move that can further boost cross-border electricity trading in South Asia. Besides, there are also plans to lay a dedicated transmission line connecting Nepal and Bangladesh via India, which is at official level talks at present. Two routes have been identified for the same.

Government officials said that bilateral trade in power is already happening in South Asia, but such a tripartite deal will open up more avenues for electricity trade in the region, particularly for green energy, going ahead. Besides, it will also open ways to sell power to neighbouring countries such as Sri Lanka and Myanmar. A top Indian government official said, “India is open to permit transit of electricity from Nepal or Bhutan to countries

such as Bangladesh or even Sri Lanka, if they have grid interconnection capacity available and they are able to harmonise grid operations with India."

Deal details

As per the proposed three-way deal, Nepal will supply hydropower to Bangladesh leveraging India's high-voltage transmission line. At first, 50 MW will be provided to Bangladesh by Nepal using India's Baharampur-Bheramara cross-border transmission line. The electricity will be supplied from Nepal's 900 MW Upper Karnali hydropower project. In return, India wants Bangladesh to provide it access to lay transmission lines for connecting its north eastern States.

"In the first attempt, Bangladesh has proposed to procure on a long term basis 500 (MW) from one hydro power project in Nepal and India has given its go-ahead. It is the beginning of the trilateral power transaction through the Indian grid, the official mentioned above said.

Trade sources said that there is huge potential for India, which already runs the world's largest single grid infrastructure. Considering Nepal's hydropower potential and rising demand, especially for renewables in South Asia, India could be in that sweet spot where it can leverage its grid for supplying electricity in the region.

Dedicated transmission line

"India will support more of such cooperation, subject to two conditions. First, if the export or import of power is from or to India, then it should not affect India's energy supply or energy security. We have to see the seasonality. Second, such power plants should not have been built with any investment or contribution from a third country, which is not in tune with India's strategic interests," the official added.

Officials said that for a dedicated transmission line, Nepal and Bangladesh have identified two corridors. The first is the Anarmari (Nepal)-Panchagarh (Bangladesh) corridor with a total length of 49 km, of which 24 km will be in India.

The second is the Anarmari (Nepal)-Thakurgaon (Bangladesh) line with a length of 83 km, of which 33 km will be in the Indian territory. Bangladesh is already importing 500 MW power from India through the Baharampur-Bheramara transmission line, and around 150- 160 MW through the Tripura-Comilla grid interconnection project. Besides, it is now also getting coal-fired power from Adani's Godda (Jharkhand) thermal power plant. ***Source***

Power Consumption Rises 8%, Hits 139 Billion Units In July

India's power consumption registered a significant growth of 8.4 per cent in July, reaching 139 billion units compared to 128.25 billion units during the same month last year, according to government data. The peak power demand met also witnessed a substantial increase, reaching 208.82 GW in July 2023, surpassing the figures from July 2022 (190.35 GW) and July 2021 (200.53 GW).

The surge in power consumption is attributed to a variety of factors. The power ministry had initially projected the country's electricity demand to touch 229 GW during the summer season. However, the forecast did not materialize in April and May this year due to unseasonal rains, which adversely affected power consumption.

Untimely rains reduced power consumption

The period from March to June experienced widespread rains across the country, leading to a reduction in power consumption. During these months, the demand for electricity decreased, as people used fewer cooling appliances compared to previous years. The unseasonal rains impacted overall power consumption, creating a temporary decline. Nevertheless, experts revealed that power consumption in June saw some improvement despite the challenges posed by the rainfall. As the weather conditions shifted in July, the demand for electricity surged due to extremely humid conditions, resulting in prolonged usage of cooling appliances, particularly air conditioners, throughout the day.

Power consumption growth to continue in August

Analysts predicted that power consumption and demand would continue to grow in August, as economic activities improved and humidity levels remained high. The country's overall power consumption trend is likely

to remain positive, reflecting the revival of economic activities and the resumption of normal operations following the impacts of the COVID-19 pandemic.

As the power sector continues to adapt to varying environmental factors and changing consumer behaviours, the industry is expected to witness continued growth and resilience. Efforts to mitigate the effects of unseasonal rains on power consumption, such as encouraging the adoption of energy-efficient cooling technologies, will play a vital role in ensuring sustainable energy usage.

The surge in power consumption in July highlights the nation's dependence on electricity for various sectors, including residential, commercial, and industrial. With a growing population and increasing demand for energy, India's power sector faces the ongoing challenge of meeting electricity needs while adopting sustainable practices and reducing environmental impact. ***Source***

Thermal Energy Accounted For 76% Of India's Electricity Generation

The latest renewable energy generation report from the Central Electricity Authority (CEA) for June claimed that renewable energy generation improved in the month. The data claimed that by the end of June 30, India had a total installed capacity of 176,242 MW (including large hydro). In contrast, the total energy generation from renewable sources during the month stood at 36,936.82 MW.

It was against the total renewable energy installed capacity of 33,443 MW. Thus in terms of generation, India's renewable energy generation increased by 10 percent. According to the CEA monthly generation report, 72.82 percent of India's total energy was produced from thermal sources alone. In comparison, renewable energy accounted for 24.63 percent of the total energy generated in India during the month.

Out of the total renewable sources, large hydro projects accounted for 9.56% of the total generated energy. Solar stood at 6.41%, whereas wind energy accounted for 7.71 percent of the total energy generation in June. Other forms of clean energy sources accounted for smaller fractions like the combined energy generation from biomass, bagasse and waste to energy stood at 0.47%.

During the same month, India added a total of 2.8% GW of new renewable capacities. In terms of installed capacity, by the end of June 2023, the total renewable energy capacity (excluding hydro) stood at 30 percent. In contrast, the installed capacity of thermal power in India stood at 56 percent. However, the difference between installed capacity and real energy generation hinted at the gap.

On a broader form, the details of total energy generation in India from April to June 2023 claimed that the majority of the power generation (75.90%) in India came from thermal energy, whereas renewable (including large hydro) accounted for only 21.59 percent of the total energy generation in the country. During the same duration, the highest share of renewable energy was taken by large hydro projects, which accounted for 38.81 percent of the total power generation among renewables. It was followed by solar energy (26.01%), Wind (31.29%). ***Source***

India's energy transition needs nuclear

Extreme weather events in different parts of the world have focused attention of the policymakers on climate change and energy transition. India hosted G20 energy and climate ministers' meetings in Goa and Chennai. Earlier, US special envoy on climate change John Kerry's visit to China during July 16-19 brought out the continued rift between the positions of China and the US—the biggest and the second-biggest emitters. While Kerry diplomatically mentioned that more work needs to be done, the Chinese side was blunt. President Xi Jinping said that China's climate goals "should and must be determined by ourselves, and never under the sway of others."

G20 is a larger grouping than bilateral Sino-American discussions and therefore exposed to more pressures. Though the meetings produced outcome documents on areas of consensus, no agreement on the tripling of renewables, phasing down of fossil fuel, and bringing forward the peaking year to 2025, could be reached.

The developed countries showed no appetite to increase their financial commitment beyond $100 billion per annum.

China accounts for 31% of global emissions. Its relative share in the global basket will grow by 2030, as the emissions of the US and the EU have already peaked and are declining. The Chinese emissions will keep growing till 2030, when it peaks. Global temperatures are expected to cross the threshold of 1.5 degrees above pre-industrial levels in 10-11 years. The longer transition period to net zero emissions by 2070 chosen by India will not save her from international pressure. The window is closing fast. G7 has called for all major economies to peak their emissions by 2025. India has not agreed to peaking; Our cumulative emissions as well as per capita emissions are much below international levels.

What are India's options for transition to net zero emissions (NZE) by 2070? A report by the Vivekananda International Foundation (VIF) Task Force addressed two questions. What is the minimum quantum of demand to reach net zero emissions? Second, what is the most cost-effective way of producing the minimum demand? Mathematical modelling by IIT Bombay found that the quantum of electricity demand will rise to 24,000–30,000 GW by 2070. This seems much higher than the IEA's estimate of 3,400 GW by 2040. IEA has not given any projection of demand in 2070. India's energy consumption in 2020 was 6,200 TWhr. Is it logical to expect that energy consumption will go down to half in two decades instead of rising with increased development?

The mathematical modeling also found that the nuclear-high scenario will be cheapest at $11.2 trillion, while the renewable-high scenario will be most expensive, at $15.5 trillion by 2070. This seems contrary to popular perception based on falling renewable tariffs. This view however does not take into account systems costs. When the sun is not shining and the wind is not blowing, renewables have to be supplemented with a source of stable, base-load power. This results in additional cost which was estimated by the Forum of Regulators at Rs 2.12 per unit in 2021. Added to the tariff of Rs 2 per unit for solar power, this makes renewables, at Rs 4.12 per unit, more expensive than either thermal power (Rs 3.25) or nuclear (Rs 3.47).

Earlier, OECD and MIT studies have pointed out that the cost of achieving a low carbon target increases 'disproportionately' without the inclusion of nuclear in the generation mix. Renewables require higher capacity build-up due to their low PLF, which pushes up the cost of renewables-high approach. This problem is compounded by higher transmission costs associated with renewables. All new ultra-mega solar power projects in India have to come up in remote locations like Kutch or Ladakh, which increases transmission costs.

The VIF study has also found that the renewable high scenario will require more than 4,12,033 square km of land, while the nuclear high scenario will require 1,83,565 square km of land. The total surplus land available in India currently is 2,00,000 square km according to a study by SP Sukhatme.

The developed countries' commitment of $100 billion is paltry. How much money the reform of MDBs will release? The change in the World Bank equity-to-loan ratio from 20% to 19% would release $5 billion. The World Bank has estimated that $2.4 trillion is needed every year for developing countries to address climate change, conflict, and pandemic between 2023 and 2030. India, as the G20 chair, has put the figure higher at $4 trillion per annum for energy transition alone.

The bulk of the resources for energy transition will have to be internally raised. To avoid adding to the government's fiscal burden, the financial health of the discoms must be restored. The rapid ramp-up of nuclear capacity will require government support since resources at this scale cannot be internally generated by NPCIL. Renewables cannot provide stable, baseload power. Nuclear is the emission-free alternative to coal. ***Source***

CERC green signal to HPX will stabilize 'volatile' energy market

Hindustan Power Exchange Limited (HPX), India's new-age power exchange jointly promoted by PTC India Ltd, BSE and ICICI Bank, has been given the go-ahead by Central Electricity Regulatory Commission (CERC) for introducing high price contracts in three key markets-High Price Day Ahead Market (HP-DAM), High Price Term Ahead Market (HP-TAM), and High Price Contingency Contracts. At present India has three power exchanges, IEX, PXIL and HPX. In the present scenario, buyers and sellers at each exchange do trading of electricity and discover spot price separately at these exchanges. It is a place where participants can buy and sell energy through a double-sided closed auction process. State electricity boards, power-producing and power transmission companies, and power traders have a huge capital trade on IEX. CERC's latest move comes as a part of its efforts to boost market dynamics, deepen the market and provide more opportunities for members to manage their risk while also optimising their energy portfolios. The High Price Contingency Contracts will provide the added stability to the energy market during periods of volatility.

Significantly, India's power demand has risen to 1905. Industrial sector has a share of more than 40 per cent in the total electricity consumption in India. Future investment will benefit from strong demand fundamentals, policy support and increasing government focus on infrastructure.

The power ministry had earlier sought CERC to initiate the process of coupling multiple power exchanges, a mechanism which seeks to ensure uniformity in price discovery of energy at trading platforms. From the HPX' perspective, the CERC nod has ensured successful delivery of two new products for the power market within a short span of one year after having started its business operations last July. Till date these high-price generators had just one option to sell power-participation in the HP-DAM segment. With these new segments the generators can plan their power sale to interested buyers for up to 90 days, giving HP generators sufficient clarity to work out their fuel procurement and logistics. This will ensure a level playing field across market segments and gives more choice to the consumers and promotes competition.

It is important to note that power trading is in a transition phase in India and the energy mix is changing in a big way. Transmission infrastructure has improved a lot in the last 3-4 years. There are also challenges attached to the power sector like inefficiencies in the distribution value chain with accumulation of large dues from discoms. Sector analysts opine that more renewable energy (RE) integration will the pave the way for a robust RE market availability implying better integration and fuelling RE power into the grid. The need of the hour is to introduce new initiatives like market-based ancillary services besides working towards having bilateral contracts in power exchanges and initiatives for renewable power to be traded through an efficient market. ***Source***

Renewable Market News

India's solar parks generate 10.2 GW power nationwide: Minister

Union minister for new & renewable energy and power R. K. Singh on Wednesday said India's solar power projects' initiative has resulted in the establishment of solar projects boasting a collective capacity of 10.2 GW across the country. In a written reply in Rajya Sabha, the minister emphasized that the "Development of Solar Parks and Ultra Mega Solar Power Projects" initiative has been granted an approved budget of ₹8,100 crores. The scheme has been extended till the fiscal year 2025-26, without any additional financial outlay.

Singh said the government has sanctioned a total of 50 solar parks in 12 states, aggregating an impressive 37,990 MW capacity. Out of these sanctioned parks, 11 have been successfully completed, collectively generating 8,521 MW. Further, 7 Solar Parks have reached partial completion, contributing 3,985 MW to the nation's solar capacity.

The cumulative outcome of these endeavors has manifested in the creation of solar projects with an impressive 10,237 MW capacity within these solar parks, reflecting the nation's strides towards sustainable energy adoption. Highlighting the recent growth trajectory, the minister noted a substantial increase of 2,292

MW in the electricity generation capacity of solar projects housed within various solar parks during the past three years.

“Around 69,000 hectares of land has been acquired so far for solar parks. Provision of land for Solar Parks is responsibility of the concerned state/UT government. Further, the Solar Park scheme encourages use of waste/non-agricultural land for development of Solar Parks," he added. ***Source***

State has 4,552 MW solar energy capacity: Centre

VIJAYAWADA: The state has 4,552.12 MW installed capacity of solar energy as of June 30, 2023, said Union minister for new and renewable energy and power R K Singh in Rajya Sabha on Tuesday. The minister in reply to YSRCP member Parimal Nathwani said that the total solar power generation during 2022-23 in the state stood at 8140.72 MW.

The minister said that a cumulative solar power capacity of 70,096 MW has been installed in the country. India has an estimated solar power potential of 7,48,990 MW. Hence, the potential of solar energy is not fully tapped, so far. The statement says that solar projects are developed largely through private investments by the project developers selected through tariff-based competitive bidding, for captive consumption, and third-party sale, etc. At present 55.90 GW solar projects are under implementation.

The minister also told the member that the government has taken various steps to promote renewable energy, including solar energy, in the country. The government has permitted Foreign Direct Investment (FDI) up to 100 per cent under the automatic route. Waiver of Inter State Transmission System (ISTS) charges for inter-state sale of solar and wind power projects to be commissioned by 30th June, 2025. Declaration of trajectory for Renewable Purchase Obligation (RPO) up to the year 2029-30. ***Source***

India succeeds in reducing emissions rate by 33% over 14 years, sources say

India’s greenhouse emissions rate dropped by a faster-than-expected 33% in 14 years as renewable energy generation rose and forest cover increased, according to two officials privy to latest assessment made for submission to the United Nations. The report’s findings showed India well on the way to meeting a commitment to the United Nations Convention on Climate Change (UNFCCC), to reduce emissions intensity by 45% from the 2005 level by 2030.

India’s rate of emissions intensity – the total amount of greenhouse gas emissions emitted for every unit increase of gross domestic product (GDP) – fell by 33% from 2005 to 2019, officials privy to the preparations of the Third National Communication (TNC) report said. Many countries are preparing their TNC reports to update the UNFCCC on their efforts to mitigate emissions. India’s average rate of reduction in emissions increased to 3% annually in the period 2016-2019, from just about 1.5% in the period 2014-2016.

It was the fastest reduction so far, and was largely attributable to the government’s push towards renewables, even as fossil fuel continues to dominate the energy mix. “There is continuous reduction in the emission intensity of the Indian economy, which shows the country has been able to completely decouple its economic growth from greenhouse gas emissions,” one official, who declined to be named, told Reuters.

The progress made on reducing emissions intensity should help India avert pressure by developed nations to stop using coal, the second official said. This official said a substantial increase in forest cover and schemes promoting non-fossil generation and targeting emissions in industrial, automotive and energy sectors has led to the sharp reduction in India’s emissions intensity.

As of 2019, forests and trees covered 24.56%, or 80.73 million hectares, of India. Recently, India has also been trying to promote green hydrogen, manufactured by splitting water molecules using renewable energy. A third official said the report is yet to be ratified by the federal cabinet. India’s environment ministry did not respond to queries sent on Monday by Reuters.

Central Electricity Authority data shows that non-fossil fuel-based power – including hydro, nuclear and renewable energy – accounted for 25.3% of India's total power generation in the fiscal year that ended in March, up from 24.6% three years earlier. Thermal power stations still provide 73% of the electricity consumed, down from about 75% in 2019. The Group of 20 (G20) major economies failed twice last month to agree on phasing out the use of fossil fuels and on setting concrete targets to cut emissions. Developing countries including India are resisting higher emission reduction targets, arguing that industrialised nations unfettered use of fossil fuels have depleted resources. ***Source***

India now has 70,000 MW of solar power generation capacity; Rajasthan leading the pack

India's solar power generation capacity has now surpassed the 70,000 Megawatt mark and Rajasthan is leading with the highest installed base of the renewable energy technology among all the states, Power and New & Renewable Energy Minister R K Singh said. Of the total 70,096 MW capacity at the end of June 2023, Rajasthan contributes 17,839 MW, Gujarat contributes 10,133 MW, Karnataka contributes 9,050 MW, Tamil Nadu contributes 6,892 MW, Maharashtra contributes 4,870 MW, Telangana contributes 4,695 MW while Andhra Pradesh contributes 4,552 MW.

Among the other larger states, Madhya Pradesh contributes only 3,021 MW and Uttar Pradesh contributes a mere 2,526 MW solar capacity. Punjab's contribution stands at 1,190 MW, Haryana contributes 1,106 MW, Chhattisgarh contributes 962 MW, and Bihar contributes 203 MW of solar power capacity. "The country has an estimated solar power potential of 748,990 MW. Hence, the potential of solar energy is not fully tapped, so far. The Government is making efforts to harness the available potential through various schemes and programs," Singh said in a written reply in Parliament.

Some of the schemes and programmes aimed at promotion of renewable energy, including solar power, in the country include: permitting Foreign Direct Investment (FDI) up to 100 percent under the automatic route; waiver of Inter State Transmission System (ISTS) charges for inter-state sale of solar and wind power for projects to be commissioned by 30 June 2025; and declaration of trajectory for Renewable Purchase Obligation (RPO) up to the year 2029-30.

As the global community grapples with the escalating threat of climate change, the concept of achieving net zero emissions has reached unprecedented heights. With climate change posing the biggest existential threat to the world, every country has set their Net zero targets. India, being one of the world's largest and fastest growing economies, aims to achieve Net zero by 2070 and has defined a long term strategy for low carbon development.

Singh mentioned other steps by the government including laying of new transmission lines and creating new sub-station capacity under the Green Energy Corridor Scheme for evacuation of renewable power; notification of standards for deployment of solar photovoltaic systems; and setting up of Project Development Cell for attracting and facilitating investments. ***Source***

Renewable Energy Trading Dips 53% YoY at the IEX in July 2023

The Indian Energy Exchange (IEX) traded 275 million units (MU) of renewable energy in July 2023, a year-over-year (YoY) decline of 53.3% from 589 MU and marginally increasing from 272 MU in June. By the end of July, the total traded volume reached 8,522 MU, indicating a year-over-year (YoY) increase of 19%.

During July, the trading price settled at ₹4.55 (~$0.055)/kWh, a 16% reduction from the previous year. Enhanced liquidity on the sell-side of the exchange platform led to the decline. The decreased supply situation persisted throughout the month due to strong coal production, decreased costs of e-auctioned coal, and lower imported fuel prices. IEX anticipates heightened liquidity to yield more competitive pricing, offering additional chances for optimization to distribution companies and consumers with open access. According to the data published by GRID-India, the energy met in the country during July 2023 stood at 139 BU, an increase of 9% YoY.

Green Market: Day-Ahead and Term-Ahead

In July, the IEX Green Market, encompassing both the Green Day-Ahead and Green TermAhead Market segments, traded 275 MU. Specifically, the Green Day-Ahead Market conducted trades for a volume of 213 MU over the month, achieving a weighted average price of ₹4.95 (~$0.060)/kWh. This segment attracted participation from 200 market players.

The Green Term-Ahead Market traded 62 MU. The average monthly prices for this segment were ₹3.10 (~$0.037)/kWh for solar energy, ₹4.99 (~$0.060)/kWh for non-solar sources, and ₹4.45 (~$0.054)/kWh for hydroelectric energy.

Electricity Market: Day-Ahead, Term-Ahead, and Real-Time Market

In July, the Day-Ahead Market saw trading activity amounting to 3,976 MU representing a 12% YoY upswing. The average market clearing price stood at ₹4.55 (~$0.055)/kWh, a 16% decrease over the corresponding period last year. The Real-Time Electricity Market traded 2,540 MU, a YoY expansion of 19%. The segment attracted the participation of 757 entities during the month. The Real-Time Market division empowers distribution utilities and industries with heightened flexibility and improved portfolio optimization by maintaining a real-time equilibrium between power demand and supply. The Term-Ahead Market, which encompasses contracts such as intraday, contingency, daily, weekly, and contracts spanning up to three months, traded 1,036 MU in July, a YoY surge of 136%.

Renewable Energy Certificate Market

During the July 26, 2023 trading session, 624,000 renewable energy certificates (RECs), corresponding to 624 MU, were transacted at a price of ₹650 (~$7.86)/REC. The next REC trading session will be held on August 30, 2023.

Energy Saving Certificates

In the month of July, a total of 70,222 energy-saving certificates (ESCerts), amounting to 70 MU, were exchanged on the platform at a base price of ₹1,840 (~$22.25) per ESCert. IEX reported a profit after tax of ₹758.2 million (~$9.2 million), an increase of 10% YoY in the first quarter of the financial year 2024. Electricity volumes witnessed a 6.9% YoY growth during April-June, with 23.7 BU traded. The conventional power market accounted for 22.8 BU, while the green market segment saw 910 MU traded. ***Source***

India's energy transition: Challenges and opportunities for a sustainable future

India is a crucial player in the global clean energy transition, given its status as the thirdlargest energy consumer in the world as of 2022. As the need to accelerate this transition becomes urgent in the face of rising climate catastrophes, India is taking prompt action to address its high carbon emissions and environmental challenges. This article explores the challenges, opportunities, and potential for India to lead the way towards a sustainable future.

India currently experiences a significant increase in energy demand driven by rapid economic growth, which necessitates a shift away from fossil fuels. However, fossil fuels still dominate global energy consumption, continuing to raise GHG emission levels. To bridge the emissions gap, India must triple its solar and wind capacity, exceeding 500 GW in renewable power generation over the next decade, for which the nation has allocated an investment of ₹2.44 lakh crore or ₹2.44 trillion, according to a CEA committee. In 2022, wind and solar made up 92% of India's capacity additions to power generation. India's electricity use grew by almost 13% YoY to 126.16 billion units in January 2023, reflecting the pace of growth in energy demand.

The energy transition requires substantial investments: $9.2 trillion in annual average spending on clean energy assets, which needs to scale up by $3.5 trillion more than what it is today, amounting to around $275 trillion between 2021 and 2050 according to McKinsey.

Opportunities

Accelerating the energy transition can bring numerous opportunities for India. It can create millions of jobs, enhance energy security, and tangibly reduce nationwide greenhouse gas emissions. The renewable energy sector already employs 11.5 million people globally, with an estimated 24 million new jobs by 2030. India can serve as an example for the world by fostering what is potentially the largest green workforce in the world and building a domestic supply of critical battery materials via recycling, contributing significantly to the fight against climate change on both national and international scales.

India has already made strides in green energy production. It aims to become a net-zero emitter of CO2 by 2070 and generate at least half of its power from non-fossil sources by 2030. The country's resources, including its long coastline, abundant sunshine, and various vacant lands, can facilitate renewable power generation via hydro, solar, and wind. The nation thus has the potential to rank among the top global producers of both wind and solar energy.

To achieve its target of 500 GW in renewable power capacity by 2030, India has implemented various measures, including the waiver of transmission system charges for inter-state solar and wind power sales, establishing renewable power purchase obligations, and creating Ultra Mega Renewable Energy Parks. The government also supports domestic manufacturing through Production-Linked Incentive (PLI) schemes. India has also set up innovative green energy trading platforms such as the GTAM (Green Term Ahead Market) and GDAM (Green Day Ahead Market). These platforms enable renewable energy developers to sell power on the open market without signing long-term Power Purchase Agreements. New measures introduced at the Indian Energy Exchange have also resulted in the trade of billions of units of clean energy in recent months.

Role of Energy Storage

Lithium-ion batteries play a vital role in the energy transition as the contemporary medium for energy storage, the most cost-effective, versatile, and reliable choice on the market for meeting the growing needs of electric mobility, consumer electronics, and renewable energy storage ecosystems. As the renewable-energy generation is only available for a limited time every day, the CEA committee envisages the installation of battery storage capacity worth 51.5 GW by 2030 to provide "round-the-clock power to end-consumers".

India can leverage innovation in lithium-ion batteries and battery recycling technology to enhance energy storage capabilities and optimize renewable energy utilization. The nation is set to become a preferred destination for lithium-ion battery recycling and reuse, contributing to a circular economy and reducing reliance on virgin mined raw materials.

Along with battery recycling, India has begun repurposing used batteries into sustainable 2nd-life Battery Energy Storage Systems (BESS), saving 98% of GHGe compared to making new batteries, which approximately equals 176,400 Tons of CO2e per GW of batteries, equal to the emissions produced by 39,254 fossil fuel powered passenger vehicles driven for one year. Mining for battery raw materials generates up to 100 Kgs of CO2e per kWh of battery capacity and also consumes an alarmingly unsustainable 500,000 liters of water per Metric Ton. India can now leverage battery recycling technology that reduces GHG emissions by 50% compared to mining and consumes 500x less water per metric ton of raw materials to not only reduce dependence on raw material imports but also become a global supplier of low-carbon energy transition materials.

As India emerges as the fifth-largest economy in the world, hosting one of the world's fastest growing GDPs in 2022, the world is looking at India, not just for mutual economic progress but also observing its decisive steps for a sustainable future. India can do much for a greener planet via innovation, effective policy implementation, and building a green workforce to expedite India's energy transition while contributing to the world's energy transition.

Conclusion

India's energy transition faces both challenges and opportunities. The urgent need to reduce carbon emissions requires swift action and significant investments. However, embracing and accelerating this transition can induce job creation, energy security, and a reduction in greenhouse gas emissions. Currently, fossil fuels remain more affordable than renewables, but governments can help make renewables viable by investing in the sector and scaling up a circular energy economy. India's progress in renewable energy production, coupled with its potential in sustainable energy storage and growing battery recycling & reuse industry, positions it to facilitate the world toward a Net Zero CO2e future, becoming a force for the world to emulate. ***Source***

India to emerge as global renewable energy powerhouse with fastest growing capacity

India is poised to establish itself as one of the largest solar module manufacturers in the world and is witnessing the fastest growing capacity in renewable energy, said Raj Kumar Singh, Union minister of power and renewable energy. Speaking at an event in Delhi, the minister highlighted India's impressive strides in the renewable energy sector, including green hydrogen, fostering a robust ecosystem. The country boasts one of the largest manufacturing ecosystems for wind energy and is experiencing rapid growth in solar capacity, propelling India to be the global leader in renewable energy.

With substantial existing solar manufacturing capacity and ambitious projects underway, including polysilicon facilities, India is set to become one of the world's largest solar module manufacturers. Adding to the nation's achievements, India has already achieved its Nationally Determined Contributions (NDC) target of 40% capacity from renewable sources ahead of schedule. The government remains steadfast in its commitment to achieving the NDC goal of 50% capacity share from renewable energy, well ahead of the NDC timeline set for 2030.

India is one of the fastest-growing economies in the world, yet per capita emissions of greenhouse gases are substantially lower than the world average. The country is striving to achieve a fine balance between meeting its surging energy needs and reducing carbon emissions. India remains steadfast in its commitment to sustainable growth, renewable energy expansion, and electric vehicle adoption.

"By strategically balancing economic growth with environmental consciousness, the nation is determined to carve a brighter, greener future for generations to come," he reiterates. Speaking on the occasion, Ramnath Krishnan, MD & Group CEO, Icra Ltd., praised India's clean energy revolution, attributing it to robust policy support from the Government of India and enhanced tariff competitiveness in solar and wind power.

He also lauded the recent announcement of a bidding trajectory of 50 GW per annum from FY2024 to FY2028, which paves the way for achieving the ambitious 500 GW non-fossil fuelbased capacity target by 2030, as set by the government. Krishnan underscored the importance of timely completion of tendering processes, risk mitigation during execution, and strengthening the domestic solar supply chain to successfully reach the capacity targets.

He projected a rise in the share of renewable energy plus hydro in India's electricity generation mix, estimated to reach around 40% by FY2030, up from the current 23% in FY2023. To mitigate intermittency risks associated with higher levels of renewable energy generation, Krishnan stressed the necessity of developing adequate energy storage capacities at a competitive cost.

The adoption of electric vehicles (EVs) in India has gained significant momentum due to proactive measures taken by the Indian government and various state governments. Increasing awareness among citizens about the environmental benefits of EVs has propelled demand, while original equipment manufacturers (OEMs) have been expanding their EV portfolios to cater to consumer preferences.

Krishnan also highlighted the substantial investments made in charging infrastructure and the local vendor ecosystem, which have further contributed to the rapid adoption of EVs. ICRA estimates e-2W penetration to

reach 10-12% of new vehicle sales by FY2025, e-3W at 14-16%, and e-buses at 11-13%. To sustain and accelerate EV adoption, continued technological advancements, reduced import dependence, wider consumer choices, and accessible financing options are vital. ***Source***

Transmission charges payable by DICs for the billing month of August 2023

The Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses), Regulations 2020 came into force with effect from 1.11.2020. In these New Regulations, STOA charges will be determined based on monthly state transmission charges and there shall not be any separate injection and drawl PoC charges, for STOA. Further, DISCOMs having long term Access are not required to make any payment against POC charges for STOA transaction.

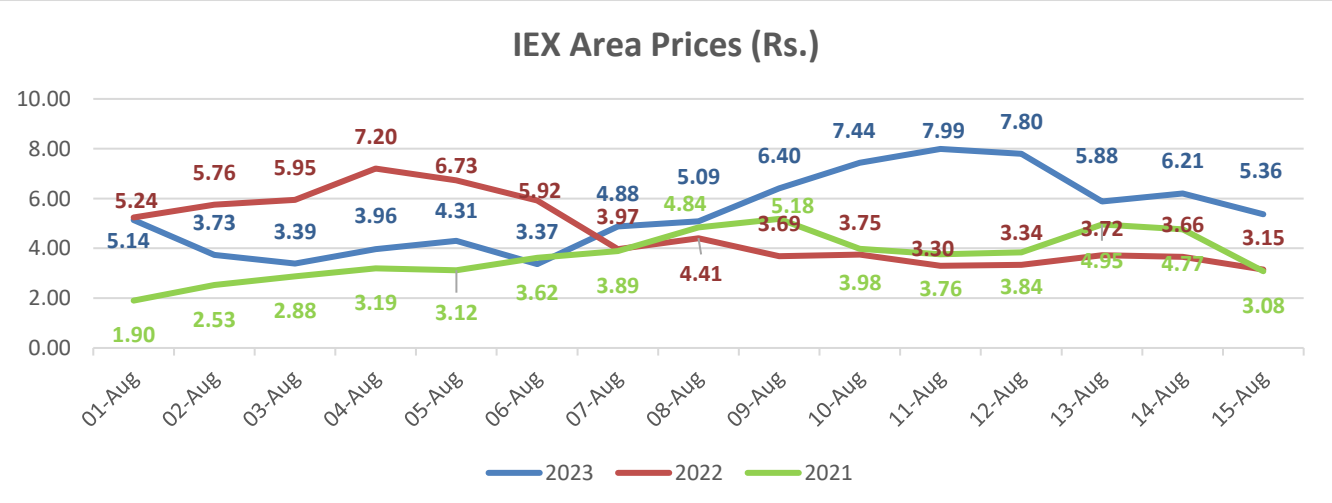
Transmission Charges for Short Term Open Access (STOA)			
Sl. No.	**State**	**Region**	**STOA rate (paise/kWh)**
1	Delhi	NR	51.14
2	UP	NR	56.88
3	Punjab	NR	50.88
4	Haryana	NR	66.26
5	Chandigarh	NR	43.53
6	Rajasthan	NR	53.48
7	HP	NR	41.94
8	J&K	NR	44.47
9	Uttarakhand	NR	50.63
10	Gujarat	WR	38.15
11	Madhya Pradesh	WR	45.16
12	Maharashtra	WR	53.18
13	Chhattisgarh	WR	37.43
14	Goa	WR	51.26
15	Daman Diu	WR	46.76
16	Dadra Nagar Haveli	WR	46.76
17	Andhra Pradesh	SR	65.61
18	Telangana	SR	48.49
19	Tamil Nadu	SR	48.24
20	Kerala	SR	51.14
21	Karnataka	SR	51.44
22	Pondicherry	SR	43.86
23	Goa-SR	SR	42.41
24	West Bengal	ER	50.43
25	Odisha	ER	46.47
26	Bihar	ER	44.41
27	Jharkhand	ER	49.12
28	Sikkim	ER	37.84

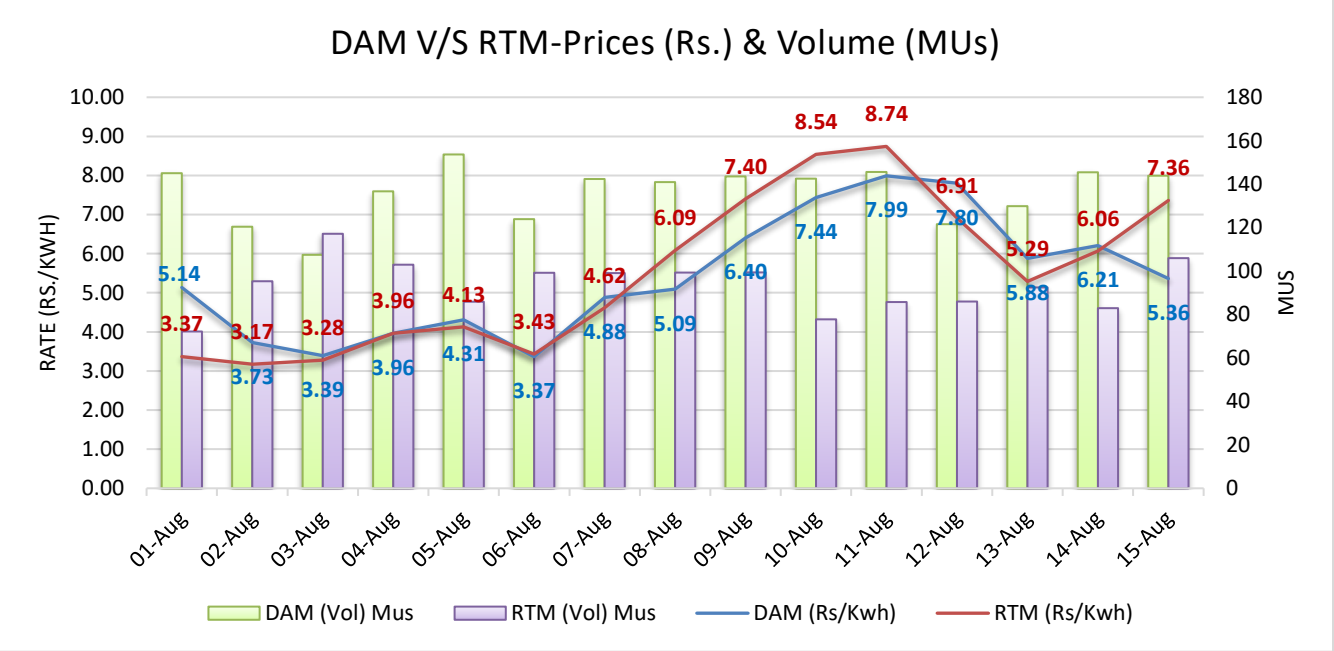
29	DVC	ER	44.48
30	Bangladesh	ER	36.14
31	Arunachal Pradesh	NER	41.55
32	Assam	NER	43.34
33	Manipur	NER	40.93
34	Meghalaya	NER	36.04
35	Mizoram	NER	42.54
36	Nagaland	NER	57.41
37	Tripura	NER	45.59

Bilateral Tender Status

Sl. No.	Tender Quantum (MW)	Supply Period	Time Blocks (Hrs.)	Price (Rs./kWh)	LOI Status
PFC Consulting Limited/Short/23-24/RA/81					
1	300	01.08.2023 to 31.08.2023	19:00 to 20:00	9.99-11.97	LOI Issued
2	900	01.08.2023 to 31.08.2023	20:00 to 24:00	10.00-50.00	
3	400	01.08.2023 to 31.08.2023	00:00 to 02:00	8.93-9.00	
CESC/Short/23-24/RA/84					
1	36	26.08.2023 to 23.08.2024	00:00 to 24:00	5.78	Awaited
RUVNL/Short/23-24/RA/79					
1	600	01.11.2023 to 30.11.2023	06:00 to 18:00	6.25-7	LOI Issued
2	600	01.12.2023 to 31.12.2023	06:00 to 18:00	6.34-7	
3	1000	01.01.2024 to 31.01.2024	06:00 to 18:00	6.32-7.2	
4	600	01.02.2024 to 29.02.2024	06:00 to 18:00	6.22-7.2	

IEX Price Trends





Weather (Estimated for next fortnight)

City	Max Temp	Min Temp	Precipitation (Probability)
DELHI	37	27	25%
MUMBAI	31	26	65%
KOLKATA	34	27	56%
CHENNAI	34	27	20%

(Source - Accuweather)

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Editorial team: Biswajit Mondal (Specialist-Short Term, Utility Marketing) Mob No-9717533211 and Nishu Kumari (Lead Engineer- Marketing) Mob No- 8210172389