SUMMARY NOTES
EEAP WEBINAR 29
Driving Energy Efficiency in MSMEs
Sustainable Technologies and Financial De-risking for Market Transformation

7 August 2026 | Online webinar | 60 minutes

On 7 August 2026, Energy Evaluation Asia Pacific (EEAP) convened its 29th webinar to examine how practical energy-efficiency technologies and financial de-risking mechanisms can work together to accelerate investment in micro, small, and medium-sized enterprises (MSMEs). The session featured two speakers from the International Institute for Energy Conservation (IIEC):

- **Abhishek Dhupar:** Associate Director, IIEC
- **Sanjay Dube:** President and CEO, IIEC

The webinar linked technology selection, business models, finance, measurement and verification, and programme evaluation. Drawing on India's experience, while highlighting relevance for other developing markets, the speakers showed that market transformation requires more than efficient equipment. It also requires trusted delivery institutions, affordable capital, credible savings data, capable energy service companies (ESCOs), and mechanisms that transfer or insure performance risk.

Central message

Technology and finance must be designed as one market system. Efficient equipment becomes scalable when projects are bankable, savings are verifiable, risks are allocated credibly, and MSMEs can invest without prohibitive upfront costs or collateral requirements.

Webinar Agenda

Time (Manila)	Session / Speaker
11:00–11:05 AM	Welcome remarks and context setting - Edward Vine, Affiliate, Lawrence Berkeley National Laboratory and EEAP Steering Committee Member
11:05–11:40 AM	Presentations: • Abhishek Dhupar, "Sustainable Energy Efficiency Technologies for Improved Energy Performance in MSMEs"; • Sanjay Dube, "Role of Financial De-risking Instruments for Energy Efficiency in Transforming the Market"
11:40–11:55 AM	Moderated audience Q&A -Edward Vine
By 12:00 PM	Concluding comments and vote of thanks

Introduction and Context Setting

Edward Vine, *Affiliate, Lawrence Berkeley National Laboratory (LBNL) and Steering Committee Member, EEAP*

Ed introduced EEAP as a community of practice established in 2018 to strengthen objective evaluation of energy-efficiency and renewable-energy policies and programmes across the Asia-Pacific region. EEAP promotes collaborative, data-driven learning through webinars, conferences, workshops, capacity building, and web-based knowledge resources.

He framed evaluation around three practical questions: which actions pay off, how programmes and policies can be improved, and what can be scaled. He also emphasized post-implementation monitoring and the need to assess policy adoption, behavioural change, and wider economic and environmental benefits, not only energy savings or production.

Against a backdrop of climate change, artificial intelligence, environmental risk, and declining trust in science, Ed underscored the importance of credible evidence for decision-making. He also announced EEAP's first virtual conference, scheduled for 1 October 2026, and invited abstract submissions.

Why MSME energy efficiency matters

MSMEs support employment, industrial growth, and local economic development, but many continue to use inefficient motors, boilers, compressors, heating and cooling systems, and production equipment. Adoption is constrained by high upfront costs, limited technical capacity, uncertainty about savings, and restricted access to affordable finance. The webinar therefore examined two complementary levers: suitable technologies and financing mechanisms that make those technologies accessible and investable.

1. Sustainable Energy Efficiency Technologies for Improved Energy Performance in MSMEs

Abhishek Dhupar, *Associate Director, International Institute for Energy Conservation (IIEC)*

Abhishek used the GEF-6 "Creating and Sustaining Markets for Energy Efficiency" programme in India to illustrate how technology, business models, policy support, and evaluation can combine to transform markets. The programme began in 2018 with the Asian Development Bank (ADB) and United Nations Environment Programme (UNEP) as implementing agencies and Energy Efficiency Services Limited (EESL) as the principal executing entity. IIEC joined the programme in 2024 with UNEP support.

Three programme components

- **Scale established markets:** expand proven technologies such as LED lighting, super-efficient fans, and air conditioners to deliver large energy and greenhouse-gas savings.
- **Diversify into under-penetrated technologies:** develop markets for industrial and building solutions such as premium-efficiency motors, heat pumps, waste-heat recovery, industrial automation, compressors, blowers, and pumps.
- **Strengthen the super-ESCO model:** enable EESL to aggregate demand, procure at scale, finance projects, and replicate solutions across public and private end-use sectors.

Technology portfolio and system perspective

The portfolio spans efficient appliances and industrial systems. Appliance programmes include LED lighting, five-star ceiling fans, and air conditioners that exceed prevailing efficiency benchmarks. Industrial opportunities include IE3 and IE4 motors, heat pumps, waste-heat recovery, automation, compressors, blowers, and pumps.

> **Practical insight:** Efficiency gains are larger when projects optimize a complete motor-driven system, such as a motor plus pump, compressor, or blower, rather than replacing only the motor. In the Q&A, Abhishek estimated that motor replacement alone may yield up to about 10% savings, while system replacement can raise savings to roughly 20–30%.

Four business models used to reach different customers

- **Upfront purchase:** the customer pays in full; this is suited to proven, plug-and-play products for which energy savings are straightforward to estimate.
- **On-bill financing / utility demand-side management:** utilities aggregate customers and recover equipment costs through electricity bills or instalments, using their existing customer relationships and trust.
- **Shared-savings ESCO model:** EESL invests and is repaid from monetized energy savings, reducing the customer's upfront burden.
- **Low-cost finance plus technical assistance:** interest subvention, energy audits, feasibility studies, and measurement, reporting and verification (MRV) make adoption more affordable and credible for MSMEs.

From Demonstration to Market Transformation

Aggregation, procurement, and financing

As a super-ESCO, EESL aggregates demand and conducts bulk procurement. For motors, this approach can narrow the price gap between higher-efficiency and conventional equipment. Offers may also include extended warranties, sample audits, MRV support, and project-management services. For small and medium enterprises, an ESCO can finance the investment and recover costs over time, incorporating equipment, service, and financing costs into one proposal.

Demonstrating less-penetrated technologies

IIEC supported technical assistance for secondary-steel and textile clusters. More than 100 expressions of interest were received, with implementation completed in 32 units across four clusters. Solutions included heat exchangers, boiler waste-heat recovery, industrial automation, IE4 motors, and screw compressors with permanent-magnet motors.

Abhishek reported approximately USD 7 million in monetary savings against investment of about USD 2.8 million across these interventions, indicating an attractive aggregate payback. These figures were presented as programme results and should be interpreted alongside detailed project reports and MRV methods.

How to evaluate a market-transformation programme

- **Policy and standards:** Did the programme influence standards, minimum energy-performance requirements, guidelines, or enabling policies? Examples included work on industrial heat-pump standards and efforts to advance IE3 motors as a minimum standard.
- **Supply-side change:** Did availability, supplier participation, quality, and cost improve? India's LED market was cited as an example of rapid price reduction and supplier expansion.
- **Demand-side change:** Did awareness, confidence, feasibility support, and suitable business models increase adoption?
- **Access to finance:** Did the programme reduce financing costs, upfront-cost barriers, collateral requirements, or perceived performance risk?
- **Verified results:** Were energy savings, resource savings, operating-cost reductions, and greenhouse-gas reductions measured credibly and independently verified?

Multiple benefits

Beyond energy and emissions, programme evaluation should examine productivity, equipment reliability, resource efficiency, operating costs, competitiveness, livelihoods, and gender mainstreaming. Abhishek emphasized that technologies such as high-efficiency motors, variable-frequency drives, heat pumps, waste-heat recovery, and efficient compressors can improve production systems as well as reduce consumption.

Persistent implementation challenges

High upfront costs, limited awareness, uncertainty about technology performance, and weak confidence in savings remain important barriers. Feasibility studies, technical assistance, service-based models such as cooling-as-a-service, credible MRV, and energy-savings insurance can help address these constraints.

2. Financial De-risking Instruments for Energy Efficiency Market Transformation

Sanjay Dube, *President and CEO, International Institute for Energy Conservation (IIEC)*

Sanjay focused on the financing gap that continues to slow energy-efficiency adoption, particularly in developing economies. Although capital and technical expertise exist, projects are often perceived as complex, costly, data-poor, or risky. Financial institutions may lack technical understanding, while energy-efficiency practitioners may lack financial expertise. Effective market development therefore requires these communities to work together.

Risks that constrain investment

- Perceived high capital requirements, transaction costs, and long payback periods—even where actual paybacks may be shorter.
- Insufficient technology and performance data, which reduces lender confidence and complicates validation.
- Limited technical knowledge among lenders, insurers, and other market actors.
- Evolving or weakly implemented policy and regulatory frameworks.
- Uncertainty about technology performance, energy savings, and ESCO capability.
- Split incentives and collateral requirements that prevent otherwise viable projects from proceeding.

Established instruments and their sustainability challenge

Common instruments include partial-risk or credit guarantees, performance contracts, green bonds and loans, contingent grants, dedicated credit lines, and technical assistance. Guarantees can encourage banks to lend, but donor- or programme-backed facilities often have a fixed life. When a facility ends, lending may contract again. Sanjay argued that durable market transformation requires mechanisms that can continue through private-sector institutions.

Emerging performance-risk solutions

Two related approaches are gaining attention: performance guarantees and market-based energy-efficiency insurance. Rather than focusing only on borrower credit risk, these mechanisms address whether the project will deliver the stipulated energy savings.

Energy savings insurance model

- A standardized contract defines the expected performance and obligations of the ESCO and client.
- A third-party insurer covers an eligible shortfall in stipulated savings in exchange for a premium.
- Independent validation and annual verification support claims management and maintain confidence in the savings.
- A bank finances the project, sometimes supported by an additional credit guarantee or programme facility.
- If covered savings fall short because of specified risks, the insurance responds, reducing stress for the MSME, ESCO, and lender.

Why De-risking Matters and What Evaluation Should Test

Potential market benefits

- Transfers defined performance risk away from the project balance sheet and reduces financial exposure for MSMEs, ESCOs, and lenders.
- Can improve ESCO creditworthiness and help smaller firms compete for projects.
- May reduce collateral requirements and lower financing costs by giving lenders greater confidence in project performance.
- Creates stronger incentives for robust technology assessment, contracts, MRV, and annual validation.
- Supports a shift from public-sector-led pilots toward scalable, private-sector delivery.

Sanjay indicated that premiums may currently be around 2–3% in the models discussed, while stressing that detailed product design and local conditions determine actual costs and coverage.

Evaluation dimensions for de-risking programmes

- **Policy and regulatory readiness:** Do insurance and financial regulations permit the proposed product and claims structure?
- **ESCO implementation capability:** Can participating ESCOs identify, design, deliver, and maintain quality projects?
- **Bankability:** Can MSMEs and ESCOs prepare credible proposals, cash-flow projections, and repayment structures?
- **Technology data and MRV:** Are baselines, savings calculations, monitoring data, and validation methods reliable and transparent?
- **Institutional readiness:** Do banks, insurers, auditors, validators, and programme managers understand their roles and collaborate effectively?
- **Market size and targeting:** Is the selected MSME cluster or sector large and coherent enough to aggregate projects efficiently?
- **Capacity building:** What knowledge and operational gaps must be addressed for each stakeholder group?

Challenges to address during pilots

Key uncertainties include evolving regulation, uneven ESCO capacity, continued barriers to finance, the need to replace collateral, limited insurer familiarity with validating energy savings, and targeted capacity-building requirements in emerging economies. These are not only implementation issues; they should become explicit evaluation questions, indicators, and learning priorities from the start.

> **Evaluation implication:** A de-risking instrument should not be judged only by the value of finance mobilized. Evaluation should also test additionality, project quality, verified savings, default and claims experience, transaction costs, inclusiveness, market persistence after public support ends, and whether private institutions continue offering the mechanism.

Moderated Audience Q&A

The Q&A was moderated by Edward Vine and focused on the role of ESCOs, the value of multiple benefits, and technologies with short payback periods.

How is the ESCO market developing?

Sanjay described energy-efficiency market de-risking as a global agenda rather than an India-only effort. In India, donor-supported programmes and the creation of EESL as a super-ESCO helped demonstrate how ESCOs can operate at scale when their capacity, technology offer, and access to finance are strengthened. Similar concepts are being developed in the Philippines and Indonesia. He argued that long-term transformation depends on moving from predominantly public programmes toward capable private-sector delivery.

Do MSMEs value multiple benefits?

Abhishek explained that awareness and priorities vary by enterprise size. MSMEs often prioritize immediate revenue gains and cost reductions, while large firms may give greater weight to productivity, carbon-market requirements, export competitiveness, and net-zero commitments. The benefits may be recognized across firms, but the way they should be framed—and the investment case used—must reflect each customer's priorities and purchasing power.

Which technologies can offer short paybacks in tropical, high-humidity sectors?

For food processing, cold chain, logistics, hospitality, and light manufacturing, Abhishek identified motors and motor-driven systems as a strong cross-sector opportunity. He suggested typical paybacks of around two to two-and-a-half years, noting that system-level replacement can unlock larger savings than motor replacement alone. Final technology choices should nevertheless follow a site-specific audit because operating hours, load profile, equipment condition, tariffs, maintenance, and climate all affect the business case.

Consolidated Key Takeaways

- Technology and finance are complementary: efficient equipment will not scale if MSMEs cannot afford or trust the investment.
- System optimization is often more valuable than component replacement, particularly for motor-driven equipment.
- Aggregation, bulk procurement, on-bill finance, shared savings, and interest support can reduce upfront barriers for different customer segments.
- Insurance and performance guarantees can shift attention from borrower credit alone to the reliability of energy savings.
- Credible baselines, MRV, independent validation, standardized contracts, and clear risk allocation are foundational not administrative extras.
- Market-transformation evaluation should cover policy, supply, demand, finance, verified energy and emissions results, multiple benefits, and persistence.
- Capacity building must connect energy experts, finance institutions, insurers, ESCOs, MSMEs, regulators, and evaluators.

Presenters' Bios

Abhishek Dhupar

Associate Director, International Institute for Energy Conservation (IIEC)

Abhishek is a senior energy-efficiency specialist with more than 15 years of experience across government, private-sector, and development organizations, particularly in industrial energy efficiency, cooling and heating, and clean-energy technologies. He has worked with organizations including BEE, BIS, EESL, UNEP, the World Bank, ADB, GIZ, CLASP, and industry associations. His work includes national motor replacement, super-efficient air conditioners, heat-pump design tools, waste-heat recovery, cooling-as-a-service, impact assessment, and clean-energy policy advocacy. He is an electrical engineer with postgraduate qualifications in marketing and information technology and is a certified Energy Management and Climate Action professional.

Sanjay Dube

President and CEO, International Institute for Energy Conservation (IIEC)

Sanjay is an internationally recognized clean-energy, clean-transport, and environmental expert with 38 years of experience leading programmes supported by organizations including the World Bank, UNEP, UNDP, GIZ, SDC, OECD, ADB, and CCAC. He advises governments, industry, civil society, and international organizations. In India, his work has contributed to appliance standards and labelling, the Energy Conservation Building Code, clean-air programmes for industry and transport, clean transport, and industrial waste-heat recovery. He has also served as visiting faculty at the University of Oslo's International Summer School.