



Drivers of Energy Efficiency in Industries

23.5.2017

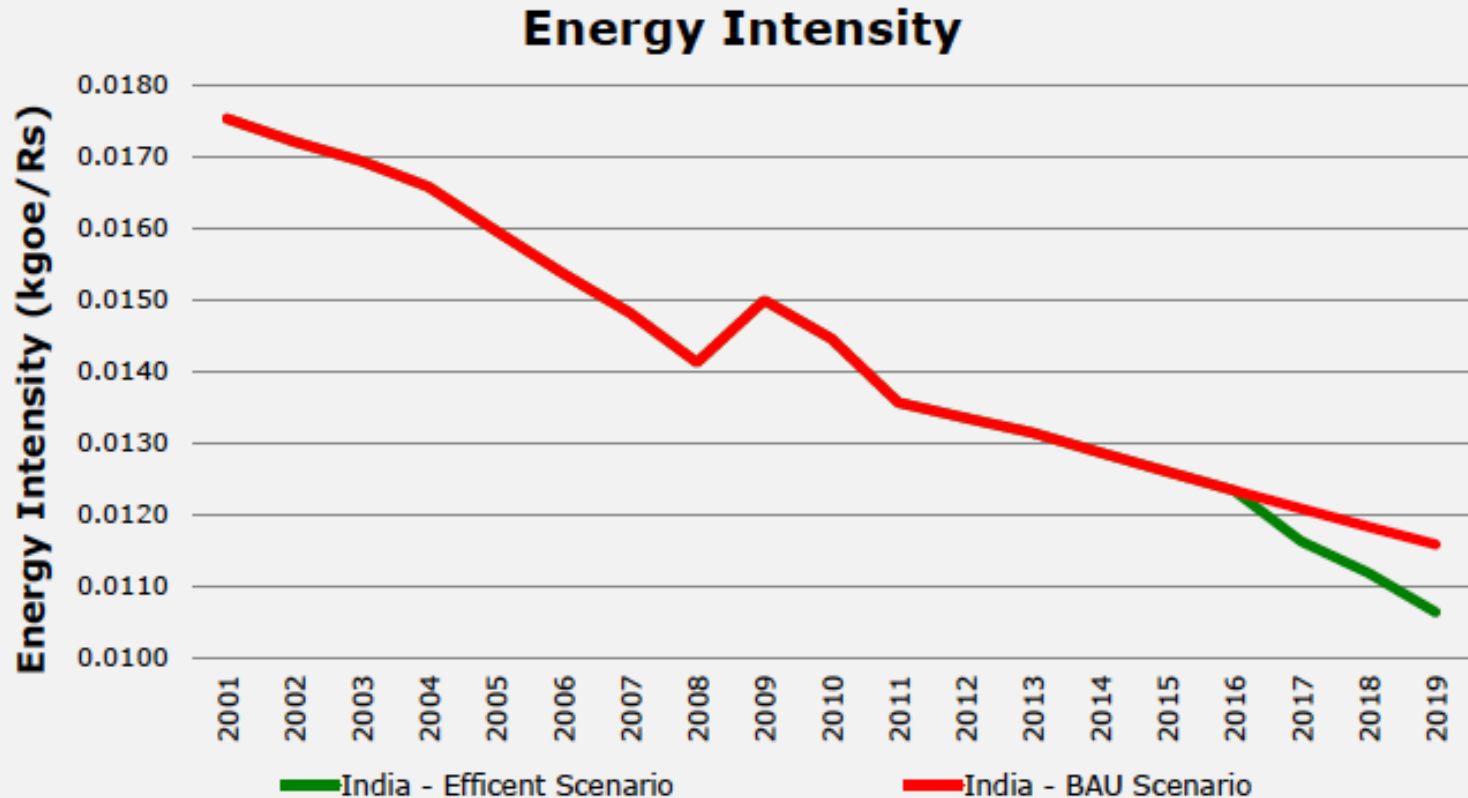
By: AEEE

India GDP Growth



SOURCE: WWW.TRADINGECONOMICS.COM | WORLD BANK

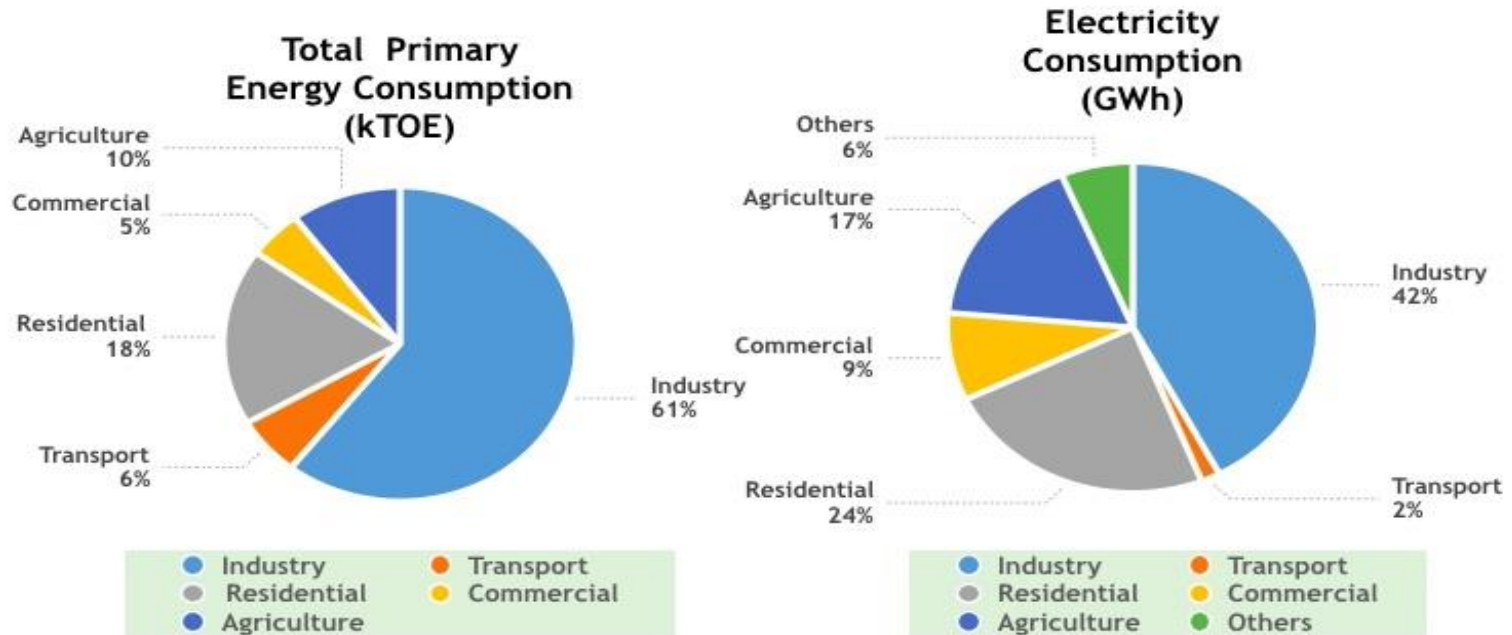
Energy Intensity Declining despite Increase in GDP



Total Avoided Capacity - 28,600 MW

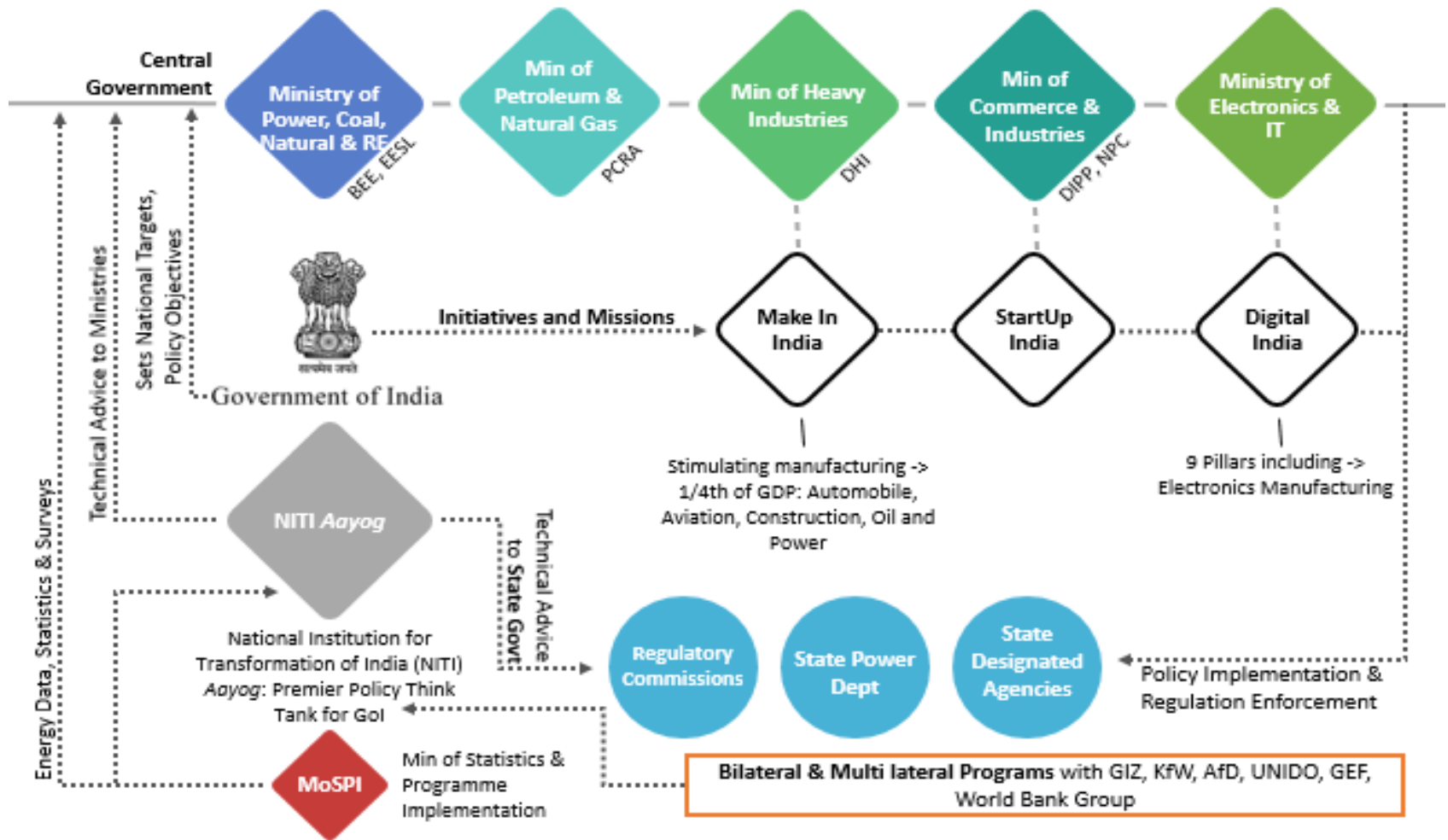
Annual Fuel savings - 44 million toe

Energy Consumption Pattern in India 2015-2016



Source: MOSPI

Government of India (GoI): Key Institutions for Large Industries



The Large Industry Segment in India

Trend in Large Industries

- Move towards privatisation which supports both operational and energy efficiency – PAT Scheme a regulatory mechanism to improve efficiency

Number of Large Industrial Units

- 200+ Large Public Sector Enterprises in Industrial sector - include Energy (Oil, Coal, Power) , steel & infrastructure, engineering, manufacturing & mining industry, textiles & agro-based industries
- Dynamic Private Sector Industries with major Global presence and partnerships, and wide mix of shareholding patterns

Contribution to Economy

- 30% of GDP, leading contributors include Engineering & Machinery, Textiles, Chemicals, Transportation and Electrical equipment

Market & Employment

- Accounts for 30 % of Exports, over 50% of share of inputs for national infrastructure development
- Employs 33% of the national workforce, as sector is capital intensive

Perform Achieve Trade (PAT)

PAT

- A regulatory scheme for large industries to reduce their specific energy consumption
- Through certification excess energy can be traded
- Three year programme

PAT Cycle 1

- PAT Cycle 1 – 2012-2015
- SEC reduction in 478 designated consumers from 8 energy intensive sectors
- Achievement – 8.67 MTOE
- 31 million tonnes of CO₂ reduction
- 306 DCs issued 38.50 lakhs ESCerts cumulatively; 110 DC can purchase 14.50 lakhs ESCerts cumulatively

PAT Cycle 2

- 2016-2019
- 681 DCs and 3 new sectors added
- Target – 8.869 MTOE reduction
- Energy Savings achieved 9.75 mtoe

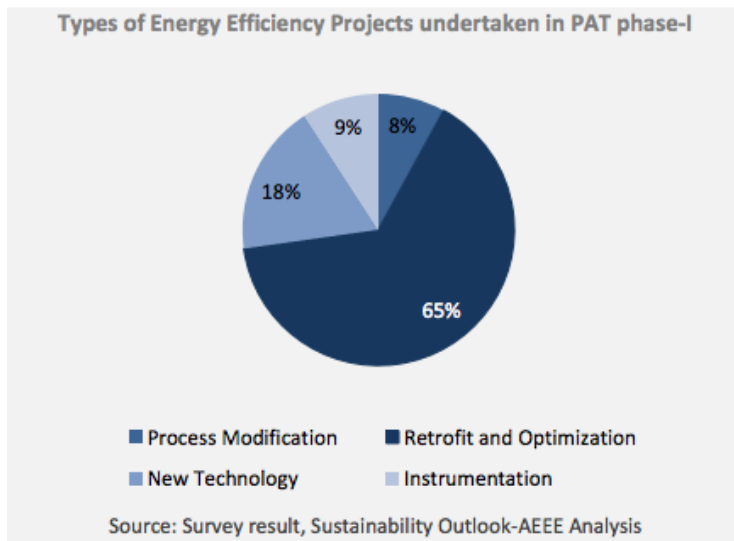
Lessons from PAT- Phase-1

- Efficiencies achieved through retrofits and optimisation – low capital expenditure and short payback
- Focus on utility and component efficiency and not process and systems efficiency
- Projects implemented with own resources rather than outsourced to ESCOs
- Concerns about ESCerts market not picking up
- Greater emphasis needed on financing models

Unleashing the Potential from PAT-1 to PAT-2

PAT-1

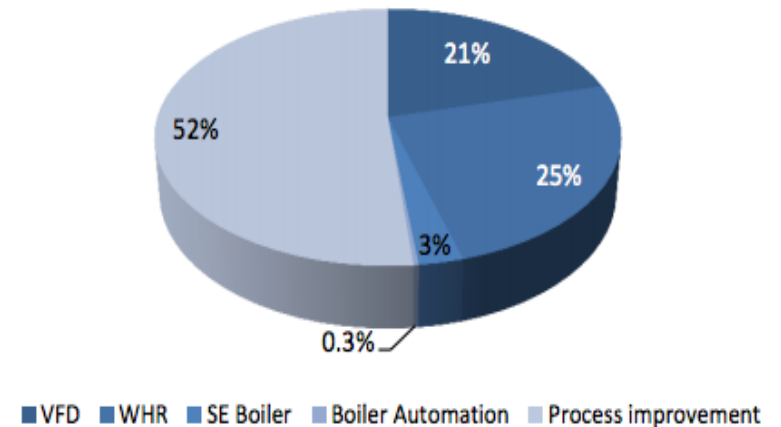
Limited role of Process Modification
Largely Retrofits & Optimisation



PAT-2

Predominant role of Process Innovation
Estimated market Rs 34,000 cr by 2020

Rs 34,000 crore Industrial EE market by 2020 (excluding thermal power sector)

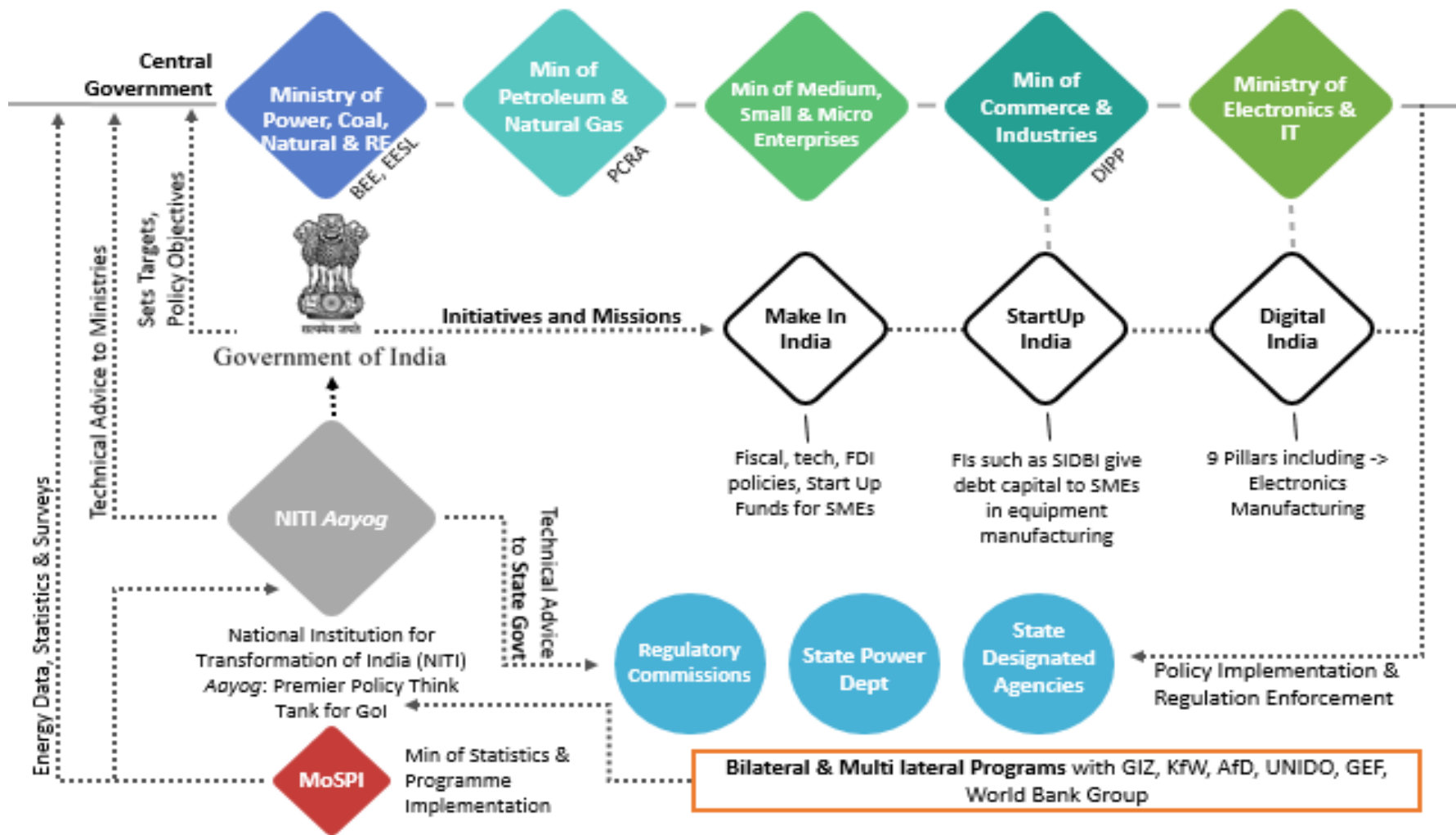


PAT Cycle 3

- 2017-2020
- Effective from 1st April 2017
- 116 DC added
- Cumulative consumption – 35 MTOE
- Energy Saving Target – 1.06 MTOE

Energy Efficiency Initiatives in Micro, Small & Medium Enterprises (MSMEs)

Government of India (GoI): Key Institutions for Small & Medium Enterprises (SMEs)



India Micro, Small & Medium Enterprises (MSMEs) - Profile

Number of SMEs

- 3617600000
- 77.6% of SMES are non-agricultural SMEs

Contribution to Economy

- 6% of GDP
- 33% of Manufacturing

Market & Employment

- 45% of Exports
- Employs 108411367 persons

BEE MSMEs Programme Results 2015-2016

10 best technologies demonstrated in 100 units in 5 SMEs sectors

Energy Intensives clusters have been mapped across the country in partnership with MoMSME

INR 10 Lakhs will be given to each unit for demonstration

Thrust to EE in MSMEs

BEE partnership with MFIs and bilateral agencies to promote in EE in MSMEs

Created SAMEEKSHA – knowledge sharing website (sameeksha.org) for EE in MSMEs

SIDBI - financial institution lending for EE implementation. SIDBI has compiled 50 EE success stories from 20 industrial sectors. Released 20 Case Studies in 2017 on EE & ESCO projects

World Bank, GEF, UNIDO, JICA, KfW, AFD, SDC and others are supporting BEE's EE Programme

EESL is envisioning a programme for SMEs

SIDBI – EE Lines of Credit

- Japan International Cooperation Agency (JICA)
 - Phase I, II, III - JPY 30 Billion each (INR 1740 Crores)
- Agence Francaise de Developpement (AFD), France-
EUR 50 Million (INR 362 Crores)
- Kreditanstalt fur Wiederaufbau (KfW), Germany-
 - 50 Million EUR (INR 362 Crores)
 - 53.74 Million EUR (INR 390 Crores) for promoting investment in cleaner production options
- 307 MSMEs obtained aggregate term loan of more than INR 355 Crore under these LOCs

GEF-World Bank -SIDBI MSME EE Financing

- Timeframe 2010-2014 extended up to 2019
- SIDBI implementing EE in 5 energy intensive clusters:
 - Foundry, Forging, Limekiln, Chemical Cluster & Mixed cluster
- Total Investment INR 120 Crores
- Payback 12-15 months
- 10% - 20% Energy Savings
- Results – December 2016
- Aggregate EE Investment INR 1000 million achieved
- 661 IG DPRs prepared
- 600 Energy Auditors trained
- Reached 1500 MSME Entrepreneurs
- Trained 1400 FI sector personnel

UNIDO-GEF - Promoting EE and RE in MSME clusters

Implementers

- BEE, MNRE and MoMSME

Timeline & Funding

- 2011-2016
- \$ 33 Million

Project

- Promotion and use of EE and RE
- 12 energy intensive Clusters
- Brass, Ceramic, Dairy, Foundry & Hand tools
- Estimated Energy Consumption of 12 clusters - 1.44 MTOE

GEF-UNIDO-BEE Project Status

- Implemented 6 big and 60 small scale investment projects
- 250 units surveyed in 9 Clusters
- 54 Energy Audits Completed
- 42 DPRs have been prepared, 6 DPRs Implemented
- 27 Best Practices Workshop
- 60 Case Studies Prepared

Other EE Initiatives in MSME

Swiss Agency for Development and Cooperation & TERI

- 100 MSME clusters in India for energy data collation
- Supporting EE Implementation in 3 Foundry Clusters, and two new sectors – aluminium and induction furnaces
- 3 Year project 2014-2017
- **EESL SME Implementation Plan (SMEIP-E)**
 - EESL will identify replicable technical interventions and prioritize them
 - Identify technology suppliers
 - Implement EE measures
 - Reduce transaction cost to MSMEs by developing unique financial instruments.

The Role of ESCOs in Industrial EE and AEEE's unique position in it

- Energy Services Companies (ESCOs) can facilitate enhanced energy efficiency in industries. However, the ESCO market in India is still very nascent (<\$150 million).
- AEEE is uniquely positioned to enable industries' access to institutional financing for ESCO projects and reduce the inherent trust gap between ESCOs and end users.

AEEE has been closely interacting with 20+ ESCOs that focus on large industries and MSMEs.

Top large industry segments identified	Chemical/fertilizer, petroleum/refining, paper & pulp, rubber/plastic, iron & steel, food & beverage, textiles, powder metallurgy, dairy, textiles, automobiles, mining, electrical and electronic equipment
Top ECM categories identified	HVAC, lighting, building automation, drives/pumps/ fans/motors, Boilers/ furnaces/ burners/ waste heat recovery



CONNECT WITH US

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