Lessons Learned and Close-out Report:

Energy Management Consultation and Training Project (EMCAT)

Prepared for
The Office of Environment, Energy and Enterprise

Prepared by
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USAID/India

Contents

Methodology

This summary captures the candid reflections by USAID managers and key project partners of the USAID/India Energy Management Consultation and Training project and its accomplishments, challenges, and lessons learned.

The one-day lessons learned round-table discussion on which this report is based was a cost-effective mechanism for capturing the accomplishments and challenges faced in the implementation of this activity. The discussion provided an opportunity to reunite key partners and stakeholders and obtain their feedback on what worked and what did not and how things can be done better. The informal setting enabled frank discussions, which have been captured in this report.

The text is a dialogue-narrative hybrid. Comments are attributed at a general level.

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Introduction

The Energy Management Consultation and Training Project (EMCAT) was a bold, forward-leaning investment by USAID and project partners including the Power Finance Corporation, the Industrial Development Bank of India, and Winrock International of India.

In 1991, when EMCAT was designed and initiated, power in India was a state monopoly. Despite many very evident shortcomings in the power sector, there was no reason to believe that the battle to improve management and efficiency would be anything but uphill. This changed shortly after the project started. Provoked by a macro-economic crisis, the government of India began releasing its grip over the economy in the early 1990s. USAID and EMCAT partners found themselves in an entirely new policy context. While the original intent may have been a modest experiment in change, after deregulation project managers found themselves in a more permissive environment. As a result, USAID refined the project to take advantage of this political will for change. For example EMCAT was amended to include support for private power development and renewable energy policy reforms. EMCAT concluded in 2004, after 13 years and $26.81 million in USAID funding and a greater amount of in-kind, financial and other forms of project partner contributions.

Stakeholders agree that because of USAID's higher risk tolerance and USAID and partner responsiveness to opportunity, and the evolution of GOI policies in the power sector, EMCAT contributed greatly to enduring systemic improvements in India's power policies and the effectiveness of State Electricity Boards. The Government of India and foreign donors continue focusing on improving efficiency and effectiveness in power generation and distribution reform. USAID continues to respond to GOI priorities in the power sector, and most current work builds in some way, on EMCAT partnerships, approaches, and accomplishments.

Large-scale GOI and USAID investments in the power sector created valuable partnership experiences under EMCAT. This report summarizes partner reflections on design, management, and impact. Lessons learned in design and management are summarized below for convenience.

EMCAT Design

In India at the time EMCAT started the power sector was completely controlled by the state. It is still largely managed by the public sector. In the late 1980s and early 1990s, generation and distribution were major policy issues. The GOI had no policy reform models or experience, and few donors were willing to become involved. There was also little donor awareness. What did "reform" mean? "We weren't sure," said an Indian project partner. India had monolithic organizations, with many feedback and communication and coordination problems. "We are happy that USAID dared to enter this area, and that's one reason we see power sector reform advancing today," said another.

EMCAT at a Glance
[1: Background]

Project Purpose
Improve India's technological and management capabilities for the supply of energy and its end-use by private industry and other sectors.

Signatories, June 28, 1991
- The Department of Economic Affairs, Ministry of Finance (DEA)
- Power Finance Corporation (PFC)
- Industrial Development Bank of India (IDBI)
- USAID

USAID was bold…. USAID had worked in the power sector for many years. In the case of EMCAT, design assistance from Washington was requested. Negotiating this agreement took time. The goal was to help the Power Finance Corporation (PFC) coordinate with the World Bank and Asian Development Bank (ADB). USAID facilitated an MOU among USAID, the World Bank, and the ADB. Then-Mission Director Bob Bakely was instrumental. The World Bank requested USAID to be on their mid-term evaluation team for approval of their loan to the PFC. Negotiating the MOU took a long time. The PFC was new, and the World Bank and ADB were looking at the PFC as their main partner. If either the World Bank or ADB had pulled out, USAID might also have pulled out. USAID gained a lot of leverage by having donors work together.

…And sought new partners. The PFC and IDBI were brought in together from the start, in consultations at least, which was smart. USAID wanted to expand institutional partners and looked to the IDBI to see if they were interested. IDBI was initially wary; they didn't want to be evaluated by outside consultants, which would have accompanied USAID involvement. This was eventually resolved.

How much did USAID involve the partners in design? Design was 80 percent complete before USAID involved its partners. Prior to this design it could not be discussed with partners. Back and forth dialogue with the partners nevertheless persisted for almost six months, largely becomes the project was new to PFC and IDBI. (It was a focused approach to institutional development in the power sector.)

Design Strengths and Weaknesses

The design evolved. From the Indian side, there were no problems with design. It was an evolving design, and the project's direction changed in the early 1990's in response to opportunities; this made the activity effective. The design was excellent. When starting something new, variation from country to country and industry to industry is imminent. Allowing for corrections in the Indian context was critical. The basic design achieved noble purposes. In reality, though, part of the evolution was funding-driven: in 1995 USAID/Washington offered $5 million to support greenhouse gas mitigation and invited Mission proposals. Washington funded USAID/India's proposal, which added a focus on renewable technologies policy development and commercialization. In 1996, a four-person midterm evaluation team recommended new activities, identified new beneficiaries, and re-emphasized the need for USAID/India to focus on power sector reform. Again, reforms were not in the picture at all at the time of the original EMCAT design.

EMCAT at a Glance
[2: Key Players]

The Power Finance Corporation, PFC
- Established 1986 to provide financing to the power sector
- 100 percent government owned

The Industrial Development Bank of India, IDBI
- A public financial institution established in 1964. IDBI has helped found many institutions, including the Securities Exchange Board of India and Export Import Bank of India
- Helped develop India's domestic financial sector

Winrock International
- An independent not-for-profit development organization managing energy, environment, natural resource management and sustainable development activities

State Electricity Boards are a tough nut. One project objective was to help the PFC improve. They have, but the State Electricity Boards (SEB's) have not. Their finances are still bad. The project ought to have provided more training for SEB's. USAID wanted to improve SEB performance through PFC lending, using PFC's conditionality to influence SEB policies and performance. USAID's original idea was that PFC would be a catalyst through lending. But the project took a different turn.

Do you think SEBs were adequately addressed? USAID utilized all the opportunities within EMCAT to engage the SEBs. The PFC went to all the SEBs and encouraged as much participation as possible. For example, EMCAT project teams were mandated in the utilities. . The Orissa model stumbled, but some of the determination of

success and failure depends on one's time scale (more on this below). [1] The Orissa model is still progressing, and performance may improve. It may simply be too early to expect success.

Change is slow, slower still in India... The U.S.A. faced setbacks and failures in electrification, and many of the results of any assessment of success and failure depend on the time frame used. In this case, in the power sector in India, change takes time because of the unique system. India is aware of the need for reform today. For political, commercial, and financial reasons, reform foes not take place overnight. Setting priorities is also difficult: generation or distribution? Power distribution is a large arena catering to many interests. The government continues to come up with schemes of free power, for example the Congress government's plans to provide free power to farmers in Andhra Pradesh. These large-scale reforms require a longer time frame in India.

…And culture matters. In addition to technological change, cultural change is also very important. Accountability through technical change, for example computerization of accounts, is faster than accountability through cultural change, but cultural change is required for systemic impact and sustainability. USAID agrees that change in technology is faster than change in culture; change in culture in is a slow and sensitive process in any society.

EMCAT at a Glance
[3: Assistance Provided]

- **USAID Direct Disbursement** – U.S. contractors, grantees, Power Finance Corporation and Industrial Development Bank of India for their local currency expenditures **U.S. Contractors** - TA to Power Finance Corporations and State Utilities
- **IDBI** – TA on energy efficiency
- **Power Finance Corporation & Industrial Development Bank of India** – TA, studies, training for local institutions and NGOs
- **Power Finance Corporation and State Utilities** – Limited commodity procurement

Financing: Someone has to provide the money, but 50 percent cost share contribution levels are just too high. Financing is important to project implementation. USAID gave some financial support. Through Winrock USAID was financing renewable energy commercialization activities under EMCAT and Winrock is still working with the reflows, but the 50 percent matching funds requirements continue to be a major hindrance for borrowers. If the borrower could provide 50 percent of the funds they need would they borrow from USAID? Conditional grants do help companies, but this type of

[1] The Orissa model included unbundling SEB generation, transmission, and distribution functions, and moving towards privatization of electricity generation and distribution

financing does not come from Indian financial institutions. The IDBI for example does not provide finance for high risk projects. Nobody will finance them, even if the lender only gives a little. Captive power, or bulk producers, the large financial institutions such as PFC and IBDI, are comfortable with those. If you are looking at an electricity service company with market uncertainties, the lenders are much more hesitant. From the IDBI side, again nobody should expect to be given 100 percent funding. To give 50 percent of a loan with a very long repayment period is generous and very rare in any country. And if you lend someone 100 percent, they have no stake in the project. No funding should be made without participation of the party involved. This is Winrocks's point exactly: when loans are given there is a contribution requirement, but 50 percent using Winrock as an example, is too high.

Was the loan component successful? How was USAID's design of the loan component? Was it useful for generating projects? Project partners found that yes, it was a real force for co-generation projects. Today, for example, sugar co-generation projects are doing very well because of the profitability of co-generation, not because sugar is doing well. The government cannot allow sugar prices to increase because of public outcry; they would even accept one rupee less than current prices. Sugar company revenues are coming more and more from the production of the molasses that goes into ethanol and from the sale of electricity than from sugar. These projects started because of USAID activities under EMCAT.

EMCAT at a Glance
[4: Program Evolution]

1991, Authorization
$20 million life of project funding level ($14 m for supply and $6 m for end-use)

1994
- Amended to support private power development
- LOP increased by $2 m

1995
- Amended to support renewable energy policy development
- LOP increased by $5 m

1996
- PACD extended to December 1999 based on midterm evaluation results

1997
- Supply side component ended in March, a design study is conducted that focuses on restructuring and regulatory reform
- PACD extended to June 2001

2001
- PACD extended to December 2002

2002
- PACD extended to June 2004

If you could change one thing? From the PFC side, improvement in the quality of participation in the project team was needed. From the IDBI side, it is hard to think of a better form for the project at that time. If it were designed now, what would be done differently? The accountability of project implementers could be improved. Time frames could have been fixed. Participants could have been made more accountable to time commitments.

EMCAT Management

USAID was too removed from implementation. From the Indian project partners' perspective, we see that USAID's use of contractors insulates USAID from implementation and from liabilities. There is little interaction between project partners and USAID. Most of the interaction is with USAID contractors. PFC had frequent problems working with the contractor, especially relating to the scope of work and work quality. USAID does not get involved in day-to-day operations, therefore when the contractor comes to USAID with a problem the problem is already very advanced and damage has been done. How can this be avoided?

EMCAT at a Glance
[5: Primary Agreements]

- Demand Side Component -

Contracts

- Resource Management Associates: TA $2.76 m
- IRG Task Order: TA, Energy efficiency $2.49 m
- SRC: Study of Energy Service Companies (ESCOS) $0.12 m

Grants, Cooperative Agreements, and PASAs

- Winrock: Renewable Energy Commercialization (RECOMM) $1.09 m
- Winrock: Accelerating Renewable Energy Commercialization (ARECOMM) $.49 m
- International Executive Service Corps Volunteer Program $0.650 m
- IIE: Energy Training $0.65 m
- Institute for Transportation and Development Policy: $0.291 m
- Improved Cycle Rickshaw
- Industrial Development Bank of India: Studies $1.20 m

Not all were bad, but the chiefs of party were a general problem. From a USAID perspective, the contractor's chief of party (COP) is very important. USAID had poor experiences with them. The contracted firm was good, but their choice of people was a problem. It is hard for USAID to change the COP. As a result of this problem, contract value and duration were reduced to avoid even more problems. From experience on the Indian side, USAID has organized training and workshops that proved to have no new technical value or new ideas because the COP was a technocrat. When that COP was replaced, quality in technical assistance improved.

How about the GOI? What was the government's involvement and was it helpful? USAID experienced few problems with the Ministry of Power (MOP), but did experience some delays with the Department of Economic Affairs, Ministry of Finance. Another Indian EMCAT partner emphasized: as long as the government is not directly involved in implementation, *that* will contribute to success. And the government did not interfere. "As long as the government allows you to function that is a major contributor to success", said one partner. The government's participation in Project Review Committee (PRC) meetings, however, had a positive outcome.

ESCOs and the MOP. The Energy Service Companies (ESCOs) are now operating and the Energy Conservation Act of 2003 is in place. EMCAT contributed to this. The GOI created a Bureau of Energy Efficiency, which did not exist earlier. In the beginning of EMCAT, the MOP was not directly involved in the project; they were on the PRC. When the reform of the power sector started in 1997, the MOP wanted to get involved. The MOP designated two directors as authorized reps and took an active role in reviewing SOWs and meeting with consultants.

Project staff worked in MOP, helped lead reform planning. EMCAT set up a regulatory and restructuring reform cell within the MOP, working directly with the MOP to give them the capacity to respond to queries on reform and restructuring.

EMCAT at a Glance
[6: Primary Agreements]

- Supply Side Component -

Contracts

- Bechtel: TA & Training $5.66 m
- K&M Engineering: Private Power Development $1.44 m
- IRG Task Order: Regulatory Reform & Restructuring $4.10 m
- Midterm Evaluation $.07 m

Grants, Cooperative Agreements, and PASAs

- U.S. Energy Association: Energy Partnership Program $2.33 m
- Pittsburgh Energy Technology Center (PETC), U.S. Department of Energy: Power Plant Life Assessment $1.50 m
- IIE: Energy Training $0.650 m
- Power Finance Corporation (local currency costs) Training, studies, website $1.6 m

Management and impact would be improved by having candid discussions like this during implementation. From the NGO side, there were workshops to publicize project activities and technologies, but major financial institutions and development organizations need to come together in discussions once or twice a year. It will add to the results of any future programs.

Lending was a challenge, but Winrock met that challenge. The purposes of the Renewable Energy Commercialization (RECOMM) and Accelerating Renewable Energy Commercialization (ARECOMM) components of EMCAT, managed by Winrock, were to provide finance where others were reluctant. Winrock is a development organization, not a financial institution. Commercial lending was a major challenge. USAID had a Project Investment Committee with four members from different sectors to examine proposals for lending. The lending committee then approved rates, etc. That committee (on RECOMM) helped Winrock to grow and think like a finance institution in the development sector. The financial discipline and technological expertise gained was valuable. Winrock now manages the reflows.

PFC initially lacked coordination… PFC didn't have effective Project Review Committees. First, the composition of the project review committee was a problem. It had SEB, MOP, and PFC members; new people came to each meeting. There was no continuity, and discussions had to start from the beginning each time.

…but IDBI managed project committees and grants well. IDBI was effective: they lead their proposal review committee, which had 10 people, including from a university. On average, seven would attend for good, effective reviews of proposals. These same people were on the committee for three years. Lessons: composition, continuity, competence, and committee SOW are important!

How would you compare the productivity of foreign and local consultants? The quality of products from expats was not reliably great; many just give their expert opinion based on collecting information locally. The comparative advantages between expat and local consultants, therefore, isn't so clear. From the USAID controller's perspective, this issue comes up a lot, usually after a problem. (Sometimes Indian participants need external consultants to catalyze resource commitments.) USAID has seen a slow migration from foreign TA to local expertise, but much of this local expertise has been developed, harnessed, focused by USAID. As a result, after some time a situation is presented where the same consulting resources are available in India for about half price, though with some continuing participation from the U.S.

From the Indian perspective, the cost of foreign consultants will always be expensive. But the point is, was the contribution sufficient based on quality and innovation, not necessarily cost? Expats provide many good points for follow-up by local people. Remember: many big projects taken by big Indian corporate players have failed.

Foreign consultants are required to facilitate agenda-setting and stakeholder buy-in, spark innovation, and build local expertise; foreign consultant participation should decline over the life of an activity.

Two funding successes: direct disbursements and clean audits. From the USAID Controller's perspective, EMCAT achieved two financial management successes. One was the direct disbursement mechanism where USAID would directly fund the project partners. This was a major success. Routing money through the GOI was, and continues to be, a time consuming process which slows the pace of the project. On the other hand, in the last 10 years, USAID has never received a call from a direct disbursement partner claiming that USAID funds never came. The second was all the audits under EMCAT were clean; there are no pending audit issues.

From the USAID controller's office: a big thanks to the PFC and IDBI. The USAID controller's shop offered appreciation to PFC and IDBI for putting in efforts without charging anything. This showed in the substantial Host Country Contributions made to this project and their institutional commitment and contribution. PFC and IDBI

commitment is one of the main reasons for success of the project: they put in 100 percent and did something innovative and new for the country.

EMCAT Impact

Indian partners emphasized the size of India. If India were smaller we could all have a shorter time span. But India is huge, with cultural and language variation, huge numbers of staff in the power sector, and a huge number of minds to change. It takes time to build critical mass to sustain momentum. Therefore times scales need to be big, too. Let's review the timeline. The GOI introduced economic reforms in 1991. Privatization in electricity began cautiously in 1991, but electricity reforms only started in about 1994. By the mid-1990's EMCAT was creating an environment among receptive utility personnel for change (unbundling, commercialization, etc.). This is only a 10 year period for affecting major changes.

EMCAT at a Glance
[7: Collaborative Management]

Project Review Committees (PRC)
Guided project implementation; energy supply component/committee chaired by the Power Finance Corporation (PFC), energy end-use component/committee chaired by the Industrial Development Bank of India (IDBI)

GOI Authorized Representatives
PFC and IDBI were original authorized representatives. The Ministry of Power later nominated additional authorized representatives for the project's supply side component

Grant Proposal Review
Grant proposals under the end use component were reviewed and approved by the PRC. The IDBI monitored the grants

EMCAT was like a seeding program. Ten years later, effects are being seen. Quite a few renewable energy projects are doing well: mini and micro projects. The sugar industry will do very well this year, partly because of co-generation projects. This is like sowing a seed that takes 20 – 50 years to grow.

Some of the demonstration activities under the end-use component were successful, some not. Experience is important, whether successful or not, and it often takes a long time to know one way or the other. For example in the case of waste heat recovery: many participants were not previously aware of the concept of recovering heat and now they are.

What was made possible on accelerated by EMCAT? Workshops and training programs helped a lot: they improved communication and networking and information and idea sharing. It became easier for many people to accept and implement new ideas after they had been introduced through workshops. They helped the GOI formulate energy conservation rules and regulations. People will not change their thinking because they've read a report. Workshops are better.

Through these workshops, helpful communication started at the top and middle management levels. One result of workshops, beside awareness building, was

networking and sharing of ideas across state boundaries. Different SEBs deal with different problems. Interaction between them is usually only at the top, not at the middle-level. As a result, there is no cross-fertilization or sharing. Under EMCAT many workshops were hosted, communication started, and people met and found their own ways of communicating. SEB personnel were not internet or computer savvy, so the Powernet (the EMCAT-supported with site) was only useful to a small number of managers. If those managers were computer savvy, they would extend the technology through the industry. Powernet was a seed activity, and worked. Everyone started web sites and expanded their computer networks. SEBs had to increase their network capacities. In many indirect ways EMCAT workshops helped improve electricity efficiency because the answers to one SEB's problems were applied by other SEBs. There can't be a one-to-one connection between workshops and results, but the USAID partner side saw an impact.

The USAID perspective. The quality of partnerships is what is responsible for any USAID success, and this means IDBI, PFC, Winrock, and others. We have forged something that is greater than the sum of its parts, with tangible success. We've influenced policy and current bilateral project design. Now state utilities are receptive to the reform agenda. To truly affect development we have to move outside the core power sector: we have to reach out to policymakers and consumers. We can help them appreciate why reform is important.

Partner selection is critical to impact. Indian partners agreed that USAID did an important thing in selecting PFC and IDBI. This was a good choice of partners. Any commercial bank wouldn't participate in an EMCAT-like project for such low returns. USAID and these organizations selected good people who went out of their way without compensation. In fact, it is not that IDBI was not aware of conservation, but this program has helped all players focus including individual end users, on conservation. This was brought about through workshops and training.

If partner selection is so important, what did we learn in EMCAT? The IDBI is changing into a commercial bank and may not want to participate in an EMCAT-like project in the future. Development oriented organizations are needed, not profit-driven banks, to provide investment. From the NGO side, commercialization has to be in every activity and promoted by every partner, otherwise the incentives for partnership and participation are weak. Project progress is almost ensured if there is a commercial incentive. USAID feels it is important to have detailed discussions before the project starts to maintain clear and mutual understandings to prevent implementation problems.

In the market place of ideas, EMCAT was attractive. India is a large country, and different kinds of people all over are trying to do different things. Many people came into this project and started implementing, which speaks highly of the schemes objective.

A whole new level of consciousness about conservation. Many EMCAT-seeded hydro, biomass, and other projects are going well. Steel mills can improve their power efficiency by using waste heat, and this is exactly what they are doing. This awareness is a result of EMCAT. Now the rising cost of energy is also driving energy conservation. Conservation is a much more deeply engrained, and has to go to every individual. Market prices help drive that change in behavior.

Training paved the way for change. The Power Finance Corporation coordinated nine training programs in the Untied States. The most useful programs were in collaboration with Harvard University faculty. Harvard collaborated in three programs with 45 people each. These helped people understand the many reforms that were discussed. People who went to the United States for training remember the Power Finance Corporation. Participants took pride in their training, and the PFC believes the impact has been sustained. For example, the influence of workshops on state-level organizations seeded new ideas and ways of talking that have contributed to progress today. (The Department of Economic Affairs vetted candidates for training in the United States. The Power Finance Corporation was consumed by DEA delays and clearances).

2,000 people were trained, but where are they now? How can we build on their past participation? In-country training was more effective in spreading messages. USAID wondered, do we know where the 2,000 people we trained are and how they were impacted? IDBI has a list of all participants: some retired and may be doing consultancy work; in any training and education program, you will have a lot of migration. From the USAID side, though, 2,000 people is a large resource built up under EMCAT. However, partners responded that finding them would be very time consuming and not cost effective. Wherever these EMCAT trainees have gone, the impact is there. It cannot be measured. They will be contributing in some form or another.

Funds availability. As a result of EMCAT, more funds are now made available for implementing energy efficiency demonstration projects in industry. The rise of oil prices to $50 a barrel will further drive energy efficiency investments, and many will be based on work conducted under EMCAT; these activities assume greater importance in response to changes in fuel prices.

EMCAT training continues. USAID stopped funding the PFC's training activities in 1998, but EMCAT training continues: the PFC provides 8 – 10 training programs every year for borrowers from state power companies. This training and other EMCAT investments have helped build institutional capacity and improve accountability in the power sector. At the policy level, documents generated in EMCAT

EMCAT at a Glance
[8: Money Matters]

LOP Funding:	**$27.00 m**
Obligations:	**$26.81 m**
Commitments:	**$26.81 m**
Expenditures:	**$26.76 m**

are still used in the PFC (those documents were generated in consultation with TA consultants and experts from SEBs and MOP).

Winrock generated many firsts as an NGO partner participating in renewable energy financing. USAID granted funds to Winrock. Winrock financed 8 projects, helping increase private sector investment in alternative renewable energy. Transaction costs for NGOs in project financing are very high. However, the repayment of these funds has created reflows that flow back into the fund, which Winrock continues using for the commercialization of renewable energy. These reflows have been important to the sustainability of EMCAT and, for Winrock, reflows represent their return on all their efforts over seven years of EMCAT. Winrock provided funding at the pre-investment phase, for example helping to develop business plans. Pre-investment financing remains a challenge. Winrock's work helped develop trade links between U.S. and Indian firms that resulted in technology transfer to India.

Winrock deepens and expands its capacities. Partly as a result of its work with EMCAT, Winrock has entered into the field as professional certified energy auditors. India never had energy auditors before; even now this remains a significant project accomplishment and a major improvement in the Indian energy system.

Energy Service Companies. EMCAT financing partners helped set up several of India's Energy Service Companies by way of soft loans.

Current USAID energy projects build on EMCAT. Lessons learned from EMCAT help inform the current USAID – GOI bilateral energy projects, DRUM and ECO. PFC is a partner in the DRUM project, playing a financing role. ICICI is a partner in ECO. ECO has been ongoing for four years, with a policy and market emphasis on energy efficiency. USAID also advises that some activities are being taken up under the current bilateral electricity distribution reform project, DRUM. DRUM focuses on distribution reform upgrades and management.

Lessons Learned in Design and Management

Design

- Designs should be flexible and allow for course corrections.
- Identify key partners in the design stage, come to a clear understanding of each other at an early stage, and share information to avoid problems during implementation.
- The Department of Economic Affairs, Ministry of Finance, took time in providing approvals to participating training in U.S., causing delays. The Power Finance Corporation played an important role in following up with DEA. The PFC found that "maximum time was consumed in getting DEA approvals."
- Energy projects have to focus on commercialization (profitability and market viability) at the partner and consumer level.
- Commercial financing agencies in India today are still reluctant to finance renewable energy projects in the small and medium enterprise sector. As a result, working capital finance remains a challenge. Small and medium renewable energy enterprises need venture capital in addition to loan capital.
- Innovative financing is required to match the needs of renewable energy borrowers, such as up-front costs, variability in cash flows, sizeable working capital requirements.
- 50 percent matching contribution requirements for renewable energy project may have been too high (50 percent of renewable energy project costs had to be covered by the borrower).
- Non-profit organizations, in this case Winrock International, can support commercial lending. Project partners should include a mix of financial institutions and NGOs.
- Transaction costs in an NGO lending program can be high because paperwork and process requirements are the same for large and small loans.
- Energy and pollution are linked; energy projects naturally should also address pollution.
- Project Review Committees (PRC's), a new concept, were useful when well-run. Useful PRCs were characterized by consistent membership. Those not useful were characterized by short-term, rotating membership.

- Focused training has a greater impact on local institutions.
- Institutional development is important.
- New projects cannot expect free services from partners today because the working environment and relations have changed. This will affect sustainability planning.
- Indian counterpart institutions selected for implementing USAID projects need to be paid fees for managing the project unlike in the past when some institutions provided free service as a sort of development mandate.

Management

- Changes in personnel at partner institutions impaired collaboration, reduced the effectiveness of project review committees, and caused implementation delays. Project managers should require stakeholders to commit to the continuity of the project team.
- Contractor personnel sat in the Power Finance Corporation offices and this close interaction between the USAID contractor and partner institutions improved impact.
- People skills are critical to effective management.
- Direct payment mechanisms are more efficient than routing the funds through GOI.
- Include the Department of Economic Affairs (DEA) in project reviews and evaluations so they can appreciate the extent to which (1) GOI project partners and donors share a common agenda and (2) efficiency and effectiveness may be enhanced.
- USAID should neither micro-manage nor be too remote and hands-off.
- Record success and share information about successful activities.
- Foreign consultants are required to facilitate agenda-setting and stakeholder buy-in, spark innovation, and build local expertise. Foreign consultant participation should decline over the life of an activity.
- Host country contribution and commodity procurement reports may take a long time - up to one year in some cases.
- Like Project Review Committees effective proposal review committees require both steady membership and good management to be effective. The same core group must

participate for the duration of the activity. Composition, continuity, competence, and committee SOW are important.

Appendix A: Lessons Learned Workshop Agenda and List of Participants

USAID-India

EMCAT Project
Lessons Learnt Workshop

Facilitated By Development Alternatives
Venue: Light House Room, India Habitat Centre
Thursday, October 28, 2004

AGENDA

09.30 a.m. – 10.00 a.m.	Registration and Coffee
10.00 a.m. – 10.05 a.m.	Welcome Address: Glenn Whaley, USAID
10.05 a.m. – 10.10 a.m.	Workshop Objectives: Christian Hougen, USAID
10.10 a.m. – 10.20 a.m.	Introduction and Methodology: Pat, Workshop Facilitator
10.20 a.m. – 10.35 a.m.	Presentation on EMCAT – Project Overview by Seshadri
10.35 a.m. – 10.50 a.m.	Presentation on the Energy Supply Component by PFC
10.50 a.m. – 11.00 a.m.	Presentation on the Energy End-Use Component by IDBI
11.00 a.m. – 11.10 a.m.	Presentation on RECOMM and ARECOMM by Winrock
11.10 a.m. – 11.30 a.m.	Group Photographs along with Coffee and Networking
11.30 a.m. – 01.30 p.m.	Facilitated Discussion focused on key issues *
01.30 p.m.	Lunch

*** Issues for Discussion:**

1. **Project Design**
   a. Effectiveness and validity of assumptions to serve the project purpose.
2. **Impact**
   a. Of various activities (technical assistance, training, grants, partnerships etc) on efficiency of energy supply and end-use (project objectives).
   b. Training (both U.S. and in-country), its relevance and implications for the sector
3. **Responsiveness** to changes in the energy sector and new requirements.
4. **Management** of the project by USAID and counterpart institutions
   a. Challenges faced
   b. Mechanisms established for project implementation.
5. **Effectiveness of implementing mechanisms**
   a. Contracts, grants, PASAs, funding to local institutions etc.
   b. GOI's level of interest and participation
   c. Role of Project Review Committees
6. **Financial profile**
   a. Realistic LOP funding, actual expenditures v/s budgets, usefulness of financial profile in informing activity performance etc.
7. **Sustainability**
   a. Of the project results
   b. Opportunities for continuation of activities under new projects.
8. **Recommendations / Suggestions** which can be useful for future programs

EMCAT Project Lessons Learnt Workshop

Venue: Light House Room, India Habitat Centre
Thursday, October 28, 2004

LIST OF PARTICIPANTS

	Name	Organization
1.	V.S. Saxena	Power Finance Corporation Ltd.
2.	N.K. Kohli	Power Finance Corporation Ltd.
3.	Puja Sharma	Winrock International India
4.	S. Ramadoss	Industrial Development Bank of India
5.	D.K. Singh	Industrial Development Bank of India
6.	Glenn Whaley	USAID
7.	John Smith-Sreen	USAID
8.	N.V. Seshadri	USAID
9.	Uma Ravikumar	USAID
10.	Arun Monga	USAID
11.	Ted Gehr	USAID
12.	Christian Hougen	USAID
13.	N. Ramesh	USAID
14.	Sashidharan Menon	USAID
15.	K K Updhyay	Development Alternatives
16.	S. Patara	Development Alternatives

Appendix B: Partner Presentations

Energy Management Consultation and Training (EMCAT)

Lessons Learnt Workshop
October 28, 2004

Presentation on Project Overview
By N.V. Seshadri
Project Officer, USAID

Background

- Project Goal : Improve the efficiency of both energy supply and its utilization in the industrial and other sectors
- Purpose : Improve India's technological and management capabilities for the supply of energy and its end-use by private industry and other sectors

Background

- Project Agreement signed : June 28, 1991
- Signatories : DEA, Power Finance Corporation (PFC), Industrial Development Bank of India (IDBI) & USAID
- Project Components : Energy Supply & Energy End-use
- LOP Funding at authorization : $20 million ($14 million for supply and $6 million for end-use)

Project Amendment and LOP Funding Increase

- In Sept. 1994, project amended to include a separate activity to support private power development. Additional funding of $2 million provided under supply component, thereby increasing the LOP to 22 million.
- Subsequently in (1995), another activity focused on policy development of renewable energy technologies included under the end-use component with additional funding of $5 million, increasing the LOP funding to $27 million

Mid-term Evaluation and Re-design study

- A mid-term evaluation was conducted in January 1996. Based on the evaluation recommendations, the project assistance completion date was extended to December 1999, with the recognition that power sector reforms remains a critical area for India's future.
- In early 1997, a study was commissioned for programming the next phase of assistance for the supply side component focused on restructuring and regulatory reforms (The initial TA contract for the supply side component ended in March 1997)

Mid-term Evaluation and Re-design study

- The re-design study identified several activities to address the policy, legislative and regulatory hurdles at the national level as well as several state and utility level assistance activities.
- Based on the study recommendations scope of work developed for technical assistance focused on regulatory reforms and restructuring and a new contract negotiated for TA services.

PACD Extension and Funding Summary

- In June 1997, the Project Assistance Completion Date (PACD) was extended from December 1999 to June 28, 2001.
- Subsequently, the PACD was further extended to December 2002 and then further to June 2004 to complete some of the activities initiated during 2002 and 2003.

Funding Summary

LOP Funding -	$ 27.000 Million
Obligations -	$ 26.809 Million
Commitments -	$ 26.809 Million
Expenditures -	$ 26.766 Million

Major Implementation Mechanisms

- Supply Side Component
  - Contracts

a.	Bechtel Consulting for technical assistance & Training	$5.66m
b.	K&M Engineering for Private Power Development Activity	$1.44m
c.	Task Order with IRG for Regulatory Reform and Restructuring Activity	$4.10m
d.	Mid-term evaluation	$0.07m

Major Implementation Mechanisms

Grants, PASA and Cooperative Agreements

a. Energy Partnership Program through USEA - $2.33m
b. PASA with PETC, DOE for Power Plant Life Assessment $1.50m
c. Energy Training through IIE $ 0.69m
d. Local currency costs to PFC for training, studies, Powernet etc. $ 1.6m

Major Implementation Mechanisms

- Demand Side Component
  - Contracts
    a. TA Contract with Resource Management Associates (RMA) $2.765m
    b. Task Order with IRG for TA activities in energy efficiency $2.487m
    c. Study on ESCOs through SRC $0.116m

Major Implementation Mechanisms

- Demand Side Component
  - Grants and Cooperative Agreements
    a. Grant to Winrock for RECOMM $1.086m
    b. Grant to Winrock for ARECOMM $0.490m
    c. Grant to IESC for Volunteer Program $0.153m
    d. Grant to IIE for Energy Training $0.650m
    e. Grant to ITDP $0.291m
    f. Studies, grants through IDBI $1.200m

Types of Assistance and Disbursement Mechanism

- Types of Assistance
  - Technical assistance for PFC and State utilities through US contractors
  - Technical assistance on energy efficiency through IDBI for industrial and other sectors
  - Training (US and India)
  - Support for technical assistance, studies and training to local Indian institutions, industries, NGOs through PFC and IDBI
  - Limited commodity procurement

Types of Assistance and Disbursement Mechanism

- Disbursements Mechanism
  - Direct disbursement by USAID for US based contractors, grantees as well as for all payments in dollars.
  - Direct disbursement to PFC and IDBI respectively for all local currency expenditures incurred by them for the project activities

Project Implementation

- Project Review Committees (PRCs) to guide project implementation chaired by PFC and IDBI respectively.
- PFC and IDBI designated additional authorized representatives for the project
- Subsequently MOP also nominated additional authorized representatives for the supply side component of the project
- For the end-use component, proposals received for grant assistance reviewed by PRC and if found suitable approved. IDBI monitored the progress of the grants and advised PRC periodically.

Some Issues For Consideration That Affect Project Implementation

- Change of personal at partner institutions
- Active involvement of DEA in the project and processing of nomination for overseas training and study tours
- Closer interaction between contractor and partner institutions
- Host country contribution and commodity procurement reports receipt and project audits
- Time spent by project partners for monitoring and follow up activities

Appendix B: Partner Presentations – Power Finance Corporation

PFC

- A Development Financial Institution
- Established in 1986 for financing the power sector
- 100% Government ownership

VISION

- To be a total service provider in India and SAARC countries
  - power and allied infrastructure sectors
  - project financing, consultancy, banking and power project insurance

2003-04 - A SNAPSHOT

• Paid Up Capital	Rs. 1030 Crores (US$219 million)
• Networth	Rs. 6194 Crores(US$1318 million)
• Loan Sanctions	Rs.16472 Crores(US$3505 million)
• Loan Disbursements	Rs. 8975 Crores(US$1910 million)
• Income	Rs. 3656 Crores(US$778 million)
• Profit Before Tax	Rs. 2115 Crores(US$450 million)
• Profit After Tax	Rs. 1607 Crores(US$342 million)
• Dividend	Rs. 321 Crores(US$68 million)

- **Cumulative Loan Sanction : Rs.60975 Crs** (US$12973million)
- **Cumulative Loan disbursement: Rs.40690 Crs** (US$8657 million)

Supply side of EMCAT

- Implementing Agency for
  - Conducting studies through Indian consultants
  - Designing, planning & organizing training programmes
  - Designing, planning & conducting Seminars and Workshops
  - Private Power Support
  - Establishment of Powernet

Roles & Responsibilities

- Identification of areas & development of scope of work for the consultants and issue of work orders
- Identification & Development of training material
- Communication with beneficiary erstwhile electricity boards and other state and central undertakings
  - To get nominations for the programmes
  - Obtain DEA approvals where required
  - Make all local logistic arrangement
  - Local procurement
  - Provision of a secretariat for the USAID contractors
- Payment to the party's and seeking reimbursement from USAID
  - Maintenance of accounts
  - Appointment of auditors
  - Facilitating the auditors with the required information
- Convening of PRC meetings

Some of the key achievements

- Successful as a catalyst in promoting reforms in the power sector
- Facilitated Bringing the officers of different SEBs together at common forums
- 12 studies were commissioned out of which RLA study was conducted by TVA under US Dept. of Energy. Other significant studies were a case study on structural reforms in Orissa, tariff formulation, past trends in project costing.
- Training was imparted to 1838 Officers through 62 Programmes in India and 172 Officers through 9 programmes in the US.
- Arranging Harvard Faculty to provide training in India on Project appraisal and risk analysis.
- Organized about 28 workshops which included workshop on T&D loss reduction, mobilization of resources, strategic planning, operationalisation of SERC's. tariff rationalisation etc.

Some of the key achievements(Cont.)

- Development of documentation for private power support
  - Model Hydro PPA
  - Model liquid fuel based thermal PPA
  - Financial model for tariff formulation
  - Compilation of capital cost data base
  - Model RFQ
  - Model RFP
  - Model Distribution Management Agreements
- Establisment of Powernet. Some 24 utilities benefited under the project.
- Project funds to the extent of Rs. 4.67 Crores (US $ 1 Million approx.) were utilized by PFC for direct payment and approx. US $ 5.3 million were contributed as HCC against project plan of US $ 5.67 million.

COMPARISION WITH OTHER FIs

	PFC	REC	IDBI*	IFCI*	IDFC (2003 - 04)
Profit after Tax (Crores)	1607	612	401	-884	259
Non-Performing Assets (%)	Nil	-	14.2	29.5	Nil
No. of Employees	269	662	2800	620	130
Disbursement (Crores)	8975	6017	3892	1308	2704
Disbursement / Employee (Crores)	33.36	9.1	1.39	2.11	20.8
Net Profit / Employee (Crores)	5.97	0.92	0.14	-	1.99
Admn Exp./ Disb. (%)	0.53	0.77	5.42	4.27	-

*Figures pertain to 2002-03 as the corresponding figures for 2003-04 are not available

Appendix B: Partner Presentations – Industrial Development Bank of India

Energy Management Consultation and Training (EMCAT) Project

- *EMCAT funded by USAID commenced in 1991.*
- *Aimed at Promoting the Energy Efficiency in the energy supply & its end use, and Energy Management, by grant assistance.*
- *Energy Supply component implemented by Power Finance Corporation (PFC).*

Energy Management Consultation and Training (EMCAT) Project

- *Energy end use component (USD 9.55 mn.) administered by IDBI.*
- *An amount of USD 9.51 mn committed under EMCAT.*
- *About 50 projects assisted under EMCAT and USD 9.03 mn disbursed.*

Energy Management Consultation and Training (EMCAT) Project

- *EMCAT is steered by a Project Review Committee (PRC).*
- *PRC meets at 3/6 months interval.*
- *PRC is headed by ED of IDBI and represented by high level executives from Ministry of Finance, Ministry of Power, USAID, Indian Industry Associations and Educational Institutions.*

Components of EMCAT Project End Use Component

- *End Use Component administered by IDBI*
  - *Loan Portfolio Design*
  - *Private Sector Energy Consultation*
  - *Information Dissemination and Policy Dialogue*

Components of EMCAT Project End Use Component

- Loan Portfolio Design
  - Preparation of project report for energy efficiency projects and energy conservation schemes
  - establishment of demonstration units
  - sponsor studies to examine the impediments and opportunities for energy conservation and efficiency

Components of EMCAT Project End Use Component

- Activities supported under Loan Portfolio Design
  - Supported studies and preparation of feasibility reports for waste Heat recovery projects in cement plants
  - Supported Energy Conservation opportunities in energy intensive sectors such as iron & steel, cement, paper & pulp, textile etc
  - Funded energy efficiency projects taken up by the industry

Components of EMCAT Project End Use Component

- Private Sector Energy Consultation
  - Sponsoring training of auditors
  - Provision of energy audit instruments to energy auditors
  - support for follow-up & monitoring of the units that have carried out energy audits under IDBI assistance

Components of EMCAT Project End Use Component

- Activities Supported under Private Sector Energy Consultation
  - assist setting up Energy Services Companies (ESCO) in India by way of soft loans, eg. Intesco Asia Ltd.
  - Organising workshops and seminars

Components of EMCAT Project End Use Component

- Information Dissemination and Policy Dialogue
  - Support activities of associations and NGOs' to increase the awareness of in the energy efficiency and energy conservation
  - Helps government in formulating the energy conservation rules and regulation

Components of EMCAT Project End Use Component

- Activities supported under Information Dissemination and Policy Dialogue
  - supports organising workshops
  - sponsor the setting up and functioning of Demand Side Management (DSM) cells in the utilities eg. Ahmedabad Electric Company Ltd., Haryana Vidyut Prasaran Nigam, Tamil Nadu Electricity Board.
  - Supports setting up energy data bank eg. Schooll of Energy Studies, Jadavpur University
  - Supports study visits

Components of EMCAT Project End Use Component

- Other Activities supported under EMCAT Project
  - support study and design of energy efficient labeling for electrical consumer durables
  - support renewable energy commercialisation programme
  - cane cogenaration programme
  - emerging technologies programme
  - financial advisory services

Energy Management Consultation and Training (EMCAT) Project

- As a sequel to the achievement under EMCAT, more funds could be made available for implementing demonstrative energy efficiency projects in the Industry
- Further, with the ever increasing fuel prices and diminishing natural resources, especially Crude oil which have already crossed USD 50/barrel, this assumes greater importance.

Appendix B: Partner Presentations – Winrock

RECOMM & ARECOMM initiatives by Winrock International India (WII)

WINROCK INTERNATIONAL INDIA

Presentation by:
Puja Sharma

Renewable Energy Commercialization (RECOMM) – Goals

- USAID/ India authorized grant of US$ 2.7mn (EMCAT - $1.1 mn) to WII for supporting commercialization of renewable energy technologies to:
  - Increase India's capacity to meet its energy needs in an environmentally sustainable manner
  - Catalyze and support institutions and programs working to commercialize renewable energy.
  - Identify and overcome the barriers to commercialization
- Duration : 1995 - 1999

Key Achievements

- A total of 59 agreements signed
- Conditional grants comprised of more than half of the funds were invested.
- Main focus area - Solar PV projects
- Setting up of An Entrepreneurial Development Institute.
- Entry of renewable energy into sectors Health and education

Success stories

Accelerated Indo US trade	**REVA Electric Car Company, Bangalore**
Development of ESCO Model	**SELCO, Bangalore**
Development of NGO model	**RK Mission, Nare[illegible] Don Bosco, Pavur**
Development of Cooperative Model	**CTD- NGO resource C[illegible]**
Development of Rural Enterprise model	**HESCO – IT Power**
Development of Micro Utility model	**SHP Cost shares**
Development of Lease/ finance model	**Polyene Film Industries**

Accelerated Renewable Energy Commercialization (ARECOMM) - Goals

- The success of RECOMM led to the development of ARECOMM (EMCAT - US$0.49mn), focusing on:
  - Commercialization of high potential technologies
  - Developing renewable energy projects
  - Improving access to financing and capital
  - Strengthening the environment for RE technologies and projects
- Duration: 2001- 2004

Key Achievements

- A total of 8 projects were financed. ARECOMM helped in as:
  - Addressing fundamental barriers to private sector investment in RE enterprises
  - Leveraging commercial financing from other sources
  - Enterprise assistance and technical services
  - Development of trade links between US and Indian firms established

Lesson learned

- A Not for profit organization can support commercial lending.
- Formation of Investment Committee – a new concept.
- Commercial financing agencies still reluctant to finance new RE projects in SME sector
  - Working capital finance remains a challenge
  - Broad-basing of RECOMM/ARECOMM efforts required
- Need for both loan capital, but more importantly for risk capital, strategic and other inputs for RE enterprises in SME segment
- The matching contribution component limit (50% of the project cost) may be reconsidered.

Lesson Learned Contd....

- Pre-investment financing remains a challenge. Larger funds and resources needed for this crucial activity
- Transaction costs high.
- Need for a larger fund.
- Innovative financing required to match specific requirements of RE enterprises; such as
  - up-front costs,
  - variability in cash flows,
  - sizeable working capital requirements

REFLOWS

- The monies disbursed through RECOMM and ARECOMM have started ploughing back.
- A revolving fund is created to be used for further support the efforts of commercialization of RETs.

THANK YOU