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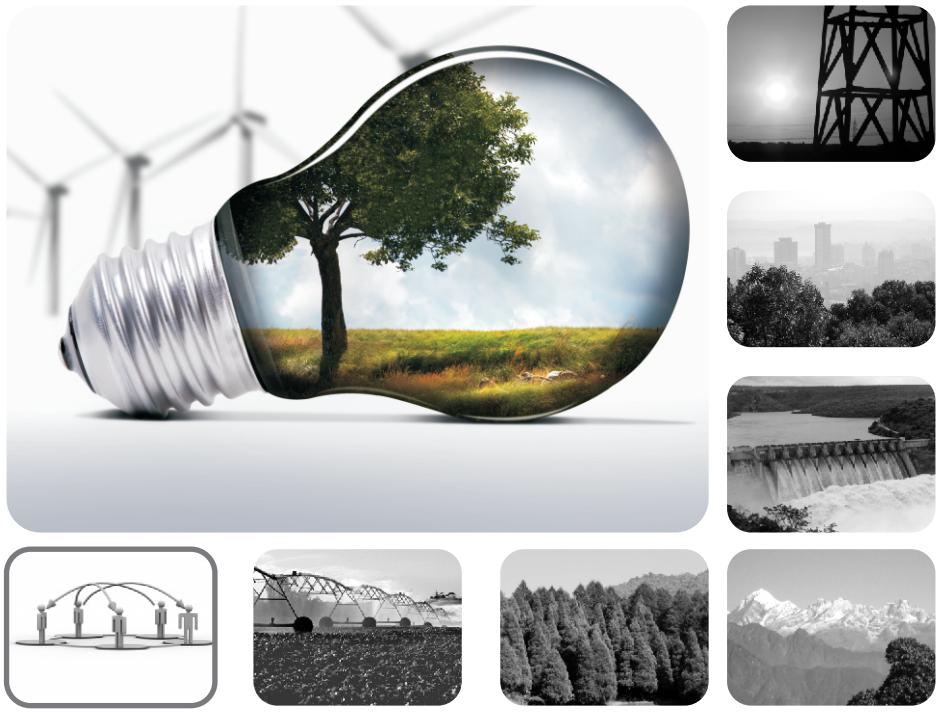
# National Mission for Enhanced Energy Efficiency



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# National Mission for Enhanced Energy Efficiency

June 2015

This is one of the eight-brief series prepared as part of the Study titled `Implementation of the National Action Plan on Climate Change (NAPCC) – Progress & Evaluation'. The Study report, along with the eight briefs, can be accessed at **http://ifmrlead.org/napcc-progress-and-evaluation/**

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# About the Study

This Study has been undertaken to provide pointers to facilitate effective implementation of the National Missions under the NAPCC, as well as to highlight key policy aspects that augur well to further this national mandate. Specifically, the Study has sought to track the progress achieved by each of the National Missions since their launch up to March 2015 and also evaluate them through the lens of core policy implementation functions.

Using a combination of desk research and expert interviews, the Study has consolidated informed insights on strategies to accelerate and enhance the efficacy of the Missions' implementation, apart from documenting details of their progress. The Study team has interacted with key Government officials, domain experts in affiliated technical and academic institutions and independent research organizations to gain perspectives from all relevant stakeholders in this context. A distinct format has been followed for reviewing the Missions which have achieved quantifiable progress against their targets.

The findings of this Study were disseminated at a policy workshop, hosted by IFMR LEAD in June 2015 at New Delhi, bringing together policymakers from the concerned Union Ministries, bilateral agencies and other relevant stakeholders. The event marked a focused dialogue on the progress of the NAPCC thus far as well as the way forward for the Missions. Inputs from the workshop have been incorporated into the Study report. While the Study objectives, methodology adopted and findings across Missions have been summarised in this report, detailed findings on each Mission have been elaborated in individual Mission briefs.

# Introduction

Energy, a crucial input for economic development, assumes critical importance for a developing country like India. Sector-wise energy consumption indicate that industry continues to be the largest consumer at about 45% and the major energy sources utilised are non-renewables such as coal (55%) and oil (29%)[1]. With final energy consumption for commercial energy only going to escalate in the future, energy intensity rates (energy consumed per unit of Gross Domestic Product for the sector must be reduced.

The National Mission for Enhanced Energy Efficiency (NMEEE), approved by the Union Cabinet in June 2010, falls under the domain of the Bureau of Energy Efficiency (BEE). The Energy Conservation (EC) Act 2001 which was responsible for setting up the BEE, empowers it to put in place policies and regulations to improve Energy Efficiency (EE) in energy intensive industries. The overall goal of the Mission is to ensure that in the context of providing increasing energy to meet the demands of a growing population, EE is promoted using various approaches and incentives.

**Energy Efficiency (EE)** refers to any process, technique or equipment that helps to achieve reduction in energy consumption while performing an operation, while achieving the same or better level of output.

Specifically, the Mission seeks to create, strengthen and sustain the Rs. 74,000 Crore market for EE. This is envisaged by a) providing a conducive and regulatory policy regime and b) fostering innovative and sustainable business models for the sector.

The Mission, developed by the Ministry of Power (MoP) and the BEE, spells out four initiatives to enhance EE, in addition to the programmes that are already being pursued nationally. These include:

- *Perform, Achieve & Trade (PAT),* the flagship initiative, which is a market based mechanism to enhance cost effectiveness of improvements in EE in large, energy intensive industries, by certifying energy savings, which can then be voluntarily traded.
- *Market Transformation for Energy Efficiency (MTEE)*, which includes innovative measures to accelerate the shift to energy efficient appliances in designated sectors, by making them more affordable.
- *Energy Efficiency Financing Platform (EEFP)* and *Framework for Energy Efficient Economic Development (FEEED)* that leverage fiscal instruments that can help finance Demand Side Management (DSM) programmes.

This chapter is structured as follows: a section is devoted to each component of the Mission, wherein under each initiative of the component a) progress is tracked[2], b) departures from the Mission design examined; c) outcomes delineated and d) recommendations and policy conclusions spelt out.

[1] Energy Statistics (2013).Ministry of Statistics and Programme Implementation. New Delhi: Government of India.
[2] Up to March 2015

# Tracking the Mission's Progress

## Perform, Achieve & Trade

### Background

PAT is a market-based mechanism that seeks to improve energy efficiency in nine energy intensive large industries and sectors by allowing voluntary trading of energy savings through Energy Savings Certificates (ESCerts). Industries are encouraged to achieve greater energy savings, i.e. exceed their Specified Energy Consumption (SEC) targets and these additional savings are traded with a unit, whose own SEC targets are either too challenging or costly to be met. At the outset, it is important to state that the PAT is a unique policy instrument in that the overall objective lies in improving the efficiency of the production process (i.e. systemic & structural changes) in order to achieve the ultimate target of energy savings. This is different from other emission reduction directives, which seek to reduce absolute number of emission consumption units, which can be oft-affected by political and commercial factors. Phase I of the PAT (2011/12 to 2014/15) is likely to save about 6.6 mtoe (million tons of oil equivalent) of energy and the co-benefit will be a reduction of about 25 mtoe. Considering that the cost of 1 toe is about Rs. 10,154 (BEE, January 2015), energy savings will amount to Rs. 6,782 Crores. PAT Phase II is expected to start in March 2015.

### PAT Framework

#### *Legal, Regulatory & Institutional Design*

The genesis of the PAT scheme flows out of the EC Act (as mentioned in Section 14). The EC Act empowers the BEE to put in place policies, rules & regulations to improve EE in energy intensive industries. Therefore, wherever apposite, references are made to specific modalities within the EC Act (refer Annexure for details).

Tables 1 and 2 below highlight the PAT institutional design and stakeholders relevant to the scheme with their broad roles and relationships. As is seen, the design is elaborate and in theory, there is clarity in the role assignments of various stakeholders. The design also allows for effective enforcement and compliance, including an impartial Monitoring & Verification (M&V) exercise.

**TABLE 1: INSTITUTIONAL DESIGN OF THE PAT**

| Functions / Type of Institution | Operations | Compliance | Trading (ESCerts) |
|---|---|---|---|
| Nodal Authority | Bureau of Energy Efficiency | | |
| Adjudicators, Quasi-Judicial & Judicial Institutions | | SERC and Adjudicating Officers, Appellate Tribunal | |
| Agencies that interact with DCs | SDA & Inspecting Officers, AEAs, Energy Auditor/Energy Manager at the DC | | Power Exchanges |
| Others | ESCOs | Legal experts | Traders |

*Note: AEA = Accredited Energy Auditor; DC = Designated Consumer; ESCO = Energy Service Company; SERC = State Electricity Regulatory Committee; SDA= State Designated Agency*

## TABLE 2: ROLES & RESPONSIBILITIES OF STAKEHOLDERS

| Stakeholder | Roles & Responsibilities as per Mission Design | Departures from Mission Design | Observations |
|---|---|---|---|
| State Designated Agencies | As per the EC Act, each State must notify a SDA, and provide resources for its establishment.<br><br>Section 15 of the EC Act: reviewing and commenting on reports submitted by the DC, inspection and recommending penalty proceedings against non-compliant DCs. Rules 2010 empower the SDA to appoint the necessary number of inspecting officers, who can visit the DC premises as and when required and deliberate with AEAs to seek necessary information.<br><br>The SDA submits a report to the SERC, the Adjudicating Authority, which decides the type and amount of penalty. | All States (except Kerala) have relied on existing agencies engaged in other core functions (e.g State Nodal Agency for Renewables, Electrical Operators, State Electricity Distribution Companies).<br><br>None | There are very few dedicated personnel with the necessary skillsets in the area of EE in these agencies. Therefore there is a need for extensive training & capacity building among SDA personnel.<br><br>Since 2007, the BEE has undertaken a programme to strengthen human and institutional capacities of the SDA. This is to ensure that they can discharge their statutory requirements. It includes providing a quick resolution to queries raised by the DCs regarding the PAT. This includes:<br>a) training<br>b) exposure visits to Japan & Germany, to learn and be trained in EE implementation<br>c) provision of financial resources to undertake demonstration projects. |
| Designated Consumers | PAT Rules 2012, notifications of March 2012 and 2014 of the EC Act specify the obligations of the DC. These include:<br>a) Appointing an energy manager or auditor who is certified by BEE<br>b) Achieving optimum energy use by implementing EE measures suggested by AEAs<br>c) Verification done by AEAs | None | None |
| Accredited Energy Auditors (AEAs) & Accredited Energy Auditor Firms | AEA will be engaged by the DC for conducting *energy audits* and working with the energy cell of the DC for recommending energy conservation options. He/she will inspect energy demand and consumption data from previous years.<br><br>Once the DC has finished auditing the data, and highlights achieved energy savings, the DC appoints an AEA Firm for *verification and certification* of achieved savings. | Since AEAs and AEA firms are appointed by the DC, a process of check verification has been put in place, whereby through a random process, the BEE asks another AEA firm to re-verify or check the results of the audit. Number of check verifications is pegged at 10% in the initial cycles. | Effective deterrent to any potential influence that the DC can exert on the AEA firm.<br>In case of inconsistency or error, punitive action includes de-panelment of the AEA firm.<br>The effectiveness of this mechanism will depend on the efficiency of enforcement. |

*Source: Study by research team*

### *Design of PAT*

The cycle of the PAT scheme can be understood along the lines of the following stages:

**FIGURE 1: STAGES OF THE PAT CYCLE**

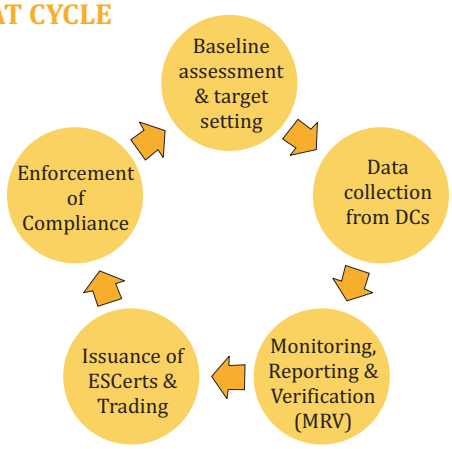


Table 3 below tracks the progress made under each of these stages and highlights departures from Mission design. Outcomes are stated wherever appropriate.

**TABLE 3: STAGES OF THE PAT CYCLE**

| Stage | Mission Design | Mission Implementation | Observations and Outcomes |
|---|---|---|---|
| Baseline assessment & target setting | Schedule of the EC Act identified and provided thresholds in nine energy intensive sectors defined.<br><br>762 DCs consuming more than or equal to 164 mtoe identified | Eight instead of nine sectors, railways yet to be included.<br><br>555 DCs fall into energy intensive category. Baseline assessment for 478 conducted by the Energy Efficiency Services Limited (EESL).<br><br>**SEC targets put in place by March 2012.** | Detailed baseline assessments made before target setting for SEC.<br><br>Sectoral targets on a pro-rata basis of energy consumption. Targets are plant-specific, take into account normalisation factors and calculated as a percentage improvement. |
| Data collection from DCs | Generic format for data collection on financial & energy details.<br>Web-based reporting system (PAT-NET) where DCs were to file details annually. | Given several issues, new data format developed, wherein worked with sector-specific technical committees to incorporate elaborate sector-specific data collection formats (Form 1), normalization factors and M&V guidelines.<br><br>**This was completed in February 2015.**<br><br>The new PAT-NET website has also been revamped and DCs can submit forms online.<br><br>**DCs are to submit the forms online by March 2015.** | This new format is a tremendous effort to resolve underlying complexities and develop a robust and simple-to-use structure.<br><br>Additionally workshops are being undertaken to aid DCs, energy auditors & SDAs in completion of forms. This has resulted in DCs and other relevant stakeholders becoming more proactive, cooperative and ready to volunteering information. |

**TABLE 3 (concluded)**

| Stage | Mission Design | Mission Implementation | Observations and Outcomes |
|---|---|---|---|
| MRV | Normalisation factors and sector-wise revised Form 1, metering/MRV protocols. Detailed Reporting Formats verified by AEAs | It is proposed that the AEA and AEA firms will complete the MRV process by June 2015. | Time period of 3 months to conduct MRV by AEAs is too short a time and cannot be met. |
| Issuance of ESCerts & Trading | EESL will be responsible for issuance of ESCerts. Trading will be carried out bilaterally between DCs or one special platforms created in power exchanges. The protocols for trading were to be finalised in 2009-10. | Currently however, the EESL is not part of the issuance process, and its role has been limited to conducting the baseline survey for 500 DCs. **The BEE is expected to issue Escerts by August 2015.**<br><br>Trading will be done only through power exchanges (NCDEX, MCX[3], Power Exchange India). Protocol for trading not yet finalised, and actual trading is envisaged only over the period **September-November 2015.** | Mid-course correction which correctly identified that the market is currently not mature enough for bilateral trading between DCs. Moreover there is no in-built mechanism as yet for monitoring.<br><br>IEX working with BEE to establish to identify establish depository for ESCerts. |
| Enforcement for Compliance | Clause 1A, section 26 of the EC Act provides penalty not exceeding Rs. 10 lakhs for non-compliance with SEC targets. In case of continued failure, an additional penalty is to be imposed, not less than the price of every mtoe of energy that is in excess of prescribed norms. | Realtime compliance will depend on the demand-supply equation. Ideally a penalty should be substantially high as compared to the market purchase price of ESCerts, forcing DCs to prefer trading for compliance and not resorting to penalties. | It is only after trading (post November 2015) that demand-supply of ESCerts will be known. Therefore it is too early to comment on this aspect. |

*Source: Study by research team*

To secure a sustained interest and commitment towards PAT, a knowledge exchange platform has been launched in February 2015. Attended by 438 DCs and representatives from MoP, a day-long discussion focused on what each DC had done in terms of implementing EE measures. **The idea here is to encourage cross-pollination of ideas and best case practices on technology use. A compendium of technology best case practices is also being commissioned by the BEE.** A forum (website) is being created, where information, queries and discussions will be shared. Instead of driving commitment top-down, this initiative has the DCs leading the way.

### *Deepening the PAT Scheme*

Currently, 96% of total energy consumption covered under PAT 1 cycle comes from 4 sectors – power, cement, fertilizer and steel. Under PAT 2, more DC sectors are expected to be included. Some of the criteria that the BEE is considering for inclusion of a sector include a) annual energy consumption in the sector, b) number of DCs and range of energy consumption, c) existing EE potential in the units and d) degree of complexity in including the sector, i.e. how amenable the sector is to the PAT design.

[3] NCDEX = National Commodity and Derivatives Exchange; MCX = Multi Commodity Exchange

Discussions revealed that the railway sector, refineries, Transcoms and DISCOMs are choices for inclusion under PAT 2. Petroleum and the transmission and distribution sectors are good choices, given that their SEC metrics, parameters influencing efficiency and data are available.

With regard to the railways sector, each zonal division will be considered a DC, and the amount of energy used per tonne kilometre will be the unit of analysis. Bringing DISCOMs under the PAT fold is relatively easy as the MoP has already invested considerable effort in this direction. The unit of analysis here is the difference between the amount of energy purchased and the amount of energy billed. For petroleum refineries, measures of EE are already in place and are different across each refinery. Standard energy efficiency benchmarks will be used to compare across the refineries in the public sector. For privately owned refineries, the Centre for High Technology has developed an index.

**PAT Scheme: Key take-aways**

- Existing legal frameworks including the EC Act and its subsequent rules and regulations have collectively ensured a robust framework.
- This clearly defines stakeholder roles and responsibilities, coordination and hence a good edifice for a sound institutional structure and scheme design has been ensured.
- Wherever additional training of personnel in designated agencies is required for effective discharge of statutory responsibilities, the BEE, through its various programmes has ensured this and provided support.
- DCs' commitment to EE and achievement of PAT targets is crucial. To ensure this, the BEE has made necessary formats for form filling and submission simple. Moreover, efforts have been made to facilitate experience and best practices sharing among DCs.
- The empanelment process of AEAs and AEA firms has been made simple.
- Check verifications have been put in place to ensure that DCs do not influence AEA's MRV process.
- The BEE has already commenced preparatory activities for deepening the PAT scheme under PAT cycle 2. Study on potential for deepening has been commissioned for Iron & Steel, Textile, Pulp & Paper and Cement sectors.

**Recommendations**

- The BEE could consider placing potential AEAs in audit projects in other sectors such as SMEs, to enhance understanding, expertise and competency of AEAs. Expert agencies are to be exhorted to take interest in the energy audit space, and provide internships & demonstration projects experience for AEAs.
- The BEE could devise a system to provide early market signals of ESCerts. This can be done post the MRV process is complete, and before the actual trading begins. This can promote better trading.

## Market Tranformation for Energy Efficiency

### Background

Market Transformation for Energy Efficiency (MTEE) seeks to accelerate shift to energy efficient appliances in designated sectors through innovative measures to make these products more affordable. The rationale behind designing the MTEE is that the use of energy efficient products and technologies is often hindered by significantly higher initial costs vis-à-vis less efficient products. Therefore the first step is to overcome the cost bias to initiate a market transformation towards their preferential adoption.

It was decided to leverage international funds for promoting energy efficiency, and therefore to design and prepare projects to utilise bi-lateral and multi-lateral funds already in existence. The natural choice for this is the Clean Development Mechanism (CDM) that promotes adoption of such energy efficient instruments and moderates their cost through additional revenues due to carbon emission savings associated with lower energy use. Therefore, the MTEE proposed implementing national energy efficiency CDM roadmap wherein public sector leadership and involvement would be used for aggregating projects and programmes of activity for household lighting, municipal & agriculture demand side management, Small & Medium Enterprises (SME) sector, commercial buildings sector and distribution transformers. Given the cessation of CDM in 2012, there are only two programmes which fall under the MTEE – the Bachat Lamp Yojana and the Super Efficient Equipment Programme (SEEP).

**Initiatives under the Commercial Buildings Sector**

Although initiatives taken under the commercial buildings sector falls directly under the EC Act, it is important to briefly highlight these, as there is tremendous potential for promoting energy efficiency in the buildings sector. The Energy Conservation Building Code (ECBC) was launched in May 2007, and is presently in vogue on a voluntary basis. The ECBC sets minimum energy standards for new commercial buildings with a connected load of 100 kW or contract demand of 120 kVA. The BEE is promoting implementation of energy efficiency measures in existing buildings.

As per the 12$^{th}$ Five Year Plan, 75% of new buildings should be compliant with ECBC, and 20% of existing buildings must reduce energy consumption by 20%. For the former, designers and architects are needed, while for the latter, retrofitting solutions can be provided by accredited ESCOs. ESCOs provide innovative business models through which energy savings potential in existing buildings can be captured and the risk faced by the building owners can also be addressed.

Currently, eight states have made adherence to ECBC compulsory – Karnataka, Rajasthan, Orissa, Uttarakhand, Telangana, Andhra Pradesh and Pondicherry. There are two ways to comply with the code; prescriptive (wherein only a few selected parameters from the code are adopted) and simulation (wherein all parameters are adhered to). The number of buildings that follow the simulation track is few and far between. This is largely because of a lack of technical experts. Therefore, the BEE is providing technical experts in the form of consultants.

**Recommendation:** *One of the main reasons for only a few buildings adhering to the ECBC, is that there is no initial cost difference to exhort building owners. Owners are told that the incentive for following the ECBC is reduced energy demand and consumption in the future, i.e. energy savings. This does not seem to be incentive enough. Provision of financial incentives is an area that can be considered.*

## Bachat Lamp Yojana

The Bachat Lamp Yojana (BLY), launched in 2009, aimed at delivering Compact Fluorescent Lamps (CFLs) at the cost of normal light bulbs, with the difference in cost to be covered by Certified Emission Reduction (CERs). The BLY was envisaged as a PPP (Public-Private Partnership) comprising the BEE, Distribution Companies (DISCOMs) and private sector DISCOM chosen, BEE empanelled CFL suppliers. With the cessation of CDM, BLY stands closed and the EESL started Light Emitting Diode (LED) sales under the Domestic Efficient Lighting Programme (DELP) in 2014. In the future, it is proposed to provide support to the Rural Electrification Corporation (REC), using the BLY structure. The BEE will frame technical specification and monitoring/verification of the energy savings from the LED bulbs distributed under the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) to below poverty line (BPL) households.

### TABLE 4: PROGRESS OF THE BLY

| Mission Design | Mission Implementation | Observations and Outcomes |
|---|---|---|
| BLY launched in 2009 to distribute CFLs to replace normal bulbs. 50 lakh CFLs in each DISCOM area to be distributed. Maximum of 4 CFLs provided at the cost of one normal bulb. | As of March 2012, 29 million CFLs were distributed under the BLY, leading to an avoided generation capacity of 415 MW. | Clarity in institutional structure, regulatory framework, baseline assessments, due diligence process, operationalisation and M&E[4].<br><br>Market transformation: sales of CFL have increased manifold. In 2009-10, 150 million CFLs sold, and in March 2014, it was 340 million. |
| LED sales under DELP by EESL in consultation with DISCOM & SERC | 20 lakh LEDs have replaced lamps.<br><br>Fillip given by Prime Ministers Announcement of 100 smart cities wherein 2 LEDs will be given per person. | Based on the institutional structure of BLY. Clarity in regulatory framework, baseline assessments, due diligence, operationalisation and M&E[5].<br><br>Market transformation:<br>Cost of LEDs fallen. When the programme started, the cost was Rs. 400 per bulb. In 2014, the EESL procured 70 lakh LED bulbs, and the cost has come down to Rs. 149 per bulb. The EESL issued a bid in February 2015 for 10 crore LEDs bulbs to all manufacturers for the year 2015-2016 and the hope is that the retail price of the LED will come down below Rs. 150 per bulb. |

*Source: Study by research team*

## Super Efficient Equipment Programme (SEEP)

This new programme is designed to bring accelerated market transformation for super efficient (greater than 5 star rating) appliances by providing financial stimulus innovatively at critical junctures of intervention. The ceiling fan has been identified as the first appliance to be adopted. An efficiency level of about 50% greater than market average is envisaged by providing atime bound incentive to fan manufacturers to manufacture super efficient fans and sell at a discounted price. Why the ceiling fan? Fans have an average life of about 15 years and about 35 million are produced in the country each year. Each fan consumes about 50-75 watts of electricity. If the consumption can be brought down to 35 watts, the energy savings will be enormous. The production is yet to begin. Currently, BEE's consultation with the main stakeholders (fan manufacturers, technology providers and R&D institutions) is completed, along with testing of capacity. Bidding for the Monitoring and Verification Agency (MVA) is under process and the product is expected to hit the market by February 2015.

[4] CFL suppliers chosen by DISCOM through due diligence process from list of CFL suppliers empanelled by BEE. Pilots in Vishakapatnam, Jaipur & Yamunanagar with OSRAM as private supplier conducted as part of baseline evaluations. The BEE monitored savings.

[5] DELP to be offered as a Standard Offer Programme (SOP) an innovative approach to mainstream EE into DSM. Pilots in Puducherry & Andhra Pradesh, as part of baseline evaluations. The programme has started in Delhi. LEDs provided to all registered consumers (web-based or SMS system) at an initial payment of Rs 10 each and recovery of Rs 10 each for 12 months from their electricity bill. Hence the unit cost of LED is Rs. 130 as compared to the market price of Rs. 350-400. The BEE will monitor and calculate savings on a sample basis.

**MTEE: Key take-aways and Recommendations**

- Introduction of Standard Offer Programmes (SOP) is an innovative approach to bring in EE into DSM.
- The DELP exhibits clear administrative structure, process modalities and operationalisation framework.
- The BLY and DELP have transformed the market for CFL and LED respectively by lowering prices. Further success of the programme depends on cost reduction in the price of LED (to at least Rs. 100 if not lower).
- It is too early to comment on process modalities, monitoring and compliance issues.
- The modalities for SEEP are in place, and the first appliance (ceiling fan) is set to hit the market soon.
- Well-conceived mass media awareness and adoption campaigns in local languages to be designed.

# Building a Sustainable Financial System

## Background

According to the Expert Group on Low Carbon Strategies for Inclusive Growth, the cumulative costs of low-carbon strategies between 2010 and 2030 are estimated at USD 834 billion (at 2011 prices). To meet the targets laid out under the eight Missions of the N APCC, financing requirements of USD 41.54 billion are needed under the 12$^{th}$ Five Year Plan Period (Economic Survey of India, Ministry of Finance, 2013-2014). This cannot be expected to get sourced from the public sector alone. Therefore there is a need for strategic policy and regulatory frameworks to catalyse investments into EE. There are several barriers to investment – viz.,

- Small project size (Rs. 2-5 Crores), resulting in high transaction costs and low rates of return
- Lack of deemed returns (energy performance contracts business models lack private equity capital infusion as risks related to non-performance of EE technology and reduction in energy tariffs are perceived as too high)
- Dilution of equity tantamount to lower profitability of promoters (non-availability of leveraged finance in the form of debt, equity etc. results in limited options to raise finance)

To counter these problems, two initiatives have been envisaged under the Mission, viz., the Energy Efficiency Financing Platform (EEEP) and the Framework for Energy Efficiency Economic Development (FEEED). Both initiatives specifically seek to a) address risks and barriers faced/perceived by FIs and b) engage Participating Financial Institutions (PFIs) and commercial financial institutions and build their capacity to finance EE projects on a commercially sustainable basis. *It is to be noted that under both these initiatives, frameworks have just been put in place, and a few basic activities to initiate the instruments have been undertaken. Therefore issues such as governance & policy, compliance, monitoring and evaluation are yet to be decided.*

## Energy Efficiency Financing Platform (EEFP)

Initiatives under the EEFP have focused on stimulating FIs to finance energy efficient projects and to stimulate States to engage with ESCOs through designated agencies and utilities. Table 5 tracks the activities under the EEFP.

## TABLE 5: PROGRESS UNDER THE EEFP

| Parameter | Process | Finance | Outcomes |
|---|---|---|---|
| Stimulating FIs to finance energy efficient projects by showcasing best case practices | Survey of efficient projects by the BEE team.<br><br>Dossier of fifty best case practices in the SME sector prepared by the BEE team. | USAID<br><br>SIDBI and BEE | Expected publication date March 2015<br><br>Expected publication date February 2015.<br><br>By showcasing these, it is hoped that ESCOs will engage with the State. |
| Capacity building of personnel in banks and FIs on performance contracting | Training modules developed by BEE with the help of HSBC in 2011 | In-house financing from budget. | Training modules assessed through workshops and conferences with multiple stakeholders through 2013-2014. Mid-course changes made to training modules.<br>Training workshops with Scheduled Commercial Banks (except cooperative banks) expected to start in 2015. The BEE is networking with the Indian Bank Association for the same.<br><br>MoUs have been signed with FIs such as PTC India Ltd., SIDBI, HSBC, Tata Capital, and IFCI. |

*Source: Study by research team*

**EEFP: Key take-aways**

- Consistent efforts have been taken to stimulate take-up of EE projects by ESCOs and States by providing best case practices; a dossier of energy efficient projects has been prepared in this context.
- Training and engagement with FIs and banks has resulted in agreements being signed with several financiers.
- Efforts are under way to bring more banks under the fold of the Programme.

## Framework for Energy Efficiency Economic Development (FEEED)

Two initiatives have been created under the FEEED, viz., the Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE) and Venture Capital Fund for Energy Efficiency (VCFEE).

### *Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE)*

The PRGFEE is a risk sharing mechanism to provide commercial banks with a partial coverage of risk involved in extending loans for EE projects. Eligible projects for which the PFI can apply for a guarantee could be credit facilities extended to ESCOs for EE projects. Sectors in the mandate of PRGFEE include government buildings, municipalities, SMEs and industries. Table 6 highlights the framework of the PRGFEE. *It is to be noted that the PRGFEE is yet to take off.*

**TABLE 6: FRAMEWORK & ACTIVITIES - FEEED**

| Parameter | Mission Design | Mission Implementation |
|---|---|---|
| Finance | Rs. 312 Crores set aside. | Only Rs. 70 Crores have been released. This is the amount released under the 11th Five Year Plan. Unless 80% of this amount is utilised, further money will not be disbursed under the 12th Five Year Plan. |
| Policy Administration: Regulatory Frameworks | PFI empanelled by the BEE to take guarantee from PRGEE before disbursement of loan to the borrower. Guarantee will not exceed Rs. 3 Crores lakhs or 50% of the loan (only principal), whichever is less. | It is proposed that this amount will be increased to Rs. 15 Crores under the 12th Five Year Plan (given that not just government buildings and municipalities, but also industries are part of the mandate, which need larger loans). |
| Policy Administration: Coordination | BEE to select a PFI as an Implementing Agency (IA) for all activities - approval of proposals, signing guarantee agreements, regular monitoring and appointment of M&V consultant for processing guarantee claims. | While the process and procedures under the Fund (operationalisation) were decided in April 2012, the Fund was yet to become active as of February 2015. The main impediment has been the inability to find an IA. Since the IA has to be a government institution (a PFI) chosen based on a tender process, there have been several unresolved issues. Currently, only one bid has been received –REC-PDCL (Power Distribution Company Ltd), a subsidiary of REC Ltd, and it has been decided that this will be the IA. |
| Policy Administration: Monitoring | A Supervisory Committee has been constituted to provide guidance as well as monitor progress. | |

*Source: Study by research team*

### TABLE 7: ROLES & RESPONSIBILITIES OF PRIMARY STAKEHOLDERS - PRGFEE

| BEE | Implementing Agency | Financial Institution |
|---|---|---|
| Nodal agency, appoints the IA | Assistance to BEE in empanelment of PFIs | Evaluates loan application |
| Updates the list of empanelled ESCOs | Reviews progress reports and statement of accounts | Monitors borrower account |
| Empanels independent M&V agency, and PFIs under PRGFEE | Updates Supervisory Committee on progress of the scheme | Safeguards primary securities |
| Carries out annual visits and submits reports to SC | Processes guarantee application and signs agreements with PFIs | Submits verification report with due diligence |
| Manages the administrative account | | Safeguards interest of PRGFEE |

*Source: Study by research team*

### *Venture Capital Fund for Energy Efficiency (VCFEE)*

The VCFEE is a fund that provides risk capital to support EE investments in new technologies, goods and services. The fund helps in creating a volume in EE deal flow by the fund manager through advertising and soliciting opportunities in the EE area. ESCOs and companies that plan to undertake EE projects in the performance-contracting mode are the key beneficiaries. The support under VCFEE is limited to government buildings and municipalities. It is expected that the VCFEE will be initiated by April-May 2015.

### TABLE 8: FRAMEWORK & ACTIVITIES - VCFEE

| Parameter | Mission Design | Mission Implementation |
|---|---|---|
| Finance | Rs. 210 Crores set aside under the 12th Five Year Plan | Rs. 29 Crores released under the 11th Five Year Plan. Unless this amount is spent, additional funds under the 12th Five Year will not be disbursed.<br>Since the corpus has only Rs. 29 Crores, there is little or no confidence among the FIs and banks. |
| Policy Administration: Regulatory Frameworks | Fund is registered with SEBI under its Alternative Investment Funds Regulation. The BEE selects a PFI as the Fund Manager.<br>Any single investment by the fund cannot exceed Rs. 2 Crores or 15% of total equity, whichever is lesser, through Special Purpose Vehicles (SPV). | Rules for operationalization approved in April 2012.<br><br>In the infrastructure sector, various SPVs are formed such as Infrastructure Development Finance Company (IDFC), Power Finance Corporation (PFC), Indian Rail Finance Corporation (IRFC), which have been identified to raise funds for development of sector projects. |
| Policy Administration: Coordination | Fund Manager responsible for making investments | The process of hiring a Fund Manager has commenced. |
| Policy Administration: Monitoring, Compliance | Board of trustees has been formed comprising DG-BEE, Joint Secretary, MoLaw, Joint Secretary, MoP, a senior person from Power Finance Corporation and an energy efficiency expert from TERI. Trustees to monitor quarterly reports presented by the Fund Manager. | |

**TABLE 9: ROLES & RESPONSIBILITIES OF PRIMARY STAKEHOLDERS - VCFEE**

| BEE | Fund Manager | Board of Trustees |
|---|---|---|
| Applies to Fund Manager for equity | Conducts due diligence | Approve the investment strategy |
| Submits documents for pre-approval | Develops investment strategy and pipeline of projects | Review the progress of funds regularly |
| Raises remaining equity and debt | Makes decisions on investments, exit strategies, management of liquidity and participate in management of investee equities | |

*Source: Study by research team*

# Conclusion

The NMEEE is predicted to help achieve avoided capacity addition of 19,598 MW, attain fuel savings of 23 million tons per year and reduce greenhouse gases by 98.55 million tonnes per year. It is proposed that this will be attained through objectives and deliverables across two components – industry (PAT scheme) and appliances (DELP and SEEP). Across both these instruments, several positives emerge. One, the *institutional mechanism* for both the PAT and MTEE (through the DELP and SEEP) is well designed. There is clarity in role assignments of various stakeholders. This is critical, as it sets the stage for effective compliance, due diligence and an objective MRV. Second, *selection of various stakeholders* has been given due consideration, keeping in mind the core competencies and profiles of existing organisations. The only exception here is the SDA, wherein the BEE has had to step in to provide training and development needs. Third, groundwork in the form of *detailed baseline evaluations* to feed into the design of both the PAT and the DELP has ensured a robust design. Fourth, *the BEE has exhibited extreme proactiveness in bringing on board crucial stakeholders such as DCs, SDAs, AEAs, and FIs through workshops and trainings. In the case of DCs, formats for entry of energy related information have been made much simpler. Also, modifications suggested by stakeholders have been kept in mind and mid-course changes in scheme design have been taken*. Fifth, mechanisms (preparation of compendiums and case studies, conferences, websites) to *share best case practices* between DCs have been initiated. Lastly, the BLY and subsequently the DELP programme have ushered a *market transformation* in the use of CFLs and LEDs respectively, the initial objective that it set out to achieve.

There is much to look forward to under the NMEEE – Will PAT cycle 1 be a compliance market? How will the PAT be expanded – will it be broadened (bring more DCs under the ambit) or deepened (reducing energy consumption thresholds)? Will the price of LEDs fall further? How will the SEEP programme take off? Will the exhorting of ESCOs and FIs to take up EE projects be successful? Having evolved through complex challenges in putting place the framework for these various instruments, the role of the BEE and the MoP and the future success of these programmes will depend on continuously reviewing and consolidating its intrinsic mechanisms, and whether or not they can be adapted to changes in economic and political scenarios.

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## ANNEXURE: PAT SCHEME UNDER THE EC ACT

| Rules/Regulations/ Notifications under EC Act (2001) | Purpose |
|---|---|
| Rules 2007 | Defining how DCs should submit Form 1 (status on energy consumption) |
| Rules 2008 | Defining process and timelines associated with submission of Form 1, Form 2 (recommendations of AEAs for improving EE), Form 3 (EE measures implemented, progress made, savings etc.) |
| Regulations 2010 | Timelines and process for conducting energy audits to gear up for trading of ESCerts |
| Amendments, May 2010 | Trading of ESCerts |
| Rules 2012 (PAT rules) | Details on operation of PAT |
| **Notification, Date/Year** | **Purpose** |
| December 2006 | Minimum qualifications for energy managers |
| Rules 2010 | Allows for SDAs to appoint an inspecting officer to carry out inspection at the premises of the DCs for ensuring compliance to Rules 2007 and Rules 2008 |
| Regulations 2010 | Certification procedures for energy managers.<br>Qualifications for AEAs and maintenance of their list |
| March 2012 | Notification of Energy Consumption Norms & Standards for DCs under PAT cycle 1 |
| March 2014 | Notification mandating DCs to get audit undertaken by AEAs in accordance with Regulations 2010 |

*Source: Study by research team*

*Note: DC = Designated Consumer; ESCert = Energy Savings Certificate; AEA = Accredited Energy Auditor; SDAs = State Designated Agencies*

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