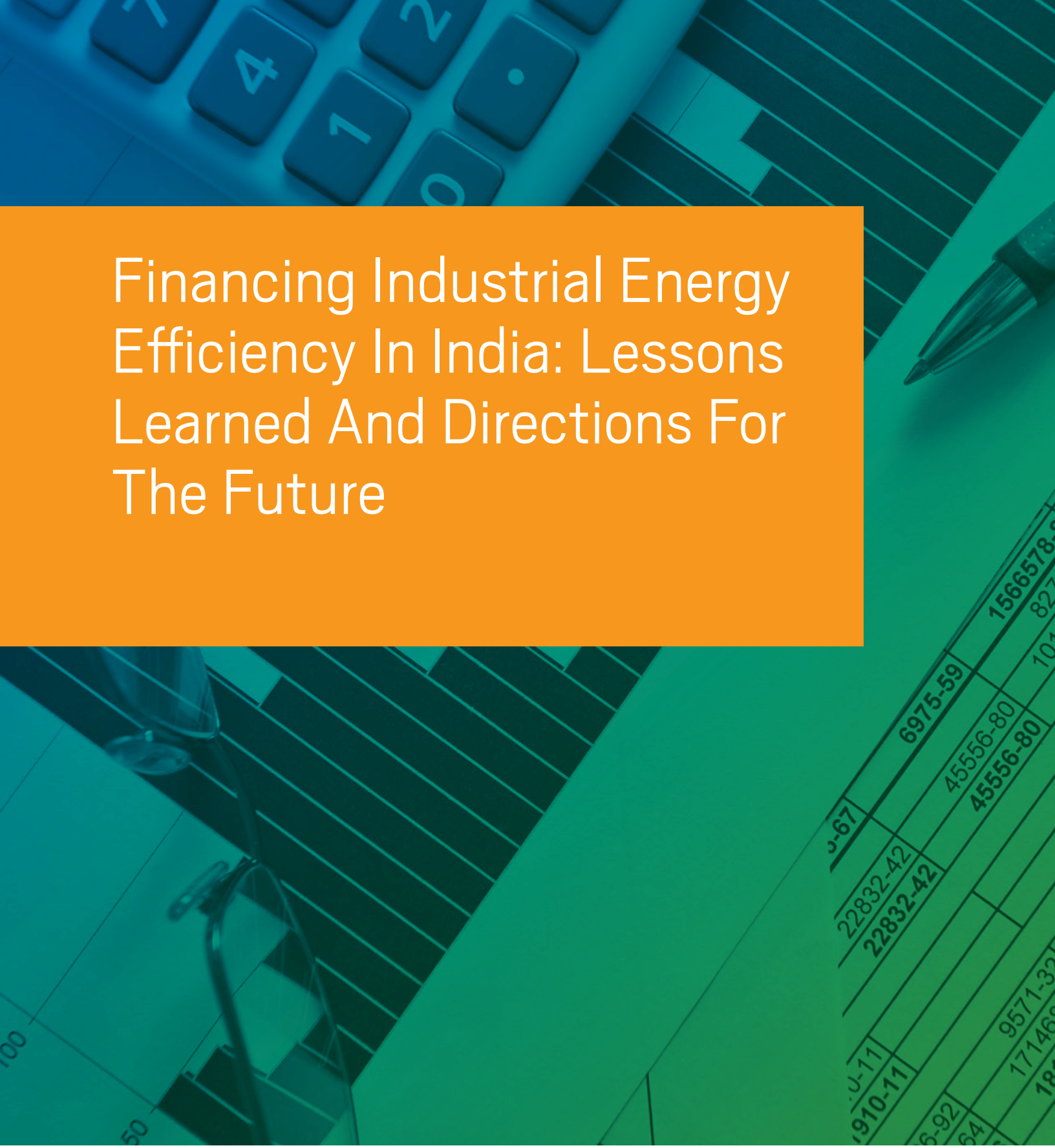
Financing Industrial Energy Efficiency In India: Lessons Learned And Directions For The Future



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Financing Industrial Energy Efficiency In India: Lessons Learned And Directions For The Future

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Prepared for Institute for Industrial Productivity by SRC Global Inc.

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The Institute for Industrial Productivity (IIP) provides companies and governments with the best energy efficiency practices to reduce energy costs and prepare for a low-carbon future. Our global team and independent experts offer an integrated service package comprising technology, policy, and financing components.

We are the partner of choice for companies and governments—whether the need is best practice information or a tailored approach to implementing an initiative.

The Institute for Industrial Productivity works across the globe with a near-term focus on China, India, and the USA to ensure industrial stakeholders have access to the most effective energy efficiency technology, policy, and financing approaches. We do this by:

- sharing best practices and providing access to a network of international experts;
- developing original research, analysis, and databases; and
- bridging the gap between government policy and industry implementation.

Companies, industry associations, and governments can leverage our expertise to achieve their goals.

Many companies, industry associations, and governments are aware that increasing energy efficiency cuts costs and helps achieve sustainable economic growth, and they establish goals to boost energy productivity. The Institute for Industrial Productivity helps these organizations understand which technologies, policies, and financing options will help them achieve their vision. Our integrated technology, policy, and financing model and our broad network of experts make us the partner of choice for governments and companies that share our goal of competitive industries through a low-carbon future. The Institute for Industrial Productivity is a nonprofit organization independently funded by the ClimateWorks Foundation, serving as its Best Practice Network partner for the industrial sector.

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Abbreviations and Acronyms

ADB	Asian Development Bank
BEE	Bureau of Energy Efficiency
BHC	British High Commission
BWT	Bank Working Team
CDI	Cluster Development Initiative
CEI	Central European Initiative
CEF	clean energy fund
CEO	chief executive officer
CIF	Climate Investment Funds
CGTMSE	Credit Guarantee Trust Fund Scheme for Micro and Small Enterprises
CGTSME	Credit Guarantee Trust Fund for Small and Medium Enterprises
CTF	Clean Technology Fund
CWT	Country Working Team
DPR	diversified payment right
DSM	demand-side management
EBRD	European Bank for Reconstruction and Development
Ecosmart	Infrastructure Leasing and Finance Corporation Ecosmart Limited
EE	energy efficiency
EESL	Energy Efficiency Services Limited
EMC	Energy Management Center
EMCAT	Energy Management Consultancy & Training Project
ESCO	energy service companies
FI	financial institution
GEF	Global Environment Facility
GHG	greenhouse gas
GIZ	German Agency for International Cooperation
GOI	Government of India
IBA	Indian Banks Association
IDBI	Industrial Development Bank of India
IDFC	Industrial Development Finance Corporation
IEE	industrial energy efficiency
IEEP	Industrial Energy Efficiency Project
IIEC	International Institute for Energy Conservation
IIP	Institute for Industrial Productivity
IIP-India	Institute for Industrial Productivity's India operations
IL&FS	Infrastructure Leasing and Finance Corporation
IMG	Inter Ministerial Group
IREDA	Indian Renewable Energy Development Agency
IT	information technology
KSECF	Kerala State Energy Conservation Fund
JICA	Japan International Cooperation Agency
JNNSM	Jawaharlal Nehru National Solar Mission
LBNL	Lawrence Berkeley National Laboratory
M&V	measurement and verification
MOEF	Ministry of Environment and Forests
MSME	micro, small, and medium enterprise
MW	megawatt

MWh	megawatt hour
NCEF	National Clean Energy Fund
NGO	non-governmental organization
NMEEE	National Mission on Enhanced Energy Efficiency
NPA	non-performing asset
PAT	Perform, Achieve, and Trade
PBC	public benefit charge
PFC	Power Finance Corporation
PPP	public-private partnership
PRGF	Partial Risk Guarantee Fund
PSL	priority sector lending
R&D	research and development
RBI	Reserve Bank of India
RCF	Regional Climate Foundation
RE	renewable energy
SBI	State Bank of India
SCEF	State Clean Energy Fund
SEB	state electricity board
SEC	specific mandated energy consumption
SEEP	Super-Efficient Equipment Program
SEFF	Sustainable Energy Financing Facilities
SIDBI	Small Industries Development Bank of India
SME	small and medium enterprise
SRC	SRC Global Inc.
TA	technical assistance
TDB	Technology Development Board
TIFAC	Technology Information Forecasting and Assessment Council
TPGF	Technical Performance Guarantee Facility
TWh	terawatt hours
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNF	United Nations Foundation
UNIDO	United Nations Industrial Development Organization
USAID	U.S. Agency for International Development
VCFEE	Venture Capital Fund for Energy Efficiency

1 Introduction

1.1 Background

The Institute for Industrial Productivity (IIP) is a nonprofit organization established by the ClimateWorks Foundation in 2010 to focus on energy efficiency in the industrial sector. IIP fosters implementation of a wide range of existing and emerging technologies to achieve significant reductions in greenhouse gas (GHG) emissions. As the ClimateWorks best practice network in industrial energy efficiency (IEE), IIP is part of a global network addressing climate change issues. IIP works in partnership with governments, industrial enterprises, research organizations, financial institutions (FIs), multilateral and bilateral development organizations, and other stakeholders to reduce industrial impacts on climate.

IIP established its Indian operations (IIP-India) in early 2011 and works closely with Shakti Foundation, a ClimateWorks Regional Climate Foundation (RCF) that provides grants to promote energy efficiency (EE) in India. IIP also functions as the best practice network for IEE in collaboration with RCFs in China and the United States. IIP's mission is to significantly reduce GHG emissions by giving business leaders and policy makers access to effective practices, technologies, and tools to advance industrial productivity.

1.2 Project Rationale

IIP's overall goal in India is ambitious—to reduce GHG emissions in the industrial sector by 130 million tons of CO_2 equivalent by 2030. While IIP's main focus is on large industrial enterprises, it also addresses needs and opportunities in the small and medium enterprise (SME) sector.

IIP recognized that a major barrier to scaling up the implementation of EE projects in India is the availability of financing. Therefore, IIP is interested in understanding and addressing the financing issues and barriers related to IEE in India. During the last 15 years, many initiatives in India have sought to develop policies and programs that address the financing issues related to IEE; however, progress in achieving widespread implementation of EE projects, both in large industry and in SMEs, has been far short of the potential. Consequently, IIP undertook this study to review and assess IEE efforts in India and define initiatives and actions for the future.

1.3 Project Objectives

This project was designed to help establish a more transparent and efficient market for financing EE projects in India and to promote increased investment by Indian FIs and other stakeholders (including multilateral and bilateral donor agencies). To accomplish these objectives, the project identified best practices and new and innovative financial instruments to reduce financing costs and delays, to better manage financing risks, and to improve access to capital for large industry and SMEs (including SME energy service companies [ESCOs]) seeking financing for EE projects.

The specific objectives of the project were to accomplish the following:

- Conduct a comprehensive review of current, prior, and planned IEE finance policies, programs, and activities in India (covering both large industry and SMEs), and document the various initiatives in a standard format
- Identify the major initiatives and activities undertaken, the results of these initiatives, and the lessons learned
- Establish a Bank Working Team (BWT) and collaborate with the BWT to review and develop concepts for new and innovative financial products
- In cooperation with IIP-India, establish a Country Working Team (CWT) and review with the CWT the concepts for new and innovative financial products
- Define the structure of recommended new and innovative financial products to help scale up the implementation of IEE projects

IIP commissioned SRC Global Inc. (SRC), an international research and consulting firm, to conduct this assessment.

1.4 Summary of Major Project Tasks and Activities

The project team conducted the following major tasks and activities:

Identification and Review of Prior, Current, and Planned Industrial Energy Efficiency Financing Initiatives

The SRC project team identified a total of 37 prior, current, and planned IEE initiatives in India by government agencies, multilateral and bilateral donors, industrial associations, and FIs. For each initiative, the available information was obtained from existing documents and, to the extent appropriate, from interviews with selected government agencies, donors, and FIs. The information developed for each initiative includes the following: (i) the objectives and scope, (ii) the barriers addressed, (iii) the industrial sectors covered, (iv) the major activities, (v) the results, and (vi) the lessons learned and potential for replication. A major focus of the task was to identify how IIP can coordinate with and possibly complement current and planned programs (including those under the Department of Science and Technology, the Ministry of Environment and Forests [MOEF], and the National Mission on Enhanced Energy Efficiency [NMEEE]).

A standard template was developed to summarize the key characteristics of each of the major initiatives to facilitate review and comparative assessment of the objectives, activities, results, and lessons learned.

Interviews with Industrial Energy Efficiency Experts

After developing the initial information from published reports, the project team identified the need to conduct interviews with IEE "experts" with substantial relevant experience. These interviews were designed to obtain additional information as needed to supplement the program summaries and document the key issues or challenges identified in past and present IEE financing programs in India. The project team prepared a structured Interview Guide to elicit the experts' views regarding key issues and barriers, efforts conducted in the past to address these issues and barriers, experiences and lessons learned from these efforts, and potential future interventions and activities that could be undertaken to scale up IEE implementation. The team conducted 25 interviews (in person or on the telephone) with representatives of banks and FIs, multilateral and bilateral donor agencies, private equity firms, industry associations, government agencies, and non-governmental organizations (NGOs).

Bank Working Team

In cooperation with the Director of IIP's India Office and IIP's Director of Financial Products, the project team convened a BWT comprising representatives of FIs that have been active in innovative financing of IEE projects. The banks represented on the BWT included the Reserve Bank of India (RBI), ICICI Bank, Small Industries Development Bank of India (SIDBI), Industrial Development Bank of India (IDBI), State Bank of India (SBI), and HSBC.

The initial findings of Task 1 and the results of the expert interviews were summarized into a working paper documenting past and present IEE financing activities in India and identifying some working hypotheses regarding promising innovative approaches to increase access to finance, particularly for SMEs and ESCOs. A meeting of the BWT was convened to review and discuss this working paper and to obtain the BWT members' views on the major potential new initiatives identified in this project.

In addition, the project team and IIP representatives met with senior HSBC officials to discuss the bank's interest in promoting increased financing of EE projects and to review some of the initiatives identified in the project with HSBC.

Country Working Team

With the assistance of IIP's Head of the India Program and IIP's Director of Financial Products, a team of stakeholders (called the "Country Working Team") was convened. The CWT included representatives of government agencies, donor agencies, industry associations, energy service providers, FIs (beyond those represented on the BWT), private equity firms, and financial consultants. A CWT stakeholder workshop was conducted to review experiences and lessons learned, as well as to review and discuss the feasibility, advantages, limitations, and strengths and weaknesses of potential new and innovative financing instruments.

Final Report

This Final Report was prepared based on the results of the above activities.

1.5 Outline of this Report

- **Section 2** provides a summary of the review of IEE studies and projects in India.
- **Section 3** provides a summary of the interviews conducted by the project team with IEE experts.
- **Section 4** presents an overview of the barriers to IEE financing identified through the interviews and review of IEE studies and projects and the suggested measures to address these barriers.
- **Section 5** discusses proposed new initiatives for IIP based on the assessments conducted in this project and the results of discussions at the BWT meeting and the CWT stakeholder workshop.
- **Section 6** provides recommendations for future IIP activities.
- **Annex A** provides summaries of the IEE programs and studies in standard template formats.
- **Annex B** presents the letter from IIP to RBI requesting that RBI designate EE loans as priority sector lending (PSL).

2 Review of Prior, Current, and Planned Industrial Energy Efficiency Financing Initiatives

2.1 Overview

The project team identified studies and programs conducted by government agencies, multilateral and bilateral donors, industrial associations, and FIs to promote or facilitate financing for IEE projects. This process focused on ongoing and planned efforts as well as projects and studies completed during the last 20 years. For each study or program, the team identified available reports and documents, obtained and reviewed the information, and summarized the material in a standard template.

These activities also included a review of new infrastructure financing procedures for SMEs to determine whether these procedures consider EE (process and equipment).

2.2 List of Studies and Programs

Table 2.1 lists the 37 studies and programs reviewed, and Table 2.2 provides a sample template for the summary information. Annex A provides summaries of the studies and programs.

2.3 Identification of Industrial Energy Efficiency Experts

While compiling summaries of the IEE studies and programs, the project team identified a number of policy makers and practitioners active in IEE financing. These individuals were then interviewed to supplement the program summary information in this document. The results of these interviews are presented in Section 3.

2.4 Cluster Development Initiative for Small and Medium Enterprises

SMEs are an important part of India's industrial infrastructure. SMEs are generally located in sector- or product-specific geographic clusters. More than 350 such clusters exist in India's textile, leather, pharma, foundry, and other industries. These SME clusters contribute significantly to India's employment and exports. In addition, close to 4,000 artisan and agro processing clusters provide employment to a large cross-section of society. SMEs in these clusters lack adequate infrastructure, which adversely affects their industrial competitiveness.

Development of the needed infrastructure for SMEs has been entrusted by the Government of India (GOI) to the Infrastructure Leasing and Finance Corporation (IL&FS), as endorsed by the Central Bank of India, Housing Development Finance Corporation Limited, and Unit Trust of India. Over the years, IL&FS has broadened its shareholder base and added various institutional shareholders, including international organizations. A key mandate for IL&FS is to catalyze the development of India's infrastructure, with a major focus on developing and commercializing infrastructure projects and creating value-added financial services.

IL&FS established the Cluster Development Initiative (CDI) as a strategic business unit to undertake cluster development programs across various industries. CDI is designed to enhance the competitiveness of SMEs through a cluster-based, public-private partnership (PPP) approach. CDI addresses the infrastructure, market access, technology, and finance requirements of SMEs by developing modern industrial clusters in textiles, pharmaceuticals, leather, light engineering, agro/food processing, crafts and other vertical industries across the country. GOI has also appointed IL&FS as the Project Management Consultant to set up 25 integrated textile park clusters in the country.

Services Provided

CDI provides capacity building; financial, engineering, technology, and marketing linkages; and other services. CDI provides these services to the targeted cluster enterprises in an integrated and commercially sustainable manner. These services are provided to the targeted cluster enterprises in an integrated and commercially sustainable manner.

TABLE 2.1: List of Industrial Energy Efficiency Programs and Studies

Completed Programs and Studies (showing completion dates)
United Nations Development Programme (UNDP) – Energy Conservation in Small Tea Processing Units in South India (2011)
Frankfurt School – Innovative Loan Product for MSMEs (2010)
IDFC Research on Infrastructure Financing (2010)
JICA Credit Line for Energy Efficiency (2010)
McKinsey Report – Environmental and Energy Sustainability (2010)
The Climate Group – Report on Climate Change and Finance in India (2010)
Energy Conservation and Commercialization – ECO III – SME Study (2009)
World Bank Paper – Lessons Learned – EE Financing (2009)
World Resources Institute ESCO Report (2009)
ECO-Asia Clean Development and Climate Program Review of Financing Programs in India (2008)
UNDP Removal of Barriers to Energy Efficiency Improvement in Steel Rerolling Mill Sector (2008)
World Bank/UNEP/UNF 3-Country EE Project (2008)
ICLEI Study of RE and EE in India (2007)
IREDA EE Financing Scheme (2006)
ADB Energy Efficiency Improvement Program (2005)
Asian Development Bank – Industrial Energy Efficiency Project (2006)
Energy Conservation and Commercialization – ECO II (2005)
Energy Conservation and Commercialization – ECO II – State Energy Conservation Funds (2005)
Crestar Report on Innovative EE Financing (2004)
U.S. Agency for International Development (USAID) – ECO I - Program (2004)
Lawrence Berkeley National Laboratory (LBNL) – Report on Role of MDBs in Industrial EE (1999)
USAID – Energy Management Consultancy & Training Project (1998)

Ongoing Programs and Studies
BEE Perform, Achieve and Trade (PAT) Scheme
BHC-IIEC (International Institute for Energy Conservation) – Public Benefits Funds for Clean Energy
Canara Bank – Energy Saving Loan Scheme for SMEs
Credit Guarantee Trust Fund Scheme for Micro and Small Enterprises
Kerala State Energy Conservation Fund
KfW Credit Line for Energy Efficiency
National Clean Energy Fund
SBI – Project Uptech
Technology Development Board (TDB) – Fund for Technology Development and Application
Technology Innovation Fund – SRIJAN
United Nations Industrial Development Organization (UNIDO) – Promoting Energy Efficiency and Renewable Energy in Selected Micro SME Clusters
World Bank/GEF Project for EE Financing in MSMEs

Future Programs and Studies
BEE Partial Risk Guarantee Fund
BEE Venture Capital Fund for Energy Efficiency
Clean Technology Fund Investment Plan for India

TABLE 2.2: Sample Summary Information – ADB Energy Efficiency Improvement Program

No.	Characteristic	Description
1	Program Title	ADB Energy Efficiency Improvement Program
2	Sponsoring Agency	Asian Development Bank (ADB)
3	Counterpart Agency	Bureau of Energy Efficiency (BEE)
4	Type of Program	Technical Assistance
5	Implementing Agency	Charles River Associates (Asia-Pacific) Pty. Ltd.
6	Start Date/End Date	2003–2006
7	Objective(s)	Contribute to the development of a sustainable private-sector market for EE by developing (i) the financial products required to meet the needs of the key stakeholders (project hosts, ESCOs, and FIs), and (ii) the institutional mechanisms for implementing these products
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	"Second-tier" industrial firms (including public-sector undertakings), commercial buildings, and municipalities
10	Barriers Addressed	Limited activity by energy users, ESCOs, and FIs with respect to EE project financing
11	Financing Mechanism(s)	Proposed the Partial Risk Guarantee Mechanism and Payment Security Mechanism to facilitate and promote EE project financing
12	Eligibility Criteria	N/A
13	Total Funding	A proposed line of credit of $100 million
14	Major Activities	• Reviewed and recommended a policy framework • Conducted a market assessment • Developed new financial products • Recommended candidate financial institutions to act as executive agency • Identified potential users and projects
15	Key Results	• Conducted a comprehensive market assessment • Developed the template for an ESCO project for government buildings • Concluded that a line of credit was not needed and recommended a risk-sharing program • Defined the structures of the Partial Risk Guarantee Mechanism and the Payment Security Mechanism to facilitate and promote EE project financing • Identified 10 potential projects for financing
16	Lessons Learned	• The market for EE in the target sectors was estimated to be Rs. 120 billion. • Banks and FIs stated that liquidity is not an issue in the Indian financial markets and that a sovereign ADB loan would not be very helpful. • Banks/FIs have a perception of high risk that may be partially addressed through a risk-sharing program.
17	Contact(s)	Dilip Limaye, Team Leader, dlimaye@attglobal.net
18	Reports/Publications	Energy Efficiency Enhancement Project: TA 3885-IND – Final Report, prepared by Charles River Associates (Asia-Pacific) Pty. Ltd., for Asian Development Bank and Bureau of Energy Efficiency, February 2005.
19	Other Comments	The results of this project were used by BEE to conduct the EE program for major government facilities using the ESCO mechanism.

As a part of the CDI, IL&FS has developed the requisite capabilities to take infrastructure projects from concept to commissioning. The organization has developed a pool of institutionalized resources and functional expertise in areas such as project management, project engineering, finance, risk management, and environmental–social management, all of which are strategic to the infrastructure development activity.

The specific services provided by IL&FS to SME clusters include the following:

- Infrastructure services
- Project development
- Project implementation
- Cluster development
- Environment and social services
- Education
- Technology
- Logistics and fleet management
- Facility management
- Financial services
- Project finance
- Investment banking
- Private equity
- Trust and fiduciary
- Auto infrastructure
- Depository, custodian, and professional clearing services

Activities Relevant to Energy Efficiency in Infrastructure Development

A review of the activities and initiatives of IL&FS indicates that EE is not explicitly considered in the infrastructure development and financing procedures. However, IL&FS has undertaken a number of activities that may relate to or can be enhanced to address EE. Some of these are summarized below:

Power Sector and Renewable Energy

The Power Group of IL&FS has engaged in activities related to project preparation, project development, project financing, and project execution of renewable energy (RE) projects, including the following efforts:

- Wind power development
- Cogeneration
- Waste to energy
- Small hydropower
- Bio-diesel
- Solar energy
- Geothermal energy

Environmental and Social Responsibility

IL&FS has recognized the need to demonstrate its commitment to environmental and social issues in each of its projects. The IL&FS Environmental and Social Policy Framework is founded on the concept of sustainable development and recognizes that environmental and social considerations add value in its business operations, helping to increase the effectiveness of infrastructure projects by minimizing impacts and risks. IL&FS has published a document summarizing its environmental and social policy and its operational and guiding principles.

Infrastructure Lessing and Finance Corporation Ecosmart

IL&FS established IL&FS Ecosmart Limited (Ecosmart) with a mandate to provide environmental and social services. Ecosmart's expertise spans planning, reviewing, and implementing environmental and social safeguards as an integral part of project development and implementation.

Potential Future Role of the Infrastructure Leasing and Finance Corporation

The range of activities conducted by IL&FS in infrastructure development and financing indicates that it may be possible for IL&FS to undertake a major role in facilitating and promoting EE in SME clusters. Specifically, IL&FS could engage in the following:

- Project aggregation
- Demonstration and implementation of innovative energy technologies
- Investment in cogeneration or tri-generation projects in industrial clusters
- Development of customized financial products for SME investments in energy-efficient products and technologies.

SRC Global and IIP invited IL&FS to participate as a member of the BWT. However, IL&FS was unable to participate in either the BWT or the CWT meeting. It is anticipated that SRC will arrange one or more meetings between IIP and IL&FS to explore the potential role of IL&FS in promoting and facilitating EE in SME clusters.

3 Interviews with Energy Efficiency Experts

3.1 Overview

While the review of IEE studies and programs provided useful information regarding the major characteristics of the prior initiatives related to IEE, it was important to supplement this information with insights gained by the practitioners who were involved in these programs, The project team, in cooperation with IIP, identified approximately 25 IEE experts who have considerable knowledge and experience regarding some of the studies and programs reviewed—and in some cases had actually participated in program implementation.

The project team conducted interviews with these experts in person and over the telephone. The intent of these interviews was to draw on the personal knowledge and experience of these experts to supplement the program summaries and document the key issues and challenges identified in past and present IEE financing programs in India.

3.2 Interview Guide

The project team prepared a structured Interview Guide to elicit the views of these experts on: the key issues and barriers to scaling up IEE; past efforts to address these issues and barriers; experiences, successes, failures, and lessons learned; and interventions and activities that could be undertaken to scale up IEE implementation.

The Interview Guide is shown in Table 3.1.

3.3 List of Experts Interviewed

The project team selected experts from banks and FIs, private equity firms, donor agencies, government agencies, NGOs, and consulting firms. The team completed 18 interviews.

Table 3.2 lists the experts.

TABLE 3.1: Interview Guide

Name of Expert		
Organization		
Contact Details		
Date of the Interview		
What are your roles and responsibilities with respect to financing industrial energy efficiency?		
What are the key issues and barriers you think are relevant to industrial energy efficiency (EE) programs – for large industries and for MSMEs?		
Issue/Barrier	**MSMEs**	**Large Industries**
Lack of availability of internal financing		
Lack of bank financing		
Perception of risk		
Limited knowledge and awareness of EE options		
Lack of interest/motivation		
Low priority by management on EE		
High transaction costs		
Low energy prices		
Identify EE programs/projects you have been involved in:		
Describe objectives of these programs/projects:		
Scope of above-referred programs/projects funding activity?		
How did these programs/projects address the barriers?		
What went right in the programs/projects?		
What went wrong in the programs/projects?		
What are your or your organization's proposed future activities in support of industrial energy efficiency promotion or financing?		
In your opinion, what types of action are required to promote/ encourage energy efficiency in the MSME and large industries?		
Are there any specific capacity building needs for large industry, MSMEs and banks/financial institutions?		
Would you like to offer any other suggestions to the Institute of Industrial Productivity to help guide their future activities?		
Can you suggest names of individuals we should contact for additional information?		

TABLE 3.2: List of Experts

Organization	Name	Comments
ICICI Bank	Jaisingh Dhumal	Leader in EE financing
IL&FS	Ravishanker Raman	SME infrastructure financing expert
IDBI	B.D. Save	Financing large industry
SIDBI	Rajiv Kumar	Leader in MSME financing
RBI	A. K. Misra	Bank regulator
HSBC	Aloka Majumdar	Partner with BEE
SBI	S. Balasubramanian	Project Uptech
Federation of Indian Chambers of Commerce and Industry	Vivek Pandit	Active in IEE Programs
USAID	S. Padmanaban	Major role in many IEE programs
BEE	Saurabh Diddi	NMEEE
National Productivity Council	D. Pawn Kumar	Technical Expert – IEE
Indian Renewable Energy Development Agency (IREDA)	K.P. Philip	IREDA Energy Efficiency Program
The Climate Group	Urvashi Devidayal	Status update
Frankfurt School	Sanjeev Tamhane	German Agency for International Cooperation (GIZ) Innovative SME Financing Project
Adelphi Consult	Kailash Mahajan	EE financing consultant
Alliance for an Energy-Efficient Economy	Ramesh Bhatia	EE Expert
Aloe Capital	Vivek Mehra	Private equity financier
Meghraj Capital	Chandrashekar Iyer	Private equity financier

4 Barriers to Financing Industrial Energy Efficiency and Suggested Measures

To document the barriers to EE financing and potential measures to address these barriers, the project team analyzed the results of the interviews and of the review of IEE studies and programs.

4.1 Barriers to Energy Efficiency Financing

Overview of Barriers

Many of the financial barriers to IEE arise from the unique characteristics of such projects relative to traditional investment projects. While EE reduces energy costs and improves the "bottom line" of enterprises, it does not increase the "top line," which may make it somewhat difficult for corporate or government executives and managers as well as bankers and other members of the financial community to clearly perceive the benefits of IEE. Further, IEE projects are typically much smaller than conventional projects for new plant construction, plant expansion, new product development, research and development (R&D), or facility modernization. Other salient characteristics of IEE projects include their high project development and transaction costs; utilization of new or innovative technologies; the relatively small value of their project assets; and, in some cases, utilization of new business models involving performance contracting and third-party implementation (by ESCOs or other types of energy service providers).

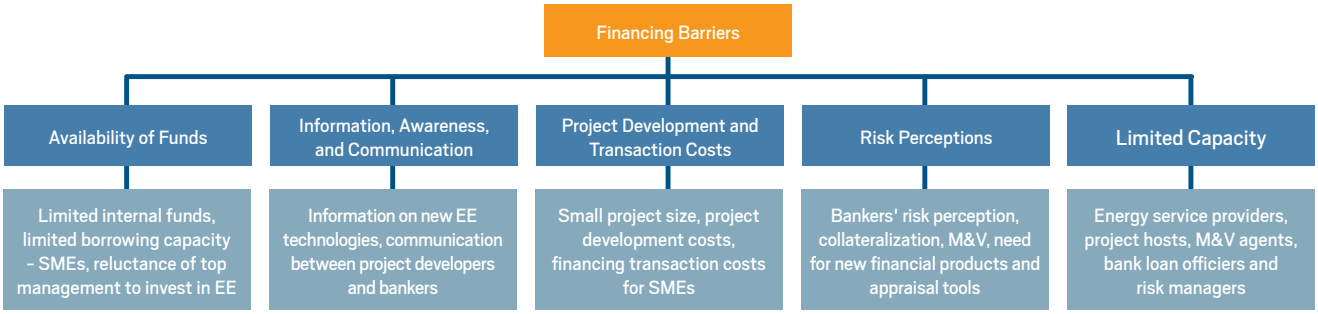
The interviews confirmed that the financial barriers to IEE projects in India fall into five major categories (analogous to those identified in the World Bank report on Clean Energy Financing[1]), as illustrated in Figure 4.1 and listed below:

1. **Availability of funds for investing in EE projects:** limited internal investment funds, limited borrowing capacity of SMEs, and reluctance of top management of industrial firms to invest funds in EE
2. **Information, awareness, and communication:** lack of information on new EE technologies and lack of communication between project developers and bankers
3. **Project development and transaction costs:** small project size; relatively high project development costs; and financial transaction costs, particularly for SMEs
4. **Risk assessment and management:** risk perceptions of bankers, limited collateral for project financing, difficulties in measurement and verification (M&V), and lack of customized financial products and appraisal procedures
5. **Lack of capacity:** limited understanding and capacity of energy service providers, M&V agents, project hosts, and bank loan officers and risk managers.

The intensity of these barriers is typically less severe for large industry than for micro, small, and medium enterprises (MSMEs). The interviews with IEE experts and BWT members pointed out the specific issues shown in Figure 4.1.

1 Limaye, Dilip R., Regulatory and Financing Mechanisms for Scaling-up Energy Efficiency, presentation at the World Bank Workshop on Appropriate Incentives to Deploy Renewable Energy and Energy Efficiency, Washington, DC, January 2012.

FIGURE 4.1: Financing Barriers to Industrial Energy Efficiency



Source: Compiled by authors based on review of IEE studies and programs and interviews with IEE experts.

Availability of Funds

Key issues related to the availability of funds for EE projects include the following:

- Lack of internal financing resources is a key barrier for MSMEs, but it is less relevant for large industry.
- Lack of interest or motivation on the part of top management is a significant barrier for both MSMEs and large industry. IEE investments are often driven by individual (top management) perceptions and preferences. In addition, MSMEs are influenced by the actions of recognized "industry leaders;" they tend to follow "first-movers."
- Lack of access to bank financing is a serious barrier for SMEs, resulting from their relatively weak balance sheets and lack of other collateral. Most SMEs are reluctant to seek bank financing, except for plant modernization or expansion projects. Availability of bank financing is generally not a major issue for large industries, as they have strong balance sheets, although some large enterprises are reluctant to commit any of their borrowing capacity for EE projects.

Development finance institutions, such as SIDBI and the Indian Renewable Energy Development Agency (IREDA), offer concessional financing for IEE. According to banking regulators, commercial banks (e.g., ICICI Bank and IDBI Bank) cannot on-lend any funds on a concessional basis, as they lack sovereign guarantees from GOI. For example, ICICI Bank has managed several donor-funded credit lines for which it has carried non-performing asset (NPA) risk on its books.

In general, existing bank IEE programs have minimal NPAs, indicating the low-risk profile of the projects funded. IDBI and ICICI have reported premature loan repayments on IEE projects. Notwithstanding this low risk experience, most bank IEE finance schemes have been launched by special departments. As a consequence, IEE financing has not been mainstreamed.

New investments in SME clusters can benefit from the inclusion of IEE elements; to date, however, India's national industrial policy has primarily focused on development of infrastructure rather than IEE.

It is likely that IEE financing can be scaled up if concessional terms (e.g., favorable interest rate, longer tenure, and grace period) could be arranged by the banks. Such terms could be facilitated by an Energy Efficiency Fund established by GOI to boost EE investments.

It is important to recognize that investment in IEE service or equipment businesses is as important as debt financing of IEE projects.

Information and Awareness

The major barriers related to information and awareness of EE options include the following:

- MSMEs have limited knowledge and awareness of IEE options, and management (owners) does not have time to obtain the needed information. Management may become interested only after a competitor has successfully implemented an IEE technology with demonstrable results.
- While most large enterprises, particularly those competing in international markets, have good information on IEE technologies, many others are not current on international best practices in their industries.
- Third-party project developers, such as ESCOs and equipment providers, have limited understanding of bank requirements and have difficulty preparing successful project proposals for financing.

Industry benchmarking can be useful in identifying EE opportunities, particularly in MSMEs. BEE's Perform, Achieve, and Trade (PAT) scheme is addressing this issue, but only for very large industries. Similar efforts are needed for smaller industries.

Project Development and Transaction Costs

The typical IEE project (with the exception of cogeneration and waste heat recovery) is much smaller than conventional bank-financed projects, and the "soft" costs of project development represent a high proportion of total costs. In addition, the cost of project appraisal is typically high relative to the financed amount, and bundling of projects to reduce transaction costs has not been widely practiced.

Risk Perceptions

Perception of risk in EE projects poses a somewhat stronger barrier for MSMEs than for large industries. Generally, bankers do not have sufficient information on IEE projects to understand the low technical risks of most IEE technologies. Respondents felt this barrier depends substantially on the type of IEE technologies proposed. Other key risk issues include the following:

- The perception of technology risk may also limit the interest of industrial managers in accepting proposals from vendors or ESCOs to implement new EE technologies.
- The credibility of energy audits needs to be improved; industrial management does not necessarily believe the recommendations of energy audits.
- Encouraging industrial enterprises to conduct energy audits and develop and implement energy management systems is important to attract EE investments. Incentive mechanisms need to be developed to promote effective audits with implementable recommendations.

Capacity Building

Capacity building is an important prerequisite to scaling up financing for IEE projects. Two specific suggestions emerged from the interviews (other than the commonly recognized need for capacity building of ESCOs):

- Training and capacity building of loan officers and risk managers in the areas of IEE technology characteristics and performance contracting business models
- Training of process designers and consultants in specific MSME clusters to implement and disseminate best practices with respect to EE technologies in those clusters

Another important consideration that emerged from the bank interviews was the need to obtain the commitment of senior bank management to IEE as an important business area. Without such express management commitment, it will be difficult to get the loan officers and risk managers to devote serious efforts to "mainstreaming" IEE lending.

The same consideration was expressed by the experts with respect to management of industrial enterprises. The top management of industrial firms needs to be informed and educated on the importance of IEE and the availability of IEE options that are technologically feasible and economically attractive.

4.2 Suggested Measures to Address Barriers

Based on the results of the interviews and the review of experiences and lessons learned from the IEE projects in India, the project team identified a number of measures that could potentially address the various barriers to scaling up EE projects. These are listed in Table 4.1.

TABLE 4.1: Suggested Measures to Overcome EE Financing Barriers

Suggested Measure	Rationale
Request RBI to designate EE lending as PSL	Increase bank lending for EE
Establish a "Technical Performance Guarantee Facility" for EE projects	Help equipment suppliers and ESCOs overcome the risk perception issue
Establish a risk-sharing and credit enhancement facility for MSME EE projects	Risk sharing may induce banks to consider lending to MSMEs
Create a National Energy Efficiency Fund	Increase the availability of funds, possibly using concessional financing. Such a fund can leverage bank financing
Develop Cluster Financing Schemes for MSMEs	Facilitate aggregation of projects and implementation of best practice technologies in MSME clusters
Develop financing programs for technology providers (equipment manufacturers, suppliers, vendors)	Address the barrier of limited interest and capacity of MSMEs to seek bank financing and focus on financing for technologies that have high IEE potential
Develop financing programs for "Greening the Supply Chain"	Use the buying power of large industries to influence the suppliers to implement IEE
Extend the PAT scheme to "less than very large" industries	Benchmarking and market-based incentives may promote IEE implementation
Capacity building of banks	Help loan officers and risk managers understand EE technology characteristics, Energy Savings Performance Contract business models, risks, and M&V approaches
Include EE in "rating" schemes for MSMEs (by CRISIL)	Increase interest of MSME owners and management in implementing IEE
Establish "Center of Excellence" for IEE finance	Disseminate best practices and innovative financial products for IEE financing
Publicize success stories of IEE implementation and financing in MSMEs through industry associations, leaders, and technical experts	Help "followers" adopt efficient IEE technologies
Document the fiscal and environmental benefits of IEE implementation	Help develop supportive policies and programs (including IEE fund and designation as priority sector)
Develop financing products for "cross-cutting technologies"	Promote increased implementation of technologies such as waste heat recovery, variable speed drives, combined heat and power, etc.
Implement demonstration projects for transformational technologies	Such demonstration project are needed to induce industrial enterprises to invest in new EE technologies
Develop equipment leasing schemes for IEE equipment in MSMEs	Facilitate implementation by financing vendors
Enhance the credibility of energy audits	Help industrial managers understand EE benefits and facilitate their decisions to undertake EE projects
Meghraj Capital	Chandrashekar Iyer

Source: Compiled by authors

5 Proposed Initiatives

5.1 Selected Initiatives

Based on a review of the various initiatives listed in Table 4.1, the following four initiatives were selected as the highest priority action items for IIP to pursue in the future:

- Request that RBI designate EE lending as "priority sector lending" (PSL) by Indian banks
- Establish a technical Performance Guarantee Facility (Savings Insurance Facility)
- Mainstream EE lending by incorporating it into corporate lending to major bank customers in a manner analogous to the European Bank for Reconstruction and Development (EBRD)
- Incorporate EE lending as part of a "Greening the Supply Chain Program"

These four options are summarized below.

5.2 The Reserve Bank of India Priority Sector Lending Program

Overview

GOI, as a policy initiative, emphasized that commercial banks should increase their involvement in financing priority sectors, such as agriculture, exports, and small-scale industries. At the direction of GOI, RBI initiated a program of directed credit through the PSL program as a major public policy intervention to ensure that (i) vulnerable sections of society get access to credit at an affordable rate, and (ii) there is an adequate flow of resources to those segments of the economy that have higher employment potential and impact poverty alleviation.

PSL supports many of the objectives of India's Five-Year Plans. The PSL program establishes targets for the percentage of lending to sectors designated as priority sectors. RBI reports that the success of PSL in the country is noteworthy.[2] This is reflected in the improved reach of the banking system; higher credit flow to the designated economic sectors; and more importantly, increased coverage of vulnerable populations. Commercial banks have achieved success in making credit available at an affordable cost to diverse segments of beneficiaries.

Review of the Priority Sector Lending Program

In 2011, RBI appointed a committee to re-examine the existing classification and suggest revised guidelines with regard to "priority sector lending classification and related issues." In this framework, the committee endeavored to examine the issues, understand the viewpoints of diverse stakeholders, and recommend appropriate changes in the current policy framework. The committee, chaired by Shri M. V. Nair, Chairman and Managing Director, Union Bank of India, arrived at initial findings and prepared a report in February 2012. RBI then invited comments on the Nair Committee report from banks, non-bank FIs, other institutions, and members of the public.

Designating Energy Efficiency as Priority Sector Lending

The project team concluded that adding EE financing to the list of designated priority sectors would considerably enhance lending to this important sector. A meeting was organized with Mr. Ajay Kumar Misra, General Manager, Rural Planning & Credit Department of RBI, to explore the possibility of designating EE financing as PSL. RBI responded that while it can certainly influence the definition of PSL in its capacity as the banking regulator, it faces the following constraints:

Priority lending as a policy by RBI and the Ministry of Finance has been designated for those sectors that are deprived of formal banking channels and need to evolve as economic units (these sectors include farming, very small businesses, and micro and small enterprises (medium enterprises are not included).

- Priority lending as a policy by RBI and the Ministry of Finance has been designated for those sectors that are deprived of formal banking channels and need to evolve as economic units (these sectors include farming, very small businesses, and micro and small enterprises [medium enterprises are not included]).

2 Reserve Bank of India, Report of the Committee to Re-Examine the Existing Classification and Suggest Revised Guidelines with regard to Priority Sector Lending Classification and Related Issues, February 2012.

- Several Ministries have approached RBI in the past to queue in new sectors for priority lending—these include rural information technology (IT), education, health, and others. RBI feels that too many competing sectors have made requests, and that they need to prioritize.
- In general, RBI, as a regulator, intends to keep the changes simple.

The project team recommended that IIP consider petitioning RBI to designate EE financing as PSL and to further discuss this matter at the BWT meeting. With the foregoing considerations in mind, IIP wrote to the Nair Committee to meet the deadline for comments. The letter is attached to this report as Annex B.

5.3 Technical Performance Guarantee Facility or Energy Savings Insurance

Rationale

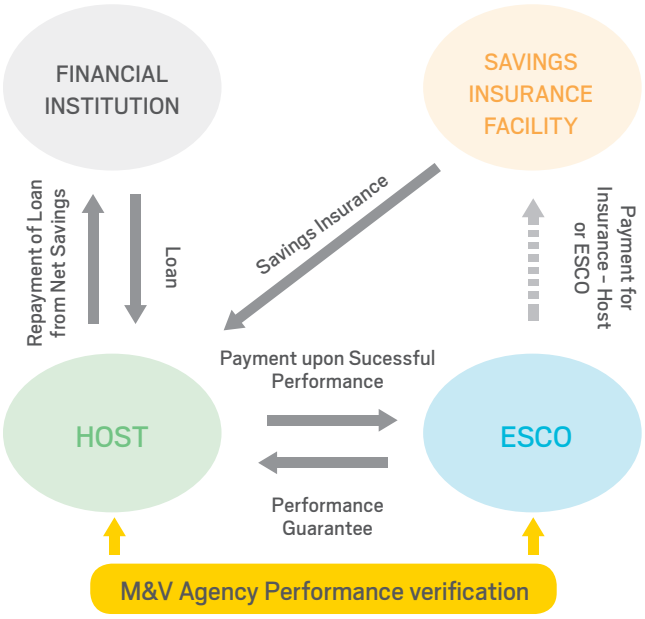
Barriers to using performance contracting to implement EE projects include the perception by banks that EE projects are highly risky and the generally low credibility of the performance guarantees provided by equipment vendors and ESCOs. One option to address these issues is the establishment of a facility that would guarantee the technical performance of the IEE technology proposed. In essence, such a facility would back up the performance guarantee offered by the equipment supplier or ESCO and make up the shortfall in the event the equipment fails to perform in accordance with the guarantee. Such a facility was initially called the Technical Performance Guarantee Facility (TPGF). It would essentially provide insurance that would reassure industrial decision makers as well as banks regarding the feasibility and performance of EE technology. During discussions with the CWT at the Stakeholder Workshop (see discussion below), it was decided that this facility should be called the Savings Insurance Facility to avoid any confusion with the partial risk guarantee facilities being planned by BEE and the World Bank.

Description

The two basic implementation models for financing EE projects are as follows:

- Financing by the host facility: Host facilities may finance the EE project using internal funds or a bank loan. If a bank loan is to be obtained, the host facility needs to provide collateral to the bank. The type and level of collateral required by the bank and the terms of the bank loan depend on the creditworthiness of the host and the type of project for which the host is seeking the loan.
- Financing by the ESCO: In this model, the host company does not invest any of its own funds. Financing for the project is provided by the ESCO. Because ESCOs have limited funds of their own, they will generally need to obtain bank financing.

FIGURE 5.1: Savings Insurance Facility with Project Host as the Borrower



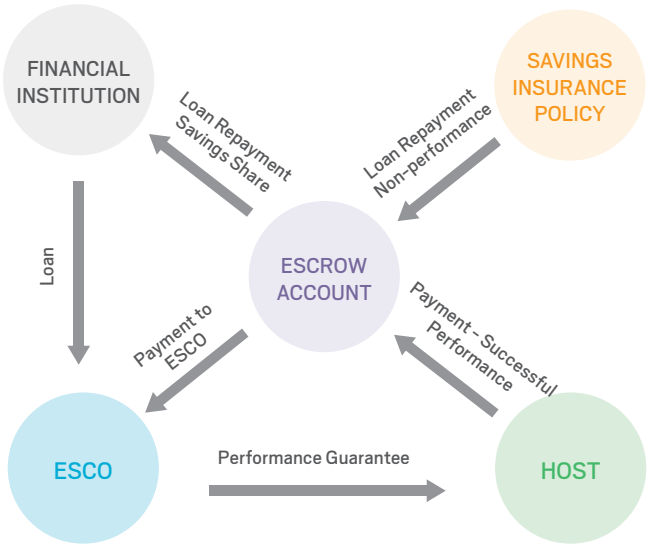
Source: Compiled by authors

Savings Insurance with Host as Borrower

In the first model (Figure 5.1), the host finances the project using its own funds or bank financing. The ESCO implements the project and is paid upon satisfaction of the performance guarantee. The terms of the performance guarantee and the M&V scheme are specified in the energy services agreement between the host and the ESCO. The M&V may be conducted by the ESCO; the host; or a designated, independent, third-party M&V agency. The payment terms may vary from a single payment upon demonstration of performance to several payments spread over one or several years.

The figure shows how the savings insurance facility will facilitate these transactions. The insurance facility will provide a performance guarantee to the host regarding the technical performance of the project after evaluating the capacity of the ESCO and the technical characteristics and risks of the project. The facility will specify that if the equipment installed by the ESCO fails or falls short of the performance guarantee, the facility will pay a specified amount that will cover the deficiency (or the loan service, if the host facility has borrowed funds from the bank). The facility will require that the M&V be conducted by an independent, third-party agency. In this manner, the facility provides reassurance and risk protection to the host regarding the technical performance of the project, and thereby facilitates the host's decision to undertake the project.

FIGURE 5.2: Savings Insurance Facility with ESCO as the Borrower



Source: Compiled by authors

Savings Insurance with ESCO as Borrower

Figure 5.2 shows the basic ESCO financing model with the Savings Insurance Facility. The ESCO signs a contract with the host facility to implement the EE project and provides the appropriate performance guarantee. The ESCO borrows funds from the bank to implement the project. When the project is installed and performance is verified according to the specified M&V protocol, the host makes payments into an escrow account at the bank. The loan repayments to the bank are made from the escrow account and the remaining amount is paid to the ESCO.

As in the case of the host financing model, the insurance facility will evaluate the capacity of the ESCO and the technical characteristics and risks of the project and provide a performance guarantee to the bank. If the project fails or the performance falls short of the guaranteed level, the host will not pay the ESCO (or pay an amount less than what may be required to pay the loan repayment). In such a situation, the facility will make a payment to the escrow account that will cover the bank loan repayment.

The insurance facility thus backs up the ESCO's performance guarantee and provides risk protection to the bank regarding loan repayment. Such a scheme should enhance the ESCO's ability to obtain bank financing. As in the case of host financing, the insurance facility will require that the M&V be conducted by an independent, third-party agency.

5.4 The European Bank for Reconstruction and Development Energy Efficiency Audit and Technical Assistance Program

European Bank for Reconstruction and Development Overview

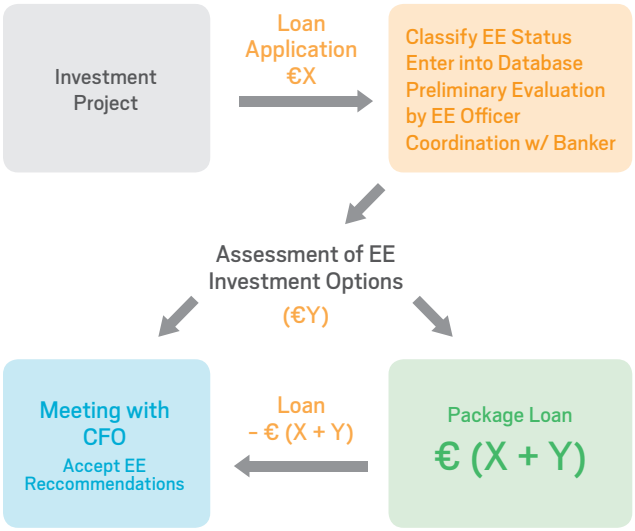
In 1994, the EBRD was the first international FI to establish a specialized EE team, and since then it has accumulated valuable expertise in generating and financing low-carbon projects. Since 2006, the EBRD has pursued sustainable energy investments through the Sustainable Energy Initiative as part of its overall strategy. The initiative addresses climate change by developing specific projects with carbon reduction impacts in all economic sectors in the EBRD's countries of operations.

In 2002, a pilot technical assistance (TA) program was designed to provide EBRD clients with dedicated international expertise to help them implement EE through energy audits and targeted training. Building on this initial experience, in 2004 the bank started expanding the program with the support of the Central European Initiative (CEI), an Italian trust fund. The CEI-funded energy audits and capacity building program have been instrumental in positioning the EBRD as a leading FI in the promotion of energy sustainability. EBRD has recently launched a new €3.5 million technical cooperation facility—the Regional Energy Efficiency Program for the Corporate Sector—to provide energy audit support for the manufacturing, agribusiness, and natural resource sectors.

European Bank for Reconstruction and Development Energy Audit and Technical Assistance Program

The EBRD's successful program to provide EE auditing and TA to its clients has several important characteristics. The EBRD routinely offers energy auditing services to clients during the evaluation of loan applications from most industrial and commercial users, particularly energy producers and high-volume energy users, regardless of the purpose of the original loan request. A schematic overview of the EBRD program is presented in Figure 5.3.

FIGURE 5.3: Overview of EBRD Program



Source: Compiled by authors

Key features of the EBRD program are described below:

- As customers are already at the bank, seeking a loan, no dedicated outreach effort is required. Creditworthiness is evaluated as part of the original loan process.
- The audit is provided at no cost to the client.
- The mandatory involvement of the client's engineer or plant manager in the audit creates local ownership of the eventual EE project.
- EBRD and the client's engineer or plant manager present the potential savings to the client's chief executive officer (CEO) or chief financial officer before negotiations on the original loan are concluded, giving the customer the option of adding the cost of the EE investment to the loan. EBRD reports that about 60 percent of companies implement the suggested EE measures.
- EBRD currently has four in-house energy engineers auditing 100 projects per year, at a cost of roughly €800,000 a year.
- EBRD has substantial experience in building the capacity of intermediary banks in EE financing through the establishment of Sustainable Energy Financing Facilities (SEFF), which combine credit lines with technical assistance to help local banks support hundreds of small, sustainable energy projects, principally in Eastern Europe.
- Both the auditing program and the SEFF program have been supported by grant funds from European governments and other donors.
- The results of the audit and TA program indicate about a 50:1 leverage of EE investments relative to expenses.

5.5 Energy Efficiency Financing as Part of Greening the Supply Chain

Many large industrial firms work with their banks to design and implement vendor finance programs. Increasingly, these firms are also engaged in "greening the supply chain," which involves encouraging and facilitating their suppliers to adopt environmentally friendly practices. The focus of such programs is on implementing EE, RE, and clean production technologies in production operations. IIP is currently working with IKEA to develop a "greening the supply chain" program for its suppliers in India.

One way to encourage implementation of EE by suppliers is to add a financing component to the supply chain program. IIP has initiated discussions with HSBC in India to extend its existing vendor financing program to incorporate EE financing.

5.6 Discussion with the Bank Working Team

The Bank Working Team

The project team organized a BWT comprising representatives of banks and FIs with experience in financing IEE projects. Table 5.1 lists the BWT members.

Individual meetings were held with these BWT members to discuss the review of the IEE studies and to elicit the experiences of and lessons learned by these bankers in financing IEE projects. The results of these individual discussions were combined with the findings of the review of IEE studies and the interviews with IEE experts to assemble a briefing package for the BWT meeting.

BWT Meeting

The BWT met in Mumbai in March 2012. IIP and the project team presented an overview of the project and findings from the (i) review of IEE studies, (ii) discussions with IEE experts, and (iii) discussions with individual BWT members. Barriers to financing IEE projects and measures to address them were summarized. The group then discussed the four major new initiatives identified through the project. Box 5.1 shows the questions presented to the BWT for discussion.

Box 5.1 Questions for Discussion – BWT Meeting

What can we do to convince RBI that energy efficiency should be designated as a priority lending sector?

Would a Technical Performance Guarantee Facility or Savings Insurance Facility help reduce the risk perceptions of industrial decision-makers and bankers regarding EE projects? How can such a facility be set up? The TPGF would be different from BEE's proposed Partial Risk Guarantee (PRG) facility. What are the relative strengths and weaknesses of these two options for promoting financing of performance contracting projects?

How can we establish a "cluster financing" scheme for EE in MSMEs? What can we learn from the IL&FS experience in cluster financing of infrastructure investments? Would such a scheme be feasible and useful as a "technology financing program" for equipment manufacturers/suppliers with specialized technology for MSME clusters?

How can banks support the "greening the supply chain" programs of large industrial enterprises by developing financing products for suppliers?

What are the key elements needed in capacity building of banks? How can bank capacity building program be scaled up?

Would there be any interest in an EE Audit and TA program similar to the EBRD program to mainstream IEE financing as a part of industrial loans?

TABLE 5.1: List of BWT Members

Organization	Name	Title
ICICI Bank	Jaisingh Dhumal	General Manager, Technology Finance Group
IDBI Bank	B.D. Save	Deputy General Manager
RBI	A.K. Misra	General Manager, Rural Planning & Credit
SIDBI	Rajiv Kumar	Deputy General Manager, Energy Efficiency Cell
SBI	S. Balasubramanian	Former General Manager, Project Uptech
IL&FS	Santosh Shidhaye	Vice President
HSBC	Aloka Majumdar	Senior Vice President, Corporate Sustainability
Aloe Capital Investments	Vivek Mehra	Principal

Discussion Results

The major results of the discussions at the BWT meeting are summarized below:

Priority Sector Lending

Participants agreed that it would be a good idea to recommend to RBI that EE financing be designated as PSL.

Scaling up bank financing of IEE requires commitment by the top management of banks and FIs; if RBI were to designate IEE financing as PSL, top management would make such a commitment.

While the Nair Committee report had already been published and did not include the designation of IEE financing as PSL, the bankers remarked that solar water heating had been designated as PSL, and that therefore it would not be unreasonable to request IEE to also be designated as such.

It was recommended that IIP try to work with the Indian Banks Association (IBA) to develop a letter requesting that RBI designate IEE financing as PSL.

Energy Savings Insurance Facility

Participants considered a Savings Insurance Facility to be potentially quite useful, particularly to help SMEs increase the confidence of project hosts regarding the performance of the EE technologies, and to reduce the risk of the FIs with respect to the loan repayments.

Many issues need to be resolved prior to establishing such a facility, including the detailed definition of its functions and operating procedures, possible funding sources, and management structure.

IIP should further define this concept and test its feasibility and effectiveness.

Greening the Supply Chain

Several large industrial companies in India are interested in helping their vendors and suppliers adopt environmentally friendly practices and are initiating programs for greening the supply chain. It would be useful to include a financing component in such programs to facilitate the implementation of IEE projects by the vendors/suppliers.

European Bank for Reconstruction and Development Program

The innovative EBRD EE audit and TA program could help banks work with their large corporate customers to implement IEE projects. There is no such program in India at this time, and it would be useful if one of the major banks were to implement one. It was suggested that IIP work with HSBC under the HSBC Corporate Sustainability Initiative to initiate the first such program in India. Additional information and case studies of projects financed by the EBRD would be informative.

Cluster Financing Scheme for Energy Efficiency in Micro, Small, and Medium Enterprises

A scheme focusing on financing EE projects in specific industrial clusters could be useful. However, SIDBI has a number of financing schemes, some of which target SME clusters. Therefore, a new initiative on cluster financing may be less useful than the other measures discussed above.

It may be worthwhile to consider a financing scheme for specific EE technologies that would provide the vendors and suppliers of these technologies the capacity to scale up their technology implementation in certain clusters.

Capacity Building of Banks and Financial Institutions

There is a need to build the capacity of loan officers and risk managers in IEE financing. However, the more important need is to obtain top management commitment to IEE financing as a business area. If such a commitment were made, the capacity building would be easier to implement. Therefore, IIP would be better off convincing RBI to designate EE as a PSL and apprising top bank personnel of the business opportunity in IEE financing.

5.7 Country Working Group

Convening of the Country Working Group

The project team assembled a CWT comprising representatives of government agencies, donor agencies, industry associations, project developers, energy service providers, FIs, and private equity firms. A stakeholder workshop was organized with the CWT to review and discuss the project findings and to develop recommendations for future work by IIP.

Stakeholder Workshop

The stakeholder workshop was conducted in Mumbai in May 2012. A briefing package summarizing the project activities and results was sent to the CWT members prior to the workshop.

Table 5.2 lists the workshop participants.

Discussions at the Stakeholder Workshop

The stakeholder workshop focused on review and discussion of the four initiatives that emerged as the highest-priority items from the BWT meeting:

- Requesting RBI to designate EE as PSL
- Establishing a Savings Insurance Facility to guarantee technical performance
- Encouraging large industrial borrowers to implement EE measures when financing expansion/modernization projects using the model of the EBRD program
- Introducing a financing program for "greening the supply chain"

Participants discussed the following questions at the workshop:

- What can we do to convince RBI that energy efficiency loans should be designated as priority sector lending?
- Would an insurance facility that guarantees technical performance and essentially provides savings insurance help reduce the risk perceptions of industrial decision-makers and bankers regarding EE projects?
- Can we encourage Indian banks to adopt an EE program for large industrial borrowers similar to the model of the European Bank of Reconstruction & Development (EBRD)?
- How can banks support the "greening the supply chain" programs of large industrial enterprises by developing financing products for suppliers of major companies?

The participants supported the four initiatives identified for future IIP activities.

TABLE 5.2: List of Participants: Stakeholder Workshop

Sr.No	Organization	Name	Email ID
1	British High Commission	Naman Gupta	Naman.gupta@fco.gov.uk
2	World Bank	Mudit Narain	mnarain@worldbank.org
3	Consultant, Former Deputy General Manager, SBI	S. Balasubramanian	balan1994@yahoo.com
4	HSBC	Snehashis Sarkar	snehashissarkar@hsbc.co.in
5	HSBC	Jayesh Modi	jayeshmodi@hsbc.co.in
6	HSBC	Vandana Bhansali	vandanabhansali@hsbc.co.in
7	Studnya Industrial Services Pvt Ltd	Shishir Athale	shishir@sudnya.com
8	Amplebit Energy	Arvind M T	Arvind.mt@amplebitenergy.com
9	Upstream Advisors	Girish Mangalvedhekar	girishmangalvedhekar@gmail.com
10	Crestar Capital India (P) Ltd	H V Kumar	hvkumar@gmail.com
11	L & T Infrastructure Finance Co Ltd	Amit Oke	Amit.oke@ltinfra.com
12	International Institute for Energy Conservation	Nitin Pandit	Nitin.pandit@iiec.org
13	See Tech Solutions	Milind Chittawar	ceo@letsconserve.in
14	Energetic Consulting Pvt Ltd	Shirish Deshpande	shirish@ecpl.co.in
15	IIP	Patrick J D'Addario	Patrick.daddario@iipnetwork.org
16	SRC Global	Dilip Limaye	dlimaye@attglobal.net
17	MP Ensystems Advisory Pvt Ltd	Mahesh Patankar	Mahesh.patankar90@gmail.com
18	MP Ensystems Advisory Pvt Ltd	Prasun K Agrawal	pka@mpensystems.com

Given the reluctance of RBI to add priority sectors, an important recommendation from the participants was to ask RBI to consider issuing a notification under the "prudential lending norms" regarding the importance of lending for IEE projects.

The participants also endorsed the concept of the Savings Insurance Facility and commented that such a facility would be beneficial to product-based ESCOs, vendors of EE technologies, and developers and suppliers of new IEE technologies.

Participants concluded that the EBRD program and financing of "greening the supply chain" initiatives could help to scale up the financing and implementation of IEE projects—and that these should be demonstrated in India.

5.8 Meetings with HSBC

During the course of this project, HSBC (India) expressed keen interest in undertaking programs to scale up IEE projects. The global CEO of HSBC has expressed the bank's major commitment to mitigating climate change, and its Indian operations are participating in HSBC's global corporate sustainability initiative. IIP and the project team had several conference calls and meetings with senior officials at HSBC to discuss the proposed initiatives and to explore cooperative efforts. A summary of these efforts is provided below.

HSBC has been very supportive of the effort to ask RBI to designate EE lending as PSL. After discussions with HSBC on how to best approach RBI in this matter, IIP and HSBC independently submitted letters to RBI in response to RBI's request for comments on the Nair Committee report. In addition, HSBC suggested that IIP meet with IBA and get its support to submit another request to RBI regarding the PSL designation.

HSBC expressed interest in implementing an EBRD-type IEE audit and TA program. Information on this program has been provided. HSBC has requested a more detailed case study of the EBRD program.

HSBC has in place a vendor finance program under which financing is provided to vendors and suppliers of HSBC's corporate clients for various pre-shipment and post-shipment activities. The bank is interested in defining how a financing component can be added to develop greening of the supply chain efforts, and requested that IIP provide further detail on this concept.

6 Recommendations

The project has identified four main initiatives for IIP regarding future activities to help scale up financing of IEE projects. The project team provides the following specific recommendations to IIP:

6.1 Requesting the Reserve Bank of India to Designate Energy Efficiency Financing as Priority Sector Lending

IIP should continue the efforts initiated under this project to inform RBI of the importance and benefits of EE and to undertake efforts to encourage RBI to designate EE financing as PSL. Specific recommended activities include the following:

- Work with major banks (in addition to HSBC) at the top management level to obtain their support regarding efforts to encourage RBI to designate EE financing as PSL.
- Engage IBA and get its support as an organization representing the banking industry for the request to the RBI to designate EE financing as PSL or to address it under the prudential lending norms.
- Meet with senior officials at RBI to further discuss the request from IIP and from other banks and IBA.

6.2 Savings Insurance Facility

The participants of both the BWT meeting and the stakeholder workshop endorsed the concept of the Savings Insurance Facility as a useful initiative to help scale up project implementation using the performance contracting approach. The following is recommended:

- IIP should further develop the concept of the Savings Insurance Facility and document the experience and lessons learned from such facilities in North America.
- IIP should review the Savings Insurance Facility concept being developed by ADB in its project in Hebei, China.
- A concept paper should be prepared to encourage donor agencies to develop and implement such a facility in the near future.

6.3 Energy Efficiency Audit and Technical Assistance Program

HSBC has expressed interest in implementing an EBRD-type EE audit and TA program. It is possible that other banks may also be interested in establishing such a program. Therefore, the following is recommended:

- IIP should develop additional information on the structure, operations, and experiences of and lessons learned by EBRD, and provide such information to HSBC.
- IIP should initiate discussions with top management of other banks to encourage them to implement similar programs.

6.4 Greening the Supply Chain

Banks can help the greening of the supply chain initiatives of major industrial clients by providing a financing component to such programs. HSBC has expressed interest in adding such a component to its vendor finance program. The following is recommended:

- IIP should develop further details of this concept and engage HSBC to help it initiate a program for financing greening the supply chain initiatives.
- IIP should also introduce the financing component in its project with IKEA on greening the supply chain.

6.5 Collaboration with Other Donor Agencies

A number of other donor agencies are currently engaged in or initiating new programs in India that include substantial emphasis on financing EE projects.

- USAID is initiating the Program to Accelerate Clean Energy Deployment, a $20 million, five-year program that includes a major task on innovative financing of EE projects.
- The World Bank, in addition to its project with the Global Environmental Facility (GEF) on scaling up implementation of EE projects in SMEs, is initiating several major programs related to financing EE, including the establishment of a partial credit guarantee facility.

- KfW Bankengruppe established an EE credit line with SIDBI and is exploring additional financing initiatives, including a TA program to help Energy Efficiency Services Limited develop innovative mechanisms for financing and implementing EE projects.

It is recommended that IIP establish working relationships with these and other donor organizations working on financing initiatives and collaborate with them in further developing and implementing the initiatives identified in this project.

Annex A – Summaries of Programs & Studies Reviewed

Table A.1 lists the programs and studies reviewed in this project, organized into three groups:

- Completed programs and studies (in reverse chronological order)
- Ongoing programs and studies (in alphabetical order)
- Future programs and studies (in alphabetical order)

The summaries are presented in the following pages in the order listed below.

TABLE A.1: List of Programs and Studies

A.1 Completed Programs and Studies (showing completion dates)
UNDP – Energy Conservation in Small Tea Processing Units in South India (2011)
Frankfurt School – Innovative Loan Product for MSMEs (2010)
IDFC Research on Infrastructure Financing (2010)
JICA Credit Line for Energy Efficiency (2010)
McKinsey Report – Environmental and Energy Sustainability (2010)
The Climate Group – Report on Climate Change and Finance in India (2010)
Energy Conservation and Commercialization – ECO III – SME Study (2009)
World Bank Paper – Lessons Learned – EE Financing (2009)
World Resources Institute ESCO Report (2009)
ECO-Asia Clean Development and Climate Program Review of Financing Programs in India (2008)
UNDP – Removal of Barriers to Energy Efficiency Improvement in the Steel Rerolling Mill Sector (2008)
World Bank/UNEP/UNF 3-Country EE Project (2008)
ICLEI Study of RE and EE in India (2007)
IREDA EE Financing Scheme (2006)
ADB Energy Efficiency Improvement Program (2005)
ADB – Industrial Energy Efficiency Project (2006)
Energy Conservation and Commercialization – ECO II (2005)
Energy Conservation and Commercialization – ECO II – State Energy Conservation Funds (2005)
Crestar Report on Innovative EE Financing (2004)
USAID – ECO-I Program (2004)
LBNL – Report on Role of MDBs in Industrial EE (1999)
USAID – Energy Management Consultancy & Training Project (1998)

TABLE A.1 (CONTINUED): List of Programs and Studies

A.2 Ongoing Programs and Studies
BEE Perform, Achieve and Trade (PAT) Scheme
BHC-IIEC – Public Benefits Funds for Clean Energy
Canara Bank – Energy Saving Loan Scheme for SMEs
Credit Guarantee Trust Fund Scheme for Micro and Small Enterprises
Kerala State Energy Conservation Fund
KfW Credit Line for Energy Efficiency
National Clean Energy Fund
SBI – Project Uptech
TDB – Fund for Technology Development and Application
Technology Innovation Fund – SRIJAN
UNIDO – Promoting Energy Efficiency and Renewable Energy in Selected Micro SME Clusters in India
World Bank/GEF Project for EE Financing in MSMEs
A.3 Future Programs and Studies
BEE Partial Risk Guarantee Fund
BEE Venture Capital Fund for Energy Efficiency
Clean Technology Fund Investment Plan for India

A.1 Completed Programs and Studies

TABLE A.2: UNDP – Energy Conservation in Small Tea Processing Units in South India

No.	Characteristic	Description
1	Program Title	Energy Conservation in Small Tea Processing Units in South India
2	Sponsoring Agency	United Nations Development Programme (UNDP)
3	Counterpart Agency	Ministry of Environment & Forests (MoEF), Ministry of Commerce, Government of India (GOI)
4	Type of Program	Technical Assistance
5	Implementing Agency	Tamil Nadu Energy Development Agency, Indian Renewable Energy Development Agency
6	Start Date/End Date	2004–2011
7	Objective(s)	The project aims to remove barriers to energy conservation and energy efficiency that inhibit the realization of large energy saving potential in the tea sector. Capacity building, training, and awareness creation are large components of the project activities.
8	Energy Efficiency/ GHG Goals	The total direct reduction in carbon dioxide (CO_2) emissions is estimated to be 56,925 tonnes. Replication would indirectly reduce CO_2 emissions by a further 170,775 tonnes.
9	Sectors Targeted	Small and Medium Scale Tea Processing Units in South India
10	Barriers Addressed	• Lack of knowledge about the energy-efficient technologies adopted in the tea processing units • Lack of awareness about the EE opportunities available through adoption of energy saving technologies • Inadequate data on return on investments in energy-efficient technologies • Uncertainties over value realized through tea plantations (barrier linked to crop insurance and associated output)
11	Financing Mechanism(s)	The project was designed to support technical studies and build awareness among tea processing unit operators. No specific financing mechanisms were envisaged except for providing tea growers an insurance facility through the National Bank for Agriculture and Rural Development's crop insurance schemes.
12	Eligibility Criteria	N/A
13	Total Funding	$ 950,000 by GEF and co-financing of $ 1.1 million by GOI/other stakeholders related to project implementation
14	Major Activities	• Awareness creation in target sector about EE and RE technologies and their relationship to profitability • Elimination of financial barriers that inhibit investment in energy conservation equipment • Adoption and procurement of energy efficiency / renewable energy equipment / practices • Learning, knowledge sharing, and replication • Thirty tea processing units in south India adopted energy-efficient equipment and practices within the project period, resulting in cumulative savings of 56,925 tons of direct CO_2 emissions • New investments in energy-efficient technology annually from the second year • Number of factories invest in energy efficient equipment, nature of equipment deployed • Tea Board extends the same to other tea clusters

TABLE A.2 (CONTINUED): UNDP – Energy Conservation in Small Tea Processing Units in South India

No.	Characteristic	Description
15	Key Results	This project ended in December 2011; no specific information on results is currently available
16	Lessons Learned	The project was completed in December 2011. No interim review report is available as of now. UNDP issued a request for proposal in May 2012 for international and national consultants to evaluate the project. The evaluation report is likely to be made public by the end of 2012.
17	Contact(s)	Martin Krause, Regional Technical Advisor – Climate Change, +66-2-2882-2722, Martin.krause@undp.org
18	Reports/Publications	UNDP/GEF MSP Proposal - PIMS No. 3163 GEFSEC Project ID 2500.
19	Other Comments	Project implementation through local partners, such as the Technology Information Design Endeavour, appears to be a key to the success of project implementation.

TABLE A.3: Frankfurt School – Innovative Loan Product for MSMEs

No.	Characteristic	Description
1	Program Title	Frankfurt School – Innovative Loan Product for MSMEs
2	Sponsoring Agency	GIZ
3	Counterpart Agency	Frankfurt School of Finance and Management
4	Type of Program	Developed a concept paper on an integrated loan (EE and other equipment) and a cluster loan
5	Implementing Agency	Recommended SIDBI as the implementing agency
6	Start Date/End Date	2010
7	Objective(s)	Support SIDBI and its three partner banks in developing new loan products
8	Energy Efficiency/ GHG Goals	N/A
9	Sectors Targeted	MSME
10	Barriers Addressed	Difficulties in financing MSME EE projects
11	Financing Mechanism(s)	• Integrated loan: A package comprising (i) an equipment loan and (ii) a loan for other aspects related to the unit • Cluster loan finance: EE equipment loans to a cluster of MSME units belonging to a particular industrial sector
12	Eligibility Criteria	MSME
13	Total Funding	N/A
14	Major Activities	• Review of international best practice • Assessment of SIDBI loan products • Development of new financial products
15	Key Results	Recommended new loan products for MSMEs
16	Lessons Learned	N/A
17	Contact(s)	Jan G. Andreas, international@frankfurt-school.de Sanjeev Tamhane, s.tamhane@int.fs.de
18	Reports/Publications	Frankfurt School of Finance and Management, Energy Efficiency Loan Product Concept for MSMEs, 17 Dec. 2010.
19	Other Comments	While the study recommended two specific financing mechanisms, SIDBI did not follow up with implementation of either option.

TABLE A.4: IDFC Research on Infrastructure Financing

No.	Characteristic	Description
1	Program Title	IDFC Research on Infrastructure Financing
2	Sponsoring Agency	Industrial Development Finance Corporation (IDFC)
3	Counterpart Agency	N/A
4	Type of Program	IDFC internal research
5	Implementing Agency	IDFC research team
6	Start Date/End Date	2010
7	Objective(s)	• Review the EE landscape in India • Summarize EE technologies that are relevant to the Indian growth sectors and related technology gaps • Review past international and Indian experiences in EE implementation • Define the government's role in building EE • Assess the institutional ecosystem of the EE industry • Review innovative financing mechanisms
8	Energy Efficiency/ GHG Goals	N/A
9	Sectors Targeted	Buildings, utilities, and energy service providers
10	Barriers Addressed	N/A
11	Financing Mechanism(s)	• Suggested ESCO-based EE project implementation • Suggested State Energy Conservation Fund and Partial Credit Risk Guarantee Fund • Identified ESCOs and Tradable Energy Efficiency Certificates Market as key market mechanisms
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Reviewed the EE market in India • Offered suggestions on innovative financing mechanisms
15	Key Results	• Assessed barriers related to buildings and energy service providers • Discussed State Energy Conservation Funds and Partial Risk Guarantee Funds as enablers to finance EE projects • Recognized the limitations of data availability
16	Lessons Learned	• Barriers in both supply and demand have to be removed. • Sustained government interventions are important in policy, regulation, and demonstration of EE benefits
17	Contact(s)	N/A
18	Reports/Publications	IDFC India Infrastructure Report, 2010; chapter on: Drivers of Energy Efficiency Industries – Indian and International Experience in Infrastructure.
19	Other Comments	N/A

TABLE A.5: JICA Credit Line for Energy Efficiency

No.	Characteristic	Description
1	Program Title	JICA Credit Line for Energy Efficiency
2	Sponsoring Agency	Japan International Cooperation Agency (JICA)
3	Counterpart Agency	SIDBI
4	Type of Program	Credit line for financing EE equipment
5	Implementing Agency	SIDBI
6	Start Date/End Date	August 2008–July 2011
7	Objective(s)	Provide financing for energy-efficient equipment for MSMEs
8	Energy Efficiency/ GHG Goals	N/A
	Sectors Targeted	Buildings, utilities, and energy service providers
9	Sectors Targeted	MSMEs
10	Barriers Addressed	Lack of capital for investing in EE
11	Financing Mechanism(s)	Loans for energy-efficient equipment
12	Eligibility Criteria	SME invests in new EE equipment specified on the list prepared by the SIDBI
13	Total Funding	Rs. 1,500 crores (about $350 million)
14	Major Activities	• List of EE equipment • Training and TA to loan officers • Processing of loans
15	Key Results	• The project was completed in 2010 • More than 3,000 loans were processed
16	Lessons Learned	• There is high demand for EE equipment in MSMEs • A cluster-based approach is useful
17	Contact(s)	Rajiv Kumar, SIDBI, New Delhi
18	Reports/Publications	SIDBI, Initiative for Promoting Energy Saving Projects in the MSME Sector, PowerPoint presentation, 2010.
19	Other Comments	A new JICA credit line is being processed.

TABLE A.6: McKinsey Report – Environmental and Energy Sustainability

No.	Characteristic	Description
1	Program Title	McKinsey Report – Environmental and Energy Sustainability
2	Sponsoring Agency	McKinsey & Company internal project
3	Counterpart Agency	N/A
4	Type of Program	Research initiative
5	Implementing Agency	McKinsey & Company
6	Start Date/End Date	2010
7	Objective(s)	Discuss the opportunities India has to meet the twin objectives of sustainable development and inclusive growth
8	Energy Efficiency/ GHG Goals	Research suggests that annual emissions could potentially be lowered to 2.8 billion tonnes by 2030, a 30–50 percent reduction over the base case projection.
9	Sectors Targeted	Power, industrial, habitat (buildings and appliances), transport, and agriculture
10	Barriers Addressed	• Created a base case of GHG emissions in 2030 and suggested reduction plan including clean power, EE in industry, green transportation, sustainable habitats, and sustainable agriculture and forestry • Highlighted additional capital requirements to address the low-GHG scenarios, supply and skill deficits, technology uncertainty, market imperfections, and changes to the regulatory and institutional frameworks
11	Financing Mechanism(s)	No specific financing mechanism was suggested in the research, because that was not the focus of the study.
12	Eligibility Criteria	N/A
13	Total Funding	The report estimates a €600–750 billion incremental capital requirement to meet the emissions reduction targets from 2010 to 2030
14	Major Activities	• Projected energy demand and gross domestic product growth in India • Projected growth rates of floor space, vehicle fleet, power demand, and cement demand • Assessed 200 opportunities to reduce energy and carbon emissions in the 10 largest consuming and emitting sectors in India
15	Key Results	• Eighty percent of infrastructure that would exist in 2030 would be built between 2010 and 2030 • Projected energy use in 2030 of 3,870 terawatt hours (TWh) and energy demand of 1.8 billion tonnes of oil equivalent • Projected annual growth rates of 6.6 percent of total floor space, 8.3 percent of vehicle fleet, 7.1 percent of power demand, and 8 percent of cement demand
16	Lessons Learned	Substantial GHG emissions are possible in the Indian growth story, with substantive incremental capital requirement.
17	Contact(s)	N/A
18	Reports/Publications	McKinsey & Company, Environmental and Energy Sustainability: An Approach for India, 2010.
19	Other Comments	N/A

TABLE A.7: The Climate Group – Report on Climate Change and Finance in India

No.	Characteristic	Description
1	Program Title	The Climate Group – Report on Climate Change and Finance in India
2	Sponsoring Agency	The Climate Group
3	Counterpart Agency	PricewaterhouseCoopers
4	Type of Program	Survey of Indian Bank Activities related to Climate Change Mitigation
5	Implementing Agency	N/A
6	Start Date/End Date	2010
7	Objective(s)	Review and document the commitment and leadership of banks in creating a low-carbon economy
8	Energy Efficiency/ GHG Goals	N/A
9	Sectors Targeted	N/A
10	Barriers Addressed	N/A
11	Financing Mechanism(s)	Reviewed the financing and other activities of leading Indian banks related to climate change mitigation
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Survey of banks • Documentation of activities related to EE/RE/sustainability
15	Key Results	Summary and case studies of bank activities
16	Lessons Learned	N/A
17	Contact(s)	Urvashi Devidayal, UDevidayal@theclimategroup.org
18	Reports/Publications	The Climate Group, Climate Change and Finance: Banking on the Low-Carbon Indian Economy, 2010.
19	Other Comments	The report focuses on many different climate mitigation actions; IEE is not covered in much detail

TABLE A.8: Energy Conservation and Commercialization — Eco III — SME Study

No.	Characteristic	Description
1	Program Title	Energy Conservation and Commercialization — ECO III - SME Study
2	Sponsoring Agency	USAID
3	Counterpart Agency	BEE, Ministry of Power
4	Type of Program	TA
5	Implementing Agency	International Resources Group Limited
6	Start Date/End Date	2009–2010
7	Objective(s)	• Promote access and utilization of clean energy technologies and continued implementation of the Energy Conservation Act of 2001 • The SME project within ECO-III conducted assessments and demonstrations of EE opportunities in selected SME clusters to address barriers to the adoption of EE technologies and developed a set of recommendations for enhancing EE in SME clusters
8	Energy Efficiency/ GHG Goals	Not Specified
9	Sectors Targeted	SME clusters
10	Barriers Addressed	• Lack of awareness and capacity • Low credibility of service providers • Limited availability of financing • Lack of coordination among government and the private sector (including banks)
11	Financing Mechanism(s)	The project focused on identifying EE technologies, conducting pre-feasibility studies, preparing diversified payment rights (DPRs), and developing implementation strategies, but it did not develop specific financing mechanisms.
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Cluster analysis • Pre-investigative studies • Pre-feasibility studies • Investment-grade proposals • Barrier analysis and assistance in financing
15	Key Results	• Completed studies in four clusters (dyeing units and steel re-rolling in Punjab and textiles and mixed industry cluster in Gujarat) • Organized meetings and workshops to establish dialogue among SMEs, vendors, FIs, government, and donor policy makers • Developed recommendations for implementation
16	Lessons Learned	• A variety of SME characteristics need different solutions to liquidity and risk issues. • Programmatic approach and aggregation of small EE projects is needed to implement sustainable solutions. • There is a technical credibility gap with ESCOs and with estimates of energy savings. • Bank schemes have been met with limited response from SMEs due to a lack of preparedness and communication.
17	Contact(s)	Satish Kumar, Chief of Party, ECO-III, Satish.Kumar@schneider-electric.com
18	Reports/Publications	ECO-III, Implementation of Energy Efficiency in SME Clusters, February 2009.
19	Other Comments	N/A

TABLE A.9: World Bank Paper – Lessons Learned – EE Financing

No.	Characteristic	Description
1	Program Title	World Bank Paper – Lessons Learned – EE Financing
2	Sponsoring Agency	The World Bank
3	Counterpart Agency	N/A
4	Type of Program	Technical paper
5	Implementing Agency	N/A
6	Start Date/End Date	Published October 2009
7	Objective(s)	Review and document international experience and lessons learned in financing EE programs and projects
8	Energy Efficiency/GHG Goals	N/A
9	Sectors Targeted	N/A
10	Barriers Addressed	N/A
11	Financing Mechanism(s)	Reviewed a wide range of financing mechanisms
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	Reviewed and assessed international experience
15	Key Results	Reviewed utility demand-side management (DSM), standard offer, ESCO development, special EE funds, credit lines, and loan guarantee programs, as well as subsidies/grants and market transformation programs
16	Lessons Learned	• Need to conduct holistic market assessments • Learn from international experiences for common program strategies and approaches, but adapt and tailor models to suit local conditions • Design programs to be commercially oriented, demand-driven, and flexible • Achieve a strong balance between policy frameworks, institutional arrangements, training, and implementation • Focus programs to deliver real energy savings within 1–2 years to build program credibility • Provide participating institutions (banks, service providers, end users) with clear incentives to participate • Develop well-designed parallel marketing efforts • Provide intensive and sustained technical support
17	Contact(s)	Ashok Sarkar, asarkar@worldbank.org Jas Singh, jsingh3@worldbank.org
18	Reports/Publications	Ashok Sarkar and Jas Singh, Financing Energy Efficiency in Developing Countries – Lessons Learned and Remaining Challenges, Energy Policy Journal, October 2009.
19	Other Comments	N/A

TABLE A.10: World Resources Institute ESCO Report

No.	Characteristic	Description
1	Program Title	World Resources Institute ESCO Report
2	Sponsoring Agency	World Resources Institute
3	Counterpart Agency	N/A
4	Type of Program	Technical report
5	Implementing Agency	N/A
6	Start Date/End Date	Report published in 2009
7	Objective(s)	• Provide a better understanding of the potential of India's ESCO industry to enable financial investors to make better-informed investment decisions • Suggest approaches for driving greater investment in the ESCO industry to reduce greenhouse gas emissions and contribute to more sustainable development in India and across the world
8	Energy Efficiency/GHG Goals	N/A
9	Sectors Targeted	N/A
10	Barriers Addressed	• Lack of collateral to meet bank requirements • Clients' unwillingness to finance, or obtain financing for, ESCO projects owing to a lack of confidence in ESCOs • Industry's domination by "vendor" ESCOs that are technology biased • Indian banks' lack of engagement in financing EE projects
11	Financing Mechanism(s)	Review of a range of financing mechanisms for ESCOs
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Assessment of EE potential • Review of India's ESCO industry • Documentation of international experience • Assessment of ESCO growth potential • Recommendations for achieving growth potential
15	Key Results	• ESCO industry in India has experienced substantial growth from 2002 to 2007 (96 percent annually) • Small ESCOs have been less successful due to financing issues and challenges • Made a number of recommendations for banks, FIs, equity investors, government policy makers, and ESCOs to promote growth of the ESCO industry
16	Lessons Learned	N/A
17	Contact(s)	Ella Delio, World Resources Institute, Washington, DC
18	Reports/Publications	World Resources Institute, Powering Up – The Investment Potential of Energy Service Companies in India, April 2009.
19	Other Comments	N/A

TABLE A.11: Eco-Asia Clean Development and Climate Program Review of Financing Programs in India

No.	Characteristic	Description
1	Program Title	ECO-Asia Clean Development and Climate Program Review of Financing Programs in India
2	Sponsoring Agency	USAID
3	Counterpart Agency	None
4	Type of Program	TA
5	Implementing Agency	International Resources Group
6	Start Date/End Date	2008
7	Objective(s)	• Review the status of EE financing in India based on EE potential in the country and investment opportunities • Assess barriers to EE in India
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	Estimated EE savings potential in all key sectors in India
10	Barriers Addressed	This was a review report documenting key barriers related to information, financing, and lack of confidence in ESCOs.
11	Financing Mechanism(s)	This was a review report and did not suggest specific financing mechanisms. The report recommended updating data on EE potential and capacity building for key stakeholders involved.
12	Eligibility Criteria	N/A
13	Total Funding	The study estimates a $6 billion investment potential in electricity efficiency.
14	Major Activities	• Reviewed past EE potential studies • Interviewed key stakeholders from banking and the energy service delivery ecosystem
15	Key Results	• Compared EE potential numbers from ADB and World Bank studies—concluded that nationwide potential is close to 89.6 TWh • Linked state-level and national EE potential and corresponding investment opportunities • Summarized key barriers to EE implementation
16	Lessons Learned	• Data gaps in India need to be addressed to ascertain the EE potential. • Capacity building in the implementing organizations is key to pushing forward EE investments.
17	Contact(s)	Peter du Pont, Chief of Party, peterd@nexant.com
18	Reports/Publications	Financing Energy Efficiency in India, published by ECO-Asia Clean Development and Climate Program. Contract No. EPP-1-100-03-00013-00: Task Order 9, November 2008.
19	Other Comments	N/A

TABLE A.12: UNDP – Removal of Barriers to Energy Efficiency Improvement in the Steel Rerolling Mill Sector

No.	Characteristic	Description
1	Program Title	UNDP – Removal of Barriers to Energy Efficiency Improvement in the Steel Rerolling Mill Sector
2	Sponsoring Agency	UNDP
3	Counterpart Agency	Ministry of Steel, GOI
4	Type of Program	TA
5	Implementing Agency	N/A
6	Start Date/End Date	2003–2008
7	Objective(s)	The project sought to reduce GHG emissions by providing TA to the small- and medium-sized steel rerolling mills in India to enable them to adopt more energy-efficient and environmentally friendly technologies. The project focused on EcoTech options, strengthening institutional capabilities, launching an effective information dissemination program, enhancing stakeholder capacity, evaluating innovative financing options, and supporting investments in sample projects.
8	Energy Efficiency/ GHG Goals	Not specified
9	Sectors Targeted	Small- and medium-scale steel rerolling mills
10	Barriers Addressed	• Lack of need-based financing approaches and mechanisms • Absence of effective market transformation strategies specific to the SME sector • Lack of information • Limited institutional and industrial capacity • High transaction and hidden costs • Limited commercial experience
11	Financing Mechanism(s)	The project supported technical studies and feasibility and facilitated linkages with banks and FIs. The project proposed interest buy-down and provision of credit guarantee for initial projects leading to commercial financing for future financing.
12	Eligibility Criteria	N/A
13	Total Funding	Proposed were $6.75 million for TA and co-financing of more than $24 million from GOI, FIs, and project promoters
14	Major Activities	• Benchmarking of EcoTech options and packages • Strengthening institutional arrangements • Disseminated information effectively • Enhanced stakeholder capacity • Established feasibility of EcoTech options and technology packages • Established innovative financing mechanisms (ESCOs and third-party financing) • Established monitoring and evaluation system
15	Key Results	• Established benchmarks for EcoTech, including techno-economic viability • Conducted capacity building initiatives in multiple clusters • Implemented demonstration projects in a few SMEs, including facilitation of financing
16	Lessons Learned	Based on the mid-term report: • Steel rerolling SMEs offer good EE potential. • Stakeholder capacity building helps in promoting techno-economically feasible technologies.
17	Contact(s)	Ms. Maxine Olson, Resident Representative, UNDP, India
18	Reports/Publications	UNDP/GEF Project Document – PIMS No. 1515 Project No. IND/03/G31.
19	Other Comments	N/A

TABLE A.13: World Bank/UNEP/UNF 3-Country EE Project

No.	Characteristic	Description
1	Program Title	World Bank/UNEP/UNF 3-Country EE Project
2	Sponsoring Agency	World Bank, United Nations Environment Programme (UNEP), and the United Nations Foundation (UNF)
3	Counterpart Agency	N/A
4	Type of Program	Research study
5	Implementing Agencies	N/A
6	Start Date/End Date	2005–2008
7	Objective(s)	Share operational experiences in the implementation of EE investment projects between practitioners in Brazil, China, and India through synthesis of the many experiences shared by seasoned professionals working in these countries during the project
8	Energy Efficiency/ GHG Goals	N/A
9	Sectors Targeted	N/A
10	Barriers Addressed	Reviewed the major barriers to implementation and documented how they have been addressed in a number of prior efforts in the three countries
11	Financing Mechanism(s)	Reviewed and documented a wide range of financing mechanisms in the three countries
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Activities included specialized technical assistance, training, and applied research covering the four primary areas of country interest: (i) development of commercial banking windows for EE, (ii) support for developing ESCOs, (iii) guaranteed funds for EE investment financing, and (iv) equity funding for ESCOs or EE projects. • The project included a series of cross-country exchange activities that allowed EE practitioners from each of the three countries to learn from each other and to tackle jointly the practical problems in overcoming barriers to investments in increased efficiency. • Country reports were prepared by each core group, providing in-depth discussion of the country framework, key related projects and relevant activities, and specific implementation experience and project results.
15	Key Results	Documentation of experience from the three countries as well as 13 case studies
16	Lessons Learned	• Problems related to financing EE projects, such as high transaction costs, perceptions of high risk, and unmet needs for financial intermediation or technical expertise have created significant barriers to EE project implementation. Institutional innovation is required to address these problems and put in place efficient ways to identify, package, and deliver bundles of energy-saving projects. • Effective delivery of EE investments is essentially an institutional development challenge. As such, attempted solutions must fit within prevailing local economic institutional contexts, which vary dramatically. • Where initiatives have been most successful, they have been built following careful, in-country diagnostic work, with parallel attention to both financial intermediation and technical support requirements and with flexibility to make many adjustments along the way.
17	Contact(s)	The World Bank, Energy Sector Management Assistance Program
18	Reports/ Publications	World Bank, Financing Energy Efficiency Energy – Lessons from Brazil, China, India and Beyond, 2008.
19	Other Comments	N/A

TABLE A.14: ICLEI Study of RE and EE in India

No.	Characteristic	Description
1	Program Title	ICLEI Study of RE and EE in India
2	Sponsoring Agency	German Technical Cooperation (now GIZ)
3	Counterpart Agency	ICLEI South Asia
4	Type of Program	Research report
5	Implementing Agency	ICLEI South Asia
6	Start Date/End Date	May 2007
7	Objective(s)	Provide an overview of the status of EE and RE in India as a part of the project to promote the generation and supply of RE and the use of energy-efficient techniques in communities, with a focus on the roles and responsibilities of local governments as the driving force for innovation and investment
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	All sectors
10	Barriers Addressed	N/A
11	Financing Mechanism(s)	The project focused on identifying and assessing EE and RE technologies and identifying existing financing schemes for RE. The policy and regulatory framework for EE was described, but financing options were not addressed.
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Review of opportunities for EE and RE • Assessment of institutional framework • Definition of major technology options (mainly for RE) • Financing mechanisms for RE (but not EE) • Identification of local government's role in promoting EE and RE
15	Key Results	No relevant results for financing EE
16	Lessons Learned	No relevant lessons learned for financing EE
17	Contact(s)	Pooja Shukla, Project Officer, ICLEI South Asia
18	Reports/Publications	ICLEI South Asia, Renewable Energy and Energy Efficiency Status in India, May 2007.
19	Other Comments	N/A

TABLE A.15: IREDA EE Financing Scheme

No.	Characteristic	Description
1	Program Title	IREDA EE Financing Scheme
2	Sponsoring Agency	The World Bank
3	Counterpart Agency	IREDA
4	Type of Program	Financing of RE and EE projects
5	Implementing Agency	IREDA
6	Start Date/End Date	2004–2006
7	Objective(s)	Provide equipment financing, project financing, and loans for manufacturing
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	Industrial, commercial, and municipal
10	Barriers Addressed	• Lack of internal capital for EE • Limited commercial financing • High project development and transaction costs
11	Financing Mechanism(s)	• Finance up to 80 percent of project costs or up to 75 percent of equipment costs • Interest rate of 5–12 percent • Three-year moratorium • Up to a 12-year loan term
12	Eligibility Criteria	The focus was mainly on RE, but the project included some EE projects.
13	Total Funding	Rs. 6,000 crores (about $1.4 billion), mostly for RE
14	Major Activities	More than 1,600 projects, but very few EE projects
15	Key Results	Mostly related to RE projects
16	Lessons Learned	EE lessons not separately documented
17	Contact(s)	Debashish Majumdar, Chairman & managing Director, IREDA, cmd@ireda.in
18	Reports/Publications	N/A
19	Other Comments	While a number of projects were financed by IREDA, the vast majority were RE projects, and only a handful of EE projects were financed.

TABLE A.16: ADB Energy Efficiency Improvement Program

No.	Characteristic	Description
1	Program Title	ADB Energy Efficiency Improvement Program
2	Sponsoring Agency	ADB
3	Counterpart Agency	BEE
4	Type of Program	TA
5	Implementing Agency	Charles River Associates (Asia-Pacific) Pty. Ltd.
6	Start Date/End Date	2003–2006
7	Objective(s)	Contribute to the development of a sustainable private-sector market for EE by developing (i) the financial products required to meet the needs of the key stakeholders (project hosts, ESCOs, and FIs) and (ii) the institutional mechanisms for implementing these products.
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	"Second-tier" industrial firms (including public-sector undertakings), commercial buildings, and municipalities
10	Barriers Addressed	Limited activity by energy users, ESCOs, and FIs with respect to EE project financing
11	Financing Mechanism(s)	Proposed the Partial Risk Guarantee Mechanism and the Payment Security Mechanism to facilitate and promote EE project financing
12	Eligibility Criteria	N/A
13	Total Funding	$100 million was proposed as a line of credit
14	Major Activities	• Reviewed and recommended a policy framework • Conducted a market assessment • Developed new financial products • Recommended candidate financial institutions to act as executive agency • Identified potential users and projects
15	Key Results	• Conducted a comprehensive market assessment • Developed the template for an ESCO project for government buildings • Concluded that a line of credit was not needed and recommended a risk-sharing program • Defined the structures of the Partial Risk Guarantee Mechanism and the Payment Security Mechanism to facilitate and promote EE project financing • Identified 10 potential projects for financing
16	Lessons Learned	• The market for EE in the target sectors was estimated to be Rs. 120 billion. • Banks and FIs stated that liquidity is not an issue in Indian financial markets, and that a sovereign ADB loan would not be very helpful. • Banks and FIs have a perception of high risk that may be partially addressed through a risk-sharing program.
17	Contact(s)	Dilip Limaye, Team Leader, dlimaye@attglobal.net
18	Reports/Publications	Energy Efficiency Enhancement Project: TA 3885-IND – Final Report, prepared by Charles River Associates (Asia-Pacific) Pty. Ltd., for Asian Development Bank and Bureau of Energy Efficiency, February 2005.
19	Other Comments	The results of this project were used by BEE to conduct the EE program for major government facilities using the ESCO mechanism.

TABLE A.17: ADB – Industrial Energy Efficiency Project

No.	Characteristic	Description
1	Program Title	ADB – Industrial Energy Efficiency Project (IEEP)
2	Sponsoring Agency	ADB
3	Counterpart Agency	IDBI
4	Type of Program	ADB loan to IDBI for on-lending to IEE projects
5	Implementing Agency	IDBI
6	Start Date/End Date	July 1995–July 2000
7	Objective(s)	• Support investments in EE and related environmental improvement measures by energy-intensive industries in India, consistent with GOI's approach to efficiency of energy use under its National Energy Efficiency Program. The IEEP focused on increasing the economic and technical efficiency of energy use. • The project also included TA to strengthen IDBI's capabilities in three areas: policy and program development for IEEP, institutional strengthening through training, and raising awareness about the need to improve EE.
8	Energy Efficiency/ GHG Goals	A minimum EE improvement of 18 percent
9	Sectors Targeted	Energy-intensive industry sectors
10	Barriers Addressed	Lack of sufficient investment by energy-intensive industries in EE projects
11	Financing Mechanism(s)	ADB provided a loan to IDBI for on-lending to industrial firms. Industrial firms were required to invest a minimum of 25 percent of project costs.
12	Eligibility Criteria	Projects eligible for loans included: (i) modification of existing production processes by installing energy-efficient equipment; (ii) technological restructuring of existing production facilities; (iii) EE-related licensing or other technology acquisition subprojects; and (iv) cogeneration projects, including waste heat recovery and conversion of biomass waste into heat/electrical energy.
13	Total Funding	$150 million from ADB
14	Major Activities	A total of 26 subprojects involving 31 energy improvement schemes were funded under this effort. These included replacement of high-energy-consuming equipment with more efficient equipment, process improvements, retrofitting, heat transfer equipment, replacing low-pressure boilers with high-pressure units, back pressure turbines, equipment for waste heat recovery, a power plant based on bagasse, and other measures aimed at reducing energy use or converting waste into steam/power.
15	Key Results	• IEEP substantially achieved its targets of EE, environmental improvement, and technological improvements relating to energy-efficient processes. • All of the subprojects were financed on commercial terms with rates of interest ranging from 15-20 percent, thus proving the IEEP assumption of market-induced investment for EE for resultant cost improvements for Indian industry. • The estimated economic internal rate of return for subprojects varied from 12-51 percent, against the loan covenant of at least 12 percent. • The overall estimate of investment catalyzed is $1.064 million against ADB's investment of $150 million in 26 subprojects. However, ADB's Project Performance Report indicates that it was not possible to evaluate the actual EE improvements achieved. • The TA produced 11 sector reports covering the intensity of energy use, potential for energy conservation, areas for technological upgrading, and the sources of those technologies.

TABLE A.17 (CONTINUED): ADB – Industrial Energy Efficiency Project

No.	Characteristic	Description
16	Lessons Learned	• IDBI, with its historical experience in development banking and years of expertise in project finance, was an effective agency for channeling funds under the IEEP. But, because IDBI's focus is on large industry, the project did not address the needs of the small and medium sectors of industry. • The effectiveness of the TA was limited because it was initiated 18 months after the loan became effective. The TA would have contributed more had it focused primarily on policy and program development, training, and institutional strengthening of IDBI. The Project Performance Report assessed the TA as ineffective and also concluded that objectives related to policy changes and institutional development were not fully achieved. Despite the positive environmental benefits resulting from some of the subprojects, the project failed to address sources of the market failure. The sub-borrowers' demand for the ADB loan was not as high as expected, and the revolving fund to provide additional financing for EE projects was not established. Overall, the project was not rated highly on efficacy and efficiency.
17	Contact(s)	N/A
18	Reports/Publications	ADB, Project Completion Report on the Industrial Energy Efficiency Project (Loan 1343-Ind) in India, April 2002.
19	Other Comments	N/A

TABLE A.18: Energy Conservation and Commercialization – ECO II – State Energy Conservation Funds

No.	Characteristic	Description
1	Program Title	Energy Conservation and Commercialization – ECO II – State Energy Conservation Funds
2	Sponsoring Agency	USAID
3	Counterpart Agency	BEE, Ministry of Power
4	Type of Program	TA
5	Implementing Agency	IIEC
6	Start Date/End Date	2004–2005
7	Objective(s)	• The ECO II program was a broad-based program that included a variety of activities related to EE and DSM, including (i) designing DSM plans and implementing utility-DSM initiatives in two states, (ii) developing a DSM Best Practices Guidebook, (iii) developing energy conservation building codes, (iv) supporting the State Energy Conservation Action Plan for Maharashtra, (v) designing a State Clean Energy Fund (SCEF) design for Maharashtra, and (vi) supporting the implementation of EE programs in public buildings. • This component focused on designing the SCEF for Maharashtra, including: (i) identifying economic and fiscal benefits, (ii) reviewing SCEFs in the United States and other countries, (iii) defining options for creating the fund, (iv) defining options for financing energy conservation programs, and (v) defining options for fund management and administration.
8	Energy Efficiency/ GHG Goals	Not specified
9	Sectors Targeted	Agriculture, residential, commercial, industrial, and public (municipal)
10	Barriers Addressed	• Unknown benefits of reduced shortages to the state's fiscal health • Lack of institutional capacity • Lack of clarity in implementing energy conservation programs leveraged with private-sector (consumer) investments • Lack of confidence in investing in efficiency programs
11	Financing Mechanism(s)	• Proposed setting up for funds using state budget allocation, and a cess on electricity and private-sector/donor funds • Proposed loan/credit guarantee mechanisms, grants, and subsidies to promote EE project financing
12	Eligibility Criteria	N/A
13	Total Funding	A start-up fund of $15 million to target 1,000 megawatt (MW) (in a 12,000 MW system) savings
14	Major Activities	• Reviewed fiscal benefits to the state resulting from reduced shortages • Reviewed international examples of setting up energy conservation funds • Proposed a fund management structure and types of programs to be funded under those funds • Proposed establishment of a State Energy Conservation Advisory Committee
15	Key Results	• State government established a State Advisory Committee • Key legislation related to charging a cess and developing the Urja Ankur fund included energy conservation projects in addition to renewable energy projects.
16	Lessons Learned	• State governments benefit from implementing energy conservation programs in sectors such as agriculture and municipal. • States in India can start off with budgetary allocation to fund energy conservation projects.
17	Contact(s)	Dilip Limaye, Task Team Leader, dlimaye@attglobal.net
18	Reports/ Publications	IIEC report submitted to USAID titled "Establishment of a State Energy Conservation Fund in Maharashtra", 2005.
19	Other Comments	This project component complemented the State Energy Conservation Action Plan for Maharashtra developed under the same USAID TA.

TABLE A.19: Energy Conservation and Commercialization – ECO II – Development of State Energy Conservation Action Plan

No.	Characteristic	Description
1	Program Title	Energy Conservation and Commercialization – ECO II
2	Sponsoring Agency	USAID
3	Counterpart Agency	BEE, Ministry of Power
4	Type of Program	TA
5	Implementing Agency	IIEC
6	Start Date/End Date	2004–2005
7	Objective(s)	• The ECO II program focused on (i) designing DSM plans and implementing utility-DSM initiatives in two states, (ii) developing a DSM Best Practices Guidebook, (iii) developing energy conservation building codes, (iv) supporting the State Energy Conservation Action Plan for Maharashtra, (v) designing a SCEF for Maharashtra, and (vi) supporting the implementation of public buildings EE programs. • This component focused on the development of a State Energy Conservation Action Plan for Maharashtra.
8	Energy Efficiency/ GHG Goals	Not specified
9	Sectors Targeted	Agriculture, residential, commercial, industrial, and public (municipal)
10	Barriers Addressed	• Unknown benefits of reduced shortages on the state's fiscal health • Lack of institutional capacity • Lack of clarity in implementing energy conservation programs leveraged with private-sector (consumer) investments • Lack of confidence in investing in efficiency programs
11	Financing Mechanism(s)	Proposed setting up a State Energy Conservation Fund to help implement the Action Plan.
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Identified potential for EE • Designed energy conservation programs • Estimated energy savings, peak reduction, and implementation costs • Assessed benefits and costs
15	Key Results	• The study estimated 40,597 gigawatt hours of energy savings and a 2,334 MW capacity savings potential over 10 years in the Aggressive scenario, and an associated total capital savings of INR 18,626 crores for utilities. • The study made an important argument regarding fiscal benefits to the state government resulting from savings in subsidies extended to the tariff-subsidized sectors such as agriculture. • State government established a State Advisory Committee to implement the Action Plan. • Key legislation related to charging a cess and developing the Urja Ankur fund included energy conservation projects in addition to RE projects.
16	Lessons Learned	State governments benefit from implementing energy conservation programs in sectors such as agriculture and municipal.
17	Contact(s)	Dilip Limaye, Task Team Leader, dlimaye@attglobal.net
18	Reports/Publications	IIEC report submitted to USAID titled "State Energy Conservation Action Plan for Maharashtra", 2005.
19	Other Comments	N/A

TABLE A.20: Crestar Report on Innovative EE Financing

No.	Characteristic	Description
1	Program Title	Crestar Report on Innovative EE Financing
2	Sponsoring Agency	World Bank/UNF/UNEP 3 Country Study BEE-HSBC Bank Capacity Building
3	Counterpart Agency	N/A
4	Type of Program	A review and assessment of financing programs for EE
5	Implementing Agency	Crestar Capital
6	Start Date/End Date	Original report – 2004 Revised report – 2011
7	Objective(s)	• Identify and review the existing financial instruments and structures used by commercial banks, focusing on SMEs and ESCOs • Suggest new or modified financial instruments/structuring to meet the requirement of EE project funding • Prepare suitable documentation that would assist participating banks and SIDBI in taking actionable steps
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	SMEs and ESCOs
10	Barriers Addressed	Limitations in designing suitable financial instruments to meet the needs of EE projects, including absence of a guarantee fund for EE projects in SMEs and for ESCO projects
11	Financing Mechanism(s)	• Reviewed a wide range of existing financing mechanisms • Identified a potential set of financing approaches including conditional grants, concessional loans, pooled finance, leasing, performance guarantees, loan against credit guarantee, secured savings, etc.
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Interviewed banks and FIs • Reviewed existing financing mechanisms for EE projects • Identified financing options for EE projects in SMEs and ESCO projects
15	Key Results	• Although different projects and customers call for varied approaches to financing, minimum technical and commercial safeguards have to be incorporated into business models and contracts for EE projects. • Lending to certain EE projects, especially those involving SMEs, government, and ESCOs, is perceived as having relatively high risk. • Tools for appraising EE projects need to be developed within the framework of existing bank policy.

TABLE A.20 (CONTINUED): Crestar Report on Innovative EE Financing

No.	Characteristic	Description
16	Lessons Learned	• Existing loan products are adequate to address the financing needs of EE projects, with suitable liberalization in terms of lending and built-in contractual and payment safeguards. • Beyond a credit-enhancement support mechanism in the form of a Credit Guarantee Facility, there does not appear to be a need for any financial incentives to catalyze lending to EE projects. However, lenders' personnel need to be sensitized to EE financing to increase their confidence and awareness. • It is possible to structure EE projects as stand-alone financial structures that may be financed by any lender as long as security-related matters are resolved. A credit guarantee facility will be very useful in mitigating the perceived risks of ESCO projects.
17	Contact(s)	H.V. Kumar, Crestar Capital, crestar@gmail.com, 98210-45167
18	Reports/Publications	Crestar Capital, Designing Financial Structures and Financing Instruments for Energy Efficiency Projects in India, prepared for World Bank/UNF/UNEP TA Project (2004), revised as part of BEE-HSBC Bank Capacity Building Project, 2011.
19	Other Comments	N/A

TABLE A.21: USAID – ECO-I Program

No.	Characteristic	Description
1	Program Title	USAID – ECO-I Program
2	Sponsoring Agency	USAID
3	Counterpart Agency	ICICI Bank
4	Type of Program	Financing EE projects
5	Implementing Agency	ICICI Bank
6	Start Date/End Date	2002–2004
7	Objective(s)	• Provide loans for EE projects • Demonstrate different approaches and financial mechanisms for increasing access to commercial financing for EE projects • Increase exposure of commercial banks and improve appraisal skills
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	Industrial; commercial; and municipal, including ESCOs
10	Barriers Addressed	• Lack of internal capital for EE • Lack of bank financing for EE
11	Financing Mechanism(s)	• Finance up to 50 percent of project cost • Commercial interest rate
12	Eligibility Criteria	EE improvement in industrial, commercial, and municipal facilities
13	Total Funding	$5 million
14	Major Activities	• Developed financial products • Solicited projects • Selected and financed projects
15	Key Results	Not published
16	Lessons Learned	Not published
17	Contact(s)	Jaisingh Dhumal, Chief Manager, Technology Finance Group, jaisingh.dhumal@icicibank.com
18	Reports/Publications	None
19	Other Comments	USAID provided funds to ICICI Bank to on-lend to EE projects. ICICI financed a number of projects, and all loans were repaid with zero defaults.

TABLE A.22: LBNL – Report on Role of MDBS in Industrial EE

No.	Characteristic	Description
1	Program Title	LBNL – Report on Role of MDBs in Industrial EE
2	Sponsoring Agency	U.S. Department of Energy/ADB
3	Counterpart Agency	N/A
4	Type of Program	A review of the potential and role of IDBI in financing
5	Implementing Agency	N/A
6	Start Date/End Date	1999
7	Objective(s)	Estimate IEE potential and asses IDBI capacity and procedures for lending to industry for EE projects
8	Energy Efficiency/GHG Goals	N/A
9	Sectors Targeted	10 large industries
10	Barriers Addressed	Documented various barriers to EE, focusing on the limited availability of funds for IEE
11	Financing Mechanism(s)	Reviewed the IDBI line of credit
12	Eligibility Criteria	N/A
13	Total Funding	N/A
14	Major Activities	• Reviewed IDBI's institutional capability • Investigated procedures for lending • Conducted studies of 10 energy-intensive sectors • Pursued training and data needs to improve IDBI lending
15	Key Results	• Estimates of EE potential in industry • Procedures for IDBI to increase lending for IEE projects
16	Lessons Learned	N/A
17	Contact(s)	Jayant Sathaye, LBNL, JASathaye@lbl.gov
18	Reports/Publications	LBNL, Role of Development Banks in Promoting Industrial Energy Efficiency: India Case Studies, June 1999.
19	Other Comments	N/A

TABLE A.23: USAID – Energy Management Consultancy & Training Project

No.	Characteristic	Description
1	Program Title	USAID - Energy Management Consultancy & Training Project (EMCAT)
2	Sponsoring Agency	USAID
3	Counterpart Agency	Overall – Ministry of Power • Related to DSM – IDBI and Ahmedabad Electricity Company • Related to supply side – Power Finance Corporation (PFC) and IDBI
4	Type of Program	TA
5	Implementing Agency	• Supply side component – BECHTEL Corporation • Resource Management Associates
6	Start Date/End Date	1993 – 1998
7	Objective(s)	EMCAT's goal was to improve the efficiency of both energy supply and its utilization in industry and other sectors. The purpose of EMCAT was to improve India's technological and management capabilities for the supply of energy and for the efficiency of its end-use by private industry and other sectors.
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	Industrial (primarily) and other sectors
10	Barriers Addressed	The project addressed technological and management-related barriers to IEE finance at Indian financing institutions and distribution utilities. The project focused on training and capacity building of Indian stakeholders (state electricity boards [SEBs] and financing institutions) so that they could implement supply- and demand-side efficiency improvements.
11	Financing Mechanism(s)	The project supported the creation of operational and financial action plans to be used by PFC/IDBI and SEBs to modernize utility systems to reduce transmission and distribution losses and implement DSM measures.
12	Eligibility Criteria	N/A
13	Total Funding	Funding comprised $22 million as USAID TA; $5.67 as India counterpart funding. All of the above was evolved to support a $550 million loan product from the World Bank and ADB.
14	Major Activities	• Supply side component – Achieved institutional strengthening of PFC, as well as SEBs and state generating corporations • Private power development – Developed a power security package and private power financing options • End-use efficiency and DSM programs – Supported the transformation to efficient end-use technologies and supported peak reduction interventions for utilities
15	Key Results	• Project interventions resulted in Ahmedabad Electricity Company implementing a DSM program. • The capacity building initiative supported energy-sector consultants, financing institutions, and other related stakeholders (such as National Productivity Council)
16	Lessons Learned	Utility-scale DSM initiatives are important ways to manage peak demand and promote energy conservation. Both supply-side and demand-side efficiency improvements are important.
17	Contact(s)	S. Padmanaban; Senior Advisor, USAID/India mission, spadmanaban@usaid.gov
18	Reports/Publications	Evaluation of Energy Management Consultancy and Training Project (EMCAT 386-0517), 1996.
19	Other Comments	N/A

A.2 Ongoing Programs and Studies

TABLE A.24: BEE Perform, Achieve and Trade (PAT) Scheme

No.	Characteristic	Description
1	Program Title	BEE Perform, Achieve and Trade (PAT) Scheme
2	Sponsoring Agency	BEE
3	Counterpart Agency	N/A
4	Type of Program	Innovative, market-based mechanism to enhance the cost effectiveness of improvements in EE in energy-intensive large industries through the certification of tradable energy savings
5	Implementing Agency	BEE is setting up the overall framework for the scheme and Energy Efficiency Services Limited (EESL) will work as an implementation and monitoring agency for the entire scheme.
6	Start Date/End Date	Project design was completed in 2010. Launch was postponed from April 2011 to 2012 due to delays in "benchmarking" energy use.
7	Objective(s)	Enhance EE in the "designated consumers" (large energy-intensive industries and facilities). The scheme includes the following project steps: • Goal setting: Set a specific mandated energy consumption (SEC) target for each plant, depending on the level of energy intensity (specific energy consumed = energy use / output) of that plant. The target will specify the percentage by which a plant has to improve its energy intensity from the baseline value in a period of three years. • Reduction phase: Within a three-year period (2009–2012) the designated consumers try to reduce their energy intensity according to their targets. • Trading phase: Those consumers that exceed their target SEC will be credited tradable energy permits. These permits can be sold to designated consumers that failed to meet their target. Designated consumers that fail to achieve their target have to compensate for this failure by buying permits. If they fail to achieve either option, they may have to pay penalties. • The energy consumption reported by designated consumers is based on audits by any of the BEE accredited agencies. The BEE may verify the correctness of reported values.
8	Energy Efficiency/GHG Goals	According to GOI, the estimated size of this entire scheme will be about 700 billion Indian Rupees, or approximately $16 billion dollars, and will lead to 98 million tons of GHG mitigation.
9	Sectors Targeted	Designated consumers (large energy-intensive users)
10	Barriers Addressed	Lack of a market mechanism to incentivize large energy users to implement EE projects
11	Financing Mechanism(s)	Market-based trading of energy savings certificates
12	Eligibility Criteria	EE projects in designated consumers
13	Total Funding	There will be no direct funding from BEE for the PAT operations. Instead, there will be market-based trading.
14	Major Activities	Feasibility and design studies have been completed. Implementation is expected in early 2012.
15	Key Results	No results have been produced yet. The scheme has yet to be implemented.
16	Lessons Learned	N/A

TABLE A.24 (CONTINUED): BEE Perform, Achieve and Trade (PAT) Scheme

No.	Characteristic	Description
17	Contact(s)	Dr. Ajay Mathur, BEE, dg-bee@nic.in, 011-2617-8316
18	Reports/Publications	• GOI, NMEEE, 2008. • Emergent Ventures, Inc., "Can the Learning's from International Examples Make the Perform Achieve and Trade (PAT) Scheme Perform Better for India," discussion paper, March 2011. • BEE, PAT Consultation Document, 10 January 2011.
19	Other Comments	The launch of the PAT scheme had been postponed due to delays in developing the energy consumption benchmarks. The scheme was launched by the Ministry of Power on 4 July, 2012. GOI set the targets under the Energy Conservation Act, 2001, for 478 industrial units in India on 30 March, 2012.

TABLE A.25: BHC-IIEC – Public Benefits Funds for Clean Energy

No.	Characteristic	Description
1	Program Title	BHC-IIEC – Public Benefits Funds for Clean Energy
2	Sponsoring Agency	British High Commission (BHC) – Foreign and Commonwealth Office
3	Counterpart Agency	N/A
4	Type of Program	Establishment of a clean energy fund (CEF) in one or more Indian states using a regulatory-driven public benefit charge (PBC) mechanism
5	Implementing Agency	IIEC
6	Start Date/End Date	August 2011–December 2012
7	Objective(s)	• Prepare the design and roadmap for state CEFs for "end-use" EE and RE projects using a PBC mechanism • Assist one state in establishing a CEF
8	Energy Efficiency/GHG Goals	N/A
9	Sectors Targeted	All energy-using sectors
10	Barriers Addressed	Limited financing for EE projects
11	Financing Mechanism(s)	"Below-the-line" charge approved by the regulatory commission using the PBC concept; funding was matched by the state government from the state budget
12	Eligibility Criteria	To be defined as part of CEF design
13	Total Funding	Will be determined by the regulatory commission(s)
14	Major Activities	• Review international experience with PBC mechanisms • Assess legal and regulatory issues related to establishing a state-level CEF using the PBC • Work with regulatory commissions in 2–4 Indian states to assess the feasibility and benefits of a CEF
15	Key Results	Initial meetings with regulatory commissions in four states have indicated interest in exploring this concept. One partner state has initiated a public commenting process involving key stakeholders.
16	Lessons Learned	N/A
17	Contact(s)	Dr. Mahesh Patankar, IIEC Advisor and Sr. Advisor, Regulatory Assistance Project, mahesh.patankar09@gmail.com, 98202-25248
18	Reports/Publications	IIEC, Design and Road Map for State Clean Energy Funds for Energy Efficiency and End-Use Renewable Energy Projects, draft report, December 2011.
19	Other Comments	The Karnataka State Electricity Regulatory Commission is finalizing the draft discussion paper and the draft regulations to set up the SCEF.

TABLE A.26: Canara Bank – Energy Saving Loan Scheme for SMES

No.	Characteristic	Description
1	Program Title	Canara Bank – Energy Saving Loan Scheme for SMEs
2	Sponsoring Agency	Canara Bank
3	Counterpart Agency	N/A
4	Type of Program	Concessional loan financing of SME EE projects supported by a partial grant for energy audits as part of Canara Bank's "Green Banking Program"
5	Implementing Agency	Canara Bank
6	Start Date/End Date	July 2004–ongoing
7	Objective(s)	Finance energy-saving products and equipment in SMEs
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	SMEs (does not include ESCO projects)
10	Barriers Addressed	Limited financing for EE projects in SMEs
11	Financing Mechanism(s)	• Partial grant (up to Rs. 50,000) for energy audit and cost of preparing DPR • Loan of up to Rs. 10 lakhs or 90 percent of project cost under liberal terms • Limited loan guarantee facility under the Credit Guarantee Trust Fund for Small and Medium Enterprises (CGTSME) scheme
12	Eligibility Criteria	• Existing clients of Canara Bank • SMEs whose energy costs are more than 20 percent of production cost
13	Total Funding	N/A
14	Major Activities	• Energy audits and DPR development • Project appraisal • Loan disbursement
15	Key Results	Not available
16	Lessons Learned	Techno-economic appraisal of project presents key challenges.
17	Contact(s)	H.V. Kumar, Crestar Capital, crestar@gmail.com, 98210-45167
18	Reports/Publications	Crestar Capital, Designing Financial Structures and Financing Instruments for Energy Efficiency Projects in India, prepared for World Bank/UNF/UNEP TA Project (2004), revised as part of BEE-HSBC Bank Capacity Building Project, 2011.
19	Other Comments	The program appears to be continuing, but no information is available on the number of loans or amount of funding.

TABLE A.27: Credit Guarantee Trust Fund Scheme for Micro and Small Enterprises

No.	Characteristic	Description
1	Program Title	Credit Guarantee Trust Fund Scheme for Micro and Small Enterprises (CGTMSE)
2	Sponsoring Agency	GOI, Ministry of MSME
3	Counterpart Agency	N/A
4	Type of Program	Credit guarantee assistance to MSMEs and risk sharing
5	Implementing Agency	SIDBI and other banks/FIs
6	Start Date/End Date	2000–ongoing
7	Objective(s)	The requirement of collateral security for loans is a major barrier. To alleviate difficulties faced by small-scale units in accessing bank credit because of their inability to provide adequate collateral security for loans, GOI launched the Credit Guarantee Fund Scheme for Small Industries (subsequently renamed the Credit Guarantee Fund Scheme for Micro and Small Enterprises) in 2000. The following are some salient features of the scheme: • The scheme is operated by the CGTMSE through member lending institutions. • Loans made by member lending institutions (SIDBI and various public-sector FIs) to new and existing micro and small enterprises are covered under the scheme. • Any collateral or third-party guarantee free credit facility (both fund- as well as non-fund-based) extended by eligible institutions to new and existing micro and small enterprises, including service enterprises, with a maximum credit cap of Rs.100 lakh are eligible to be covered. • The guarantee cover available under the scheme can be up to 75 or 80 percent of the sanctioned amount of the credit facility, with a maximum guarantee cap of Rs.62.50 lakh or Rs. 65 lakh. The extent of guarantee cover is 85 percent for micro enterprises for credit up to Rs.5 lakh. • The guarantee cover under the scheme is for the agreed tenure of the term loan. • Lending institutions taking advantage of the guarantee cover have to pay upfront a one-time guarantee fee of 1.5 percent of the credit facility sanctioned (comprising the term loan and/or working capital facility) (1 percent in the case of a credit facility up to Rs.5 lakh), and an annual service fee of 0.75 percent per annum (0.5 percent in the case of credit facility up to Rs.5 lakh) on the outstanding loan amount on 31 March each year.
8	Energy Efficiency/GHG Goals	N/A
9	Sectors Targeted	All MSME clusters and units
10	Barriers Addressed	The requirement of collateral security for loans is a major barrier. GOI launched the CGTSME to alleviate difficulties faced by small-scale units in accessing bank credit because of their inability to provide adequate collateral security for loans.
11	Financing Mechanism(s)	The scheme provides credit guarantee for MSME projects, which also includes lending to EE projects.
12	Eligibility Criteria	Only MSME units as per the definition under the MSME Act
13	Total Funding	More than six lakh guarantees for an amount of Rs. 26,900 crores have been approved by the trust as of 30 June, 2011. This indicates the highly effective nature of this financial mechanism.

TABLE A.27 (CONTINUED): Credit Guarantee Trust Fund Scheme for Micro and Small Enterprises

No.	Characteristic	Description
14	Major Activities	Risk sharing and credit guarantee to MSME projects
15	Key Results	N/A
16	Lessons Learned	The sheer volume of six lakh guarantees provided shows that credit guarantees have helped significantly in the removal of the collateral security barrier.
17	Contact(s)	CGTMSE Trust at the SIDBI Head Office in Mumbai
18	Reports/Publications	More information can be found at www.cgtmse.com.
19	Other Comments	There is no explicit tie–in with EE projects, but EE projects are eligible for guarantees under the scheme.

TABLE A.28: Kerala State Energy Conservation Fund

No.	Characteristic	Description
1	Program Title	Kerala State Energy Conservation Fund (KSECF)
2	Sponsoring Agency	Kerala Energy Management Center (EMC)
3	Counterpart Agency	N/A
4	Type of Program	Establishment of a state energy conservation fund
5	Implementing Agency	Kerala EMC
6	Start Date/End Date	January 2010–ongoing
7	Objective(s)	• Provide financing support for EE projects in the state of Kerala • Facilitate the development of the EE market • Build capacity of banks/FIs and develop model financial transactions • Leverage commercial financing
8	Energy Efficiency/ GHG Goals	Not specified
9	Sectors Targeted	Industrial, commercial, municipal, public buildings, and residential
10	Barriers Addressed	• Lack of internal capital for EE • Limited commercial financing • High project development and transaction costs • Lack of knowledge and high risk perception of banks/FIs
11	Financing Mechanism(s)	• Energy audit subsidy scheme • Interest buy-down scheme for commercial and industrial customers • Energy efficient appliance financing for domestic customers • Energy efficiency grant scheme for public-sector projects • Performance contracting scheme • Partial credit guarantee scheme
12	Eligibility Criteria	Different criteria for each financing mechanism
13	Total Funding	Initial funding of Rs. 4 crores (about $1 million) – to be increased in 2012 to Rs. 40 crores (about $10 million)
14	Major Activities	• Preparation of guidelines for financing mechanisms • Development of eligibility criteria
15	Key Results	The fund was initiated in 2010—no published results are available.
16	Lessons Learned	N/A
17	Contact(s)	K.M. Dharesan Unnithan, Director, Energy Management Centre-Kerala, emck@keralaenergy.gov.in
18	Reports/Publications	• Limaye, Dilip R., et al, Establishment of the Kerala State Energy Conservation Fund, prepared for USAID ECO-Asia CDCP, November 2008. • Government of Kerala, Administrative Rules, Kerala State Energy Conservation Fund, Kerala Gazette, 2010. • Limaye, Dilip R., et al, Kerala State Energy Conservation Fund: Financing Schemes, prepared for USAID ECO-Asia CDCP, November 2009.

TABLE A.28 (CONTINUED): Kerala State Energy Conservation Fund

No.	Characteristic	Description
19	Other Comments	• The KSECF was established with an initial capital of R. 2 crores from the state budget, plus a grant from BEE of Rs. 2 crores. It has financed two projects in cooperation with EESL—one for waste heat recovery and the other for the development of the State Energy Conservation Action Plan. • Other projects will be financed under a set of five financing schemes that have been approved by the KSECF Board. • The Kerala state government plans to increase the capitalization of KSECF with funds from the sale of carbon credits from the state's compact fluorescent lamp program. In addition, the Kerala EMC has petitioned the Kerala Electricity Regulatory Commission to impose an "Energy Efficiency Cess" of Rs. 0.01 per kilowatt hour, which should then be credited to the KSECF.

TABLE A.29: KFW Credit Line for Energy Efficiency

No.	Characteristic	Description
1	Program Title	KfW Credit Line for Energy Efficiency
2	Sponsoring Agency	KfW Bank
3	Counterpart Agency	SIDBI
4	Type of Program	Credit line for financing EE projects
5	Implementing Agency	SIDBI
6	Start Date/End Date	November 2011–October 2013
7	Objective(s)	Provide financing for EE projects in MSMEs
8	Energy Efficiency/ GHG Goals	• A 20 percent energy intensity reduction • A 50 ton GHG reduction per million Rupees ($22,000) invested
9	Sectors Targeted	MSMEs
10	Barriers Addressed	Lack of capital for investing in EE
11	Financing Mechanism(s)	Loans for EE improvements in equipment and machinery
12	Eligibility Criteria	• EE projects proposed by SMEs should result in a minimum reduction of 30 tons of CO_2 equivalent per million Rupees of investment. • An assessment tool has been designed, developed, and disseminated to all SIDBI loan officers to check the eligibility of investment proposals.
13	Total Funding	€ 50 million
14	Major Activities	• Guidelines and procedures for loan processing • TA to loan officers • Develop an assessment tool • Develop a tool for monitoring results
15	Key Results	Some financings have been completed.
16	Lessons Learned	The requirement for meeting the emissions reduction criteria has been a constraint to project financing under this credit line because the SIDBI loan officers also have other donor credit lines that do not have such requirements.
17	Contact(s)	Rajiv Kumar, SIDBI, New Delhi
18	Reports/Publications	KfW and SIDBI, Operating Guidelines for KfW Energy Efficiency Line of Credit – Assistance for Energy Efficiency Projects, 2010.
19	Other Comments	Due to the requirement for meeting the minimum emission reductions (30 tons per million Rupees invested), the number of loans approved has been small (about 20 projects financed as of July 2012).

TABLE A.30: National Clean Energy Fund

No.	Characteristic	Description	
1	Program Title	National Clean Energy Fund (NCEF)	
2	Sponsoring Agency	Ministry of Finance, Department of Expenditure	
3	Counterpart Agency	N/A	
4	Type of Program	Fund for clean energy deployment	
5	Implementing Agency	Ministry of Finance	
6	Start Date/End Date	2011–ongoing	
7	Objective(s)	The NCEF has been created for funding research and innovative projects in clean energy technologies. Any project/scheme relating to innovative methods to adopt clean energy technology and R&D shall be eligible for funding.	
8	Energy Efficiency/ GHG Goals	Not specified	
9	Sectors Targeted	N/A	
10	Barriers Addressed	Availability of financing both grants for demonstration and soft loans for large projects for faster diffusion of RE and EE technologies	
11	Financing Mechanism(s)	**Limit**	**Approval from**
		< Rs 150 crores	The minister-in-charge of ministry/ department
		>= Rs 150 crores and < Rs 300 crores	The minister-in-charge of ministry/ department and the Minister of Finance
		>= Rs 300 crores	Cabinet Committee on Economic Affairs
12	Eligibility Criteria	Funds would be available for specific projects relating to innovative methods to adopt to clean energy technology and R&D: • Sponsored by a ministry/department of the government and submitted by an individual/consortium of organizations in the government/public sector/private sector in the form of loan or viability gap funding, as the Inter Ministerial Group (IMG) evaluates fit on a case-by-case basis. However, the participating organizations will have to put in a minimum financial commitment of 40 percent. The government assistance under the NCEF shall in no case exceed 40 percent of the total project cost. • The proposals for loan or viability gap funding by individuals/ consortiums are to be first submitted to the concerned line ministry, which, after due consideration, shall bring them before the IMG. In no case shall the IMG receive proposals directly from individuals/consortiums for funding. • Projects funded by any other arm of GOI or that have received grants from any other national/international body will be ineligible for applying or funding under NCEF. Further, no project relating to basic or fundamental research shall be supported through NCEF.	
13	Total Funding	Approximately Rs.1,500 crores annually through a cess on sales of coal	
14	Major Activities	Risk mitigation and financing projects on clean technologies, especially at the state level and in the private sector	
15	Key Results	N/A	

TABLE A.30 (CONTINUED): National Clean Energy Fund

No.	Characteristic	Description
16	Lessons Learned	N/A
17	Contact(s)	Mr. Neehar Ranjan Pandey, Deputy Secretary (P.F. II) Ministry of Finance, 23093109
18	Reports/Publications	Ministry of Finance, Department of Expenditure, Guidelines for appraisal and approval of projects/schemes eligible for financing under the National Clean Energy Fund, April 2011.
19	Other Comments	The fund initiated operations in 2011, but to date only a few very large RE projects (project size in excess of Rs. 10 billion) have been approved (on solar thermal, solar photovoltaics, Green India, biomass cook stoves, etc.). No EE proposals have been submitted to the fund, although it is likely that BEE may submit some proposals in the near future.

TABLE A.31: State Bank Of India – Project Uptech

No.	Characteristic	Description
1	Program Title	SBI
2	Sponsoring Agency	N/A
3	Counterpart Agency	Financing EE equipment and measures
4	Type of Program	SBI
5	Implementing Agency	2004-ongoing
6	Start Date/End Date	Provide technology upgrades and equipment financing for energy-efficient equipment to existing bank customers
7	Objective(s)	Not specified
8	Energy Efficiency/GHG Goals	MSMEs
	Sectors Targeted	Existing SBI customers, mostly SMEs
9	Sectors Targeted	Lack of internal capital for EE
10	Barriers Addressed	Lack of internal capital for EE
11	Financing Mechanism(s)	• Finance up to 90 percent of project costs or Rs. 100 lakh (about $2.25 million) • Commercial interest rate • Provided some limited funding for energy audits that was then included in the project loan
12	Eligibility Criteria	The focus is mainly on EE improvement in industrial facilities.
13	Total Funding	N/A
14	Major Activities	N/A
15	Key Results	Not published
16	Lessons Learned	Not published
17	Contact(s)	Rajiv Garg, Chief manager, Technical Appraisal, rajivagarg@bankofindia.co.in
18	Reports/Publications	None
19	Other Comments	This program was initiated as a part of the World Bank's 3-Country Energy Efficiency Project. Loans were provided only to existing SBI customers. SBI has not documented the total number of loans or the amount of loan funding.

TABLE A.32: TDB – Fund for Technology Development and Application

No.	Characteristic	Description
1	Program Title	TDB – Fund for Technology Development and Application
2	Sponsoring Agency	TDB, Department of Science and Technology
3	Counterpart Agency	N/A
4	Type of Program	Funding for development and commercial application of indigenous technology or adaption of imported technology
5	Implementing Agency	TDB
6	Start Date/End Date	1996–ongoing
7	Objective(s)	Fund the development and implementation of new or innovative indigenous or imported technologies
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	Industrial
10	Barriers Addressed	Limited availability of funding for development and implementation of new or innovative technologies
11	Financing Mechanism(s)	Options include equity, debt, and grants.
12	Eligibility Criteria	Enterprises with projects to develop and commercialize a new product/process/application through indigenous or imported technology
13	Total Funding	Out of the Rs. 1,533 crores R&D cess collection during the years 1996–2008, the government has made available to TDB a cumulative sum of Rs. 501 crores.
14	Major Activities	• Define eligible projects, activities, and expenditures • Specify eligibility and evaluation criteria • Specify types of funding available
15	Key Results	The mandate of TDB is to provide financial assistance to the industrial concerns and other agencies attempting the development and commercial application of indigenous technology or the adaption of imported technology for wider domestic application. TDB's financial assistance has covered almost all sectors of the Indian economy.
16	Lessons Learned	While many of TDB's projects are in sectors such as healthcare, chemicals, engineering, agriculture, IT, and civil aviation, TDB has funded an EE company—Elpro Energy Dimensions Private Limited, Bangalore—for developing and commercializing an energy tracking and control system to implement energy reduction measures through a voltage control mechanism. This system monitors the energy consumption and wastage in street lighting systems and improves EE.
17	Contact(s)	TDB, 26537349, 26540100, www.tdbindia.org
18	Reports/Publications	Technology Development Board, Project Funding Guidelines, New Delhi, January 2007.
19	Other Comments	N/A

TABLE A.33: Technology Innovation Fund – SRIJAN

No.	Characteristic	Description
1	Program Title	Technology Innovation Fund – SRIJAN
2	Sponsoring Agency	Technology Information Forecasting and Assessment Council (TIFAC), Ministry of Science and Technology, GOI
3	Counterpart Agency	N/A
4	Type of Program	Soft loans to MSMEs aimed at promoting and catalyzing development and demonstrating and commercializing innovative technologies.
5	Implementing Agency	SIDBI
6	Start Date/End Date	2011–ongoing
7	Objective(s)	• TIFAC has created a revolving fund of Rs. 30 crores for technology innovation and placed it with SIDBI to provide assistance to MSMEs for developing, up-scaling, demonstrating, and commercializing innovative-technology-based projects. • MSMEs seeking financial assistance from the fund for technology innovation projects may send detailed project proposals either to TIFAC or SIDBI. The technical evaluation of the project proposals will be carried out by TIFAC and financial appraisal will be done by SIDBI. Proposals recommended both technically and financially will be considered for sanction toward implementation by a Project Approval Committee consisting of SIDBI and TIFAC officials. SIDBI will manage the fund on behalf of TIFAC. The detailed format for submitting proposals to the TIFAC-SIDBI Revolving Fund for Technology Innovation may be downloaded at www.tifac.org.in or www.sidbi.in.
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	All MSME units
10	Barriers Addressed	Lack of sufficient financing for developing, demonstrating, and commercializing technologies
11	Financing Mechanism(s)	Assistance up to 80 percent of the total project cost, which would normally be less than Rs. 100 lakhs. Higher assistance could be considered selectively based on innovation content in the projects. Interest rate will not exceed 5 percent per year.
12	Eligibility Criteria	N/A
13	Total Funding	Rs. 30 crores
14	Major Activities	• The collaborative program of TIFAC and SIDBI aims to facilitate development, demonstration, and commercialization of technology innovation projects pertaining to new product or process development. These projects are envisioned to encourage and promote development of capabilities in MSMEs to innovate and bring high-risk innovations to the market for opening up opportunities for business linked with innovations. • As of April 2012, three projects have been funded under this scheme.
15	Key Results	N/A
16	Lessons Learned	N/A
17	Contact(s)	www.tifac.org.in or www.sidbi.in
18	Reports/Publications	SIDBI, TIFAC-SIDBI Revolving Fund for Technology Innovation Program, Brochure, undated.
19	Other Comments	N/A

TABLE A.34: UNIDO – Promoting Energy Efficiency and Renewable Energy in Selected Micro SME Clusters in India

No.	Characteristic	Description
1	Program Title	UNIDO – Promoting Energy Efficiency and Renewable Energy in Selected Micro SME Clusters in India
2	Sponsoring Agency	UNIDO/GEF
3	Counterpart Agency	BEE and the Ministry of New and Renewable Energy
4	Type of Program	TA
5	Implementing Agency	Program Management Cell to be located at BEE
6	Start Date/End Date	2011–2016
7	Objective(s)	The aim of the project is to develop and promote a market environment for introducing energy-efficient technologies and enhanced use of RE technologies in process applications in 12 selected energy-intensive MSME clusters in India within five sectors (ceramic production, hand tool production, foundries, brass production, and dairy production). The project also hopes to further scale up activities to a nationwide level in order to reduce energy usage per unit of product, improve the productivity and competitiveness of units, and reduce overall carbon emissions.
8	Energy Efficiency/GHG Goals	• The target for the total tonnes of CO_2 equivalent emissions avoided per year as a direct result of this project is 84,700 tonnes by 2015. • The target for the total tonnes of CO_2 equivalent emissions avoided over a 15-year lifetime as a direct result of this project is 1,270,500 tonnes by 2015. • The target for total energy saved (megawatt hours [MWh]/year) is 276,600 MWh per year by 2015.
9	Sectors Targeted	Ceramic production, hand tool production, foundries, brass production, and dairy production.
10	Barriers Addressed	• Supply-side barriers – Barriers in the supply chain for the delivery of EE/RE technology and services • Demand-side barriers – Barriers restricting the level of demand for EE/RE technology and services • Barriers to national uptake – Barriers restricting the national uptake and implementation of EE/RE technology and services • Policy barriers – Barriers in the policy and knowledge within governmental institutions for the implementation of EE/RE technology and services
11	Financing Mechanism(s)	• This project seeks to mobilize at least $4 million–$5 million in local financing for the identified investments in the 12 target clusters. This money can be drawn from a variety of commercial sources ultimately decided by the individual SME units. It can come from the SME units' own equity; expansion of existing lines of credit with their current banks; additional withdrawals under specialized lending schemes for EE; or even special government target incentive funds, if available. If financing is an issue, the units may apply to the $400 million International Bank for Reconstruction and Development credit line facility at SIDBI. • The total investment in RE/EE technologies is expected to be $16 million by the end of the project.
12	Eligibility Criteria	N/A
13	Total Funding	• GEF funding $7,172,097 • Co-financing $26,200,000 (government contribution) • Total funding $33,372,097

TABLE A.34 (CONTINUED): UNIDO – Promoting Energy Efficiency and Renewable Energy in Selected Micro SME Clusters in India

No.	Characteristic	Description
14	Major Activities	For each cluster, the following methodology will be undertaken to ensure that the cluster's specific needs are addressed: • Techno-economic studies at the unit and cluster levels will be undertaken to ensure that appropriate technologies that would be attractive to MSMEs are developed. • Training and awareness workshops will be undertaken to learn from the MSME actors and to share experiences and knowledge on EE/RE measures. • Assistance will be provided in the detailed planning of the implementation of EE/RE measures. • Initial financial assistance will be provided to "first movers" within the clusters to cover some of the costs of EE/RE measure implementation where investments are necessary. • Assistance will be provided in identifying financial resources and ensuring that the EE/RE measures pay for themselves quickly through reduced energy costs. • Operators will be trained on best operating practices that do not require investment but do reduce energy costs. • The capacity of local service providers to provide EE/RE services and products to MSMEs will be enhanced. • The cluster level "energy management cells" will be empowered and assisted to provide services to the MSMEs within their clusters. • Information booklets, pamphlets, web sites, etc. will be prepared to assist in information sharing with the MSMEs.
15	Key Results	N/A
16	Lessons Learned	N/A
17	Contact(s)	Country representative, UNIDO; India; and Director General, BEE
18	Reports/Publications	N/A
19	Other Comments	N/A

TABLE A.35: World Bank/GEF Project for EE Financing in MSMES

No.	Characteristic	Description
1	Program Title	World Bank/GEF Project for EE Financing in MSMEs
2	Sponsoring Agency	World Bank and GEF
3	Counterpart Agency	BEE and SIDBI
4	Type of Program	• EE investments in the Indian MSME sector financed from local commercial financing sources through project development support and deployment of performance-linked grants for demonstration purposes • Also includes capacity building of MSMEs and banks/FIs, and knowledge management
5	Implementing Agencies	BEE and SIDBI
6	Start Date/End Date	May 2010–August 2014
7	Objective(s)	Increase demand for EE investments in target MSME clusters and to build their capacity to access commercial finance
8	Energy Efficiency/GHG Goals	N/A
9	Sectors Targeted	N/A
10	Barriers Addressed	• The gap in understanding between energy auditors and EE practitioners, who prepare technical proposals for MSME clients, and the local banks that evaluate loan proposals • Higher transaction costs as a percentage of investment due to the small project size • Lack of information among banking sector stakeholders on the potential market for lending and the portfolio benefits • Imperfect information about EE among MSMEs • Perceived difficulties in working with this customer class
11	Financing Mechanism(s)	• Implementing outreach efforts to build capacity and awareness to improve EE, with the goal of facilitating financing of MSME EE projects by commercial banks and FIs • Facilitating and contributing to the growth of EE investments through project development support and deployment of performance-linked grants • Supporting knowledge management at the programmatic level
12	Eligibility Criteria	MSMEs in the five selected clusters
13	Total Funding	BEE – $2.25 million SIDBI – $9.05 million
14	Major Activities	• Increase demand for EE investments by adopting a cluster approach to facilitate the development of customized EE products and financing solutions • Raise the quality of EE investment proposals from technical and commercial perspectives, and increase the capacity of project developers and bank loan officers and branch managers • Expand the use of existing guarantee mechanisms for better risk management by banks to catalyze additional commercial finance for EE • Establish a monitoring and evaluation system for the targeted clusters
15	Key Results	No results have been reported yet; the project was initiated recently.
16	Lessons Learned	N/A
17	Contact(s)	Saurabh Yadav, BEE, syadav@beenet.in, 98730-85034 Rajiv Kumar, SIDBI, rajivkr@sidbi.in, 97114-41998
18	Reports/Publications	World Bank, Project Appraisal Document – The Financing Energy Efficiency at MSMEs Project, March 2010.
19	Other Comments	N/A

A.3 Future Programs and Studies

TABLE A.36: BEE Partial Risk Guarantee Fund

No.	Characteristic	Description
1	Program Title	BEE Partial Risk Guarantee Fund (PRGF)
2	Sponsoring Agency	BEE
3	Counterpart Agency	BEE
4	Type of Program	Risk-sharing fund
5	Implementing Agency	BEE
6	Start Date/End Date	On 25 June, 2012, BEE issued two solicitations to select consultants to develop the operational documents for the PRGF and establish a project appraisal unit.
7	Objective(s)	Promote EE financing by commercial banks by providing a risk-sharing facility
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	Industrial, commercial, and municipal
10	Barriers Addressed	• Limited commercial EE financing • Perception of high risk
11	Financing Mechanism(s)	Provide a partial risk guarantee – 10 percent for the first loss, 50 percent at an equal rate thereafter
12	Eligibility Criteria	• Any commercial bank, FI, or bank-owned leasing company in India may participate • Eligible borrowers for individual projects include BEE-empanelled ESCOs or joint ventures, including such ESCOs • Maximum guarantee – Rs. 300 lakh (about $7 million)
13	Total Funding	Rs. 75 crores (about $18 million)
14	Major Activities	N/A
15	Key Results	There are no results yet.
16	Lessons Learned	N/A
17	Contact(s)	Saurabh Diddi, BEE, reply2saurabh@yahoo.co.in
18	Reports/Publications	• Institutional Structure for Partial Risk Guarantee Funds (PRGF) For Energy Efficiency, to be published. • Rules: Partial Risk Guarantee Funds (PRGF) For Energy Efficiency, to be published.
19	Other Comments	The launch of the PRGF was delayed due to discussions of operational issues between BEE and the Ministry of Power regarding administration of the fund. These issues have been resolved and BEE is moving forward with implementation of the fund. As noted above, BEE is in the process of engaging consultants to assist with the implementation.

TABLE A.37: BEE Venture Capital Fund for EE

No.	Characteristic	Description
1	Program Title	BEE Venture Capital Fund for Energy Efficiency (VCFEE)
2	Sponsoring Agency	BEE
3	Counterpart Agency	BEE
4	Type of Program	Venture capital fund
5	Implementing Agency	BEE
6	Start Date/End Date	The start date, originally scheduled for December 2011, was delayed while BEE and the Ministry of Power resolved some operational issues. On 25 June, 2012, BEE issued a solicitation to engage a consultant to prepare the operational documents for the fund.
7	Objective(s)	Provide equity financing for EE projects or companies, specifically related to the following: • Financing for incubation of new EE technologies • Technology transfer leading to local manufacturing • Project financing for last mile equity
8	Energy Efficiency/GHG Goals	Not specified
9	Sectors Targeted	Industrial, commercial, and municipal
10	Barriers Addressed	• High risk of new technologies • Perceived low returns on investment • Limited equity availability for EE projects
11	Financing Mechanism(s)	Co-invest in companies or projects
12	Eligibility Criteria	• Maximum equity investment in companies – Rs. 7.5 crores (about $1.8 million) • Maximum equity investment in projects – 15 percent of total cost
13	Total Funding	Rs. 95 crores (about $22 million)
14	Major Activities	N/A
15	Key Results	No results have been reported yet.
16	Lessons Learned	N/A
17	Contact(s)	Saurabh Diddi, BEE, reply2saurabh@yahoo.co.in
18	Reports/Publications	• Institutional Structure for Venture Capital Fund For Energy Efficiency (VCFEE), to be published. • Rules: Venture Capital Fund For Energy Efficiency (VCFEE), to be published.
19	Other Comments	The launch of the VCFEE was delayed due to discussions of certain operational issues between BEE and the Ministry of Power regarding the administration of the fund. BEE is now moving forward with engaging a consultant to develop operational documents.

TABLE A.38: Clean Technology Fund Investment Plan for India

No.	Characteristic	Description
1	Program Title	Clean Technology Fund Investment Plan for India
2	Sponsoring Agency	Climate Investment Funds (CIF) – multi-donor fund
3	Counterpart Agency	N/A
4	Type of Program	Financing of low-carbon projects
5	Implementing Agency	BEE and MOEF
6	Start Date/End Date	2011–ongoing
7	Objective(s)	The Clean Technology Fund (CTF) is one of the two (along with the Strategic Climate Fund) multi-donor trust funds within the CIF. The CTF aims to finance transformational actions through the following activities: • Providing positive incentives for the demonstration of low-carbon development and mitigation of GHG emissions through public- and private-sector investments • Promoting scaled-up deployment, diffusion, and transfer of clean technologies by funding low-carbon programs and projects that are embedded in national plans and strategies to accelerate their implementation • Promoting realization of environmental and social co-benefits, thus demonstrating the potential for low-carbon technologies to contribute to sustainable development and the achievement of the Millennium Development Goals • Promoting international cooperation on climate change and supporting agreement on the future of the climate change regime • Utilizing the skills and capabilities of the multilateral development banks to raise and deliver new and additional resources, including official and concessional funding, at a significant scale • Providing experience and lessons in responding to the challenge of climate change through learning-by-doing
8	Energy Efficiency/GHG Goals	Not Specified
9	Sectors Targeted	Phase 1 financing: • Himachal Pradesh: A development policy loan on environmental sustainability and climate change • Support for NMEEE • A partial risk guarantee for EE technologies • Support to the Jawaharlal Nehru National Solar Mission (JNNSM)
10	Barriers Addressed	• Need for capacity building and training • Risk perceptions of financiers • Need for incentives to encourage PAT

TABLE A.38 (CONTINUED): Clean Technology Fund Investment Plan for India

No.	Characteristic	Description
11	Financing Mechanism(s)	Concessional financing to support two specific programs under NMEEE, as follows: • The International Finance Corporation will work directly with private actors in the financial sectors (infrastructure finance companies, ESCOs, financial intermediaries) to draw them into EE and RE financing by using risk-sharing instruments or credit lines. • IFC will also provide TA to these entities to increase their familiarity with EE and RE technologies and allow them to conduct better risk assessment of such projects.
12	Eligibility Criteria	N/A
13	Total Funding	$775 million (endorsed in November 2011)
14	Major Activities	• Support to the Super-Efficient Equipment Program (SEEP) Initiative: CTF resources would be utilized to kick-start this program in India, focusing on electric fans, as there is a significant volume sold on an annual basis (10 million, or 25 percent of the market), and the manufacturers are mostly domestic. • Support to the PAT scheme, which is a market-based mechanism to enhance the cost effectiveness of improvements in EE in energy-intensive large industries and facilities through certification of energy savings that can be traded. • Support to the partial risk guarantee for EE technologies: This mechanism is intended to address the key barriers of the availability of long-term finance at reasonable rates of interest for solar and EE applications, and building capacity within FIs to assess commercial risks in these businesses. Lower-cost financing would help make more projects financially viable, bringing advanced RE investments closer to grid-parity faster and reducing payback periods of EE investments.
15	Key Results	N/A
16	Lessons Learned	N/A
17	Contact(s)	Joint Secretary, MOEF, GOI
18	Reports/Publications	Clean Technology Fund: Investment Plan for India.
19	Other Comments	• GOI plans to kick-start India's SEEP Initiative by monetizing energy savings that will encourage consumers to buy high-efficiency fans, enhance the cost effectiveness of EE improvements in large industries and facilities, and support JNNSM by lowering the cost of financing and facilitating technology transfer in the establishment of solar parks. The support will also spur renewable hydropower development, significantly cutting CO_2 emissions. • India's goal is to invest in projects that impact social and economic development with significant co-benefits for climate change. By going down this path, and with help from the CIF, India hopes to demonstrate how innovative investments and business models can be catalytic to a low-carbon growth model.

Annex B – Institute for Industrial Productivity Letter to the Reserve Bank of India

19 March 2012

Chief General Manager-in-Charge
Reserve Bank of India, Rural Planning & Credit Department
Central Office, 10th floor, Central Office Building
Shahid Bhagat Singh Marg
Mumbai-400001
Via e-Mail – rpcdplan@rbi.org.in

Subject: Recommendation to classify Energy Efficiency Loans as Priority Sector Lending by Banks and Financial Institutions

Dear Sir:

I am writing on behalf of the Institute for Industrial productivity (IIP), a non-profit organization (NGO) established by the ClimateWorks Foundation to serve as the best practice network (BPN) for industrial energy efficiency through the efforts of its staff and expert consultants in Beijing, New Delhi, Paris, and Washington, DC. The recommendations that follow were developed at a recent meeting in which a number of the leading Indian banks (including ICICI, IDBI, SIDBI, IL&FS and SBI) participated as part of our project to develop approaches to scale up financing of industrial energy efficiency projects in India.

We appreciate the efforts of the Reserve Bank of India (RBI) in appointing the Nair Committee to re-examine the existing classification and suggest revised guidelines related to Priority Sector Lending and welcome the opportunity to provide our comments on the Nair Committee Report. We agree with the Committee's recommendations for the realignment of the agriculture sector as "agriculture and allied activities" with the target of 18% within the overall target of 40% assigned to the domestic Scheduled Commercial Banks (SCBs) and the inclusion of foreign banks to comply with a 40% target. The purpose of this letter is to make a case to also include energy efficiency loans as priority sector lending by banks and financial institutions.

While we concur with the Nair Committee recommendations pertaining to the priority lending for agriculture, rural sector, and MSMEs, we would like to draw RBI's attention to the need to promote

economy-wide energy efficiency, which currently faces significant financing barriers. The Honorable Prime Minister of India announced a very important policy initiative – the National Mission on Enhanced Energy Efficiency (NMEEE) as a part of the National Action Plan on Climate Change (NAPCC). NMEEE calls for a substantial scaling up of financing for energy efficiency through: (i) Creation of mechanisms that would help finance energy efficiency programmes in all sectors of the economy by capturing future energy savings (Energy Efficiency Financing Platform); and (ii) Developing fiscal instruments to promote energy efficiency (Framework for Energy Efficient Economic Development).

A number of recent studies in India have highlighted the benefits of energy efficiency for improved productivity, employment generation, and enhanced energy security. Perhaps even more important are the fiscal benefits of energy efficiency, as improved efficiency reduces the need for augmenting electric generation capacity, thereby reducing both fiscal and energy deficits and releasing funds for socially important investments. These studies have also pointed out that efforts to scale up energy efficiency are hindered by the limited availability of commercial financing from banks and financial institutions. Since the benefits of energy efficiency directly align with the basic objectives of the Priority Sector Lending regulated by RBI, we would like to strongly recommend inclusion of energy efficiency lending as a sub-target within the overall target of 40% assigned to the SCBs and the wholly-owned subsidiaries of foreign banks. An appropriate sub-target of up to 5% towards energy efficiency lending would enhance the availability of financing for this sector substantially, alleviate existing financing barriers, and contribute to meeting the national goals as articulated under NMEEE. Should RBI's reluctance to add additional priority sectors make the inclusion of an energy efficiency sub-target impossible, we would urge, at a minimum, that energy efficiency lending be specified under the existing MSE priority sector and include lending to Energy Services Companies (ESCOs), regardless of size, which finance energy efficiency improvements to MSEs.

We hope the RBI would accept our recommendations and look forward to an opportunity to provide any additional inputs that RBI may be needed in this regard.

We have attached for your information a brief description of our organization and activities.

Sincerely,

Institute for Industrial Productivity

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