Closing the Energy Efficiency Financing Gap through Innovative Implementation Approaches:

Deep Dive Workshop on:
Practical Actions for Accelerating Energy Efficiency: Finance, Policy, and Public-Private Partnerships

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Energy & Extractives
Washington D.C.
Scaling Up EE Needs an Integrated Enabling Environment: *finance is one part of the puzzle*

**EE ENABLING ENVIRONMENT: THE ESSENTIAL ELEMENTS**

**Policies, planning and regulations**
- Overarching legal framework, e.g. EE Law
- Cost-reflective energy pricing
- Codes and standards with enforcement mechanisms
- EE incentive schemes with funding sources
- EE targets by sector
- Public budgeting and procurement rules to encourage EE

**Information and communication**
- Databases:
  - Energy consumption
  - EE technologies
  - Service and equipment providers
  - Case studies
- Market assessment: industry, buildings
- Information centers
- Broad, sustained public awareness
- Labeling: appliances, equipment, vehicles

**Technical capacity**
- Energy auditor/manager training and certification
- Private sector training: banks, ESCOs/EE service providers, end users
- EE project templates: audits, M&V plans, EPC bidding documents, contracts
- Energy management systems

**Financing and incentives**
- Dedicated EE financing
- Commercial bank lending: credit lines, guarantees
- Cashflow-based EE financing
- Commercial ESCO financing
- Public sector EE financing
- Residential home/appliance credit
- Equipment leasing

**Agencies and institutions**
- Dedicated entity with EE mandate
- Clear roles and accountability
- Inter-ministerial coordinating body
- Monitoring and compliance enforcement
- Authority to formulate, implement, evaluate, and report on programs
- Tracking progress towards EE targets

SE4ALL 2030 Targets and Financing Gaps

Source: SE4ALL- GTF (2015)
Where are Future Energy Efficiency Investments Required?

EE Investments need to increase by 4.3x of current levels
Most action will be in Europe, Developing Asia and North America

Source: SE4ALL- GTF (2015)
How World Bank Supports EE Programs
(Financing Sources & Technical Assistance)

Technical Assistance & Capacity Building/Training

- Utility Load Research
- Program Design and Implementation
- Consumer Surveys
- Technical Specifications
- Procurement
- Testing and Quality Issues
- M&V and Impact Evaluation
- Tariffs or Financial Policy Incentives (Taxes)
- Inefficient EE Lighting (IL) Phase Out Policies

Institutions: Electric Supply/Distribution Utilities; Municipalities, etc.
Financing Sources and Instruments for Large Scale EE Investment Programs

- Public Investments (by Government and electric utilities)
- Support from Development Finance Institutions such as the World Bank through following instruments:
  - Soft/low interest investment lending,
  - Grant finance, mostly for technical assistance,
  - Lending through utilities or financial intermediaries (incl. private capital leverage)
  - Development Policy Credit
- Support from Global Climate Finance Mechanisms
  - Carbon Finance – Clean Development Mechanism
  - NAMAs, NDCs, etc
  - Clean Technology Fund (CTF) – also GCF
  - Global Environment Facility (GEF)
- Modality of Finance
  - Stand –alone
  - Blended
  - PPPs
Energy Efficiency Financing and Leverage

EE Commitments, FY10-15 (WB plus leverage)

Commitments, M USD

- China: (9)
- Mexico: (2)
- Poland: (1)
- Ukraine: (1)
- South Africa: (2)
- Vietnam: (2)
- Turkey: (2)
- Brazil: (1)
- India: (2)
- Uzbekistan: (2)
- Albania: (2)
- Belarus: (1)
- Kenya: (4)
- Morocco: (1)
- Philippines: (36)

Legend:
- Green: Counterpart & other financing
- Blue: WB financing
Sustainable EE Financing Mechanisms: Utilizing Public Finance to Mobilize Private Capital

Market Maturity

Commercial Financing

Energy Efficiency financing ladder

Advanced commercial or project financing (ESCOs)

Vendor credit, leasing

Commercial financing, bonds

Partial risk (first loss) guarantees

Credit line with commercial bank(s)

Credit line with municipal (development) bank

ESCOs (Super ESCOs)

EE Funds (Revolving, Special, Mezzanine)

Utility “on-bill” financing (DSM)

MOF financing w/ budget capture

Budget financing, grants w/ co-financing

Grants/ Subsidies

Global ESCO Development Results have been Mixed

- Some countries, such as USA, Canada, Germany, Australia, France, China, Japan, Korea, Armenia etc. have seen good growth of the ESCO industry.
- Others, such as India, Turkey and Thailand, etc. have seen limited ESCO growth and development.
- Many barriers to ESCOs particularly in the public sector

# ESCO Global Experiences & Results: Examples of Success

<table>
<thead>
<tr>
<th>Country</th>
<th>Market Size</th>
<th>Results</th>
<th>Projects</th>
</tr>
</thead>
</table>
| United States (FEMP) | US$3.8 billion | - 18 trillion BTU/yr (2006)  
- US$7.1 billion energy cost savings | 460 ESPC projects           |
| Canada (FBI) | Can$320 million       | - 20% energy intensity reduction  
- Can$40 million energy cost savings  
- 285 kt CO₂ reduction | 85 EPC projects (7,500+ buildings) |
| Germany      | ~€200 million         | - 20-30% energy cost reduction  
- €30-45 million energy cost savings/yr | 2,000 properties            |
| Japan        | ~10 billion yen       | - 12% reduction energy intensity  
- 265kt of CO₂ reduction          | 50 ESPC projects in FY06     |
| South Korea  | ~220 billion Won      | n/a                          | ~1,400 public ESCO projects |

**CHINA:** In 1997, only 3 ESCOs. In 2015, 5,000 ESCOs with $10 billion business
Sustainable EE Financing Mechanisms: Utilizing Public Finance to Mobilize Private Capital

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Factors Determining Choice of EE Financing Mechanism

- Selection of mechanisms depends on local conditions
- Different mechanisms may be needed for different sectors
- Combinations of mechanisms may be more effective
- International experience provides useful information, but must be adapted to local conditions
## India – Energy Efficiency Potential

### Energy Efficiency Potential Across Sectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Market</th>
<th>Investment potential (Rs crores)</th>
<th>Thermal mtoe</th>
<th>Electrical Billion kilowatt-hours</th>
<th>Avoided Capacity MW</th>
<th>Payback period (years)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Industrial</td>
<td>12,100</td>
<td>49</td>
<td>7,000</td>
<td>3,400</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Generic energy efficiency</td>
<td>4,200</td>
<td>23.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Process energy efficiency</td>
<td>7,900</td>
<td>25.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Commercial</td>
<td>570</td>
<td>1.71</td>
<td>553</td>
<td>360</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Government-owned offices</td>
<td>340</td>
<td>0.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Government-owned hospitals</td>
<td>85</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Privately owned hotels</td>
<td>145</td>
<td>0.18</td>
<td></td>
<td>53</td>
<td>0.6</td>
</tr>
<tr>
<td>3</td>
<td>Municipal</td>
<td>1,300</td>
<td>3.7</td>
<td>1,688</td>
<td></td>
<td>0.9</td>
</tr>
<tr>
<td>4</td>
<td>Agriculture b</td>
<td>30,000</td>
<td>30</td>
<td>5,095</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>5</td>
<td>PAT</td>
<td>30,603</td>
<td>9.78</td>
<td></td>
<td>5623</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Utilities (Utility Efficiency Program)</td>
<td>28,000</td>
<td></td>
<td>9,000</td>
<td></td>
<td>5 years</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,02,573</td>
<td>9.78</td>
<td>84.41</td>
<td>15,175</td>
<td></td>
</tr>
</tbody>
</table>

*Assuming average commercial electricity cost of Rs 5 per kilowatt-hour

b Assuming that half of the estimated 2 crore pump-sets, mostly inefficient, are replaced over the next 2–3 years through public–private partnership

cDistribution Energy Efficiency Program for reduction of Losses at the DT level.

Source: SIDBI - 2016
India’s Intended Nationally Determined Contributions (INDCs):

Key points

- Commitment to reduce the CO₂ emissions intensity by 33-35% by 2030 from 2005 levels.
- Increased thrust on Energy Efficiency, Renewable Energy, Cleaner Production, etc.
- Investment of USD 2.5 trillion required for meeting India’s climate change actions.
Partial Credit Guarantees (Risk Sharing) for Catalyzing EE Investments

- Designed to address the problem of access to finance
- Risk perception of banks and financial institutions
- Government or donor agency provides a partial guarantee covering loan loss from default
- Participating banks sign agreements specifying loan targets and conditions
- Banks conduct due diligence and process loans
- In case of loan default the guarantee covers a portion of the loss – the program may also include a “first loss reserve”
- Substantial technical assistance also provided to banks, project hosts and project developers (ESCOs)
## India: Partial Risk Sharing Facility (PRSF) for Energy Efficiency Project - DESIGN

**PDO:** Transform the energy efficiency (EE) market by promoting increased level of EE investments through Energy Service Performance Contracting (ESPC) delivered by Energy Service Companies (ESCOs)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Financing</th>
<th>Execution</th>
<th>Impact</th>
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<tbody>
<tr>
<td>▪ Provide partial credit guarantees to participating Financial Institutions (PFIs) including banks and Non Banking Financial Companies (NBFCs) and the Small Industries Development Bank of India (SIDBI) for loans extended to energy saving projects being implemented by ESCOs</td>
<td>▪ <strong>GEF grant:</strong> US$12 m (first loss)</td>
<td>▪ <strong>SIDBI</strong> (US$4 m)</td>
<td>Mobilize private financing: US$37 m of GEF and CTF resources are expected to mobilize over US$100 m of commercial financing for energy efficiency investments</td>
</tr>
<tr>
<td>▪ Provide TA and capacity building for participating financial institutions, ESCOs, and beneficiaries</td>
<td>▪ <strong>CTF guarantee:</strong> US$25 m</td>
<td>▪ <strong>Energy Efficiency Services Limited</strong> (US$2 m)</td>
<td></td>
</tr>
<tr>
<td>▪ Carry out market development, project management, awareness building and outreach to beneficiaries and stakeholders</td>
<td>▪ <strong>GEF grant:</strong> US$6 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Develop standard appraisal and transaction documents, reporting templates, energy efficient guidelines, capacity building and training, and online support, etc.</td>
<td>▪ <strong>SIDBI</strong> Window-US$6 m &amp; PFI Window-US$31 m)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Project duration: 15 years (initial period of 10 years and a follow-on period of 5 years)
India Partial Risk Sharing Facility for Supporting EE Investments through ESCOs

Partial Risk Sharing Facility
GEF $12 M + CTF $25 M

Technical Assistance
(GEF $6 M)

Risk Sharing Facility

Energy Efficiency Services Limited
(Super ESCO)

Small Industries Development Bank

Lenders - Participating Financial Institutions (PFIs)

Participants in Energy Efficiency Lending under PRSF

Access to Risk Sharing

Independent M&V Agency

Monitoring & Verification

Energy Service Companies (ESCOs)

Host Entity (Municipalities, Large Industries, MSMEs, and Commercial Buildings)
India Partial Risk Sharing Facility (PRSF) for Energy Efficiency

PRSF Website
http://prsf.sidbi.in/

Partial Risk Sharing Facility for Energy Efficiency (PRSF)

Notifications & Circulars

Objective

Key Links

Important Links

Project Management Unit, PRSF

World Bank Group
Energy & Extractives
Thank You

For questions, please contact:

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