Power Market 2.0: Market Coupling & Electricity Derivatives

Post-Webinar Report

MDI GURGAON

Event Overview

Title: ***Power Market 2.0: Market Coupling & Electricity Derivatives***
Date & Time: August 18, 2025, from 2:00 PM to 5:30 PM IST
Management Development Institute (MDI) Gurgaon
Chief Guest: Mr. Jishnu Barua, IAS, Chairperson of the Central Electricity Regulatory Commission (CERC)

Key Focus Areas

The webinar was structured around two central themes:

1. Market Coupling Strategies
2. Electricity Derivatives and Risk Management

Notable Highlights

- **Inaugural Moment**: The event opened with a traditional lamp-lighting ceremony, led by Prof. Arvind Sahay, Director of MDI Gurgaon and Mr. Ghanshyam Prasad Chairman CEA.
- **Engagement Scale**: The webinar drew a strong audience, with participation from 600+ industry experts and professionals.
- **Market Potential**: Discussions highlighted India's massive ₹40 lakh crore opportunity in the power sector, underscoring the scale and stakes of the emerging market dynamics.

Speaker Session:

Prof. Arvind Sahay (Director, MDI Gurgaon)

Prof. Sahay opened the event by stressing the importance of MDI as a bridge between academia, policymakers, regulators, and industry in shaping India’s energy transition. He emphasized that India is undergoing structural reforms in its electricity sector, with increasing renewable penetration and market innovations. The seminar, he noted, was designed to bring clarity on

reforms such as market coupling and derivatives, both of which will define the next phase of India's power market.

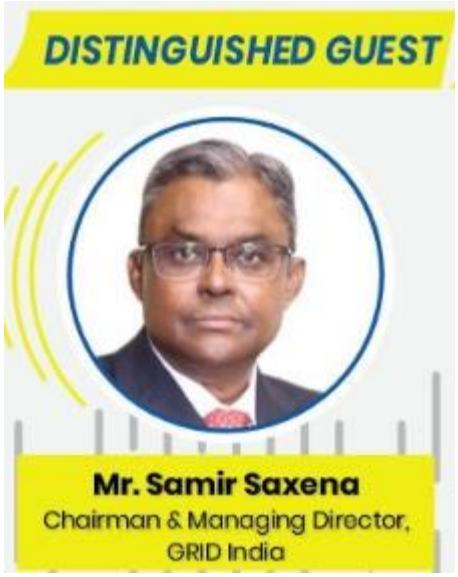
Mr. Jishnu Barua (Chairperson, CERC)

Barua provided a regulatory perspective. He traced the evolution of exchanges since 2008, noting that short-term market trade reached 238 BU in 2024–25, with exchange volumes doubling in just four years. After 15 years of consultations, joint CERC–SEBI regulation has finally enabled derivatives. MCX and NSE have already launched round-the-clock futures linked to DAM prices. He assured stakeholders that safeguards like margins, position limits, and joint surveillance were in place. On market coupling, he confirmed CERC's directive to implement DAM coupling by January 2026, though with cautious, consultative steps.

Mr. Ghanshyam Prasad (Chairperson, CEA)

He highlighted India's installed capacity crossing 485 GW, with nearly half from non-fossil sources. Around 85 percent of power remains tied up in long-term PPAs of 25–35 years, which reduces liquidity in the short-term market. He welcomed the introduction of electricity derivatives and market coupling as reforms that will create better risk management, transparency, and investor

confidence. He underlined that India's power market, while maturing, still has to evolve significantly before it can resemble European or Nordic models.



Mr. Samir Saxena (CMD, Grid India)

He outlined India's evolving market and the central role of coupling. With 234 GW renewable capacity (14% annual share, up to 40% instantaneous), variability poses balancing challenges. The current voluntary market is fragmented and <10% short-term. A pilot (Dec 2024–Mar 2025) showed clear benefits: +38% surplus, +2% cleared volume, cost savings**.** DAM coupling is planned for Jan 2026, provided algorithms, product definitions, settlements, and governance are harmonized. On derivatives, he welcomed monthly futures but stressed the need for longer tenor, customized contracts, and discom participation to anchor liquidity. Coupling + derivatives, he concluded, can deliver efficiency and depth, if backed by strong governance.

Panel 1: Market Coupling – Implementation and Governance

Moderator: Mr. S.R. Narasimhan (Former CMD, Grid India)

He introduced the theme by explaining that coupling had been under discussion since 2008 when congestion management emerged as a problem. Expert groups recommended it in 2016, pilots were run in RTM and DAM in 2022–23, and finally CERC issued its order in 2025. The pilots showed that DAM coupling offered only marginal welfare gains (around 0.3 percent), while RTM+SCED coupling could deliver savings of up to ₹500 crore per month. Despite this, the regulator decided to start with DAM coupling. Noman noted that coupling ensures that power flows from low-cost to high-cost areas, corrects illogical market outcomes, and harmonizes prices.

Prof. René Aïd (Université Paris Dauphine, France)

Prof. Aïd shared the European experience. Europe took 10–12 years to achieve market coupling across 25+ countries, with challenges in harmonizing rules and governance. Before coupling, prices could move in opposite directions across neighboring markets, creating inefficiencies. Coupling unified prices and improved efficiency, while still allowing multiple exchanges to co-exist and compete on value-added services rather than price alone. He emphasized that India, with a centralized structure, could move faster, though six months was "very challenging."

Mr. Satyajit Ganguli (CEO, PXIL)

Ganguli strongly supported coupling. He explained that discoms face audit questions when DAM prices differ across exchanges, even by 1–2 paise/unit, which creates reputational risk for officers. Coupling would eliminate these concerns, provide uniform pricing, and increase liquidity by clearing more stranded bids. He stressed that exchanges would still compete — not on price, but on analytics, technology, and customer interface. He outlined requirements: standardized bid formats, settlement systems between exchanges, fungible collateral, and a joint governance council with CERC, Grid India, and exchanges.

Mr. Rohit Bajaj (Joint MD, IEX)

He mentioned that the pilot showed minimal welfare gains (0.3% for DAM, 0.01% for RTM), questioning whether such effort was worthwhile. He argued that just as NSE and BSE co-exist with slightly different indices, multiple exchanges can co-exist without needing uniform DAM pricing. Bajaj warned that coupling may dilute competition and innovation, especially since exchanges have built their own algorithms and systems. He also highlighted that the TRAS market, India's only existing coupled product, has failed to attract liquidity, showing that design flaws can doom such initiatives.

Mr. Navjeet Kalsi (CMD, Manikaran Power Ltd.)

Kalsi spoke from a trader's perspective. As a Category-I licensed trader and member of all three exchanges, he described how clients mandate simultaneous bids across platforms. Even a 1–2 paise/unit difference can lead to major financial impacts, causing discoms and corporates to question why one exchange was chosen. He argued that uniform pricing under coupling would remove such governance issues, increase clearance of volumes, and reduce scheduling failures (which otherwise can force plants to back down or buyers to go short). He also welcomed derivatives, explaining that traders often carry mismatched positions between long-term purchases and short-term sales, making hedging tools essential.

Key Takeaways from Panel Discussion 1: Market Coupling – Implementation and Governance

Implementation Challenges

Several panelists underscored that moving to coupled markets is not merely a regulatory decision but an operational challenge. Key requirements include standardization of algorithms, bid formats, and product definitions, as well as the creation of seamless settlement systems between exchanges. Risk management protocols such as fungible collateral across exchanges, robust surveillance, and reliable default handling were identified as prerequisites. In addition, a production-grade price discovery algorithm and a joint governance council comprising CERC, Grid India, and the exchanges were seen as critical to ensure neutrality, transparency, and timely resolution of issues.

Importance and Early Evidence of Market Coupling

The panel emphasized that India's current electricity market remains fragmented across three exchanges, leading to liquidity dilution and price differences, sometimes as small as 1–2 paise per unit, that create confusion for discoms, auditors, and traders. Market coupling was presented as a structural solution to consolidate liquidity, ensure a uniform price across platforms, and optimize transmission corridors. Evidence from the pilot conducted between December 2024 and March 2025 reinforced this argument: it demonstrated a 38 percent increase in economic surplus, a 2 percent rise in cleared volumes, and notable cost savings. While the benefits were most visible in real-time and SCED coupling, the Day-Ahead Market (DAM) was selected as the first step for implementation, beginning in January 2026.

Diverging Views: Supporters

On one side, supporters of coupling, including PXIL and trading representatives, welcomed the move as a step toward efficiency and comfort for end-users. They argued that a single uniform price would eliminate uncertainty for discoms and large buyers, reduce governance risks, and improve overall liquidity. For traders, it would also end client questioning about why one exchange was chosen over another, thereby simplifying operations and enhancing trust in the market.

Diverging Views:

On the other hand, views of Mr. Bajaj from IEX, questioned the scale of the benefits. They pointed out that the welfare gains from DAM coupling, as revealed by the pilot, were marginal compared to the system's inherent inefficiencies. He argued that competition between exchanges is a healthy driver of innovation and that forcing uniform prices could stifle differentiation and technological advancement. As an example, the TRAS market, which has been coupled from the beginning, has failed to attract liquidity, raising doubts about whether coupling alone can guarantee success.

Global Lessons and Governance Needs

The panel drew lessons from Europe, where market coupling took nearly 10 to 12 years to achieve due to the complexity of multiple countries and independent system operators. India, however, benefits from a single national grid, which can make the process faster, though most agreed that the January 2026 deadline is ambitious. Effective governance emerged as a central theme: strong surveillance, transparent processes, and stakeholder trust were described as essential for smooth implementation. Current regulations already restrict ownership in exchanges, but panelists stressed that governance must evolve further to handle the interaction between physical and financial markets once derivatives and coupling operate together.

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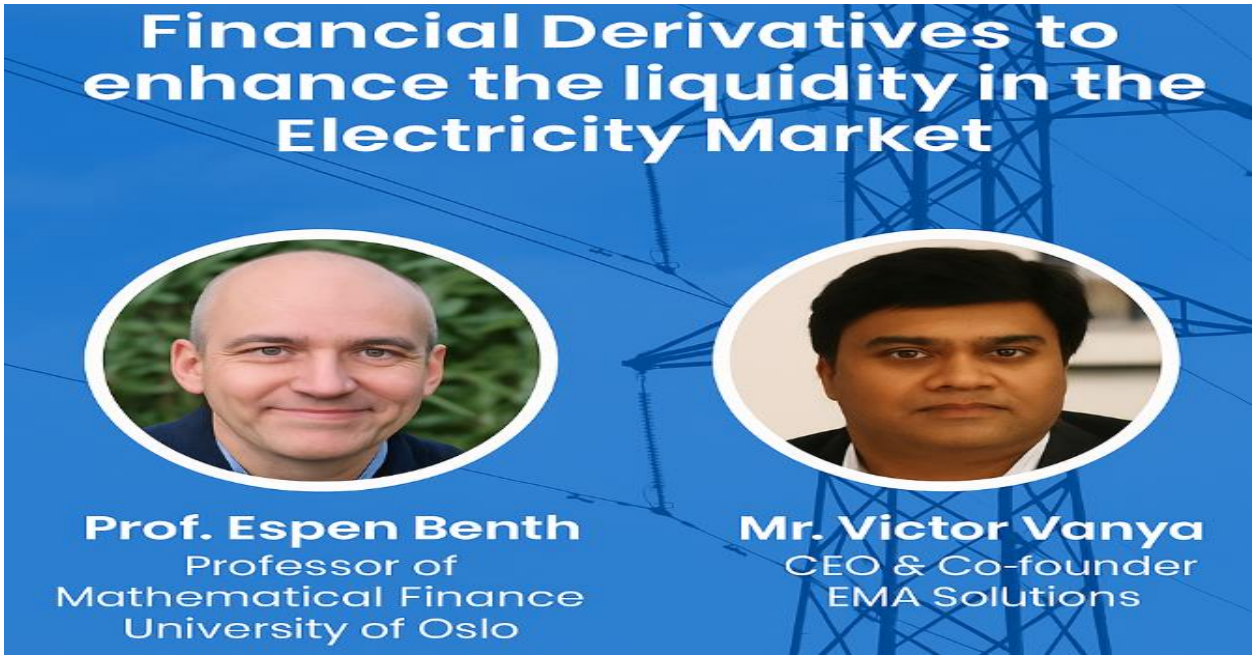
Panel 2: Electricity Derivatives and Liquidity



Moderator: Prof. Rajib K Mishra (Prof. MDI and Ex-NTPC, PowerGrid and former CMD PTC)

He set the stage by contrasting India's PPA-driven physical delivery market with global derivatives markets. In India, 85% of power is tied long-term; only ~10% trades in short-term markets. Derivatives could multiply liquidity, possibly from ₹1 lakh crore today to ₹8 lakh crore, like Europe. He asked: are participants ready? Can derivatives provide certainty and attract renewable investment?

Prof. Fred Espen Benth (University of Oslo, Mathematical Finance)

Prof. Benth delivered a detailed presentation on global derivatives. He explained the spectrum of contracts in Europe: daily, weekly, monthly, quarterly, and up to 10-year futures, as well as peak/off-peak variants. Options on futures provide insurance against volatility, while Contracts-for-Difference (CfDs) allow hedging between bidding zones. He noted the cannibalization risk: as renewable penetration rises, correlation between output and prices turns negative (more solar/wind → lower prices). This risk deters investors and highlights the need for hedging. He also discussed weather-based derivatives in the US (temperature futures at CME) and wind-index futures at EEX, though some failed due to lack of liquidity. He warned that IT majors like Amazon, Google, Meta, and Microsoft are now the largest PPA buyers globally, securing renewables for data centers, a trend India must watch carefully.

Mr. Ashish (MCX)

Ashish explained MCX's launch of India's first electricity futures in July 2025: round-the-clock monthly futures, up to 4 months ahead, with IEX DAM as the underlying. Early participation has been encouraging, especially from financial traders, with volumes already exceeding 200 MU/day.

The first expiry is due in August, and open interest is building in later months. While the initial contract is round-the-clock, MCX plans to develop peak/off-peak or renewable-specific contracts as the market matures. He stressed that hedging is the core objective, and market learning is underway.

Mr. Victor Vanya (CEO, AMA Solutions)

Victor argued that India is already 10 years late in introducing electricity derivatives. He explained that while volumes are high, participation is dominated by speculators, with minimal hedging by physical players. The core problem is product design: the RTC contract does not serve solar generators (who need day products) or discoms (who need night products). Unless customized contracts are created, physical players will stay away, and derivatives will remain speculative. He also highlighted that traders in India are essentially brokers, not risk-takers, which is why they are not active in futures. Bridging the gap between financial brokers (who lack domain expertise in electricity) and power traders (who lack F&O expertise) is critical. Reliable data, forecasting tools, and risk analytics are missing today, making meaningful participation difficult.

Prof. Benth (recommendations for India)
He recommended three priorities:

(1) build liquidity by attracting both financial and physical players,

(2) introduce longer-tenor contracts (quarterly, yearly) to support renewable financing,

(3) develop regional bidding zones with CfDs to hedge locational price differences.

He also reminded that producers themselves can act as financial participants, not just banks or speculators, since they too need insurance against volatile spot prices.

Key Takeaways from Panel Discussion 2: Electricity Derivatives – Liquidity and Risk Management

Rationale for Electricity Derivatives

The discussion opened with the context that India's physical electricity market has traditionally relied on long-term contracts and short-term spot trading, with 85 percent of power tied up under long-term agreements. This structure leaves only about 10 percent to short-term markets, where volatility is significant. Electricity derivatives were therefore introduced to provide hedging instruments, price certainty, and better investment signals, especially as renewable integration rises. Globally, such instruments extend up to five or even ten years, but India has only just launched its first monthly futures contracts on MCX and NSE.

Early Experience and Market Response

The first month of trading in these derivatives showed encouraging volumes, in some cases exceeding 200 million units per day. However, most participation so far has come from financial speculators rather than physical players such as discoms and generators. Panelists agreed that unless physical market participants begin using these products for genuine hedging, liquidity will remain shallow and prices will not carry reliable signals. The success of the market will also depend on moving beyond round-the-clock contracts toward more customized products such as day-only, night-only, peak, and off-peak structures that reflect the realities of renewable generation and discom demand.

Implementation Challenges

Speakers highlighted several challenges in developing this new segment. The first is basis risk, since current contracts are based on day-ahead market averages, which do not align neatly with the profiles of renewable energy generation or discom demand. The second is regulatory readiness, since surveillance will need to adapt to a market where physical and financial participants interact. A third challenge is bridging the gap between financial brokers, who dominate commodity and stock exchanges, and power sector traders, who have historically operated on fixed-margin, back-to-back contracts and avoided risk-taking. Without effective education and new risk management capabilities, traditional power traders may find it difficult to use derivatives actively.

Diverging Perspectives

Optimists, including exchange representatives, emphasized that Indian markets are already late in introducing electricity futures and that these products are essential to instill confidence, support renewable investment, and provide price certainty to buyers. They saw growing financial participation as a healthy sign and expected physical players to gradually join once customized products become available. Skeptics were more cautious, pointing out that current liquidity is driven by speculation without a strong anchor from utilities or generators. They argued that until discoms and renewable developers adopt these tools for real hedging, the market may remain shallow and potentially volatile.

Lessons and Way Forward

International experience, particularly from Europe and the Nordics, suggests that electricity derivatives take time to mature, with some contracts succeeding and others failing to attract liquidity. The Indian market must learn from this by experimenting with different contract types while ensuring robust data, forecasting tools, and risk management systems. Academics and experts also highlighted the need to develop energy risk management as a discipline in India, since reliable analytics and forecasting are critical for participants to trade derivatives with confidence. Ultimately, the panel concluded that while the launch of electricity derivatives is a timely and necessary reform, their growth will depend on broader participation, strong governance, and a culture of risk management within the power sector.

Vote of Thanks

Concluding Remarks and **Vote of Thanks** were presented by **Prof. Sajal Ghosh, Professor MDI Gurgaon.** He mentioned that Mathematical Market Modeling and forecasting with deep dive in the Data Analysis would be the backbone for the success of Electricity Derivative Market and expressed optimism for a robust Indian Electricity Market with these initiatives.

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