INSTITUTE FOR
Sustainable
Communities

Harnessing the Power of Markets to Drive SME CleanTech Adoption in India

Identification and Analysis of Business Models

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Note: All photos in this report are from ISC's SME CleanTech project and illustrate different clean technologies being piloted in India. All financial data is in USD unless otherwise noted.

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EXECUTIVE SUMMARY

India's industrial sector is characterized by energy intensity that is among the highest in the world,[1] emitting 300.62 MMtCO_2 per year.[2] Perhaps not surprisingly, air pollution in India was the cause of 1.24 million premature deaths in 2017, a staggering 12.5% of deaths recorded that year.[3] The economic costs of India's pollution, resulting from higher health care expenditures and a less productive workforce, are estimated at $0.5 trillion annually.[4]

Accelerating the adoption of Energy Efficiency (EE) is one of the most cost-effective ways to mitigate the health and other impacts of India's carbon-intense economy, with the International Energy Agency (IEA) stating that "energy efficiency is the first fuel of a sustainable global energy system. It can mitigate climate change, improve energy security and grow economies while delivering environmental and social benefits."[5] Similarly, the United Nations Environmental Programme (UNEP) includes industrial energy efficiency in its top 25 science-based solutions to address air pollution in Asia.[6]

Despite these environmental, technical, and financial benefits of EE for industry, EE investments are not occurring at scale in India. Barriers – particularly for SMEs – include insufficient awareness of EE options and benefits; limited capacity to adopt new technologies; high up-front costs; and a lack of access to credit. The latter arises not because funds are lacking, but because financial institutions (FIs) do not have confidence in the bankability of energy efficiency projects. Moreover, as pointed out by Association of Southeast Asian Nations (ASEAN),[7] technical, financial, and manufacturing stakeholders are not adequately collaborating, thereby compromising the potential for removing

barriers to EE uptake and catalyzing the EE market.

Against this backdrop, the Institute for Sustainable Communities (ISC), in coordination with Intellecap Private Advisory Services Limited, conducted an in-depth analysis to identify innovative approaches that bundle the technical viability and the positive Return on Investment (ROI) of EE interventions with business models that will advance market-driven adoption of those technologies. Made possible by the MacArthur Foundation and its SME CleanTech grant to ISC and featuring extensive engagement with stakeholders, the study generated seven business models for practical and actionable partnerships that overcome the critical obstacles to SME CleanTech adoption. The top-ranked turnkey solutions are:

"The world's potential for improving energy efficiency remains largely untapped, particularly in developing and emerging countries. The reasons and barriers are diverse, stemming from the policy environment (e.g., sole focus on rapid economic growth with less concern to sustainability), the energy sector itself (e.g., low energy prices), social-cultural aspects, financing problems and lack of information and know-how. One thing we can agree on is it is not a single party problem. Policymakers may be a determining factor, but the* ***success lies in the collaboration of stakeholders, including private sector and financial institutions*."*

-ASEAN Center for Energy

1. Energy Service Company (ESCO) model supported by a guarantee from the Small Industries Development Bank of India (SIDBI) or the Bureau of Energy Efficiency (BEE)
2. ESCO model supported by insurance
3. Direct financing from financial institutions

The models generated considerable excitement among key market actors – including financial institutions such as the Small Industries Development Bank of India (SIDBI) and YES Bank, and ESCOs and technology companies such as Thermax, Forbes Marshall, Siemens, and Schneider Electric – who are now ready to move forward with clean technology investments. **The assessment reaffirms the potential for market-based solutions to unleash the adoption of cleantech by industrial SMEs in India.**

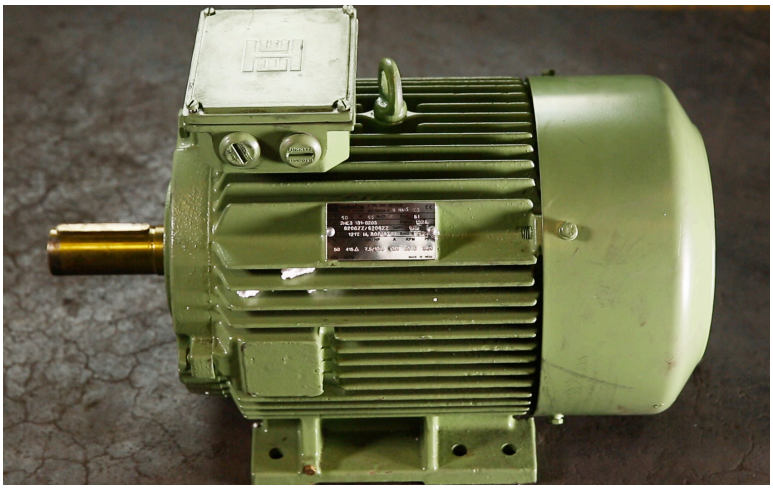
BACKGROUND

India's national manufacturing policy has set a target for the manufacturing sector to contribute 25% to India's Gross Domestic Product (GDP) by 2022, up from its current contribution of 17%. Achieving this goal has major implications for energy and natural resource requirements, given that industry-led growth requires at least 10-times more energy per unit of value added compared with growth led by the services sector[8] and given that India's energy consumption is growing at 4.2% annually, the fastest among major economies in the world.[9]

At the same time, India has committed to ambitious energy efficiency and carbon reduction goals, including cleaner economic development and reduced emission intensity of GDP. The importance of these EE and carbon reduction goals is underpinned by worsening air quality, with air pollution ranked among the top risk factors for ill health in India[10] and more than 50% of India's population living in areas where the air quality exceeds the annual PM2.5 standard (40 µg/m3).[11]

Achieving the goal of an expanding and clean manufacturing sector requires the adoption of new production technologies and processes by Small and Medium Enterprises (SMEs), which constitute 80% of all industrial enterprises in the country, 45% of the country's manufacturing output and 40% of its total exports – in addition to generating 40% of India's carbon emissions.[12] Indeed, the manufacturing sector is the largest consumer of commercial energy in India,[13] which saw the highest rate of industrial energy consumption growth in the world from 2010-17.[14]

Many Indian SMEs are energy-intensive, employing inefficient and outmoded technologies that compromise their competitiveness and future growth. Investments in cost-effective EE measures would improve their productivity and bottom-line profits, but such investments have been relatively minimal due several obstacles, including SMEs' insufficient awareness of EE options and benefits; limited skills to adopt new technologies; and lack of access to credit. A central barrier, according to the World Bank,[15] is financial institutions' lack of awareness of the ROI on EE investments, which usually do not generate additional revenues, but rather contribute to bottom-line earnings through a reduction in energy expenditures. This can make it difficult for banks to identify and capture cash flows from such projects or treat energy savings as assets of sufficient market value to justify a loan, despite the overall benefits. Other barriers to FIs' investment in EE include limited understanding of contractual mechanisms such as Energy Performance Contracts (EPCs) and of Monitoring and Verification (M&V) protocols for assuring performance guarantees; small project size and high transaction costs; perceptions of significant technical and business risks; legal and regulatory frameworks that are not compatible with energy-efficiency investments; and a lack of models that would address these technical and financial barriers, thereby facilitating EE transactions.



SME borrowing data bear this out: despite guidelines from the Reserve Bank of India prioritizing SME lending,[16] the percentage of SMEs taking advantage of institutional finance is very small: less than 12% accessed finance from institutional sources, preferring instead to finance capital expenditures from internal funds or to borrow from informal financing channels.[17] Energy Service Companies (ESCOs) would typically offer an alternative source of financing, based on energy performance contracting (EPCs), but in India they have demonstrate marginal ability to do so. To the extent that they engage with the industrial sector, they tend to focus on large enterprises and on cross-cutting interventions (such as lighting) rather than more capital-intensive and complex interventions.[18] Barriers to their market penetration include access to finance, similar to the SMEs they could potentially serve, particularly among small ESCOs.

METHODOLOGY

ANALYSIS OF TECHNOLOGIES

ISC's selected five technologies for the market analysis, including two technologies whose financial feasibility has already been demonstrated by the SME CleanTech project (energy-efficient motors and low-grade Waste-Heat Recovery (WHR)) as well as three additional technologies with a high potential for scale-up (boiler automation, fuel change, and compressors). Results are summarized below, demonstrating that **nearly all five technologies included in the market analysis generate a positive ROI in less than two years** while also resulting in significant energy savings and therefore reduced CO_2 emissions.

NAME OF TECHNOLOGY	APPLICATIONS/ CLUSTERS	TICKET SIZE PER SME (AVERAGE)	AVERAGE SAVINGS OF ENERGY PER SME	PAYBACK PERIOD FOR SMES
Waste Heat Recovery	Textile, Chemical, Dairy	INR 23,83,000	~20,00,000 kCal/day	1.5 yrs – 1.7 yrs
Boilers Automation	Textile, Chemical, Re-rolling, Foundry	INR 10,00,000	~250 MT of coal	8 months – 1 year
Fuel change for boilers	Textile, Chemical, Re-rolling	INR 8,23,000	11.4 Ton Oil Equivalent	3 yrs – 3.5 yrs
Motors	Textile, Ceramic, Chemical Foundry, Forging, Auto components, Plastic Re-rolling, Light engineering	INR 75,000	~7000 KWH	1 yrs – 1.5 yrs
Compressors	Textile, Ceramic, Chemical Foundry, Forging, Auto components, Plastic Re-rolling, Light engineering	INR 1,00,000	140,000 KWH	9 months – 1.2 yrs

IDENTIFICATION OF POTENTIAL BUSINESS MODELS

ISC considered seven possible business models for the promotion of energy efficiency interventions, drawing on international models and approaches and aligning them with available market players in India.

DESCRIPTION OF MODEL	SALIENT FEATURES	KEY ACTORS
ESCO model supported by SIDBI/BEE guarantee	• Financial institution provides credit to ESCOs supported by partial risk guarantee from SIDBI/BEE • Partial risk guarantee provided by SIDBI/BEE with 1% fees • SME repays ESCO based on energy savings	• ESCO – equipment supplier • Financial institution – financier for equipment • SME – consumer • SIDBI/BEE – technology risk insurance to lenders
ESCO model supported by insurance	• Savings from energy efficient technologies will be insured by an insurance company • Insurance will ensure no loss to the ESCO and thus payment to financial institution will be mandated • Insurance could also be provided by government agencies and backed by BEE	• ESCO – equipment supplier • Financial institution – financier for equipment • SME – consumer • Insurance agency – insurance on asset performance, business interruption
Direct financing from financial institutions	• 30% contribution by credit-worthy SME • Provision of debt by financial institutions due to improved economics	• ESCO – equipment supplier • Financial institution – financier for equipment • SME – consumer
Shared Saving/ ESCO Model	• Financing by ESCO • Supports SMEs that cannot get low-cost financing • ESCO charges service fees covered by SME's savings from the EE technologies	• ESCO – equipment supplier and financier • SME – consumer
ESCO model with escrow mechanism to minimize risk of default (with a tripartite agreement between financial institution, ESCO, and SME)	• Financing by financial institution on non-collateral basis • SME receivables and savings are attached to escrow account • Bank and ESCO will have first and second charge respectively on the receivables	• ESCO – equipment supplier • Financial institution – financier for equipment • SME – consumer
Leasing model in partnership with ESCOs/leasing agency	• ESCO/leasing agency procure EE technologies • ESCO/leasing agency provide financing support to SME • Supports SMEs that are unable to provide upfront financing	• ESCO/leasing agency - financing • SME – consumer
Energy efficiency bonds	• ESCOs aggregate SMEs/ projects and provide list of the aggregated pool for raising funds • Financial institution will issue the bond in public markets • Investors will subscribe to the bond and provide capital which will be supplied to ESCO for implementing projects	• ESCO – equipment supplier • SME – consumer • Financial institution – issuer of bond • Investors – subscriber of bond

ENGAGING INDIA'S CLEANTECH ECOSYSTEM

Analysis of the technologies and the business models featured a variety of interviews and focus group discussions with a spectrum of stakeholders engaged in India's CleanTech ecosystem, as well as a convening at the conclusion of the analysis to discuss results and next steps. These stakeholders included the following:

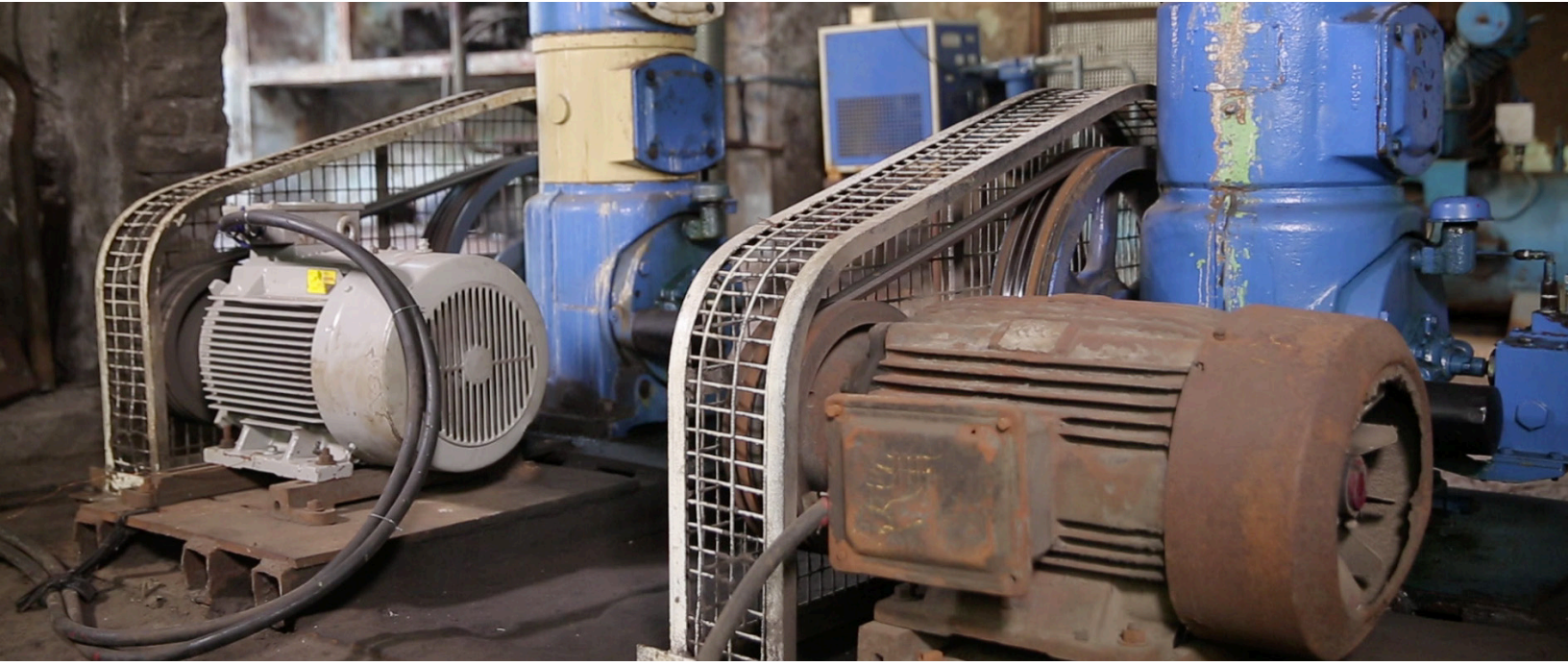
- **ESCOs:** Energy Efficiency Services Limited (EESL), Enfragy Solutions, Bhagwat Tech, Energised Solution India, Thermax, and IDAM Infra
- **Financial Institutions:** SIDBI, YES Bank, Meghraj Capital Advisors, Aditya Birla Capital, and IREDA
- **Insurance Companies:** TATA AIG, ICICI Lombard, LIC, United India, IFFCO Tokio, Bajaj Allianz, and HDFC Ergo
- **Government:** Bureau of Energy Efficiency (BEE)
- **NGOs / Think Tanks:** The Energy Resource Institute (TERI), Alliance for Energy Efficient Economy (AEEE), Foundation for MSME Clusters (FMC), the International Institute for Energy Conservation, and Stenum-Asia

Discussions with these stakeholders corroborated ISC's earlier assessment of the barriers to CleanTech adoption by SMEs. ESCOs, for example, highlighted the importance of demand aggregation to facilitate engagement of large ESCOs with SMEs and the ongoing need to raise SME and Financial Institution (FI) awareness of the technical and financial benefits of CleanTech interventions. FIs emphasized the need to mitigate risk in financing SMEs, to access more detailed information about the viability of CleanTech interventions, and to expand the pipeline of bankable CleanTech projects. Energy efficiency consultants reiterated the importance of access to information while also stressing the need for performance guarantees and after-sales service.

RANKING OF BUSINESS MODELS AND ENERGY EFFICIENCY TECHNOLOGIES

Following the selection of technologies and the identification of potential business models, ISC analyzed them according to stakeholder acceptance and viability, using primary research and in-depth stakeholder consultations to understand the challenges faced by ESCOs and SMES in implementing EE interventions, and to consider that contextual factors confronting financial institutions in providing finance to the sector. The business models and technologies were then analyzed according to four broad parameters:

- **State of the market:** availability and maturity of business model components; ease of implementation
- **Potential for financing:** return potential (Internal Rate of Return (IRR) and Debt Service Coverage Ratio (DSCR); ease of recovery, and dependence on external stakeholders
- **Impact on SMEs:** upfront investment requirement, savings potential, and liability/risk
- **Attractiveness to ESCOs:** ROI, recovery of investment, and ease of finance



RESULTS

PRIORITIZATION OF BUSINESS MODELS

Generating heat-map analyses illustrated in Attachments 1 and 2, ISC prioritized the following three business models as having the highest potential for accelerating CleanTech adoption. This prioritization also considered potential challenges to effective implementation, and generated strategies for mitigating those challenges.

BUSINESS MODELS	CHALLENGES IN EFFECTIVE IMPLEMENTATION	MITIGATION STRATEGIES FOR EFFECTIVE IMPLEMENTATION
ESCO model supported by SIDBI/BEE guarantee	• Lack of capital and resources with ESCOs which limits creation as well as aggregation of demand • Lack of awareness about the scheme at the grassroots level among ESCOs/ SMEs • Non-availability of data towards applications for availing loan (under this scheme) and integrated rejection criteria • Non-categorization of loan towards energy efficiency from the banks (thus limited refinancing)	• Technical assistance support to ESCOs for demand creation as well as demand aggregation • Promotion of the existing SIDBI scheme among ESCOs/ SMEs both offline and online (especially at the local level) • Development of portal/ tool for collection of data on application and analysis of rejection • Promotion/ development of policy towards categorization of loans for energy efficiency
ESCO model supported by insurance	• Non-availability of ecosystem (especially the presence of insurance agencies) due to non-standardization of SMEs and their business practices • Very few/ negligible use cases on the result/benefit of Energy Efficient Technologies (EETs) • Insurance charges/ premiums may be expensive for SMEs leading to reluctance towards adoption especially due to non-revenue nature of installation	• Develop new mechanism/ insurance product for EET sector and demonstrate (pilot, proof-of-concept) through effective partnerships • Technical assistance to insurance agencies for pricing of risk towards innovative and upcoming EETs

BUSINESS MODELS	CHALLENGES IN EFFECTIVE IMPLEMENTATION	MITIGATION STRATEGIES FOR EFFECTIVE IMPLEMENTATION
Direct financing from financial institutions	• Provision of high interest rate from financial institutions for a non-revenue generating activity (for SME) • Lack of awareness on the EETs to the financial institution which can provide loans to EETs • Risk of payment to financial institutions due to non-realization of savings to SMEs post installation	• Dedicated facility or intervention from government/ donors/ DFIs (provision of grant capital or concessions finance) to reduce the rate of interest • Technical assistance to financial institutions for communication on risks and rewards from EETs • Promote insurance product that can provide assurance to FIs. This insurance product could cover product liability and asset performance which will help FI to recover debt

PRIORITIZATION OF TECHNOLOGIES

The heat-map analysis of energy efficiency technologies generated the following ranking:

1. Energy-efficient motors (maturing ecosystem due to support of EESL with easy replacement potential)
2. Waste heat recovery systems (maturing ecosystem with one of the largest saving potential EET)
3. Boiler automation (matured ecosystem with high return potential to financial institutions)

MARKET STAKEHOLDERS READY TO OPERATIONALIZE MODELS FOR CLEANTECH SCALE-UP

Commercial actors and other stakeholders, including BEE, ESCOs, and FIs, highlighted their interest in exploring partnerships upon learning about the market analysis results at a convening in June 2019. For example, SIDBI and BEE confirmed their willingness to partner with ISC on CleanTech adoption under their Partial Risk Sharing Facility (PRSF) and Partial Risk Guarantee Funds (PPRGF), respectively. A detailed profit, loss, and risk analysis will be necessary to support the stakeholders' decision-making and marketplace testing. Technical assistance will also be helpful in supporting the launch and initial commercialization of these models.

ATTACHMENT 1: ANALYSIS OF BUSINESS MODELS

Technology/Model		Model 1: Direct financing from financial institutions	Model 2: Shared Saving/Energy Servicing Company (ESCO)	Model 3: Escrow mechanism with a tripartite agreement between financial institution, ESCO, and SME	Model 4: ESCO model supported by insurance	Model 5: Leasing model in partnership with ESCOs/ leasing agency	Model 6: Energy efficiency bonds to finance EETs	Model 7: Energy Servicing Company (ESCO) Model supported by SIDBI/BEE guarantee
Salient Features of Models		Accelerated depreciation benefit to SME. Interest Rate 9-12%	Zero Investment by SME. Interest Rate for ESCO 9-12%	Equated Monthly Installment (EMI) payment secured, ESCO covers Escrow account cost. Interest Rate for ESCO 9-11%	Insurance company covers asset performance and business interruption risks. Interest Rate for ESCO 9-11%	Leasing agency invests for SME AD benefit to SME. Interest Rate >20%	Large scale projects implementation. Interest Rate 8-10%	SIDBI/BEE covers technology risk with 1% fees of 75% loan amount. Interest Rate for ESCO 8.5-10%
Market	Ecosystem availability	7	6	4	1	3	2	5
	Ecosystem maturity	7	6	4	1	3	2	5
	Ease of Implementation	7	6	3	2	5	1	4
Ease of Finance	Return (DSCR/IRR)	7	3	1	2	4	5	6
	Recovery potential	5	2	4	7	3	1	4
	Dependence on external stakeholders	7	5	6	2	4	1	3
Preference of SME	Investment requirement	1	7	5	6	2	4	3
	Liability of SME	1	5	6	7	2	4	3
	Saving potential	7	1	3	6	5	2	4
Preference of ESCO	Potential of return	1	2	4	7	6	3	5
	Risk recovery	1	3	4	7	5	2	6
	Ease of finance	1	2	5	7	3	4	6
	TOTAL	**52**	**48**	**49**	**55**	**45**	**31**	**54**

Note on Scoring: Each business model has been scored on a scale of 1-7, with 7 equal to most effective and 1 equal to least effective.

Conclusion:

1. **Most effective model**: Model 4 – ESCO model supported by insurance (a highly effective model for which ecosystem work is needed for it to advance)
2. **Second most effective model:** Model 7 – ESCO model supported by SIDBI/BEE guarantee
3. **Third most effective model:** Model 1 – Direct financing from financial institutions

ATTACHMENT 2: ANALYSIS OF ENERGY EFFICIENCY TECHNOLOGIES

Technology/Dimensions		Boilers Automation	Energy Efficient Compressor	Energy Efficient Motors	Waste Heat Recovery	Fuel Change
Market	Ecosystem availability	3	2	5	4	1
	Technology maturity	4	1	2	3	5
	Ease of Implementation	5	2	3	4	1
Ease of Finance	Return (DSCR/IRR)	5	2	3	4	1
	Recovery of investment	3	4	5	1	2
	Dependence on external stakeholders	1	4	5	3	2
Preference of SME	Investment requirement	2	4	5	1	2
	Libaility	5	2	3	4	1
	Saving potential	1	3	5	4	2
Preference of ESCO	Potential on Investment	4	2	3	5	1
	Recovery of Investment	1	5	4	2	3
	Ease of finance	2	4	5	3	1
TOTAL		**36**	**35**	**48**	**38**	**22**

Note on Scoring: Each technology has been scored on a scale of 1-5, with 5 equal to most effective and 1 equal to least effective.

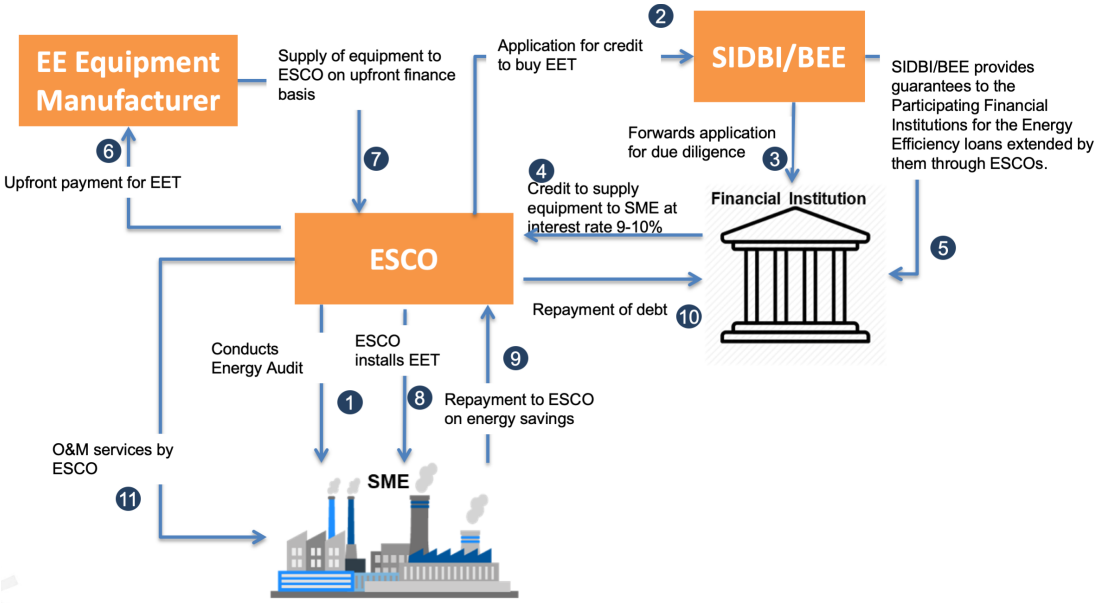
Conclusion:

1. **Most preferred EET:** Energy efficient motors (maturing ecosystem due to support of EESL with easy replacement potential)
2. **Second most preferred EET:** Waste heat recovery systems (maturing ecosystem with large savings potential)
3. **Third most preferred EET:** Boilers automation (matured ecosystem with high return potential to financial institutions)

ATTACHMENT 3: CASE STUDY - ENERGY EFFICIENT MOTORS

The following pages illustrate the application of the top-ranked business models to EE motors, a clean technology intervention that ISC has piloted in coordination with EESL and the National Motor Replacement Program (NMRP).

BUSINESS MODEL 1: ESCO MODEL SUPPORTED BY SIDBI/BEE GUARANTEE



In this model,[19] SIDBI and BEE provide partial guarantees to financial institutions for EE technologies under their Partial Risk Guarantee Facility (PRGF) and Partial Risk Sharing Facility (PRSF), respectively, thereby enabling financial institutions to offer loans at a lower interest rate. Illustrative calculations are presented in the table on the next page.

1. The **ESCO** conducts an energy audit for the SME and recommends modifications to achieve energy efficiency;
2. The **ESCO** prepares the business case, including technical Detailed Project Report (DPR), and submits it to SIDBI/BEE;
3. **SIDBI**/BEE sends the application to empaneled financial institutions for due diligence of the project and the ESCO;
4. The **Financial Institution** conducts due diligence and approves the loan for the ESCO, at an interest rate of 9%-10% provided the ESCO invests 25%-30% in the project;
5. **SIDBI/BEE** provides guarantees to participating financial institutions (banks, NBFCs) for EE loans extended by them through the ESCOs, guaranteeing 70-75% of the loan amount and charging 1% of the loan amount as fees;

6. The **ESCO** advances payment to the equipment manufacturer / supplier;
7. The **equipment manufacturer / supplier** supplies the EE equipment to the ESCO;
8. The **ESCO** installs the equipment for the SME and signs an agreement for repayment based on the generated energy savings;
9. The **SME repays the ESCO** based on the energy savings;
10. The **ESCO repays the loan** based on receivables from the SME;
11. The **ESCO** maintains the equipment throughout the contracted period, as the ESCO's revenue is dependent on the performance of the equipment.

If the ESCO is able to claim accelerated depreciation benefits,[20] it will derive a tax savings of INR 197,897 as indicated below, with the accompanying changes in equity IRR and average DSCR shown in the Illustrative Calculations table below.

TAX SAVINGS DUE TO ACCELERATED DEPRECIATION (AD) BENEFITS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Rates of prescribed AD benefits according (see Endnote #18)	40%	40%	40%	40%	40%	
Depreciation absorbed in percentage each year	40%	24%	14.4%	8.64%	5.18%	
Tax savings due to AD, with income tax level of 25% (in INR)	85,837	51,502	30,901	18,541	11,116	197,897

Illustrative Calculations

SME savings for 5 years without SME investment: INR 1,556,108 (USD 21,864)

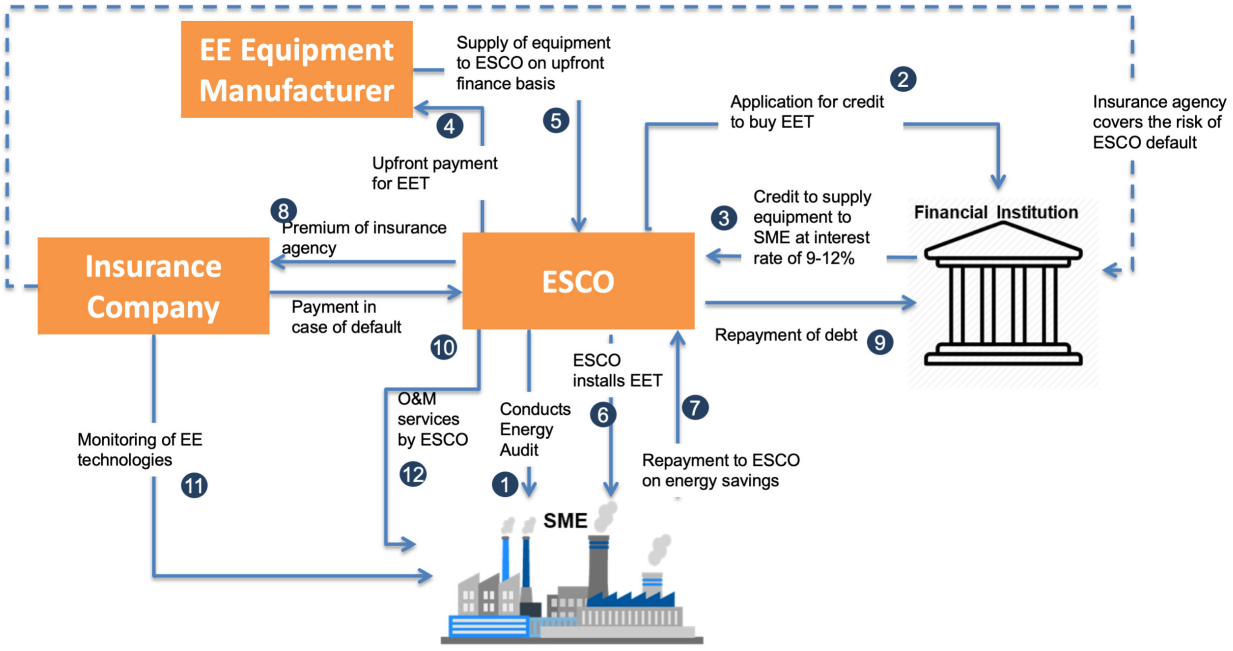
PARAMETERS	UNIT	VALUES
Number of Motors per SME	No	50
Investment for 50 motors, including taxes	INR	858,372
Equity portion (30% of capital cost) for ESCO	INR	257,511
Debt portion (70% cost of capital) for ESCO	INR	600,860
SIDBI/BEE fees paid by ESCO	%	1
Financial Institution debt interest rate paid by ESCO	%	9
Total debt interest rate + SIDBI/BEE fees to be paid by ESCO	%	10
Contract period	Years	5
Operations & Maintenance cost paid by ESCO over 5 years	INR	42,918
Equity IRR without Acceleration Depreciation benefits	%	36.01
Average DSCR ration without Acceleration Depreciation benefits	x	1.30
Estimated Annual Energy Savings from EE motors	kWh	77,805
Fixed Electricity Tariff	INR/kWh	8
Estimated total annual energy cost savings	INR	622,440
ESCO share in savings	%	50
Annual payout to ESCO	INR	311,222
Annual cost savings by SME (1/2 total savings)	INR	311,222

With Accelerated Depreciation benefits to the ESCO:

Tax savings	INR	197,897
Equity IRR	%	56.05
Average DSCR ratio	x	1.51

Total savings to SME over 5 years	**INR**	**1,556,108**

BUSINESS MODEL 2: ESCO MODEL SUPPORTED BY INSURANCE



In this model,[21] an insurance company insures the energy savings and thus ensures debt repayment, with the premium slightly higher due the nascent nature of EE technologies; financial institutions offer a lower interest rate (from 12% to 11%) due to the repayment risk being covered by insurance. Illustrative calculations are presented in the table on the next page.

1. The **ESCO** conducts an energy audit for the SME and recommends modifications to achieve energy efficiency;
2. The **ESCO** prepares the business case, including technical DPR, and applies for a loan from a financial institution;
3. The **Financial Institution** conducts due diligence and approves the loan for the ESCO, at an interest rate of 9%-12% provided the ESCO invests 25%-30% in the project;
4. The **ESCO** advances payment to the equipment manufacturer / supplier;
5. The **equipment manufacturer / supplier** supplies the EE equipment to the ESCO;
6. The **ESCO** installs the equipment for the SME and signs an agreement for repayment based on the generated energy savings;
7. The **SME repays the ESCO** based on the energy savings;
8. The **ESCO pays the insurance premium** to the insurance company to cover asset performance, material damage, and business interruption, thereby ensuring ability to repay the financial institution as required;
9. The **ESCO repays the loan** based on receivables from the SME;
10. The **insurance company** covers the loss (if any) incurred by the ESCO (due to

underperformance of equipment, insufficient generation of savings, or business interruption);

11. The **ESCO** maintains the equipment throughout the contracted period, as the ESCO's revenue is dependent on the performance of the equipment.

If the ESCO is able to claim accelerated depreciation benefits,[22] it will derive a tax savings of INR 197,897 as indicated below, with the accompanying changes in equity IRR and average DSCR shown in the table below.

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Financial Institution debt interest rate paid by ESCO	%	11.00
Contract period	Years	5
Operations & Maintenance cost paid by ESCO over 5 years	INR	42,918
Insurance cost for asset performance & energy savings(1.5% of total investment as discussed with insurance agencies)	INR	12,875
Equity IRR without Acceleration Depreciation benefits	%	33.52
Average DSCR ration without Acceleration Depreciation benefits	x	1.26
Estimated Total Annual Energy Savings from EE motors	kWh	77,805
Fixed Electricity Tariff	INR/kWh	8
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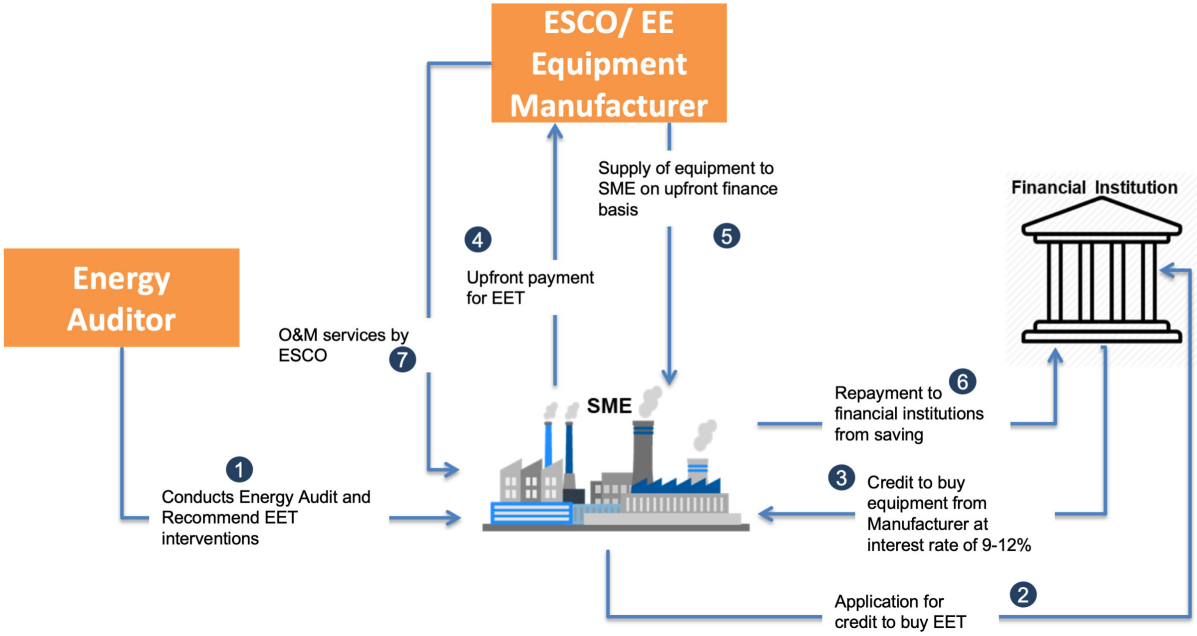
Annual payout to ESCO	INR	311,222
Annual cost savings by SME (1/2 total savings)	INR	311,222

With Accelerated Depreciation benefits to the ESCO:

Tax savings	INR	197,897
Equity IRR	%	50.59
Average DSCR ratio	x	1.43

Total savings to SME over 5 years	**INR**	**1,556,108**

BUSINESS MODEL 3: DIRECT FINANCING FROM FINANCIAL INSTITUTIONS



In this model,[23] for which illustrative calculations are presented in the table on the next page.

1. A certified **energy auditor** conducts energy audits for the SME recommends modifications to achieve energy efficiency;
2. The **SME** applies for a loan from a financial institution to implement the energy auditor's recommended interventions;
3. The **Financial Institution** conducts due diligence and approves the loan for SME, at an interest rate of 9%-12% provided the SME invests 25%-30% in the project;
4. The **SME** advances payment to the ESCO/ equipment manufacturer / supplier;
5. The **ESCO/ equipment manufacturer / supplier** supplies the EE equipment to SME;
6. The **SME** repays the loan to the financial institution from the energy savings;
7. The **ESCO/ equipment manufacturer / supplier** provides operations and maintenance services to the SME over contracted period.

If the company is able to claim accelerated depreciation benefits,[24] it will derive a tax savings of INR 197,897, as indicated below, with the accompanying changes in equity IRR and average DSCR shown in the table on the next page.

TAX SAVINGS DUE TO ACCELERATED DEPRECIATION (AD) BENEFITS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Rates of prescribed AD benefits according (see Endnote #18)	40%	40%	40%	40%	40%	
Depreciation absorbed in percentage each year	40%	24%	14.4%	8.64%	5.18%	
Tax savings due to AD, with income tax level of 25% (in INR)	85,837	51,502	30,901	18,541	11,116	197,897

Illustrative Calculations

SME savings for 5 years with 30% investment: INR 3,310,097 (USD 46,547)

PARAMETERS	UNIT	VALUES
Number of Motors per SME	No	50
Investment for 50 motors, including taxes	INR	858,372
Equity portion (30% of capital cost) for ESCO	INR	257,511
Debt portion (70% cost of capital) for ESCO	INR	600,860
Debt interest to be paid by SME	%	12.00
Contract period	Years	5
Operations & Maintenance cost paid by SME over 5 years	INR	85,837
Equity IRR without Acceleration Depreciation benefits	%	130.40
Average DSCR ration without Acceleration Depreciation benefits	x	1.79
Payback period	Years	1.7
Estimated Annual Energy Savings from EE motors	kWh	77,805
Fixed Electricity Tarriff	INR/kWh	8
Estimated total annual energy cost savings	INR	622,440

With Accelerated Depreciation benefits to the ESCO:

Tax savings	INR	197,897
Equity IRR	%	149.7
Average DSCR ratio	x	1.96

Total savings to SME over 5 years	**INR**	**3,310,097**

ENDNOTES

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19 Salient features of the model are presented on page 5, and challenges and risk mitigation strategies are presented on page 7.

20 Section 115BA of the Income Tax Act, 1961, specified that the depreciation allowance for energy efficient technologies is 40% of the stated value Section 32(1) (ii). Government of India, Notification No. 103/2016/ F.No.370142/29/2016 –TPL, Restriction of Tax Depreciation Rate to 40%. (2016) Accessed September 17, 2019. https://studycafe.in/2018/02/restriction-of-tax-depreciation-rate-to-40.html

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