

FINAL REPORT

Risk Analysis and Follow-up Definition of Possible India Guarantee Fund Requirements, Mechanisms, and Potential Key Features

PREPARED BY

S.V. Kulkarni

**SVK-CDM Technologies Private Limited,
Mumbai, India**

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ASSESSMENT OF REQUIREMENT OF GUARANTEE FUND IN INDIAN CONTEXT

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PREFACE

The report has been prepared for the World Bank (WB) which is executing the Technical Assistance (TA) project Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in China, Brazil and India (3CEE Project). The project funded by UN Foundation (UNF) through UN Environment Programme (UNEP) aims to reduce greenhouse gas emissions by catalysing a substantial increase in energy efficiency investments in these countries. The TA project initially developed an Action Plan to achieve the project objectives. In the next stage an India Secretariat was set up to implement the Action Plan under the direction of the India Core Group made of banks, financial institutions and other key stakeholders in the energy efficiency (EE) Sector.

One of the desired outcomes of the TA is the greater involvement of Commercial Banks in India in financing of EE projects and projects by Energy Service Companies (ESCOs). A significant barrier identified by ESCOs and commercial banks in financing EE projects, is their limitation in designing suitable financial instruments to suit the EE and ESCO projects, as well as the absence of a **Guarantee Fund**.

Although the EE concept is not new to India, and the macroeconomic environment is evolving in the direction of liberal and competitive economy that promotes EE investments; significant barriers remain, and EE is yet to be institutionalised in most sectors of the economy.

The small and medium industrial and commercial sectors, residential buildings, agricultural consumers, among others have not been able to enhance their energy efficiency significantly even though some specific and sporadic successes have been achieved.

Preliminary discussions with ESCOs, banks and end-users reveal the following (among other) barriers:

- Credibility of the technical consultants or the Energy Auditors (EAs)
- Availability and acceptability of Energy Service Agreements (ESA's) or contracts
- Non-availability of risk mitigation instruments for the banking community
- Financial shortcomings of ESCO's, and their inability to provide bankable guarantees and absence of successful demonstrations projects

A very valid question therefore arises in the Indian context – as to what happens if the savings expected by the ESCO or the EE Consultant are not achieved.

While issues related to credibility of technical consultants and EAs and framing acceptable ESA's are being addressed to some extent in India, the issue of seeking financial guarantees from cash-strapped EAs and ESCOs for mitigating financial risks remain to be addressed.

Against this background, the Indian stakeholders have requested World Bank to carry out an exploratory study on the option for creating a Guarantee Fund. Before initiating the process and firming up a course of action it is necessary to further investigate and validate the various assumptions that have been made. This report is an attempt to fill this gap by assessing the requirement of Guarantee Fund in the Indian context. The Terms of Reference for this Project are detailed in **Annexure 1**.

We would like to thank the WB and 3EEC experts for providing feedback on the study. Special thanks are due to Mr. Jeremy Levin, Dr. Kapil Thukral, Dr. Koshy Cherail and Ms. Debjani Bhatia, who provided valuable comments to improve the report. Dr. Kapil Thukral and Dr. Koshy Cherail also provided updated data and information on some items.

We would also like to thank various stakeholders, who we consulted during the report preparation. Stakeholders contacted by us during the study are listed in **Annexure 2** of the report.

EXECUTIVE SUMMARY

The EE/ESCO market is still in its infancy for sectors other than large Industry (only for EE projects)

- While EE projects are relatively easy to develop, ESCO project development process is not fully understood even by the ESCOs
- It is perceived to be complex, time-consuming and uncertain
- Project developers have to bear high up-front costs
- Risk capital for running projects through the ESCO route is not available
- Most of the ESCOs do not have creditworthy balance sheets.

Most of the SMEs, Commercial, Residential and Government Buildings are yet to take up EE/ESCO project implementation

- The small size of individual projects makes them unattractive to end-users
- High transaction costs and non-availability of few successful show-case projects deter end-users from implementation despite some efforts to simplify baselines and monitoring protocols.

Availability of creditworthy Energy Auditors and bankable ESCOs are prerequisites to kick-start implementation of EE/ESCO projects

- Though the Bureau of Energy Efficiency (BEE) has taken steps in that direction, ESCOs are yet to be rated based on their techno-financial capabilities.
- Most ESCOs are not in a position to bring in the required sponsors' contribution.
- The individual consultant-based ESCOs cannot offer the required performance guarantees to the end-users.

Addressing the credit risks and performance risks effectively, to the satisfaction of all the stakeholders, are key issues that need to be addressed effectively for ESCO projects

- Though the ESCOs are able to identify the performance risks associated with EE/ESCO projects and try to mitigate the same, they often fail to take into consideration, the views of other stakeholders
- Most ESCOs are not in a position to address the credit risk perceptions of banks to their full satisfaction.

Absence of a significant number of EE/ESCO demonstration projects adhering to the general appraisal norms of banks is a major bottleneck

- Attention has to be paid to addressing concerns of banking community relating to sponsors' background, their capability to bring in the required contributions and capacity to repay loans, etc

- The most acceptable business model for ESCO has to ensure financial capacity to bear the upfront costs on their own, and mitigate risks underlying the non-achievement of the required savings.
- Till ESCO business reaches a level of maturity, it is unlikely that several entities – project developers, project consultants, ESCO, equipment suppliers, industry associations, banks, financiers and end-users themselves – will assemble the necessary technical and commercial skill sets to transact and invest.

Creation of Guarantee Fund cannot solve the basic issues related to credit-worthiness of EE Consultants or ESCOs to persuade banks to take investment decisions beyond the existing banking norms. Neither can it make end-users implement the project just because a Partial Guarantee Cover is available

- The end-user would agree to implement the project bearing the performance and credit risk, and arranging his own financial resources only if he is convinced about the viability of the project. If not, the end-user would not implement the project unless it was through ESCO arrangement on the basis of shared saving. The availability of Partial Guarantee cover can never be the criteria for investment decision.
- For the banks the overall bankability of the proposal would be the criteria for the investment decision. The guarantee cover can at the most be used as collateral security for its overall exposure in the EE and ESCO industry.
- Success stories of similar applications would be a major contributor for end-users as well as bankers to take up such projects.

INTRODUCTION, APPROACH & METHODOLOGIES

How the Report has been compiled

Approach & Methodologies

- **Research**
Detailed examination of published material, seminar proceedings, events at various ESCO related meetings and forums
- **Preparation of a Concept Paper**
Compilation of a Concept Paper for discussion with various stakeholders and identification of key issues affecting development of EE/ESCO projects
- **Consultations with stakeholders (in India)**
Meetings and discussions with various stakeholders – project developers, project consultants, ESCOs, banks and financial institutions, among others – to ascertain their perception of risk in financing EE projects and their views on requirement of a Guarantee Fund in the Indian context, listen to their experience and seek solutions for problematic issues

The Summary of Discussions with various stakeholders is attached as **Annexure 2**.

Guide to terms used in the Report

BOOT: Build Own Operate and Transfer

EE: Energy Efficiency

ESCO: Energy Service Company

ESA: Energy Service Agreement

M&V: Monitoring and Verification

O&M: Operations and Maintenance

SME: Small & Medium Enterprise

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SECTION 1

A brief background of EE and ESCO Industry and Summary of Stakeholders' views on issues involved in financing EE and ESCO projects

Background to EE/ESCO Projects

Background: Energy Efficiency (EE) concept though not new to India, has not made inroads in Indian industries, specifically the Small and Medium Enterprises (SMEs) commercial and residential sectors, and Governmental organizations. Several studies have been sponsored by multilateral agencies such as World Bank, Asian Development Bank (ADB), United States Agency for International Development (USAID), have proved beyond doubt that there exists a vast potential for saving energy in these sectors, and the measures suggested to tap these savings are **commercially** attractive.

Though some of the proactive large industrial establishments have taken steps to implement the EE projects on a regular basis, mostly as part of modernization or expansion projects, the commercial execution of EE projects in SME sector, on standalone basis, has still not been tried in India.

Conventional Approach for Developing EE projects:

Normally, an Energy Auditor (EA) of repute approaches the end-user or company, either an industry, commercial or residential complex; or the latter approaches the EA with the proposal of carrying out an energy audit in their premises and submits the report for a predetermined fee. The result of such studies are discussed and finalised with the operational or technical Managers of the company. Based on the EA's recommendations and the project's techno-commercial viability the company's management decides the future course of action.

Background to ESCO Concept and ESCO-based projects:

The ESCO Concept –Though the ESCO concept is being talked about as innovative way of financing EE projects, in reality it is similar to projects implemented on a Build Own Operate and Transfer (BOOT) basis, wherein the BOOT contractor is responsible for equipment procurement, Operations and Maintenance (O&M) and also raising the required part or total finance. The only difference is that ESCO may do all or part of the roles of the BOOT contractor, and that the savings are shared in pre-determined proportion depending on the risk perception. Normally the end-user expects the ESCO to first achieve or demonstrate the savings and then make the repayment to the banks through the savings.

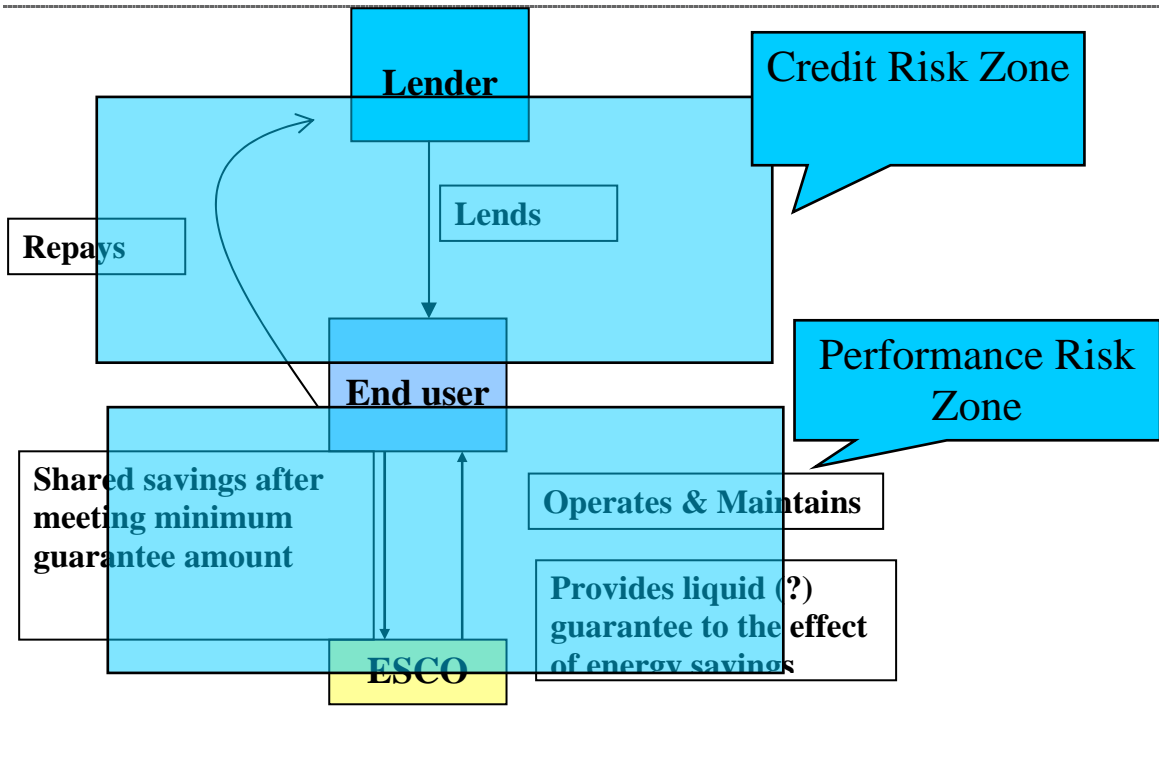
There are two models of implementation of EE project through the ESCO route viz. Guaranteed Savings model and Shared Savings model.

Guaranteed Savings Model:

In the Guaranteed Savings model, the end-user expects the ESCO to implement the project based on BOOT concept, except raising the required finance. The

ESCO in turn, assures (**guarantees**) the end-user a minimum savings (**performance**), at least equal to the debt portion of the cost of the project. Thus in case, the performance of the project is below the guaranteed savings, then the ESCO is expected to meet the shortfall in the savings. The underlying assumption here is that those end-users, who are not fully convinced about the savings potential of the project, may decide to implement the project by borrowing based on their balance sheet on the assurance of ESCO’s guarantee.

The Guaranteed Savings Model can be illustrated as below



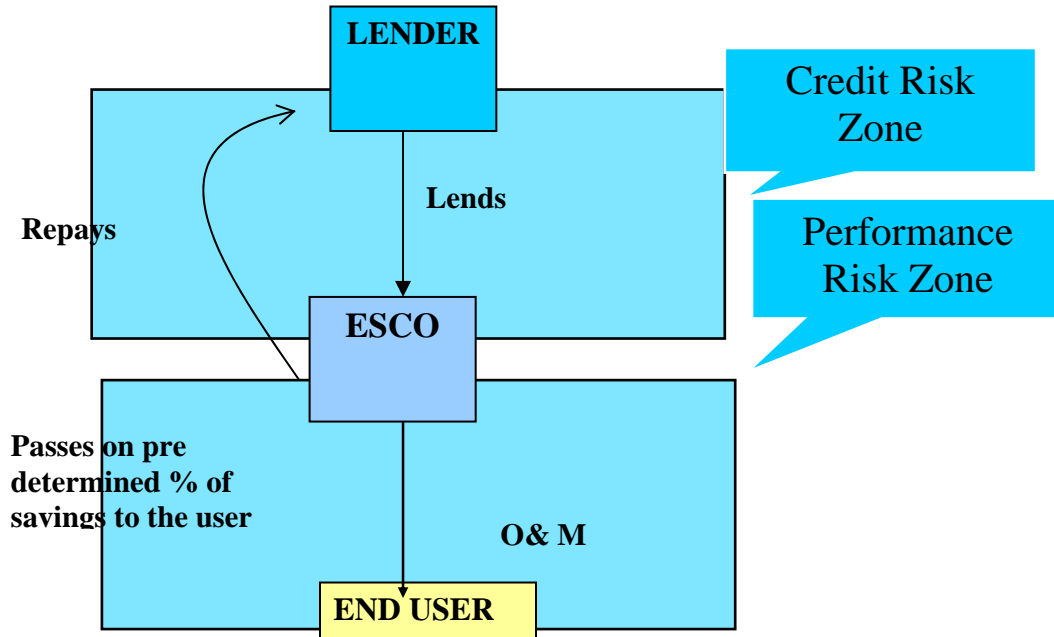
It may be observed that the **credit risk** is entirely being taken by the **end-user** whereas the minimum **performance risk** is being taken by the **ESCO**.

Shared Savings Model:

In Shared Savings model, the end-user expects the ESCO to implement the project on BOOT basis, including raising the required finance. The end-user also agrees to compensate the ESCO by agreeing to share a major part of savings for a predetermined period by way of an Energy Savings Agreement (ESA).

In this model, the **credit risk** as well as the **performance risk** is being taken by the **ESCO**.

The Shared Savings Model can be illustrated as below-



Present Scenario and Requirement of ESCOs in India

Though there are several emergent ESCO companies in India, they have had a limited impact in India. Though ESCO concept has worked well abroad, their business models could not be used in India due to the unique local conditions. The discussions with ESCOs and Banks indicate that credit-worthiness (technical and financial), availability and acceptability of well-drafted Energy Service Agreements (ESAs) or contracts, arrangement of finances for implementation of projects (both equity and loans from lenders), and limited number of successful demonstration projects are the main bottlenecks for propagating the ESCO concept in India.

Stakeholders Profile: There are three primary stakeholders in EE and ESCO business, namely the end-use industry, energy auditors, and the banks and financial institutions.

Industry is normally classified into three groups namely, the large-scale industries, the Small & Medium Enterprises (SMEs) and the cottage industries. Financial institutions normally cater to large industries. Banks and state-level financial institutions usually finance the SMEs. While awareness about EE opportunities is gradually increasing among SMEs, no special efforts have been made to expand financing to this sector. The brief profile of each is enumerated here.

A) End-use Industry

Steam and electricity are backbones of any industrial or commercial activity. As such, there always exists opportunities for improvement. Within these overall opportunities, some would be more promising than others. The best prospective sectors for EE projects are those who whose energy expenditure forms a sizable share of production costs and those units that employ old or obsolete technologies.

Large-scale Industry- This sector most commonly qualifies as the best client sector for EE projects, due to high energy prices, high energy consumption and sound credit-worthiness. EE project investments range from small to very large. A large variety of EE project opportunities may be available, including cogeneration, process control and automation, process optimization, waste heat recovery, compressed air system improvements, boiler and steam system improvements and lighting projects among others.

Most of these industries are financed by the big development financial Institutions such as Industrial Credit and Investment Corporation (now ICICI Bank), Industrial Development Bank of India (now IDBI Bank), and Industrial Finance Corporation of India (IFCI) and normally undertake EE measures out of their annual budgets or couple these investments with modernization or expansion projects. These Industries and their EE projects are best left for big Institutions to deal with.

Small and Medium-scale Industry/ Enterprises (SMEs)- This sector has similar characteristics as large industry, but the EE projects are typically small and the firms have fewer technical resources to support them. This sector also pays high energy prices, and energy may represent a large share of operating costs, while credit-worthiness is often an issue due to excessive debt and uneven management capacity. The same broad range of EE project opportunities may be applicable here as in large industry, though there maybe fewer feasible opportunities for process improvements or large projects such as cogeneration, compressed air systems, boiler-steam systems and lighting.

The problem with the SME sector is that the management of these units may not have the professional outlook and continue to run the industry in conventional manner. They are generally not associated with any technical consultant on a regular basis except for process-related problems. Awareness level on EE opportunities, specific to their unit is thus very low.

Cottage Industry- This sector generally pays low electricity tariffs, and therefore perceives that EE projects are economically less attractive. Contrary to this belief, there exists a large potential for these units to save on their energy bills by implementing simple housekeeping measures. In many cases there may be attractive opportunities for low-technology improvements, such as lighting

retrofits and improved heating systems, burner replacements and minor process modifications among others.

Commercial Buildings, Residential Complexes and Hospital Buildings-This segment of energy consumers use electricity for meeting air-conditioning and lighting requirements. Hospitals and hotels also use boilers for steam requirement.

Government Buildings and Municipal Corporations- Government Buildings are one of the largest consumers of electricity for meeting air-conditioning, heating and lighting requirements. Due to conventional equipment procurement policies, the purchase departments are generally averse to adopting new energy efficient equipment and technologies.

Municipal Corporations (MCs) are one of the biggest consumers of electricity for catering to the need of drinking water and street lighting in the cities and towns. Majority of revenue collected by MCs goes in meeting their power bills.

B) Technical Consultants, Energy Auditors and ESCOs

The broad spectrum of professionals represented among technical consultants, EAs and engineering consultants are highly specialized with varied and diversified experience across the broad range of industries. These consulting firms normally act as technical advisors to industrial units and facility owners. They render their services to identify projects, via energy audits, prepare detailed technical feasibility studies, and perform detailed engineering evaluations. Normally they are not involved in providing financing (except some of the ESCOs), but they do provide supervisory services during the construction or subsequent stages of the project. The consultant's detailed feasibility study or Energy Audit report is the basis for getting internal approvals as well as for applying for finance from internal and external sources.

C) Banks and Financial Institutions

EE projects in the large industrial sector in India have, by and large, been financed by FIs such as ICICI, IDBI, Industrial Leasing and Financial Services (IL&FS), IDFC, and Indian Renewable Energy Development Agency Ltd (IREDA) and by state level financing institutions and to some extent by commercial banks. While FIs have resources and skills sets to develop, formulate and structure EE projects in the industrial and other sectors, commercial banks have not yet made substantial progress in this matter. This is mainly due to the fact that commercial banks have been concentrating on working capital financing. Since liberalization of the financial sector in the past decade, commercial banks have commenced term lending; they are yet to have in-house capabilities or skills to appraise EE projects due to limited size of EE portfolio. Selected large commercial banks,

such as the State Bank of India, Canara Bank have provided assistance to some select EE projects.

It must be mentioned here that Financial Institutions **had access** to bilateral funds in form of grants, which they used to develop innovative funding mechanisms to provide assistance to commercial technology development and demonstration projects.

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SECTION 2

ISSUES INVOLVED AND NEEDS TO BE ADDRESSED IN FINANCING EE AND ESCO PROJECTS- STAKEHOLDERS' VIEWS

ISSUES TO BE ADDRESSED IN FINANCING EE AND ESCO PROJECTS

Despite their high potential for implementation of EE and ESCO projects in India, they are yet to pick up momentum.

A review of EE and ESCO projects from the point of view of various stakeholders would be incomplete if the project evaluation process is not understood and the differences between EE/ESCO projects and other projects are not identified.

Project Evaluation Process

Normally, all projects, be it green field, modernization or expansion projects, go through the appraisal process at the stakeholders' end. These include:

The End-user: To see if the project meets overall objective of the company and the techno-economic criteria as decided by the investors;

The Banks: To evaluate the sponsors' of the project for their overall credibility and the project for its contribution to the profitability of the end-user.

For the end-user the **performance** and the risks associated with the project are important criteria for investment decision. For banks, the **credit risk** associated with the company is the most important criteria. Bankers would evaluate the company and the project for its capacity to repay the loan along with interest. It must be noted that the EE/ESCO projects would also be evaluated for their credit risk and performance risk. As such, their financing is not different from financing of any other project.

With this background the issues related to financing EE/ESCO projects need to be examined.

ISSUES RELATED TO EE PROJECTS

A) End-user Perspective:

It is common knowledge that large companies with access to information, technical consultants and finance have been implementing the EE projects based on the risk-benefit analysis. However, the same cannot be said about projects in the SME sector, as these are the industrial units who may not have access to specific information, a trustworthy technical consultant or surplus funds to invest in EE projects. These are the customers, who have extensive dealings with commercial banks or state level Institutions for conventional financing but have not taken EE projects seriously enough due to manifold problems, some perceived and some real. The same is discussed below:

- 1) Lack of data on energy consumption, including measurement and verification (M&V) available with SMEs;
- 2) Lack of awareness of energy saving solutions for their specific plants;
- 3) Lack of trust on technical capabilities of external energy auditors (*we know our plants better* attitude);
- 4) Lack of either guarantee from the consultants for minimum savings or absence of demonstration of savings in other similar types of plants in vicinity;
- 5) Lack of project development capability to translate EE benefits in financial terms;
- 6) Non-availability of turnkey solution from concept to commissioning from one single source;
- 7) Non-availability of simple financing schemes for implementing EE projects on normal terms, preferably from the same bank from which it has availed working capital requirement;
- 8) Last but not least, the burden of upfront transaction cost of carrying out energy audits.

B) Banks' and Institutions' Perspective:

As indicated earlier, though the EE opportunities have been talked of at length in many forums, we are yet to see a boom in EE sector as business opportunity.

Conventionally, large Institutions like Industrial Credit and Investment Corp. (ICICI) and Industrial Development Bank of India (IDBI) have technical and financial analysis capability and exposure (through appraising modernization and expansion projects) to assess EE projects. Commercial banks, barring a few initiatives, do not have technical capability to assess such EE projects, due to lack of exposure of officers at branch level. The banks are willing to finance EE/ESCO projects provided they see a potentially large and viable business opportunity in EE/ESCO market. As such, banks are yet to take EE financing as major business opportunity.

Following are the issues and problems faced by the banking community in financing EE projects:

- 1) Lack of understanding of energy-related issues and opportunities at the operational level;
- 2) Lack of trust in technical capabilities of external Energy Auditors (the apprehension that the client or end-use industry may join hands with the Energy Auditors to show rosy picture of EE benefits, increase cost of project and divert funds for other activities);
- 3) Absence of risk mitigation opportunities (guarantee from the consultants for minimum savings or absence of demonstration of savings in other similar types of plants in vicinity) particularly in cases of not-so-strong balance sheets;

- 4) Known limitations at the level of end-user, specially the SME sector, in project development and their capability to translate EE benefits in financial terms;
- 5) Availability of bilateral and multilateral assistance for implementing EE projects on demonstration basis,
- 6) Last, but not least, operationalising the EE project loan schemes at branch level, training of personnel to help them assess EE projects, which are different from assessing term loan and working capital requirements of clients.

The end-use industry would agree to implement the EE projects if it is convinced about the technical acceptability of the savings calculations (**Performance risk**) and the payback period is meeting its expectations. The Banks would look for overall credit-worthiness of the end-use industry (**credit risk**) before taking investment decision.

ISSUES RELATED TO ESCO PROJECTS

A) ESCO Perspective:

1) How to develop a bankable ESCO project?

One of the main problems in developing a bankable ESCO project is to get a company or client interested in the ESCO approach. The ESCO concept works only if there is **uncertainty** either in the form of innovative technical solution or viable technical solution in other industries but not prevalent in the client industry. In short, the client (the end-user in this case), is interested in sharing rewards only if he is not sure of the outcome. While the ESCOs are by and large capable of developing technical proposal, they are yet to make headway in developing bankable proposal.

2) How to raise finances?

The other main concern with the ESCO approach is raising the required finances. The end-user expects the ESCO Company to fund the project, demonstrate the savings, and then they are willing to share the savings in pre-determined proportion depending on the risk perception. ESCOs have to approach the banks for finances. However, the banks may not be comfortable with linking the repayment of their loans to savings, and thus take the risk on the ESCO Company. Normally, the end-user does not show the willingness to finance the project subject to securing guarantees from ESCO on performance.

The constraints facing the ESCO approach are given below

1. Lack of deal-making capabilities (converting opportunities in real projects);

2. Lack of legal capabilities to draft ESCO contracts in a manner that it addresses banker's concerns;
3. Lack of understanding and capability of development of assured payment structures from end-user;
4. Lack of project development capability to translate EE benefits in financial terms;
5. Not so healthy balance sheets, Inability to raise required sponsors contribution.

B) Banks' Perspective:

From the banker's point of view, there are three major risks in ESCO projects, namely, 1) what if the project fails; 2) what if savings accrue but end-user does not pay to ESCO; and 3) what if ESCO gets paid but defaults with bank.

Following are the issues and problems faced by the banking community in financing EE projects, whether through ESCO route or conventional route:

1. Lack of understanding of energy-related issues and opportunities;
2. Lack of trust on technical capabilities of ESCOs or technical consultants (end-use industry may join hands with Energy Auditors to show rosy picture of EE benefits, increase cost of project and divert funds for other activities);
3. Availability of risk mitigation opportunities (at least for the first few first projects)
4. Known limitations with the ESCO in project development capability to translate EE benefits in financial terms;
5. Availability of bilateral or multilateral assistance to experiment financing for implementing ESCO projects on demonstration basis,
6. Last but not least, operationalising the ESCO project loan schemes at branch level, training of personnel to help them assess ESCO projects that are different from assessing the working capital requirements.

The end-use industry would implement the project on ESCO basis only if it perceives that performance risk is too high for its consideration. In this case, the end-use industry would prefer to work with the ESCO through the **shared savings** model rather than **guaranteed savings** model. The Banks would finance the ESCO project based on its evaluation of ESCO, for both the **performance risk** and **credit risk**.

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SECTION 3

ANALYSIS OF PROBLEMS AND LIKELY SOLUTIONS

RISK ANALYSIS AND LIKELY SOLUTIONS –

EE Projects

Issues Common to End-use Industry and Commercial Banks

Technical Creditworthiness of Energy Auditors - Technical credit-worthiness of Energy Auditors is one of the most important issues from the Client or end-user industry's point of view for ensuring returns on investment, and for the banks for ensuring repayment of loans. In fact, the Energy Audit report would form the basis for financing the project.

Likely Solution - Use of Accredited Energy Auditors (EA): BEE is the Nodal Agency for implementing the EC Act 2001 in India. BEE has conducted examinations for accrediting Energy Auditors all over the country. Banks also have empanelled Technical Consultants for referring certain projects, before they take up investment decision.

To begin with, Banks may use services of some of these Consultants or Auditors to verify the claims made by customer's Auditors on the projected energy savings. Further, Banks may also decide to insist on customers to use only BEE accredited EAs to carry out energy audits.

Availability of Risk Mitigation opportunities for quantification of Savings - It is known that Energy Auditors are nothing but the technocrats and thus lack the financial capabilities. As such, the question of EAs giving guarantees does not arise. Further, the guarantees of such cash strapped EAs would not be acceptable for the Banks. Also this kind of guarantee requirement is seen only in **guaranteed savings** ESCO model and not in **shared savings** model and not in EE project wherein the end-user would be investing in the project.

Likely Solution1- End-user perspective: With BEE accredited EA involvement it is more probable that that EAs would not inflate the Savings. Further, the end-user also understands the potential of savings through the **conventional** solutions. For EE projects based on the new technologies, the end-user would look for "Conditional Grant route" for project financing rather than loan instrument.

Likely Solution2- Bank perspective: Creation of Guarantee Fund mechanism- The best way to address this issue is to develop a Guarantee mechanism similar to the one available with Small Industries Development Bank of India (SIDBI).

Banks may negotiate with SIDBI for a cover of 25 per cent of its exposure in financing EE projects. This cover by SIDBI could be extended for a period of say 5 years. The scheme may operate on a case-to-case basis or on exposure basis.

Once few of demonstrations projects are successful, banks may not even insist on the guarantees on the subsequent projects.

Banks may also educate the customers to negotiate the fees with EAs in such a manner that EAs would be paid a lump-sum amount upfront and then say a certain percentage (in the range of 10-15 per cent) or some fixed amount per annum out of the savings accrued to the client. This way, the EAs would have indirect interest in ensuring that the audit is done properly and that they have interest in ensuring success of the project.

Project Implementation Risk - Normally, the EE measures are in the form of modifications, retrofits or replacement of equipment. They are mostly related to utility (steam or power) improvements. Most of the SMEs have experienced technical consultants associated with them for taking care of process-related issues. As such the management of SMEs is also aware of improvement opportunities.

Likely Solution: Involve Energy Auditors in preparation of Technical Specification as also in supervising the project; - Most of the EAs have the capabilities of providing turnkey solutions to the client. Banks, in the interest of themselves and that of End-user may consider insisting on the clients to consider entering into total contract with the EAs. We also see a benefit of price for providing overall services.

Project Development Capability - This is one of the issues that often put a strain on the relationship between banks and the customers. Banks expect that the application should be complete in all respect to enable them to take a quick view on loan sanction matter. Often, applications are not complete in all respect or do not include information that the bank needs.

Likely Solution: We suggest that a new format of Energy Audit report and applications be developed and circulated with EAs and end-users or customers. This would help them understand the requirements of banks from the point of view of technical information.

ESCO PROJECTS-

Risk Analysis and Likely Solutions

Though there are several potential ESCOs in India, very few have made significant impact in project implementation. Though the ESCO concept has worked well in certain countries, their business models would not work here due to unique local conditions. The discussions with ESCOs indicate that creditworthiness (technical and financial); availability and acceptability of well-drafted Energy Service Agreements (ESA) or contracts; arranging finances for

implementation of projects (both equity and loans from lenders) and absence of successful demonstration projects are the main bottlenecks for propagating the ESCO concept in India. An analysis of each of these issues and likely solutions are presented below.

Technical Creditworthiness - Technical creditworthiness is the least of the issues and can be addressed by carefully assessing the team of the ESCO.

Likely Solution - Credit ratings to the ESCOs: One of the key recommendations in this context is that multilateral Institutions like WB, UNF, ADB and USAID among others may provide technical assistance for developing the criteria for rating the ESCOs in India. This would also help the end-users in selecting appropriate ESCOs to meet their requirements.

Financial Creditworthiness- This is specific to the **debt portion** of the project. Financial creditworthiness necessarily reflects the need of ESCOs to support the claims made for **savings potential**. There are two models of structuring these projects:

Guaranteed Savings Model- In this model the ESCO does **not** bring in the required finance, but only guarantees the minimum savings, at least equivalent to the loan exposure, that would accrue to the end-user. The ESCO agrees to meet any short fall that may arise in actual savings and the loan repayment.

End-user/ Banks Perspective- It is known that ESCOs are primarily technocrats and may lack the financial capabilities. As such, the question of ESCOs giving guarantees does not arise. Further, the guarantees of such cash-strapped ESCOs would not hold weight or considered significant with the end-users, banks or FIs.

The end-user therefore generally prefers to undertake these types of projects as EE projects rather than asking for guarantees and then agreeing for sharing the savings. It is for this reason that we do not see many projects on guaranteed savings model in India. **The issue here relates to the risk-profile of the project and not the guarantee.**

Shared Saving Model- In this model, the ESCO **brings in all the investment** and agrees with end-user to share only the small portion of savings with them for a limited period. At the end of this agreed period, the ESCO transfers the assets to the end-user at a nominal cost.

End-user/ Bank's Perspective- The end-user is risk free here (barring the likelihood of total failure of the project) as they only gain and do not lose in any case. The banks on the other hand are more interested in ensuring the structured repayment to ensure that defaults do not take place. If the project is structured properly, banks do not need any other cover specific to the project.

However, considering that the ESCO concept is new, the overall guarantee cover to safeguard the exposure would be welcome by the banks.

Likely Solution - Creation of Guarantee Fund Mechanism: The likely solution to address this issue could be for multilateral Institutions such as WB, UNF or ADB to develop a Guarantee Fund similar to SIDBI's credit guarantee fund operated by CGTSI which would be available to banks taking exposure in EE/ESCO projects.

Financial Creditworthiness- This is specific to the equity portion of the project- It is well known that the banks would consider funding the projects based on the standard debt-equity ratio, thus expecting the sponsors of the project to bring in the equity portion of the project. As indicated earlier, ESCOs do not have financial strength and therefore the project, though acceptable on all other fronts, would not materialize for want of sponsor's contribution.

Likely Solution- Creation of Mutual Fund/ Equity Fund for investment in ESCO projects-While market forces will come into picture once the ESCO concept gets established, it is essential to have a start-up fund or facility so that ESCOs can demonstrate the ESCO models. It is necessary to develop the criteria for such a Fund to be established by all participating Banks and Institutions. The Government of India can extend the special tax concessions and other benefits to such a Fund.

Alternatively, SIDBI can allow its equity fund to be tapped by the ESCOs. SIDBI may be required to bring in policy changes in this matter.

Availability of Well-drafted ESAs- Most of the ESCOs are technology-driven companies and do not have the required legal and financial expertise in-house. Further, the EE projects based on ESCO route needs strong ESAs. The ESA drafting requires a detailed knowledge of energy efficiency measures (EEMs), financial structuring capabilities, accounting procedures and legal expertise. Hence a Legal expert or financial expert alone cannot develop these ESAs. It is necessary to form a consortium of such experts to develop the same. Thus, the availability of well-drafted ESAs, suitable to Indian conditions and ready for use, is the need of hour for all ESCOs.

Likely Solution- Development of model ESAs: It is essential to have these user-friendly model contracts available with ESCOs. One needs to consider development of such market-driven, goal-oriented ESAs covering all aspects of ESCO requirement as an important activity. Interaction with ESCOs in India indicates that they are yet to get this type of ready-to-use ESAs. Further, the international models are not useful since they are not meeting the local requirements. Further, modifications to these agreements mean redrafting the entire document. The ESCOs want these ESAs to be demonstrated on the live applications to test its applicability with end-users.

FINAL REPORT

Risk Analysis and Follow-up Definition of Possible India Guarantee Fund Requirements, Mechanisms, and Potential Key Features

SECTION 4

PRESENT STATUS OF OPTIONS FOR FINANCING EE/ESCO PROJECTS IN INDIA

PRESENT STATUS OF OPTIONS FOR FINANCING EE/ESCO PROJECTS IN INDIA

Background-Energy Efficiency financing is not a new phenomenon. The large Financial Institutions (FIs) such as ICICI, IDBI, and IFCI and of late, IDFC have been active in financing EE projects. The difference has been that these projects were generally **not** taken up for investments as stand-alone projects but invariably, as part of a modernisation or expansion programme.

Historically, due to prevailing closed economy, companies were able to pass on the increase in fuel cost to the customers. Since liberalisation of the economy in 1991, the large and medium companies faced with the challenges of global competition and started looking for cost cutting measures.

Majority of the large industrial units in energy intensive sectors such as steel, cement, fertilizers, sugar, pulp and paper, glass and ceramics among others, have their energy bills in the range of 30-35 per cent of the cost of production. These units had access to the consultants with technical assistance support from FIs and therefore gone ahead with implementation of EE measures on case-to-case basis. They approached either development FIs (DFIs) or used their internal cash accruals to finance such projects. Thus balance sheet funding was the main instrument for financing such projects.

Some Institutions such as ICICI and IDBI, with the help of USAID funds, through the programmes like PACER, PACT, EMCAT, ECO etc, arranged to finance some innovative projects in EE area to demonstrate the techno-economics of such projects. They used innovative financial instruments such as conditional grants, concessional loans, interest differential loans, commercial loans, lines of credits among others, to finance such projects. However, many of these instruments have subsequently not been used on commercial basis due to the fact that these institutions are no more DFIs but have operated on the commercial basis.

Recently, some banks such as SBI and Canara Bank have floated special schemes for financing EE projects with focus on SME sector. SIDBI, with objective of helping the small-scale industries, has also come out with concessional loan schemes. Besides, SIDBI also extends guarantee cover to other banks financing EE projects in small-scale industries. All these schemes are essentially extending the commercial loans, at concessional rate of interest of 1-2 per cent less than normally applicable rate of interest.

With this background, it would be of interest to look at some of the variations in the normal financing options to meet needs of end-user, **without compromising** the banking procedures.

Following are the some of the financial mechanisms or instruments that can be used for EE projects;

Conventional loan with structured repayment: This mechanism focuses on the structuring of repayment terms to meet the cash-flows of EE projects, particularly with respect to projected energy savings. Banks can think of giving equated monthly instalments (**EMI**) based repayment schedules. This type of instrument would be useful to all SME industry cliental and all types of EE projects including **ESCO** types of projects.

EE Equipment Leasing Schemes: There are generally two types of EE projects, one involving system modifications and other being installing EE equipment in place of normal equipment. While loan scheme would be ideal for system types of project, Banks may consider extending EE equipment leasing schemes. In this case, one can match lease rentals with projected savings.

This scheme would be helpful for projects such as capacitor installations, EE motors installations etc.

Line of Credit to select Vendors or ESCO: This instrument is nothing but conventional loan type of assistance, the difference being that the bank may evaluate the approved vendor or ESCO for certain level of assistance and agree to provide a line of credit with some limit. The bank shall however, insist that each project that may be funded through this line of credit subject to prior approval from the bank. This instrument would help vendors that offer to supply EE equipment to support development of EE loan portfolios for relatively small EE projects.

Though this may be recommend as a viable instrument, banks may consider this instrument only after they have assessed the performance of various EE projects and hence the performance of various Energy Auditors or vendors.

Conditional Grant for risky EE projects: This instrument would help banks in taking quasi-equity stake in the high-risk high-return types of projects.

It would be appropriate to evaluate some of the EE/ESCO projects that have been financed by the Indian banks or FIs to see if the guarantee cover was an issue in implementing or financing these projects.

CASE STUDIES

Business Models in EE/ESCO Project Transactions

ESCO-INDUSTRIAL

- **Integrated Textile Company - Factory Energy Management**
 - Energy Audit conducted by ESCO
 - Investment in assets made by project sponsorer, end-user in this case
 - (Operations & Maintenance) O&M responsibility was with ESCO
 - ESCO takes a share of the energy savings in compensation for its efforts

This project received funding from lenders but does not amount to anything beyond a **normal capital expenditure** of the project sponsorer who had good financial credentials and raised loans on the credibility of its own **balance sheet**. **Savings guarantee** by parent company of ESCO was sought to the extent of minimum debt servicing obligations, credit enhanced by collateral of parent company. It must be noted that this was the first and the only ESCO project based on the **guaranteed saving** model.

EE-INDUSTRIAL

- **Edible Oil Refinery – Cogeneration of power**
 - First time cogeneration technology was applied in the industry
 - Part of a larger capital expansion project, resulted in significant cost savings
 - Investment in assets made by project sponsorer
 - New Lender for EE Project, no security problems

The project sponsorer chose to invest in the EE project and run it on its own although it was not its core activity to generate power. Its financial base was good, but the EE **technology** was **untested** in its configuration and in this industry.

Guarantee- N no guarantee cover was insisted upon by Financial Institution. Normal Performance guarantee was given by the supplier of the key equipment.

EE-INDUSTRIAL

- **Power Utility – Distribution reforms**
 - Improve distribution infrastructure and commercialized customer billing systems
 - No capacity expansion, but tremendous cost savings and productivity improvements
 - Investment in assets made by project sponsorer
 - Risk-mitigating phasing-out of investment programme

The project sponsorer belonged to a large industrial group, but there was **no recourse to parental support**. The project sponsorer had reasonably sound **financials, but not sufficient to undertake the proposed project**. The project was structured in such a manner that the risk associated with it was mitigated by

phasing out the implementation. The result of the project was that the cash-flow of the company **improved significantly** after implementation of the EE project. The EE project was **phased out** in order to (a) demonstrate the technologies and techniques, and (b) progressively enhance the financial creditworthiness of the borrower. Lender financed the EE project within **conventional lending parameters**.

Guarantee- N no guarantee cover was insisted upon by Financial Institution.

ESCO-COMMERCIAL BUILDINGS

- **Service Sector Company - Office Lighting**
 - Energy Audit conducted by ESCO, O&M responsibility with ESCO
 - Investment in assets made by project sponsorer
 - ESCO guarantees minimum technical performance
 - Shared energy savings after crossing a predetermined threshold level of energy savings

Project **phased out vintage technology** to save energy, no major/ innovative technological issues. The project sponsorer funded the project out of its internal resources itself. ESCO was paid the fees for Energy Audit and could not work out a shared-savings deal.

Guarantee- The banks were willing to finance this project and no guarantee cover was insisted upon by Financial Institution.

ESCO-GOVERNMENT

- **Municipal Corporation - Water Pumping**
 - EE Project Investments by ESCO, with retrofits/new assets
 - ESCO guarantees minimum performance, takes large share of energy savings
 - Maintenance responsibilities with ESCO
 - Contractual/ payment structure protection for lenders

Taking advantage of the municipal corporation's healthy revenues, an Escrow Account arrangement was negotiated to ensure **irrevocable repayment of loans** advanced by lenders to invest in the EE Project.

Guarantee- The project was structured in such a manner that lenders concerns on repayment issues were mitigated by suitable Escrow Account. The Lender did not look for additional cover to safeguard its interest.

INDUSTRIAL

- **A Textile Company – EE project**
 - EE project investments by textile unit with retrofits/new assets
 - Project based on the Energy Audit report of the credit-worthy Energy Auditors
 - maintenance responsibilities with Unit itself

Taking advantage of the Textile Unit's healthy revenues, a simple medium term loan was extended to the textile company. The lender did not perceive the need for any additional cover other than the normal loan related documentation.

ESCO-GOVERNMENT

- **Municipal Corporation – Street Lighting**
 - EE Project Investments by ESCO, with new assets
 - ESCO guarantees minimum performance, takes large share of energy savings
 - Maintenance responsibilities with ESCO
 - Contractual/ payment structure protection for Lenders

Taking advantage of the Municipal Corporation's guarantee of prompt payments within fifteen days of raising the bills, an Escrow Account arrangement was negotiated with the lender to ensure **irrevocable repayment of loans** advanced by lenders to invest in the EE Project. Further the lender also agreed to extend the **line of credit** to the ESCO for financing similar projects on case to case to basis.

Guarantee- The project was structured in such a manner that lenders concerns on repayment issues were mitigated by suitable Escrow Account. The Lender did not look for **additional cover** to safeguard its interest.

The existing financial instruments are sufficient to finance the EE/ESCO projects. The various projects financed by the Banks and Institutions clearly indicate that if the bankable, well-structured projects are received by the Banks, the Banks are willing to fund the projects.

FINAL REPORT

Risk Analysis and Follow-up Definition of Possible India Guarantee Fund Requirements, Mechanisms, and Potential Key Features

SECTION 5

RISK ANALYSIS AND ASSESSMENT OF REQUIREMENT OF GUARANTEE FUND

GUARANTEE FUND

The preceding review has shown that the EE/ESCO projects, though makes sound business sense for the **End-users** (saves the fuel cost and adds to bottom line), **Banks** (a new business opportunity) and **ESCOs** (a viable option for third party financing of EE projects), have not yet made the impact in Indian industry.

While, the issues related to the funding of EE/ESCO projects are by and large known and to some extent addressed effectively, the various stakeholders of EE/ESCO projects have been voicing in various forums about the requirement of Guarantee Fund as one of the tools to kick-start the funding of EE/ESCO projects.

It is therefore essential first

- 1) To identify those stakeholders who would require Guarantee Fund;
- 2) To assess the risk associated with the different types of EE/ESCO projects and then analyze the risk perceptions for such EE/ESCO projects from stakeholders' point of view
- 3) Assess if the Guarantee Fund is the solution to mitigate the risk associated with financing EE/ESCO projects.

Who would require Guarantee Fund Assistance?

The main stakeholders in EE/ESCO projects are end-users, EAs or ESCOs and last but most importantly, the banks.

End-users, EA/ESCO- The end-users in EE/ESCO projects would be all those who consume energy - electrical or thermal - such as all industrial units, commercial and residential complexes, hotels, government buildings and municipal corporations.

Under project development activity, the EA/ESCO approaches these customers and carries out the energy audit and then recommends energy saving measures along with the cost. If the recommendations are accepted, the end-user decides to implement the project either with its own sources (equity and loan) or asks the ESCO to implement the project on shared-saving basis.

The decision on the implementation route largely depends on the risk perception of the measures suggested by EA/ESCO. In case, the risk perception of likely savings that may accrue from implementation of EE project is on higher side, the end-user may insist on **performance guarantee** from the EA/ESCO. It is in this context, some of the ESCOs may ask for Guarantee Fund cover to retain the customer.

The Banks/ Institutions- Even though banks and FIs Institutions are expected to play the role of development institutions, they have to abide by the rules and regulations set by the Government of India and the Reserve Bank. Banks have financed the Energy Efficiency projects in past, though not specifically as EE projects but as part of expansion/ modernization projects. These projects are largely funded based on the overall creditworthiness of the borrower.

EE projects through the ESCO route are comparatively new to the Indian banking community and therefore from the Banker's point of view, there are three major risks in ESCO projects, namely, 1) what if the project fails; 2) what if savings accrue but end-user does not pay to ESCO and 3) what if ESCO gets paid but defaults with Bank. It is necessary to analyse all these risk perception and seek solutions.

Project failure Risk- Normally the ESCO projects are based on proven technologies, with some innovative features. The innovation could mean that it has not been tried in that particular industry or it is better technology than the conventional one. The bankers would prefer to have risk mitigation solution to cover this risk. **Guarantee Fund** could be one such option.

End-user's failure to pay ESCOs and or ESCOs default with Bank- If for some reasons the ESCO defaults with the Bank, the **guarantee cover** if available, would help banks to mitigate this risk perception.

The above discussion has identified who could be the stakeholders who would use the Guarantee Fund cover. It is equally important to analyse the risk perceptions for different types of the EE/ESCO projects and evaluate the major areas of concern and probable effective financial tools to mitigate the risks.

What are the major areas of concerns associated with different types of EE/ESCO projects?

The table below indicates the risk analysis for different types of EE/ESCO projects.

TYPE OF ESCO PROJECT	MAJOR AREAS OF CONCERN	RISK MITIGATION	FINANCIAL INSTRUMENT
Industrial	Dynamic baseline	Proper M&V	Loan
Commercial	Collection Mechanism, small size	Proper M&V and Structured Payments	Line of credit
Residential, small Hotels	Collection Mechanism, small size	Structured Payments	Line of credit
Government Building	Delays in Payment	Structured Payments	Line of credit
Municipal Corporations	Quantification of savings	Proper M&V	Loan

What are the views of different stakeholders' in financing EE projects?

Having made an overall EE/ESCO industry risk analysis, it is equally important to assess the individual stakeholder's view for the same project to decide on the requirement of additional risk mitigation tool.

RISK ANALYSIS OF FINANCING EE PROJECTS

Area Of concern	End-user view	ESCO view	Bankers view	Likely solution
Correctness of energy audit report	Major risk for investment	N.A.	Major risk area for investment decision	Use of BEE accredited EA, use overall credit worthiness as criteria
Saving Quantification	Major risk for investment	N.A.	Moderate risk area for investment decision	Sensitivity Analysis
Project Implementation	Low risk	N.A.	Low risk for large and SME sector	Involve EA in Project Management
Financial Creditworthiness	Sponsors contribution	N.A.	Major risk area for investment decision	Apply normal appraisal Techniques

The discussions with the end-users and banks indicates that-

- 1) They have **financed** the bankable EE projects in past;
- 2) The **appraisal norms** can not be diluted just because it is EE project;
- 3) The Banks would welcome the Guarantee Fund as collateral security. However, this would largely depend on the quantum of potential business in this area;
- 4) It is the bankability of the project which is most important for financing decision. The Guarantee Fund alone can not be a motivating factor for banks to kick start lending the EE projects.

It could be observed from the above table that the main risk perception from the end-user point of view is essentially the correctness of the Energy Audit report (Performance Risk). From bankers point of view it is the overall bankability of the sponsor of the project is the key factor for arriving at investment decision (Credit Risk).

What are the views of different stakeholders' in financing ESCO projects?

RISK ANALYSIS OF FINANCING ESCO PROJECTS

Areas Of concern	End-user view	ESCO view	Bankers view	Likely solution
Correctness of energy audit report of ESCO	Major risk if investment by end-user	Major risk if investment by ESCO	Major risk area for investment decision	Use of BEE accredited EAs, Well structured project
Saving Quantification	Major risk if investment by end-user	Major risk if investment by ESCO	Moderate risk area for investment decision	Sensitivity Analysis
Project Implementation	Low risk	Low risk	Low risk for large and SME sector	Involve ESCO in Project Management
Financial Creditworthiness	Sponsors contribution	Inability to raise funds	Major risk area for investment decision	Equity Fund, Apply normal appraisal Techniques
Finalization of Arrangement	Risk commensurate with Investment	Risk commensurate with Investment	Major risk area for investment decision	Use of well drafted ESAs

The above analysis indicates that the main bottleneck in financing the ESCO based projects is the absence of well-structured bankable projects rather than any other reason.

The discussions with the banks indicates that-

1. They have financed the bankable ESCO projects in past;
2. The banks are looking for well structured ESCO projects to finance;
3. The **appraisal norms** cannot be diluted just because it is an EE/ESCO project;
4. The banks would welcome the Guarantee Fund only as **collateral security**. However, this would largely depend on the quantum of potential business in this area;
5. It is the bankability of the project which is most important for financing decision. The Guarantee Fund alone can not be a motivating factor for banks to kick-start lending the EE/ESCO projects.

Is the Guarantee Fund effective risk mitigation tool in above scenario?

The above section confirms that the end-user/ESCO and the banks could be the beneficiary of the Guarantee Fund. However, is the Guarantee Fund the most effective tool to mitigate risk or are other options available in the existing systems that would cover such risks?

Guarantee Fund for End-user/ESCO- The guiding principle here would be that such Guarantee Fund would help End-user/ESCOs to mitigate the risk

associated with the savings quantification and realization, including project failure risk. However, even if the Guarantee Fund cover is provided, it would always be a partial cover and hence the risk can never be totally mitigated. Further, no end-user would implement the project just because the guarantee cover is available. He would first ensure that the project is bankable. The guarantee cover may however help the end-user/ESCO to use the same as a collateral security.

Further, it may also be noted that risk associated with savings quantification and realization including project failure risk would remain for some initial projects, and as the results of the first few projects are known, the banks would either stop funding such projects in future (in case of total failure) or would be convinced that this is not a real risk. The **creditworthiness analysis** of the end-user/ESCOs capabilities, his background and similar experience earlier would prove to be the guiding factors.

In other words, just because the Guarantee Fund cover is made available, The banks are not going to dilute the appraisal norms for any projects. The Guarantee Fund however may help to mitigate few failures in chunk of large EE/ESCO portfolio.

End-user's failure to pay ESCOs or ESCOs defaults with Banks- This risk is mitigated largely by the **terms of contracts including the M&V protocol** between the ESCO and end-user. If the contracts are worded properly and nothing is left for interpretation at later date, this risk can be substantially addressed to. Further, the **ESCROW or Retention Trust Agreement** kind of arrangement also minimizes this risk to a large extent. If the end-user happens to be the client of Bank, then the existing relationship plays an important role in mitigating this risk perception. We may also add that this is a **normal risk** in all lending business and as such can effectively been addressed to by using proper **appraisal techniques**.

Conclusion-The bankability of the project is most important criteria for Banks and Institutions to take investment decision in any project including EE/ESCO projects. The bankability aspect in case of EE/ESCO depends on

The Sponsors -

- The background;
- The creditworthiness;
- The financial status;
- Capability to repay the loans including the other loans;

The Project -

- The Energy Audit report;
- Creditworthiness of the Energy Auditor;
- Technology risk associated with the suggested EE measures;

The End-user -

- Viability of the end-user during the ESCO project implementation;

The Guarantee Fund, being always a partial guarantee cover, cannot reduce risk associated with any of the above aspects. It may help the Banks to use it as a tool to mitigate overall exposure in EE/ESCO projects on similar lines as that of SIDBI's CGTSI scheme. This would largely depend on the volume of the EE/ESCO business.

The above analysis indicates that the Guarantee Fund would not directly contribute to the kick start of EE/ESCO lending by the Indian Banking sector. Further, only the outcome of the first few demonstration projects along with the volume of business of EE/ESCO would confirm if the Guarantee Fund is required in the Indian context or not. Guarantee Fund may address the issue of credit risk when both the credit and performance risk are taken by the ESCO (Shared savings model)

Annexure 1**Terms of Reference****Developing Financial Intermediation Mechanisms for EE Projects in China, Brazil and India (3 CEE Project)****Risk Analysis and Follow-up Definition of Possible India Guarantee Fund Requirements, Mechanisms, and Potential Key Features****1 Background**

Although the energy efficiency (EE) concept is not new to India, and the macroeconomic environment is evolving in a direction to promote EE investment, significant barriers remain and inroads have still to be made in most sectors of the economy.

The small and medium industrial and commercial sectors, residential buildings, agricultural consumers etc. have not been able to enhance their energy efficiency significantly in general – although some specific and sporadic successes have been achieved.

Preliminary discussions with ESCOs, Banks and end-users reveal the following (among other) barriers:

Credibility of the technical consultants / energy auditors

Availability and acceptability of energy service agreements (ESA's)

Non-availability of risk mitigation instruments for the banking community

Financial shortcomings of ESCO's, and their inability to provide bankable guarantees and successful demonstrations

A very valid question therefore arises in the Indian context – as to what happens if the savings expected by the ESCO / energy consultant are not achieved.

While issues related to credibility of technical consultants / energy auditors and framing acceptable ESA's are being addressed somewhat in India, the issue of seeking financial guarantees from cash-strapped energy auditors and ESCO's for mitigating financial risks remain to be addressed.

Against this background, the Indian stakeholders have requested an exploration of the option of creating a guarantee fund. Before initiating the process and firming up a course of action however, it is necessary to further investigate and validate the various assumptions that have been made.

2 Scope of Work

A Consultant is required to undertake the following tasks:

Risk Analysis and Mitigation Options

Understanding the Guarantee Requirements of EE / ESCO projects

Analysis of Existing Guarantee Mechanisms

Identify Key Features of a Guarantee Mechanism for EE projects:

Much of the work will be done through stakeholder consultations. The following (among other) stakeholders would need to be interviewed by the Consultant:

Banks engaged in lending to SMEs and other non-large industrial energy consumers

Banks engaged in administering some guarantee funds (e.g. for SMEs and SSI units)

Banks that have some history of operating EE schemes

Multilateral and bilateral donors that have supported EE projects in India, or have previously assessed the market for EE / ESCO services / guarantee fund etc.

Energy auditors and technical consultants

Vendor-based and consulting based ESCO's

Bureau of Energy Efficiency and other selected Government / quasi-Government bodies

Selected end-users in various target segments

The major elements of the scope of work are as follows:

2.1 Risk Analysis and Mitigation Options

Through interaction with key stakeholders, as well as review of project documentation (for selected projects), bank schemes, bank policies etc., the consultant will:

Review the progress of financing of EE projects in India, right from the time the first ESCO projects began to be implemented in India – with a specific emphasis on technical and financial barriers to EE projects in general, and to ESCO projects in particular

Analyze in detail some of the EE / ESCO projects that have been financed in India, with a view to understanding:

The perceptions / concerns of developers towards engaging ESCO's

How the technical risks have been addressed by the key stakeholders (banks, developers, ESCO's, others) and whether any serious and systemic gaps remain

Whether or not the absence of a mechanism to mitigate financial risks of lenders is a major barrier to EE / ESCO projects – and the role of existing securitization and project finance mechanisms (eg. Escrow accounts, trust and retention accounts) in mitigating financial risks

Analyze how banks treat project risk, company risk and portfolio risk in general, and how these are applied to EE / ESCO loans in particular

2.2 Understanding the Guarantee Requirements of EE / ESCO projects:

More specifically, the consultant will do a gap-analysis and work towards assessing / understanding:

The level of comfort that banks would require to increase lending for EE / ESCO projects, i.e. the extent to which lenders seek financial guarantees for EE / ESCO projects

The extent to which – and how – bankers' unfamiliarity with EE technologies or / and ESCO mechanisms (performance contracting, M&V protocols, financial structures etc.) need to be addressed

Whether or not a financial guarantee is the correct mechanism to enhance EE / ESCO project investment

If so, indicative incremental costs associated with creating and managing a guarantee fund

Whether or not this incremental cost should be passed on in full or part to the clients (as guarantee fee). A broad assessment of the clients' ability / willingness to pay should be carried out through the consultative process

Analysis of Existing Guarantee Mechanisms:

The Consultant will examine the existing guarantee mechanisms in India (e.g. CGFSI administered by SIDBI) to understand and analyze:

Their role thus far in mitigating financial risks associated with EE / ESCO projects – as also its impact (if any) in furthering investment in EE / ESCO projects in India

Their performance thus far (in terms of efficacy of implementation procedures, implementation channels, evolution of priorities / focus since inception and the underlying key influences, default rates and their key determinants etc.)

Whether or not – and if so, then how – they can be adapted to support EE / ESCO projects.

Whether or not a mechanism for other banks / institutions that have launched their own EE schemes can be formalized

Whether or not it would be correct and proper (from the larger perspective of sustainable development) for the CGFSI to have a special focus on EE projects

The procedures necessary to affect any significant changes in the scope and objectives of CGFSI (if so required)

The consultant will also study the efforts made by donor agencies (e.g. ADB, USAID) towards setting up guarantee funds. In particular, the review should include:

A perspective on the reasons that the donor agencies expressed interest in a guarantee fund in India

The key findings

The present status – including the reasons for progress (or lack thereof)

2.4 Identify Key Features of a Guarantee Mechanism for EE projects:

The fact-findings and analyses of sections 2.1 through 2.3 will form the basis for a proper and well-supported perspective on whether or not the institution of a guarantee fund will encourage investment in EE / ESCO projects. In particular, the consultant will make the following broad observations and recommendations: Whether or not the guarantee fund mechanism is expected to be suitable in the Indian context

If so, then what type of a guarantee mechanism it should be – and why

The following (among other) guarantee mechanism design aspects may also be briefly recommended:

Size of the fund

Sourcing of fund

What type of an institution should administer it (e.g. Bank / Financial Institution / other, should prior experience in EE project funding be an essential pre-requisite?)

What criteria should be adopted for extending financial guarantees

What mechanisms should be in place to increase its outreach

3 Deliverables

The consultant will liaise closely with the 3CEE Secretariat (IREDA) and World Bank / UNEP during the course of this project. The consultant will interact with and interview an agreed list of key stakeholders across various categories.

The deliverables in particular will include:

An interim progress report two months from initiation

A draft final report (to be forwarded to all India Core Group members as well as World Bank / UNEP)

A brief presentation to the India Core Group

A final report that incorporates the comments from the Core Group, World Bank and UNEP

A presentation at the Final Banking Workshop to be held in India in the Spring of 2006

Annexure 2

CONSULTATIONS WITH STAKEHOLDERS – Summary of Discussions

Views of several stakeholders – Energy Auditors, Project Consultants, Energy Service Companies, Banks, Fund Managers, Government officials – were sought and taken into consideration in coming to the conclusions in this Report.

By and large, most stakeholders, particularly banks have expressed that the bankability of the EE/ESCO projects are most important drivers for the Banks to take investment decision. They have also conveyed that the banks have limited direct exposure of EE/ESCO projects due to non availability of creditworthy projects. However, they all acknowledge that the EE/ESCO project sector is very large in India and this sector needs to be developed through the successful demonstrations.

What kind of Policy and regulatory intervention is required to kick start the investments in EE/ESCO?

ESCOs and Energy Auditors

- Government may consider extending tax concessions to energy auditors and ESCOs as additional incentive to kick start the investments in this sector.
- Government may also consider allowing Banks to book investments in EE/ESCO projects as priority sector lending norms.

Do you think that here are several knowledge gaps in EE/ESCO project assessment? If yes, what are those gaps?

Bank:

- Confusion and lack of understanding on several ESCO project developers, especially the qualifying criteria for Bank assistance.
- Further Monitoring and Verification protocols, contracts etc needs to be developed taking into consideration of Banks' requirement.
- The general impression (based on the quality of DPRs received by the banks) that the ESCO and the end-user normally do not take the Banking requirements into consideration while developing the projects.

EE/ESCO project developers:

- The main job at the moment is to evolve standardized and localized methodologies and contracts for ESCO projects to emulate.

What are the bottlenecks in developing the EE/ESCO projects?***Various stakeholders:***

- Technical knowledge gaps, arranging finances and time delays are major constraints for ESCO Projects
- There is no clarity on how to balance between plain EE project and ESCO project.

Project Consultant:

- Projects run the double risk of incurring upfront costs without having assurances on acceptance of the ESCO based Project by the end-user.
- In view of the uncertainties, neither the ESCO Project Developer nor the end-user will bear the burden of paying for the upfront costs of contracts, monitoring and verification protocol etc.

What are the bottlenecks in financing the EE/ESCO projects?***Banks and Institutions***

- Inability of the ESCO project developers to develop the bankable project is the main issue from bank's point of view.
- There is a severe shortage of good bankable proposals and as such Banks are unable to take a long term view for developing this new potential business.
- Most ESCO projects require very small amount of loans and the cost of administering the project outwits the likely gains.

Do you think the creation of Guarantee Fund would kick start the investments in EE/ESCO projects?***Banks and Institutions***

- Bankability of the EE/ESCO project is must for investment decision.
- Banks would not liberalize the appraisal norms related to bankability just because it is EE/ESCO project. Banks may however consider liberal norms for D/E ratio, sponsors' contribution etc on case-to-case basis.
- Guarantee Fund cover may be useful as additional collateral security for defaults in EE/ESCO project exposure.
- The decision on such cover requirement would largely depend on the potential business.

EE/ESCO Project Developers:

- The guarantee cover would be useful to convince the end-user by extending the savings cover.
- Such guarantee may be useful for first few demonstrations only. Subsequently, the on the success or failure stories would preside the guarantee cover requirement.

Special acknowledgements are due to the following stakeholders:

- | | |
|-----------------------------|---------------------------------------|
| ▪ ICICI Bank | ▪ Nasik Municipal Corporation |
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| ▪ Bank of Maharashtra | ▪ Thane Municipal Corporation |
| ▪ Sarawsat Co-Op Bank | ▪ Concept Consultants |
| ▪ MEDA | ▪ SEE Tech Solutions |
| ▪ IREDA | ▪ DSCL |
| ▪ Winrock India | ▪ Asian Electronics |
| ▪ Bank of India | ▪ Agni Fuel Services |
| ▪ Oriental Bank of Commerce | ▪ Yajna Fuel Services |

Annexure 3

Summary of Discussions at Cross Exchange Workshop on EE Banking Window and Guarantee Facilities, Jan 18-20, 2006, New Delhi

The Draft Report of *Risk Analysis and Follow-up Definition of Possible India Guarantee Fund Requirements, Mechanisms, and Potential Key Features* was presented at the International Cross Exchange Workshop on Energy Efficiency Banking Windows and Guarantee Facilities organized by UN Foundation\UNEP-World Bank in New Delhi January 18-20, 2006. Feedback from the Workshop has been incorporated in the revised Draft Report. The workshop held under the 3 Country – Brazil, China and India – Energy Efficiency Financing project also had presentation on existing Guarantee Facilities the Brazil and China, and draft Report on India Guarantee Fund was also discussed..

BRAZIL

There is a large potential for Energy Efficiency (EE) projects in Brazil, however, the size of market is very small at present. The main reasons are (1) The prevailing system of credit assessment by Banks (2) Limited knowledge of EE projects among Banks, and, (3) limitations in financial structuring capacity of ESCOs.

To mitigate these risks a Guarantee Fund mechanism has been proposed. The Guarantee Fund aims to stimulate the market for EE projects in Brazil. The Fund aims to increase the ESCOs access to the credit market which in turn would leverage greater finance for EE projects.

Features of the Brazil Guarantee Fund mechanism

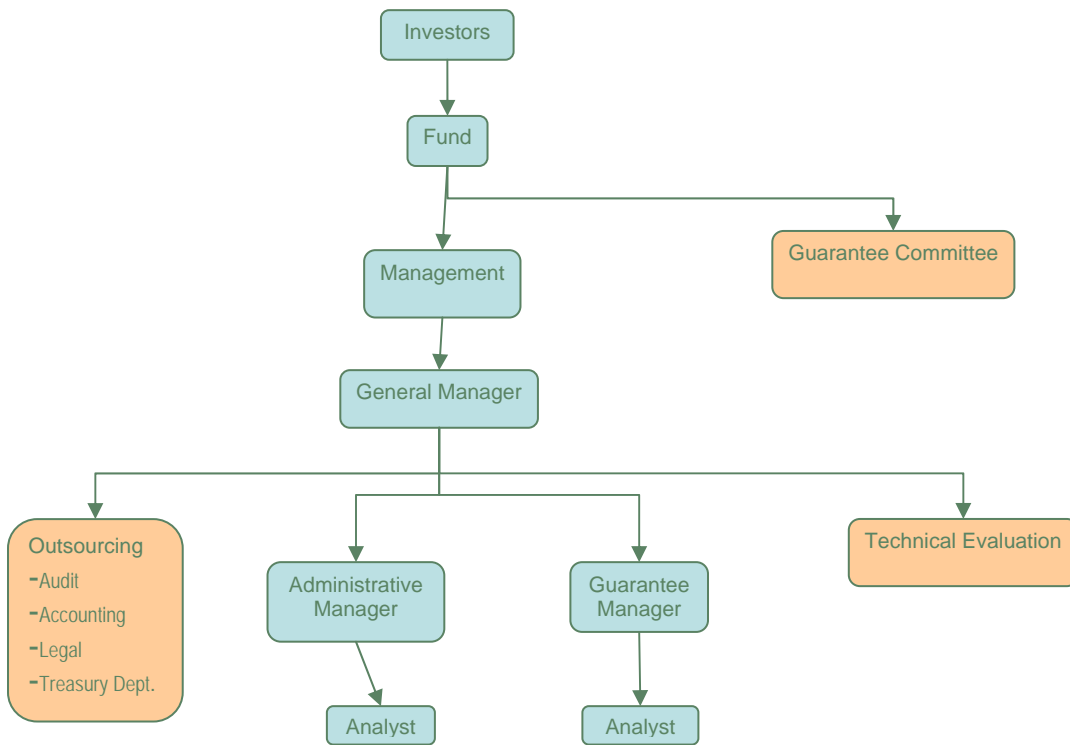
The EE project first gets technical approval from a Certifier. An agreement or contract is signed between the Certifier and ESCOs client. The (Guarantee Fund) GF mechanism provides for the accreditation of Certifiers. There is no minimum limit for the loan amount or the financial period. The maximum amount guaranteed for a single project is 5 per cent of the Fund size (10 times the Capital) for project size and for a maximum period of 10 years, and at least 50 per cent participation on value of EE projects (contribution from the project promoter).

There is no restriction on business sector or technologies. The GF can be extended to contracts which are executed under Shared savings, guaranteed savings and Special Purpose Vehicles (SPV). The Guarantee fee will be capitalized and paid with the loan under the same financial conditions. In case of default the GF will make immediate payment to the Financial Institution. Further,

after paying the Financial Institution, GF will execute the guarantees given by the ESCOs or the client and gives benefits for future business with full performance of ESCOs or the Clients.

The GF works under the following parameters. Leveraging 10 times the capital and the initial capital is at US\$ 2,800 thousand. Expected annual market size is initially US\$ 34,800 with a financing of 80 per cent with a delinquency ratio of 10 per cent. Monthly administrative costs are at US\$ 34.8 thousand and the Guarantee fee is charged at 0.26 per cent per month on the Principal and on the term of the loan. There is 100 per cent Guarantee on the principal and the risk is restricted to interest portion of the Financial Institution. In case of default, recovery of credit at the beginning of guarantee period is 2.5 per cent and over a 10 year period, this will increase to 10 per cent. In the financial application with Federal Government Securities it will begin with 1.45 per cent per month at the start of the guarantee period and over a 10 year period will reduce to 0.90 per cent per month. The financial term will be for 36 months.

The proposed structure of the GF is given below:



CHINA

China received a line of credit from the World Bank for developing a Commercial Loan Guarantee Mechanism for the Energy Management Companies (EMCo). The ambitious programme is aimed at promoting EE projects throughout the country. The World Bank loan will be released in a phased manner at a very low rate over a 5 years period (2004 to 2009).

Development of the China Guarantee Fund

The WB has supported an innovative EPC mechanism in China. Under the pilot project WB extended a US\$22 million Special Fund for the EMCo Guarantee programme. It is a policy driven mechanism. I&G is the implementing agency of EMCo Commercial Loan Guarantee Programme. I&G were set up in 1993 under the State Development Reforms Commission (SDRC) in China. I&G have taken on about 10,000 projects with a total of RMB 300 billion guaranteed till the end of 2005. Till now it has 145 registered members.

The purpose of creating this GF is that the Central Bank of China requires insurance for loan business; insurance includes mortgage, pledge and guarantee etc. EMCos were not in a position to give these guarantees and hence the mechanism was created under I&G to provide the guarantee for EMCos.

After this GF mechanism was implemented about 23 EMCos of different types got the loan from banks for 52 EE projects. Total investment in these projects was RMB 2,376,554 million. The project amount ranged from small to large and average size of the loan amount is about RMB 4,378,750. This effort I&G got a very high appraisal from the WB.

Innovative Features: The China GF mechanism had several innovative features. Some of them are listed below:

- Loan guarantee and Performance guarantee
- Guarantee Fund will remain in stock even at the end of the programme term
- The I&G is assured of a Management fee
- Taken use of the guarantee advantage from I&G
- Formation of a China Guarantee Alliance
- I&G's cooperation with Banks has contributed a lot for the success of the programme
- The mechanism has provided a *Green Channels* for EMCos with the in banks

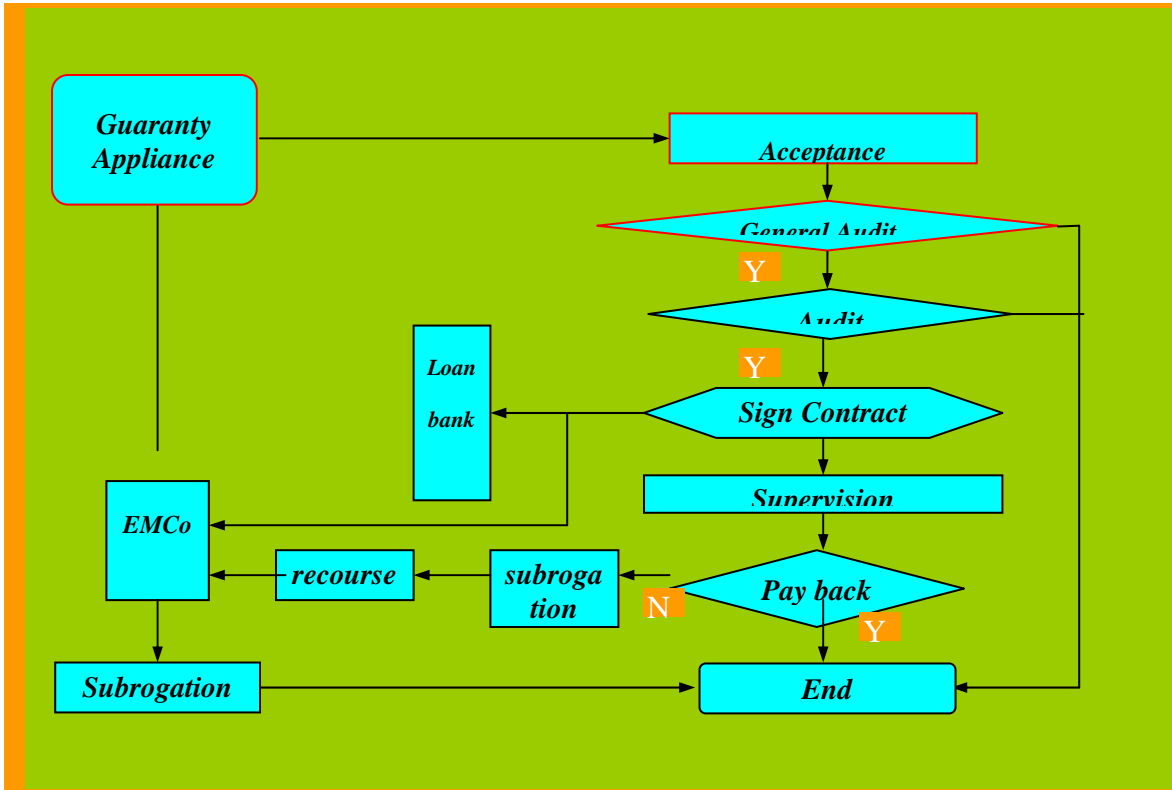
The I&G guarantee is extended to the following categories:

- (1) Finance products, (2) Marine products, (3) Frontier business, (4) Tax related programmes, (5) Property related business, (6) Machinery bidding, (7)

Contract performing, (8) Trade market, (9) Auto trade financing (10) Stock trade financing, (11)Real estate, and (12) WB energy saving projects

I&G is committed to do very well and make the programme a success. This project will continue till 2009, and I&G hopes to extend the facility beyond this time frame. The estimated savings they want to achieve is US\$ 0.38 billion, equal to 35 Million Tons of Coal and 0.23 Million Tons of Carbon emission.

The following diagram gives the business cycle in I&G:



INDIA

The India presentation highlighted that as far as the EE business opportunity is concerned there is immense potential for EE projects in Indian industry with lending opportunities for banks in a wide range of technologies, business sizes and geographical spread. Indian banks have wide reach, resources, customer base and expertise, but have low confidence in lending to EE/ESCO industry primarily due to the absence of demonstration projects. Normal or existing loan products with some modification are sufficient to kick-start EE financing. Financial product design and appraisal practices should be compatible with present business strategy and methodologies of Banks. Lending to EE Projects

is remunerative for Indian banks and existing loan products are sufficient to EE project requirements.

Discussion on India Guarantee Fund Needs Assessment

The discussion on the India Guarantee Fund study at the workshop highlighted the following issues and suggested possible solutions.

1. Higher transaction costs of structured lending: Structured lending to EE projects proposed in the Indian context may add to the transaction cost. If it is very high relative to the project cost, depending upon the size and complexity of the project, it may act as deterrent to the bank as well as the end-user and the ESCO.

2. Lenders and End users perspective- The ESCO seeks to sell the EE project idea to the client. If the client is convinced about the viability of the project, he will invest the funds and may agree to share small percentage of savings to EA/ESCIO as the case may be. Alternatively, the client would insist that ESCO fund the entire project. In this case, the lender would like to assess the entire viability of the project before arriving at lending decision. As such, whether small or large project, the lender would analyze the project for viability issues irrespective of guarantee cover (10 per cent or 50 per cent guarantee). It may happen that all projects may not be bankable. In that case, partial guarantee cover would at the most be useful for some border line projects.

2. Strategy to increase EE lending: In the initial stages where the banks in India want to increase its EE lending portfolio and is keen to identify and lend to bankable projects, the client's credit worthiness is important. Size of the loan varies from project to project linked to the credit worthiness of the end-user or client. When an EE project is technically and commercially sound, and the client has a good track record as a borrower from the bank, the banks would anyhow lend to the client, irrespective of guarantee cover being available or not. For instance if such a client has already borrowed Rs 10 million from the bank and has a further requirement of Rs 1.0 million and the same is within the borrowing limit, the bank may consider giving the loans without any guarantee.

China I&G Experience: An illustration from China was cited to clarify this point, the Beijing Commercial Bank is operating from past 10 years. Process is simplified with the guarantee from I&G. For these projects no other appraisal or guarantees are required. About the 90 per cent guarantee is given by I&G and no additional guarantees are needed to lend in such cases.

3. Guarantee V/S bankability: The Indian banks emphasized that while credit guarantee, performance guarantee etc may be useful in long run, as and when the business reaches some threshold level, it is the **bankability** of the EE/ESCO project which is important for banks to take lending decision. As such, the credit guarantee and or performance guarantee can work as co-lateral for

ensuring the repayments. There is need to educate bank staff about EE/ESCO industry, and to clarifying doubts about performance of technologies as there is inadequate technology demonstrations and precedents, identification and evaluation of equipment vendors and to understand technical and performance standards of equipment.

To build confidence in banks to finance EE/ ESCO projects, a system to accredit or empanel of energy auditors, EE consultants and ESCOs would be essential. The Bureau of Energy Efficiency has made a beginning by certifying Energy Auditors and Energy Managers.

4. Training and capacity building for Banks: It was also stated that for banks **training and capacity building** is very important for EE project evaluation. Technical assistance may be considered for this activity. The banks require more time as well suitable expertise not only to evaluate and establish financial viability but also technical viability of projects.

Since commercial banks have many products to deal, to hasten the process, a centralized financing system with appropriate technical and managerial expertise is required. At present the banks have varying systems of appraisal of EE projects. EE projects appraisal system and loan processing should be moved up from branch level to circle level.

5. Contractual and Legal issues: It is necessary to establish appraisal methodologies and to evolve appraisal guidelines for banks for EE projects. Legal problems could be resolved only by having uniform contracting practices and documents, earmarking of cash flows for specific purposes, segregating assets by identifying new assets.