

A background image showing a group of business professionals in a meeting. A woman in a grey blazer is holding a smartphone, and another person is holding a tablet displaying a document. There are coffee cups on the table.

Learnings & Key Take Aways @ ACEF -2025

Philippines
(02-Jun-25 to 06-Jun-25)

Learnings @ MERALCO - Largest private sector electric distribution utility in Philippines

- Serving 8 million customers across 39 cities / 72 municipalities, maintaining Overhead network with very good reliability despite challenges like stronger typhoons, other natural calamities, worsening traffic situation etc.
- **Working with the motto of ‘FUTURE PROOFING the distribution network and FORTIFYING the DIGITAL platforms’.**
- Five pillars – a) Grid efficiency, reliability and resiliency, b) Advance asset management, c) Distributed energy resources integration, d) Safety and Work efficiency and e) Customer empowerment.
- Best practices were shared by Tata Power Delhi Distribution Ltd and South Bihar Discoms and discussed further for exchange of best practices between Meralco and Indian Discoms.



Empowering the Future @ ACEF

- Fostering Innovation - To accelerate the development and deployment of clean energy technologies, leading to increased efficiency, reduced costs, and enhanced energy security.
- Enhancing regional Cooperation and Integration - To facilitate more efficient and resilient energy systems for greater access to clean energy.
- Developing Sustainable Financing Solutions - To unlock significant investment in clean energy projects, driving the transition to a low-carbon economy.



Learnings @ Day 1

1) Future of Floating PV and BESS in Asia (Norway and Sweden)

- Climate change and land scarcity present significant challenges, making innovative energy solutions essential -
Floating solar photovoltaic (FPV) technology offers a sustainable alternative with a low carbon footprint and minimal land use, positioning it as a key contributor to a zero-emission future. By utilizing water bodies for solar installations, FPV reduces the environmental impact associated with traditional ground-mounted systems while enhancing energy efficiency through the natural cooling effect of water.
- Battery Energy Storage Systems (BESS) are essential for solar energy development as they address intermittency, enhance grid stability and improve reliability. BESS also enhances financial returns by optimizing energy use and selling stored power at peak prices, making solar projects more viable and sustainable.
- As concerns grow over the environmental impact of land-intensive solar parks, FPV together with BESS emerge as a promising alternative, enabling the continued expansion of solar energy while preserving valuable land resources. Scandinavian companies are recognized as innovative leaders in both the FPV and BESS sectors.

2) Scaling Clean Energy Innovation : De-risking Demonstration Projects

- As clean energy transitions accelerate, integrating technological innovation and leveraging private sector investment into demonstration projects requires a robust risk management approach. Ensuring that these projects are both sustainable and inclusive is critical to achieving long-term socio-economic and environmental benefits and these projects must be investment-ready and designed to integrate inclusive approaches that consider the needs of both ecosystems and communities.

Learnings @ Day 2

Power Trade Empowering the Region's Clean Energy Future – Improving Supply, Access, and Innovation

- The Asia and Pacific region is witnessing a significant shift towards clean energy, driven by technological advancements, policy support, and growing awareness of the need for sustainable energy solutions. Regional power trade offers a unique opportunity to optimize resource utilization, reduce costs, and create a more resilient energy system.
- By integrating power markets and facilitating cross-border electricity trade, countries can leverage their diverse energy resources, balance supply and demand, and enhance energy security

1) Improving Access to Clean Energy Solutions

- Expanding access to clean energy in rural and remote areas remains a key challenge across Asia and the Pacific. Decentralized solutions- such as microgrids, off-grid solar, and hybrid renewable systems—offer promising alternatives to conventional grid expansion. Yet affordability, infrastructure gaps, and financing barriers continue to limit their reach.

2) Regional Energy Planning and Grid Integration

- Regional cooperation and grid integration are essential to optimizing energy resources and improving system resilience, yet aligning planning processes, data sharing, and regulatory frameworks across borders remains a key challenge.

3) Smart Utilities – Demand Flexibility & Grid Optimization

- Utilities across the Asia-Pacific region are rapidly embracing smart grid technologies and advanced metering infrastructure to optimize energy distribution, improve efficiency, and reduce technical losses. As renewable energy integration and demand variability grow, utilities face increasing complexity in maintaining grid stability and customer reliability
- Data analytics, automation, and public-private partnerships can help modernize utility infrastructure, enhance operational performance, and support the transition to more flexible, low-carbon power systems
- AI-powered Demand response mechanisms to improve grid flexibility, and data-driven optimization of EV charging infrastructure is the need.

4) Innovative Financing Mechanisms

- Innovative financing mechanisms are essential to accelerating the clean energy transition across Asia and the Pacific. Instruments such as thematic bonds, blended finance, carbon-linked mechanisms, and blockchain-enabled platforms help unlock new sources of capital and attract private sector participation.
- **A range of forward-looking financing models, including the use of blockchain to enable inclusive investments in clean energy, and community-based financing approaches in floating solar PV development.**

5) Improving Energy Efficiency in Building

- Energy efficiency in buildings is gaining traction as countries seek to reduce emissions and manage growing energy demand. Smart building technologies, retrofitting initiatives, and sustainable design are needed but adoption remains limited by high upfront costs, fragmented regulations, and a lack of standardized energy codes.
- Data-driven management systems are revolutionizing smart building operations, including the use of AI and real-time monitoring tools.
- Policy and technological solutions that can drive market transformation, offering insights into how building efficiency can be scaled across Asia and the Pacific.

6) De-Risking Clean Energy Investments

- Mobilizing private investment is essential to meet the region's clean energy goals, yet high perceived risks--ranging from policy uncertainty to project bankability--continue to limit capital flows.
- Governments and financial institutions are deploying risk mitigation tools such as guarantees, insurance, and blended finance to address these barriers
- Effective de-risking strategies and highlighted how public-private collaboration can enhance investor confidence and unlock financing for clean energy projects across Asia and the Pacific

Learnings @ Day 3

1) Interregional Connectivity: Enabling Power Trade through Policy, Markets, and Technology

- Innovation in development of subsea power cables, which can significantly reduce energy losses in long-distance transmission and enhance grid connectivity across borders. The rapid growth of subsea power cable and high-voltage direct current (HVDC) technologies is highly relevant to Asia's regional aspirations for expanded interconnectivity.
- Global Energy Interconnection Development and Cooperation Organization (GEIDCO) is a non-profit international organization established under the State Grid Corporation of China for global energy interconnection and promotion of sustainable development of energy worldwide.

2) Resilient Energy Systems Against Extreme Weather Events (ADB)

- Increasingly frequent extreme weather events are posing unprecedented challenges to global energy systems, impacting entire energy value chain, including fuel supply, electricity generation, transmission, distribution, and energy demand. Such events test the resilience of energy infrastructure, altering generation potential, reducing efficiency, and shifting demand patterns and esp. threaten developing countries across Asia and the Pacific, where energy systems are already strained by rising demand, limited financial resources, and aging infrastructure.
- There should strategies to strengthen resilience, covering various measures, including investments, technical and structural improvements, energy source diversification, energy efficiency enhancements, and innovative technologies.

3) Economic Impact, Energy Security, and Climate Resilience (ADB)

- Regional energy requirements are expected to expand by at least 40% by 2050. The region faces challenge for heavy reliance on fossil fuels, infrastructure limitations, and the growing impacts of climate change. Fossil fuels currently account for nearly 80% of its energy mix, exposing the region to price volatility and supply disruptions.
- The ASEAN Power Grid (APG), a flagship initiative under the ASEAN Plan of Action for Energy Cooperation (APAEC), offers a solution by Interconnecting National grids and facilitating cross-border electricity trade. APG is expected to enhance energy security, promote renewable energy integration, and foster regional economic cooperation.

4) Enabling ASEAN Power Grid Connectivity and Private Sector Cross-Border Financing Solutions

- To achieve fully integrated ASEAN Power Grid (APG) by 2045, multilateral power agreements are expanding across the region. Singapore is collaborating with neighboring countries on low-carbon energy imports/exports, with Singapore's Energy Market Authority (EMA) approving 6 GW import target from Indonesia, Cambodia, Vietnam and Australia 2035.
- Vietnam has strengthened energy ties with Laos by importing hydropower and wind power to address shortages and to advance its renewable energy goals. Laos, with its abundant hydropower and wind power resources, plays a key role in clean energy trade.
- Asian Development Bank (ADB) supports APG development through innovative financial support, policy and regulatory guidance and technical expertise in close collaboration with government ministries, regional sponsors and leading financing institutions.

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5) Doubling Down to Triple Up: HTLS Conductors for Improved Grid Efficiency and Grid Security

- Geophysical resilience and cybersecurity are integral to 21st century T&D systems. High-temperature low-sag (HTLS) conductors are one of the quickest and most cost-effective solutions for expanding T&D capacity and efficiency while minimizing environmental and social impacts.
- New renewable capacity and output cannot be readily brought online in a timely manner unless transmission capacity and efficiency increase rapidly.

6) Regional Cooperation and Integration (RCI) in the Energy Sector (ADB South Asia)

- Over the past decade, initiatives such as India's power trade with Nepal and Bangladesh, Bhutan's hydropower exports, and the potential for grid connectivity with Sri Lanka have demonstrated the transformative potential of RCI.



Learnings @ Day 4

1) Advancements in Renewable Technologies

- Breakthroughs in solar, wind, hydropower, and energy storage are improving the performance, reliability, and scalability of renewable energy systems across the region. Challenges such as technical limitations, high costs, and fragmented regulatory environments continue to slow widespread deployment.
- Diverse innovations and Regulatory solutions for recycling solar PV waste in support of a circular economy and Artificial intelligence is being leveraged to optimize clean energy systems, enhance predictive maintenance, and drive smarter grid integration.

2) Enhancing Efficiency in Manufacturing and Industry

- While industries are increasingly turning to energy management systems and efficient machinery, challenges such as high upfront costs, limited technical capacity, and difficulties in retrofitting existing equipment continue to slow progress
- Financial, technological, and policy solutions to support energy-efficient upgrades in industrial operations.
- Strategies from across the region, including energy efficiency networks (EENs) in ASEAN, scalable practices from Vietnam's textile sector, and efforts to advance motor system standards in China.

3) Scaling up ESCOs and Cooling Efficiency

- Energy Service Companies (ESCOs) plays pivotal role in accelerating energy efficiency across the Asia and Pacific region in the cooling sector. As demand for cooling continues to rise, innovative technologies, harmonized policies, and collaborative financing models are essential to scale sustainable solutions.
- ESCOs drives region-wide improvements in cooling efficiency by leveraging partnerships, digital tools, and policy alignment to reduce energy use and emissions. chiller replacement projects in Cambodia's hotel sector, Super ESCO-led cold chain solutions for agriculture in India, and the development of the Philippines' National Cooling Action Plan.

4) Strengthening Regulatory Frameworks and Policy for Clean Energy Investments

- Effective regulatory frameworks and supportive policies are mobilizing private investment in clean energy. Govts. across Asia and the Pacific are creating enabling environments through incentives, contract transparency, and long-term policy clarity. Inconsistencies across jurisdictions and gaps in implementation pose barriers to investor confidence and project development. Policy innovation and regulatory harmonization can support market growth, increase transparency, and attract new investment.
- The role of monetary and prudential policies in scaling transition finance, and contract transparency increase private sector participation. Strategic approaches integrates renewable energy development with biodiversity protection, and pumped storage support clean, reliable, and integrated energy systems.

