

**United States Agency for International Development  
Greenhouse Gas Pollution Prevention Project  
Climate Change Supplement  
(GEP-CCS)**

**Institutional Strengthening of the Finance Sector**

**Task 2A**

**Financial Institutions Training Needs Assessment (TNA)**

**By:**

**The Louis Berger Group, Inc.**

**USA: 1819 H Street, Suite 900**

**Washington, DC 20006**

**India: C-6/7, Safdarjung Development Area**

**New Delhi 110 016**

***With support from:***

**NATSOURCE Financial Advisory Services**

**140 Broadway, 30th Floor**

**New York, NY 10005**

**Global Financial Solutions LLC**

**14169 Furlong Way**

**Germantown, MD 20874**

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THE Louis Berger Group, INC.

2300 N. Street, NW  
Washington, DC 20037 USA

***The Louis Berger Group, Inc.***  
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***Sandeep Tandon, CTO***

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**LIST OF ACRONYMS**

ABC	Alternative Bagasse Co-generation
ADB	Asian Development Bank
BTC	Bankers Training College
CCS	Climate Change Supplement (see GEP)
CEO	Chief Executive Officer
DFI	Development Finance Institutions
ECC	Efficient Coal Conversion
ESCO	Energy Service Company
FI	Financial Institutions
GCC	Global Climate Change
GEP	USAID Greenhouse Gas Pollution Prevention Project
GHG	Greenhouse Gas(es)
GOI	Government of India
IBA	Indian Bank's Association
ICRA	Investment Information & Credit Rating Agency Limited
IDBI	Industrial Development Bank of India
IDFC	Infrastructure Development Finance Company Limited
IL&FS	Infrastructure Leasing & Financial Services Limited
IREDA	Indian Renewable Energy Development Agency
LBG	Louis Berger Group
MDB	Multilateral Development Banks
NIBM	National Institute of Bank Management
PFC	Power Finance Corporation
SIDBI	Small Industries Development Bank of India
TNA	Training Needs Assessment
UNFCCC	United Nations Framework Convention on Climate Change

## 1. EXECUTIVE SUMMARY

This Training Needs Assessment (TNA) of Indian financial institutions (FIs) was conducted by the Louis Berger Group (LBG), with support of financial experts from NATSOURCE LLC, Advisory Services Unit, New York City, and Global Financial Solutions, Germantown, Maryland. LBG conducted a series of meetings with Indian FIs during the week of November 6-11, 2000. A schedule of meetings and listing of attendees is found in the appendices to this document.

LBG is implementing the Greenhouse Gas Pollution Prevention Project - Climate Change Supplement (GEP-CCS) for USAID/India, a four-year effort to help create awareness of climate change issues among industry, government, financial institutions, project developers and research institutions. USAID India seeks to strengthen the capacity of greenhouse gas (GHG) mitigation project developers and financial institutions through training, technical assistance and transferring computational and other analytical tools. One of the first tasks within the project is to assess the existing in-country lending practices relating to GHG projects, as well as the knowledge among Indian FIs about the topic of GHG emissions reduction trading.

LBG's approach to the TNA focused on identifying major gaps in FIs knowledge of GHG reduction project opportunities, from both the traditional lending perspective as well as the newly emerging area of GHG emissions reduction trading. Careful consideration was given to understanding the needs and concerns of the FIs that were interviewed.

Three broad findings emerged through the meetings:

**GHG emission mitigation is not presently addressed within banking lending criteria, and basic environmental risk is assessed on a preliminary level.**

The majority of FIs indicated that their sole environmental criterion is whether the loan applicant is considered compliant by the relevant Government of India regulatory authority. As one interviewee described it, their environmental review procedures are "binary" at best, with firms receiving a "0" or "1" with respect to environmental compliance. Although environmental audits are performed, this information is not taken into account during the lending decisions.

**Though FIs expressed some cautious skepticism about the concept of GHG emissions trading, they were keenly interested in the concept and wanted to learn more about the process.**

The majority of the FIs were aware of the potential of trading certified GHG emissions reductions, but they had detailed questions about the process and likelihood of the market. There was special interest in the role of key actors in a transaction, such as auditors, engineering firms and brokers. A couple of institutions identified "east/west" concerns, in that developed countries would be allowed to continue emitting GHG, while the developing countries would be reducing their emissions.

**The FIs were very receptive to GHG training and had specific recommendations on the structure of the training and the most suitable timeframe for conducting training.**

The FIs were almost unanimous in recommending that the FI training be provided on at least two levels. First, a basic overview presented to CEO level representatives, followed by a separate 3-4 day intensive training provided to the project appraisal staff. Additionally, the timeframe most often recommended was April-May, 2001, to coincide with the end of the fourth financial quarter.

## **2. INTRODUCTION AND BACKGROUND**

### **2.1. THE USAID INDIA GEP-CCS PROJECT**

The Greenhouse Gas Pollution Prevention Project (GEP) was launched by USAID India in 1995 to reduce the volume of emissions of greenhouse gases by increasing efficiency in coal fired power plants (efficient coal conversion or ECC) and encouraging use of biomass fuels in power generation (alternative bagasse co-generation or ABC).

A Project Agreement Amendment to GEP was signed between the GOI and USAID India in September 1999 to launch the Climate Change Supplement (CCS). The GEP-CCS expands the ongoing ECC and ABC activities by adding two new components "Climate Change Initiatives for Sustainable Development" and "Linking Urban Development and Climate Change". The new set of activities will encourage technical cooperation between U.S. and Indian institutions. It will also build local institutional capacity to design and implement projects that reduce GHG emissions.

The Louis Berger Group is implementing these new components and aims to increase awareness about of Global Climate Change (GCC) issues amongst major Indian stakeholders such as industry, government decision makers, the research community and the financial sector.

### **2.2. STRENGTHENING THE FINANCIAL SECTOR – TNA TASK**

A major activity within the "Climate Change Initiatives for Sustainable Development" component calls for "Institutional Strengthening of Financial Sector." Under this activity, LBG proposes to establish a dialogue with the Indian financial community to (a) understand the current knowledge of the GCC impact on financial aspects of projects (b) disseminate information on international technology trends in GCC (c) identify gaps that hinder GHG mitigation project development; and, (d) conduct training on GHG mitigation financing and project development. LBG will conduct specialized financial training for 120 Indian professionals. At least four separate workshops, targeting 30 participants per workshop, will be conducted during the contract period.

#### **2.2.1. TNA Objective**

To better design and deliver training workshops, LBG carried out this training needs assessment (TNA) of Indian Financial Institutions (FIs). The objective of the TNA exercise was to assess the current knowledge within representative Indian FIs on GHG mitigation project appraisal, and to identify the capacity to respond to shifting market drivers, such as the newly emerging GHG emissions trading schemes.

### 2.2.2. TNA Methodology

The methodology for the TNA was designed as a two-step process. First, LBG New Delhi staff held an initial round of background meetings with selected FIs from July to October 2000. These meetings provided a general idea of existing project appraisal and environmental risk analysis practices.

Next, LBG scheduled in-depth meetings with 12 different FIs in order to gather a broad picture of Indian FI capacity relating to GHG mitigation financing. These meetings were conducted during the week of November 6 to 11, 2000 (See Appendix 1).

To bring an international perspective, LBG contracted two outside consultants with a global perspective on GHG finance issues. One expert with Global Financial Solutions, LLC was experienced in export credit agency activities and has been involved in GHG mitigation projects in Latin America and Eastern Europe. The second expert, from NATSOURCE Advisory Services, brought their perspective of assisting the governments of United Kingdom and Netherlands in developing environmental emissions trading markets.

For the interviews, the LBG team identified representative FI institutions (see Appendix 2) that covered key financial sectors including:

- Commercial Banks (2)
- Banking Trade Associations (1)
- Banking Training Institutes (1)
- Special Purpose financial Institutions (3)
- Credit Rating Agency (1)
- Development Financial Institutions (4)

The meetings averaged two hours in length. Together with the initial research, these meetings helped in identifying general trends to help structure future training programs. This TNA report relates key findings from those meetings, identifies major gaps in GHG mitigation project appraisal procedures, identifies development needs for participation in GHG emissions trading markets and suggests a broad curriculum for a training workshop.

### 2.2.3. TNA Team

The LBG team consisted of Dr. Nagaraja Rao, Acting Chief of Party, Mr. Ted Yoder, Environmental Trade Finance Specialist and Mr. Vinay Deodhar, India Project Finance Specialist. Additional outside expertise was provided by Mr. Craig O'Connor, Global Financial Solutions LLC., and Mr. Matthew Varilek of NATSOURCE LLC, Advisory Services Unit.

Dr. Nagaraja Rao is serving as Acting Chief of Party for Louis Berger's GEP-CCS project, and has over 30 years of experience in various aspects of power generation, process engineering and clean coal technologies. Dr. Rao holds a PhD in Chemical

Engineering from University of Toronto and an MS Chemical Engineering from McMaster University.

Mr. Ted Yoder has over ten years of experience in environmental consulting, the last five pertaining to environmental technology transfer to developing economies. Mr. Yoder leads up Louis Berger's Trade Finance Unit, which seeks to leverage finance for US environmental and clean energy exports. Mr. Yoder holds an undergraduate degree in Biology from Goshen College, and a Master's in International Commerce and Policy from George Mason University.

Mr. Vinay Deodhar has over 17 years of experience in project development and financial structuring and has managed project implementation in the Chemical industry. Mr. Deodhar worked in the premier financial institution, ICICI Ltd., for over 12 years on energy and environment projects. Mr. Deodhar looks after Project Development and Finance activities in the LBG New Delhi, India office. He holds a graduate degree in Chemical Engineering from the Indian Institute of Technology, Mumbai and a Master's in Operations and Finance Management from Mumbai University.

Mr. Craig O'Connor is Executive Director at Global Financial Solutions, a training firm in the area of export finance. Mr. O'Connor has worked as Director of Strategic Marketing at the US Export Import Bank and also is an adjunct professor on international business and banking at Georgetown University and American University in Washington, D.C. Mr. O'Connor holds a B.A. in Business Administration from University of Missouri and a Master's of Public Administration from American University.

Mr. Matthew Varilek is employed by NATSOURCE, a leading institutional energy brokerage, negotiating physical and derivatives transactions of electricity, natural gas, coal and emissions permits. Mr. Varilek is an analyst within NATSOURCE's Advisory Services Unit, focusing on existing and emerging emissions permit markets. In that capacity, he served as lead author of a study for the Dutch Ministry of Economic Affairs on the design of emissions permits markets. Mr. Varilek has a B.A. in Philosophy and Environmental Technology Policy from Carleton College in Minnesota and a Master's in Economic Development from University of Glasgow, Scotland.

### **2.3. BACKGROUND ON THE INDIAN FINANCIAL SECTOR**

The Indian financial sector is in transition. Traditionally, Development Financial Institutions (DFI) such as the Industrial Credit and Investment Corporation of India Limited (ICICI), the Industrial Development Bank of India (IDBI) and the Small Industries Development Bank of India (SIDBI) extended loans, guarantees and other instruments at long tenors, while Commercial Banks concentrated on working capital loans. With the opening of the Indian economy, deregulation of interest rate regimes and restructuring of the financial sector, the demarcation between long-term and short-term lending has blurred. The concept of "Universal Banking" is pushing FIs to act as one-stop shops for financial products.

To compound the pressure on FIs, external and internal economic factors have stressed domestic industry, increasing the level of Non-Performing Assets (NPA) in bank portfolios. Also, with the emergence of high-risk longer-term infrastructure projects in India, the exposure to non-recourse projects has also increased. However, the low creditworthiness of the securities offered by these has prompted FIs to shift their focus from *project* finance (off balance sheet /non-recourse) to *corporate* finance (multiple asset/full recourse) for the industrial projects.

Finally, the sources of funds for the FIs, and development banks in particular, have changed significantly in the last decade. As the DFIs did not have access to cheap finance from public deposits, they were allowed to issue debt. However, as the financial sector has become more competitive, this source of funding has dwindled. The DFIs, therefore, are raising their funds mainly through other market sources. This has increased the cost of finance and reduced the spreads.

#### 2.4. INDIAN FINANCIAL INSTITUTIONS - GCC PERSPECTIVE

Presently, the only available financing for clean energy projects is from a limited number of specialty FIs, such as the Indian Renewable Energy Development Agency (IREDA), which receives funding lines extended by World Bank and the Asia Development Bank (ADB). Also, because of commercial competition, there is a limited supply of finance for projects dealing with clean but marginally expensive technologies. As higher rates of interest are paid, this leads to a low to medium Internal Rate of Return (IRR) for these projects. Furthermore, the risk perception of GCC projects is high, resulting in demand for a stronger security mechanism, as shown by Independent Power Producers' (IPP) projects in India. These trends point to the need for additional commercially sustainable sources of funds for projects based on clean energy technology.

**Need for more commercially sustainable sources of finance**

Traditionally, FIs receive loan applications for projects after obtaining all the statutory clearances, including the environmental clearances from the appropriate Indian Government agencies. Thus, the banking institutions have had little role in advising the project developers on project design, so the concept of assessment of environmental risk management has not been adapted to a large extent.

**Environmental risk management concept is in infancy in India**

However, industrial and infrastructure projects face delays and cost inflation due to their environmental impact. If the Rehabilitation and Resettlement (R&R) issues are not addressed properly, it endangers the project execution. Along with the project developers, the lenders are also affected by these delays and cost overruns as their investments are at a risk. In view of these factors, the environmental appraisal of projects, especially

**FIs are facing increasing pressure to incorporate environmental risk criteria**

medium/large scale industrial and infrastructure projects, is important to lenders and strategic investors. The clear global trend is to appraise projects from the environment perspective prior to making lending decisions. Furthermore, all the major multilateral development banks such as World Bank, ADB, European Bank for Reconstruction and Development

(EBRD) and the like have established operating procedures whereby the environmental appraisal has been included in the systems of these institutions. Indian FIs are also facing increasing pressure to more aggressively adopt environmental risk criteria into their lending decisions.

Apart from the environmental risks posed by a project, sustainable development objectives are gaining importance as well, in the wake of international dialogue on global climate change (GCC) issues. Under these initiatives, large-scale investments are likely to flow to developing countries for purchasing certified GHG emissions reductions (e.g. carbon offsets) that will accrue to the clean energy and industrial projects. However, Indian project developers and FIs are not adequately prepared to respond to this potential market. Thus, GHG project appraisal capacity building, among Indian FIs, will be critical to exploiting the opportunity presented by the global market in certified GHG emissions reduction trading and the market based mechanisms

**FIs need to embrace sustainable development now**

GEP-CCS is designed to help address these needs, and aims to build the capacity of the banking institutions in India. Specific Technical Assistance (TA) to the finance sector will introduce the project appraisal officers of the FIs and banks to the latest techniques of GHG project appraisal. The focus of the TA will be to enhance the skills of these officials and build the capacity of the finance sector to tackle challenges presented by future regimes created under international climate change protocols. The introduction of these considerations in the appraisal systems will benefit the Indian industry as well as the projects. Leveraging GHG emissions reduction finance can potentially make it easier to avail assistance by special funds offered by multilateral development banks (MDBs), and even privately held investment funds

Sections 3 and 4 expand on the findings in this section, providing a gap analysis and presenting training recommendations to address these capacity needs. Section 5 looks at domestic training resources that can be leveraged. Finally, Section 6 provides course methodology and a proposed training schedule and curriculum.

### 3. CURRENT GHG PROJECT APPRAISAL PRACTICES

This section identifies major findings from the meetings, approached from the perspective of traditional financing and return on investment. Although developing countries are hopeful about the prospect of financial benefits from employing the ensuing market based mechanisms, the mechanics of these are unclear at this time. Moreover, because the total revenue associated with the potential sale of GHG reductions may amount to only a small percentage of overall project costs, it is prudent for project developers and financial institutions to investigate the inherent commercial viability of GHG projects, before considering the potential benefits of trading emissions reductions.

It was apparent through the interviews that all of the major Indian Banks and FIs have their own training divisions as a part of their human resources departments. Many of the larger institutions such as SBI, ICICI and IDBI have full-fledged training institutes operated as profit centers. Additionally, the National Institute of Bank Management (NIBM) operates a training center in Pune, and the Indian Banks' Association (IBA) conducts specialized training programs mainly for the commercial banks as well. Therefore, the training capacity within the financial sector is fairly elaborate – and is thus well equipped to act in a “train –the – trainer” capacity for future GHG mitigation financial training.

### **3.1. GAP ANALYSIS**

#### **3.1.1. Consistent perception that investment in GHG projects entail higher project costs**

From the outset, a consistent concern voiced by the institutions was their belief that, on balance, environmental projects entailed higher costs. They expressed concern that environmental investment was often outside their client's "core business" which represents an opportunity cost, thus diverting investment that could go to plant modernization.

Therefore, without additional drivers, the simple end result was that these perceived costs were more than the FIs' customers were willing to undertake. Without some form of subsidization, and absent a significant Government of India enforcement driver, most FIs and their customers were unmotivated to undertake environmental projects on their own merits.

The LBG team presented case studies during the meetings to show that many projects in fact do not need environmental "subsidies" to be commercially viable. Power Finance Corporation (PFC) supported these points by noting a recent case in which PFC required a power developer to invest an extra U.S. \$1.8 million for a supercritical boiler that reduced emissions and paid for itself over time by generating better heat rate at a lower power generation cost.

Therefore, specific training and case studies on potential economic benefits of GHG mitigation projects will be necessary to overcome this pervasive perception.

#### **3.1.2. Significant lack of understanding of the technologies used in GHG mitigation**

Most of the financial institutions expressed an interest in learning more about the particular technologies used in commercially viable GHG mitigation projects. A consistent comment was the need to increase awareness of GHG projects not just among financial institutions, but also among project developers and other entrepreneurs. Therefore, a portion of the training should address the types of projects and technologies that fall under the rubric of GHG mitigation, and how to calculate the energy savings from sample projects.

#### **3.1.3. Limited understanding of how to use cash-flow analysis for GHG project structuring**

GHG mitigation projects typically require analysis from a "project finance" perspective in which the cash flows from the energy savings repay the loan over a specified period of time. The need in this case is to structure the loan in such a way that the energy savings

cash flows are “captured” by the financial institution as loan repayments. An important part of this equation is the prevailing level of interest rates. The higher the interest rates, the longer it will take for the loan to be repaid out of energy savings.

### **3.1.4 Lack of awareness about international sources of GHG project finance**

Many of the financial institutions were unaware of the different types of international funding sources for financing GHG mitigation projects. They were particularly interested in techniques for leveraging international resources to lower interest rates for GHG projects. They also indicated an interest in learning more about how to package international funding, as an added service to their clients. Training modules should include an extensive section on how to leverage these international sources of funds, both public (multilateral) and private.

## **3.2 MEETING NOTES – TRADITIONAL FINANCE PERSPECTIVE**

### **3.2.1. Power Finance Corporation**

- Expressed skepticism about GHG/CDM, thus CEO level buy-in will be critical
- Stressed the importance of targeting training towards project appraisal staff
- Wanted to know more about international sources of finance (e.g. Ex-Im, IFC)
- Willing to present a case study (funding of super-critical boiler) during the training
- LBG team indicated that PFC is in ideal position to help package GHG projects for its clients

### **3.2.2. Indian Renewable Energy Development Agency (IREDA)**

- Provided substantive comments on training content/process
- Suggested three tier training program: 1) CEO, 2) Manager, 3) Operational staff
- Recommended supplying certificate of completion for operational staff
- Identified April-June as ideal training timeframe
- Suggested that the training focus on identifying the best projects for later carbon emissions trading using actual case studies as illustrations where possible.
- Offered to publicize training in their newsletter

### **3.2.3. National Institute of Bank Management (NIBM)**

- Stated that most commercial Indian banks are not equipped to conduct environmental project analysis.
- Have conducted training programs in risk management and project appraisal – so infrastructure is in place for when GHG curriculum is developed.
- NIBM needs Government permission to conduct training, however have received blanket approval which would cover the LBG – led training
- Suggested that software tools on GHG project analysis would be useful
- Identified April-July as ideal timeframe for training due to final quarter constraints
- Willing to participate as trainers. NIBM will be good multiplier organization for training and outreach.

**3.2.4. Bank of Baroda (BOB)**

- Have created an environmental audit department, and they provide compliance certificates. However only the Government of India/Appropriate State Pollution Control Board can “certify” environmental compliance, a contentious issue.
- Indicated that recent Supreme Court actions were fostering increasing environmental awareness
- Concerned how a unilateral decision to apply environmental risk analysis will affect a bank’s competitiveness.
- Indicated that entrepreneurs and project developers should be key targets of training.

**3.2.5 Standard & Chartered Grindlays**

- Recommended that USAID/LBG provide a speaker at Bank Economics Conference, hosted by Oriental Bank of Commerce, New Delhi, January 15-17, 2001

**3.2.6. Infrastructure Leasing & Financial Services (IL&FS)**

- Highly knowledgeable of GHG issue.
- They are currently active in energy management and cogeneration. Are currently developing a large sugar biomass co-gen project Special Purpose Vehicle (SPV).
- Interested in what additional benefits GHG projects may provide in order to attract outside financing. Interested in training on how to “sell” GHG to outside investors.
- Willing to devote a person for up to 2 weeks of training
- They expressed an interest in learning more about GHG project technologies and international sources of financing.

**3.2.7. Indian Bank’s Association (IBA)**

- The association of all financial institutions in India. Public sector banks account for 85% of financial business in India
- Acts as a facilitator between central government and member banks.
- Enables putting forth the position of its constituents to the Government
- A major forum for discussion of issues is the Monthly Banking Journal. Would be willing to promote training in journal and through committees.
- Process for buy-in involves LBG making formal presentation to Chairman in New Delhi and CEO in Mumbai.

**3.2.8. Infrastructure Development Finance Company Limited (IDFC),**

- Expressed an interest in the training but suggested the Ministry of Non-conventional Energy Sources be invited to participate.
- Expressed opinion that Indian financial sector will not react until Government of India buys into the idea.
- Stakeholders diverse in IDFC project with GOI taking 40% stake, 40% by multilateral organizations and 20% other domestic financial institutions.

**3.2.9. ICICI Limited (ICICI)**

- Mentioned that presently they do not focus on environmental issues in project appraisals.
- They perform simple environmental due diligence based on whether company is meeting federal or state environmental regulations.
- Moving towards corporate and trade finance and away from infrastructure
- Suggested that the focus of training be on "commercially viable GHG projects."
- They suggested a major need is to build awareness of such projects among both banks and industry.

**3.2.10. Industrial Development Bank of India (IDBI)**

- Interested in understanding how to technically evaluate of projects with respect to GHG emissions credits.
- Expressed interest in international financial sources, examples of GHG projects in other countries.

**3.2.11. Small Industries Development Bank of India (SIDBI)**

- Very interested in the training
- Are apex organization and can catalyze projects by using commercial banks and state financial corporations
- SIDBI acts as wholesaler of finance
- Suggested that the biggest gap is information on GHG technologies.
- They recommended a presentation of available GHG project technologies and "agencies" which could help locate such technology.
- Interest in training on how to "bundle" numerous smaller projects in order to capture GHG emissions credits

**3.2.12. ICRA Advisory Services**

- Interested in the concepts but stated the perception that GHG projects represent higher costs for industry.
- Recommended that awareness building on project economic benefits is critical
- Interested in seeing a prioritization of industries most conducive to GHG reduction projects
- Environmental risk assessment is binary at best... projects are either in compliance or not
- Identified energy market pricing as useful area of study – to factor into energy efficiency rationale.

### 3.3. TRAINING RECOMMENDATIONS

#### 3.3.1. Provide tools on factoring together the environmental and commercial benefits of GHG projects.

While it is certainly true that many projects undertaken for environmental benefit actually do have costs in excess of tangible economic benefits, there are a great number of GHG projects that arrive at the nexus of both economic and environmental benefit. In the U.S., for example, the major drivers for clients undertaking such projects include severely constrained capital budgets, pressure to reduce operating costs, and infrastructure and equipment that needs modernization.

**Showing real-world examples of economic benefit will be crucial for FI buy-in on GHG projects**

The recommendation therefore is to train the financial institutions to identify and properly analyze those GHG projects that create an economic benefit for their clients. It is hoped in addition that once armed with this knowledge, the financial institutions can then pro-actively market financing for such projects. Thus, the training should use real-world examples to illustrate the type of projects that create this economic benefit. A further objective of the training is to increase the awareness of such projects among the financial institutions and, ultimately, their clients.

#### 3.3.2. Provide tools for energy savings calculations.

A major rationale for investing in a GHG project is that the technology used will generate energy savings over time that can be used to repay the loan made by the financial institution. The critical element is therefore the reliability and cost effectiveness of this technology.

To address this gap, a distinct training exercise should be created that will present the major features and energy savings provided by technologies such as solar, wind, biomass, and coal-fired super-critical boiler. The training should include a section that covers techniques employed by energy service companies ("ESCO") to support energy efficiency projects.

#### 3.3.3. Identify international sources of finance for GHG mitigations projects.

In many ways, the interest in learning about sources of finance, and structures used to support projects in international markets, is driven by the current market situation faced by Indian financial institutions. A large part of public sector bank lending is to large-scale Indian industry in the textile, chemical, steel, cement, and paper sectors. These sectors are facing increasing international competition and the commodity-based nature of these

industries has exposed the companies to price pressures and the banks to increased non-performing loans.

Therefore, the training should address how FIs can use international financial sources to increase lending to these stressed industries, to allow for efficiency upgrades and plant modernization.

Additionally, the LBG team emphasized that financial institutions could benefit by lending to GHG projects, as well as by providing advisory services to clients undertaking such projects. Therefore, training should include case studies showing how FIs in other developing countries have charged for value-added GHG project development services.

## 4. CURRENT KNOWLEDGE OF GHG EMISSIONS MARKETS

This section reviews the interviews from the perspective of the emerging area of GHG emissions reductions trading. Here we assess the capacity within these institutions to assess financial benefits from emissions trading. In addition to an overview of general findings, this section includes a detailed examination of questions and comments that came up during the interviews. Finally, training recommendations are provided, which respond to the gaps and information requests from the FIs.

### 4.1. GAP ANALYSIS

The FIs were generally interested in learning how GHG emissions trading could benefit them and their clients. The meetings revealed, however, that this interest is based on only vague notions of how such trading works, and how it might be applied effectively in an Indian context. Therefore, the findings and training recommendations focus primarily on trading procedural issues.

**FIs were only vaguely aware of how emissions trading works**

#### 4.1.1. Questions about the basic environmental and economic benefits of emissions trading were common.

Although the vast majority of FIs accepted that real benefits were possible, several inquired about rough quantification of these potential benefits. Since the existing GHG market is thin, but with vast future potential, it was difficult to present the FIs with numerical indicators of market size and of the potential revenues that may be associated with the sale of emissions reductions.

#### 4.1.2. Trading mechanics were a common topic of interest.

The concept of GHG emissions reductions trading is fairly new in India, as well as in the rest of the world. Many questions focused on practical concepts such as what rules govern trading, how transactions occur and how disputes are arbitrated. Many participants sought clarification on what project types would be admissible for crediting, how emissions baselines are set, and other issues related to transformation of reductions into legally recognized credits.

#### 4.1.3. FIs wanted details about the role of various market participants and the inherent costs involved.

A key aspect of trading mechanics that raised many questions concerned the role of various market participants. The FIs were unanimous in their interest in learning the specific roles of regulators, financial intermediaries, financiers, auditors, project developers and brokers. The particular role of FIs in more mature markets was not

discussed in much detail, due to the initial need for training in the basics of emissions trading.

#### 4.2. MEETING NOTES – EMISSIONS MARKET ISSUES

This section highlights which FIs raised key emissions trading-related issues. The sheer volume of questions is attributable to the newness of emissions markets/trading in India. Thus, the design of the training curriculum should strike a balance between topics suggested by the institutions and those that the experts regard as necessary for a thorough understanding of the topic of emissions trading.

##### 4.2.1. Power Finance Corporation (PFC)

- Wanted clear motivation for them to participate.
- Roles of the various market participants were of interest (e.g. governments, brokers).
- Interested in a breakout of the costs associated with verifying emissions, especially in what cuts are taken by brokers and auditors.
- Recommended that the training provide specific examples to illustrate how trading works and what opportunities for gain exist.

##### 4.2.2. Indian Renewable Energy Development Agency (IREDA)

- Requested detailed information on what types of projects are most easily creditable.
- Interested in how facilitating institutions (such as IREDA) can garner a portion of trading benefits.
- Are very receptive to idea of trading, and wanted to know what immediate steps they could take to being generating benefits from GHG reduction.
- Want case studies included in training to demonstrate practical trading lessons.

##### 4.2.3. Bank of Baroda (BOB)

- Interested in how project developers can be motivated to pursue emissions reductions projects, absent public demand for consideration of climate change impacts.

##### 4.2.4. National Institute of Bank Management (NIBM)

- Wanted to learn how FIs can integrate environmental impacts into their appraisal methods, given that assessment of environmental impacts has traditionally been regarded as a responsibility only of government.

##### 4.2.5. Infrastructure Leasing And Financial Services (IL&FS)

- They know about the possibility of international emissions trading, but want to know how to take advantage of it.
- Want details of what types of projects would be eligible for crediting. Since they work on a wide range of project types, they are more interested in learning what sectors should be emphasized.

- Interested in appraisal techniques for ranking the attractiveness of projects from a GHG trading perspective. Sometimes they have the power to choose technology types, and other times must appraise proposed project types.

**4.2.6. Indian Banks Association (IBA)**

- IBA acts as a facilitator for discussion of banking issues. So for them to get involved, they will need a concept and agenda that they can use to generate interest amongst their members.

**4.2.7. Infrastructure Development Finance Company (IDFC)**

- Want to know how to overcome resistance to emissions trading from government and bankers.
- Interested in examples that demonstrate benefits and mechanics of emissions trading.
- Curious about the net environmental result of emissions trading if some countries have more stringent emissions regulations than other ones.
- Training should identify the steps necessary to generate credits.

**4.2.8. ICICI Limited (ICICI)**

- Interested in how FIs can integrate environmental impacts into their appraisal methods, given that assessment of environmental impacts has traditionally been regarded as a responsibility only of government.
- Want training on how credits are marketed, monetized and how trading benefits are distributed.
- Training should include update on international negotiations and the stance of Government of India.

**4.2.9. Industrial Development Bank Of India (IDBI)**

- Training should identify the roles of various participants in emissions trading
- Interested in international sources of funds for GHG emissions-reducing projects.
- Want to know about process of establishing emissions baselines, and explanations on other technical aspects of trading.
- Interested in projection of how trading and crediting rules might change over time.

**4.2.10. Small Industries Development Bank Of India (SIDBI)**

- Elaboration on the net environmental result of emissions trading if some countries have more stringent emissions regulations than other countries
- Want training on setting emissions baselines.
- They and project developers are increasingly aware that they must take account of environmental impacts, but they don't know how exactly to do it.
- Interested in project bundling and distribution of emissions credits.

**4.2.11. Investment Information & Credit Rating Agency (ICRA)**

- Want methods on how to use emissions trading to demonstrate the economic attractiveness.

- Want information on the role of various participants in emissions trading and how they could act as advisors.

#### **4.3. TRAINING RECOMMENDATIONS**

The general lack of familiarity with emissions trading suggests that the first aim of training ought to be improving the FIs' basic emissions trading knowledge. More advanced training in sophisticated trading techniques and environmental analysis must be preceded by improvement in understanding of the more fundamental concepts.

Then, with an established foundation in the basics, the FIs will be better equipped to determine for themselves what unique roles they can play in the emerging GHG emissions markets. The FIs' intimate familiarity with their own practices and with local conditions, along with their new emissions trading background, will make them best qualified to chart their own future course.

The following list of training topics aims to address the questions and issues raised above, and provides a comprehensive background in emissions trading. Methods for delivering the content described below will be determined later in the GEP-CCS project.

##### **4.3.1. The Concept Of Emissions Trading**

Demonstrate the environmental and economic benefits of emissions trading by using simple numerical examples.

- Describe the basic features of emissions trading programs using the US sulfur dioxide (SO<sub>2</sub>) Allowance Program and the northeastern US Ozone Transport Commission (OTC) NO<sub>x</sub> Program.
- Examine practical results including actual emissions reductions and allowance prices over time.

#### 4.3.2. Global Trends In The Development Of GHG Markets

Describe the basic features of the UNFCCC.

- Emphasize emissions trading features.
- Update participants on status of international negotiations and project possible developments.
- Relate international treaty developments to development of GHG markets.
- Describe national and regional governments' emissions trading programs and proposals such as those in the UK, Denmark, European Union and select US states.
- Relate the pace and nature of these programs to international developments.
- Emphasize whether such proposals would allow for international trading and or project-based creation of credits.

#### 4.3.3. Greenhouse Gas Markets From An Indian Perspective

Examine the role of developing countries in the international climate change response, and more specifically within the global GHG emissions trading markets.

- Emphasize the current absence of binding reduction targets in developing countries and thus their likely role as a source of credits for export to developed countries.
- Describe the potential benefits from international trading including revenue generation, reduced borrowing costs, technology acquisition and increased foreign direct investment. Describe developing countries' advantages and disadvantages vis-à-vis other sources of credits.
  - Advantages would include low marginal abatement costs and the possibility of crediting from 2000 onwards.
  - Disadvantages would include greater risk for buyers of transaction with developing country counter-parties, possible high transaction costs, mandatory benefit sharing, etc.
- Describe Indian Government's stance towards emissions trading.

#### 4.3.4. Quantify Potential Benefits

Review projections of GHG market size.

- Emphasize competition for market share amongst various credit suppliers.
- Examine economics of case study projects under different GHG market permit price scenarios.

#### 4.3.5. Credits Securitization Process

Explain the need to transform reductions into credits (i.e., "certification").

- Explain that countries, companies, and international negotiations may establish different certification rules.
- Explore how these differences may impact demand for Indian reductions.

Describe possible sets of certification rules. For example, the current negotiating text for international negotiations suggests the following steps for creation of credits in developing countries:

- Project design
- Validation
- Registration with host country and international regulatory authority
- Implementation and monitoring
- Verification
- Certification
- Distribution of credits

#### 4.3.6. Monetization Process

Examine buyer motivations and how these should impact sellers. Motivations include:

- Hedging future compliance costs,
- Improving public image,
- Gaining familiarity with trading.

Describe select corporate responses to climate change. Representative responses might include those of companies such as BP, Shell, DuPont, Transalta and the like.

Describe methods of transacting (i.e., sources of funding). Presently these would include direct sales to individual buyers, broker-negotiated sales to individual buyers, and sales into carbon funds such as the World Bank's Prototype Carbon Fund.

Describe seller considerations to increase attractiveness to buyers. In other words, what aspects of the project, or background on the seller, will affect the marketability of carbon credits. These include:

- The type of project (some GHG projects are more easily creditable)
- Establishment of credible emissions baselines
- Demonstration of seller creditworthiness
- Demonstration of verification by independent auditor
- Demonstration of clear ownership
- Willingness to accept liability
- Offer structures

#### 4.3.7. Role Of Market Participants

The preceding sections will have demonstrated, to some extent, the role of various market participants in emissions trading. These roles will be reviewed and elaborated in this section since FIs frequently requested clarification on these points.

This section will describe participants' roles as they have been played in existing markets. Development of new markets may catalyze development of new roles for institutions. These will be explored in a subsequent section.

Participants whose roles would be discussed include:

- Governments: setting trading rules, establishing permit registries, etc.
- Verifiers: examining quantification methodologies, robustness of monitoring, fees
- Auditors: certifying the process of securing credits and agencies involved
- Brokers: facilitating trades, disseminating information, fees
- Project developers: creating credits, addressing buyer concerns

#### 4.3.8. Projecting Future Market Trends

Examine prices and volume of transactions to date and project future possibilities.

Examine liability provisions in contracts, the development of insurance facilities and assembly of project portfolios to mitigate performance risk.

Examine trends in demand for particular vintages, structure types (e.g. spot, forward, streams, derivatives.), geographic locations, reductions types, etc.

#### 4.3.9. Future Roles For FIs

In this section we will explore some possible future roles that FIs may play in emissions trading. As indicated above, other roles may become apparent as the FIs acquire familiarity with emissions trading.

Potential roles include:

- Provide financial backing to project developers to demonstrate creditworthiness
- Disseminate securitization, monetization advice to project developers.
- Bundle small projects to spread fixed costs.
- Mediate interaction between project developers and host governments.
- Conduct trading on behalf of project developers
- Integrate potential GHG revenues into project appraisal methods.

## 5. IN-COUNTRY TRAINING CAPACITY

Once gaps and recommendations have been identified, it is important to examine what in-country resources can be leveraged to conduct the FI training.

### 5.1. POTENTIAL TRAINING PARTNERS

Based on the findings and emerging training recommendations, it is essential to identify suitable institutions which could provide the platform for the phase I (for 60 officers) of the training programs.

Partner institutions and individuals should have:

- Experience in assisting innovative energy projects.
- Well defined risk appraisal/management structures
- Significant exposure to industrial projects having sizeable potential for GHG emissions reduction
- Officials with base level knowledge of industrial project risk assessment and skills to adopt new financial instruments
- Training facilities equipped with necessary tools

While many of the FIs and banks have well-established risk analysis and appraisal systems, very few have actually assisted innovative projects in the energy sector. Based on the initiative shown in the past and the current arrangements with USAID, it is felt that **ICICI Limited** is one of the better candidates for partnering on the training program, at least in Phase I of the GEP-CCS.

ICICI has been a long-standing partner of the USAID/India mission and has managed innovative programs like PACT, PACER, TEST/CTI, ACE, PACT-CRH, ECO and GEP-CCS. Of these, PACER, TEST/CTI and the ESP projects specifically addressed the energy and environment area. ICICI has also worked with other multilateral development banks like ADB and World Bank on energy and environment projects. ICICI's overall asset portfolio is of the order of Rs. 650 billion, of which a major portion is in industrial/infrastructure projects.

ICICI has instituted a risk appraisal mechanism for all its assisted projects. This current system looks mainly at market and credit risks. ICICI has been pioneer in starting innovative programs and businesses such as ICICI Venture (Previously known as TDICI). ICICI has a dedicated training institute located in Pune, about 100 miles from Mumbai. ICICI has also indicated its willingness to host one of the training programs in the Phase I training.

As the exposure to industrial assets by commercial banks is equally high, it would be pertinent to look at a second training program primarily targeted to them. As discussed

earlier, commercial banks provide short-term loans for the working capital needs of the industry. Thus, the nature of their portfolio is different from Development Financial Institutions. There are over 24 PSU banks in India and about 10 major private banks that have been formed recently. The focal point for all banks in India is the **National Institute for Bank Management (NIBM)**. The LBG TNA team has had meetings with NIBM and visited their campus. The institute has a vast campus located in Pune, which is equipped with modern infrastructure. NIBM is managed by a board of trustees and has a full-time Director. The board is comprised of the chairmen of major banks. NIBM currently conducts several training programs for senior bank officials. The quality of training programs conducted by NIBM is high. NIBM has also expressed its willingness to be a partner for conducting a GHG project appraisal training program for banks and FIs.

## 5.2. PROSPECTIVE TRAINING LOCATIONS

Based on the preceding comments, the ideal venues for the Phase I training programs (for 60 officials) would be ICICI training facilities and the NIBM training center, both located in Pune. It is anticipated that 30 trainees representing mainly DFIs would attend the ICICI affiliated training, while a second group of 30 trainees from the commercial banking sector would attend the NIBM affiliated training. Climate conditions in April and May also make Pune a conducive location.

## 5.3. ADDITIONAL TRAINING PARTNER RESOURCES

During the TNA meetings it was evident that many other institutions were taking active interest in the proposed training activity. One of these institutions is IREDA, a special purpose FI assisting renewable energy projects and manufacturers. IREDA has a sizeable portfolio of over Rs. 10,000 million for renewable energy projects such as wind, solar thermal, photovoltaic systems, biomass, mini hydroelectric power etc. IREDA also operates a US\$ 100 million line of credit from ADB for energy conservation projects. It thus represents an ideal training partner for LBG.

## **6. INTEGRATED TRAINING RECOMMENDATIONS**

Although much of the focus of training will be to address key questions on the process and prospect of certified GHG emissions trading, there is a significant need for basic orientation on GHG mitigation technologies and energy savings calculations. Establishing the commercial viability of GHG mitigation projects is imperative, as many projects may not ultimately qualify for certified emissions trading, and will thus need to show inherent return on investment. Therefore, the training program needs to establish a foundation on traditional lending concerns – and only then consider potential GHG emissions trading revenue.

## 6.1. TRAINING METHODOLOGY

The training will be organized in four modules, building steadily towards a case study exercise where many of the skills learned in previous sections are put into practice:

- Module I: Framing the GHG issue in the Indian Context
- Module II: Traditional GHG Borrowing/Lending Considerations
- Module III: GHG Emissions Trading Markets
- Module IV: Case Study Exercise

## 6.2. TRAINING MATERIALS

A draft curriculum is identified in Section 6.6. Some training institutions and trainers have been identified. Others will be identified as this activity develops. As the trainers are identified, they will be tasked with development of materials for their specific sections. Materials will be collected into a training manual that will be taken away by trainees. Materials will include but not be limited to:

- General overview of key GHG mitigation technologies
- Financial appraisal worksheets for GHG mitigation projects
- Case studies on commercially viable GHG mitigation projects
- Case studies on actual trades of GHG emissions reductions

## 6.3. COURSE PROVIDERS

LBG would leverage in-house specialists and existing relationships with technical experts on environmental project appraisal and emissions trading. Potential training partners include but are not limited to:

Global Financial Solutions, Germantown, Maryland. Executive Director, Mr. Craig O'Connor is adjunct professor of international banking at Georgetown University and American University.

NATSOURCE LLC, Advisory Services Unit, New York City, NY. This is the consulting arm of NATSOURCE energy brokers. NATSOURCE Advisory Services Unit has provided emissions market consulting services to the Dutch Ministry of Economic Affairs, the government of the United Kingdom and many private companies.

Ecoenergy International Corporation (EIC), Boulder, Colorado. EIC provides consulting and training services to governments and industry in a wide range of areas including energy efficiency, project finance, carbon management and distributed power generation.

Bank of America, Los Angeles, California. LBG identified BOA's Training and Advisory Services group to develop and deliver regional training in Asia on environmental risk management in November 1996. This was under an assignment with the US-Asia Environmental Partnership.

First International Bank, Hartford, Connecticut. LBG partners with First International Bank to leverage finance for US environmental exporters. First International Bank is the leading bank using US Export Import Bank guarantees and loans.

#### **6.4. SELECTION OF TRAINEES**

The ideal targets for training are middle management decision-makers and project appraisers and risk assessors. FIs would be allowed to nominate potential attendees subject to review and approval by USAID India GEP CTO and the LBG. An illustrative identification of potential attendees can be found in Appendix 2.

#### **6.5. PROPOSED TRAINING SCHEDULE**

Training is proposed to take place over the course of two weeks during April and May 2001. One week would be dedicated mainly to DFI training at ICICI facilities (30 trainees), and the second week would be targeted towards commercial bankers and held at the NIBM campus (30 trainees). Outside expert trainers would remain in Pune for the entire two weeks.

The training would be structured where project appraisal staff would be present from Monday ~ Wednesday for in-depth classes and break-out case study sessions. On the Thursday of each week, CEO level management would be invited to attend a wrap-up session that would be capped off with a certificate ceremony for project appraisal staff that successfully completed the intensive 3-day training session.

**6.6. PRELIMINARY TRAINING COURSE CURRICULUM FOR FIs**

Extended Training for FI Project Appraisers and Project Developers (2-3 days)

**Module I: Framing the GHG issue within the India context and educating trainees on the role of the USAID India GEP – Climate Change Supplement**

Synopsis: This module will help frame the issue by providing a brief background on the global GHG issues, and then more specifically on the planned activities within the US-AID India GEP project.

Length of training: 2 hours

Topics to be included:

- 1) Overview of GHG issue and international trends
  - a) India GHG situation
  - b) UNFCCC activities
  - c) Private sector activities on GHG mitigation
- 2) International funds
  - a) Private Sector drivers
- 3) US-AID India activities
  - a) CTI/ECO financial services training
  - b) Previous GEP activities
  - c) GEP-CCS Supplement
- 4) Climate Change Centers
  - a) Financial Institution capacity building
  - b) Project Development capacity building
  - c) Goal of financial closure

## **Module II: Traditional GHG Borrowing/Lending Considerations**

**Synopsis:** GHG project developers and financiers must not rely on carbon reduction markets as their sole financial justification. Rather, GHG projects should first be scrutinized for their fundamental commercial and economic viability on their own. This module will assist FIs and Project Developers with understanding on how to establish the commercial and economic viability for a GHG project, thus laying the groundwork for realizing potential additional revenue from carbon reductions trading.

Length of training: 1 day

Topics to be included:

- 1) Economic rationale for undertaking GHG projects
  - a) Improved power supply
  - b) Reductions in operation costs
  - c) Revenue generation from additional power
  - d) Choice of GHG projects over competing projects
  - e) Collateral required for a GHG project
- 2) International sources of financing GHG projects
  - a) Export Credit Agencies
  - b) Multilateral Development Banks
    - i) Global Environmental Facility
  - c) Environmental equity funds
  - d) Strategic Investors interested in "buying" carbon credits
- 3) Lending criteria and standards for International sources
- 4) Case studies of GHG projects in India
  - a) Solar energy investment (IREDA)
  - b) Super-critical boiler scheme (PFC)
  - c) Co-generation by bagasse (IL&FS)
- 5) Case studies of GHG projects worldwide
  - a) Wind Turbine project (Mexico)
  - b) Energy Efficiency project (Eastern Europe)
  - c) Co-generation project
- 6) Creating Environmental Funds: A role for government
  - a) Poland's system for Environmental Protection
  - b) Colombia's Regional Environmental Fund
  - c) Thailand's EGAT

### Module III: GHG Emissions Trading and Markets

Synopsis: Once commercial and economic viability of GHG projects are established, then FIs and project developers can factor in the additional potential values from trading the carbon reductions. Not all GHG projects are alike, however, and certain types of GHG projects will earn government recognition and command market value more easily than others. Therefore, capacity building is necessary to understand how GHG emissions reductions are verified, certified and monetized.

Length of training: 1 day

Topics to be included:

- 1) The concept of environmental commodity trading
  - a) Emissions trading of SO<sub>2</sub> and NO<sub>x</sub>
- 2) Global trends in the development of GHG markets
  - a) Status of international negotiations
  - b) National and sub-national legislation
- 3) GHG markets from the India perspective
  - a) No national targets
  - b) Opportunities as sellers of reductions
- 4) Potential seller benefits
  - a) Revenue generation
  - b) Technology transfer
- 5) Case-study project economics scenarios
- 6) Process for securitization and certification of carbon credits
  - a) No rules yet but we can project what those might be
  - b) Probable steps for certification
    - i) Project design
    - ii) Validation
    - iii) Registration with host country
    - iv) Implementation/monitoring
    - v) Verification
    - vi) Certification
    - vii) Receipt of credits
- 7) Monetization Considerations
  - a) Buyer motivations
    - i) Hedge future compliance costs
    - ii) Positive public image (e.g Shell, BP)
  - b) Marketability considerations for sellers
    - i) Project types vary in carbon reduction justification
    - ii) Projects need credible project baseline
    - iii) Accurate independent monitoring required
    - iv) Seller creditworthiness
    - v) Clear ownership of credits must be determined

- c) Example of how monetization has occurred
  - i) Transalta-HEW, Fortum-Epcor
- d) Role of individual market participants
  - i) Project developers
  - ii) Engineers, Accountants
  - iii) Brokers, other intermediaries
  - iv) Government regulators
  - v) Auditors
- 8) Market Trends
  - a) Liability provisions
  - b) Offer structures
    - i) Immediate
    - ii) Forwards
    - iii) Call options
  - c) Price scenarios
- 9) Potential Roles for FIs
  - a) Financial backing
  - b) Train/advise project developers
  - c) Aggregate or bundle small scale projects
  - d) Navigate interaction with government
  - e) Integrate potential GHG revenues into project appraisal

**Module IV: Case Study Exercise**

**Synopsis:** In this module the trainees would begin to assimilate all of the issues from the previous modules by working through sample case studies. A worksheet would be provided to attendees and at least 4 case studies would be provided. Breakout sessions or small group format may be used to work through the cases, with each group reporting back on the results of their analysis. The goal is to provide a worksheet "tool" that trainees can take with them upon completion and ideally include within their project appraisal procedures

**Length of training:** ½ to 1 day

**Potential Case Study Themes:**

- 1) Renewable energy
  - a) Wind power
  - b) Biomass
- 2) Demand side management
- 3) Energy Efficiency
- 4) Process controls
- 5) Landfill methane capture
- 6) Fuel-switching



## **APPENDICES**

1. SCHEDULE OF MEETINGS
2. KEY MEETING ATTENDEES
3. POWER POINT HANDOUT GIVEN TO FIs

## APPENDIX 1

### Meeting Schedule for the Financial Institution TNA Under CLIN 2.A

#### Monday November 6, 2000 (New Delhi)

Power Finance Corporation Ltd (PFC)  
Chandralok, 3rd Floor  
36 Janpath, New Delhi 110 001  
Tel.: 372 2312 (Mr. Bhardwaj - DRT) 375 5109, 372 2301- 8

India Renewable Energy Development Agency Limited (IREDA)  
Core - 4 'A', East Court  
1st Floor, India Habitat Centre Complex  
Lodhi Road, New Delhi 110 003  
Tel: 468 2201(Debashish Majumdar-DRT)

#### Tuesday November 7, 2000 (Mumbai)

Joint discussion at Hotel Oberoi, Mumbai with:

National Institute of Bank Management (NIBM)  
NIBM P.O. Kondhwe Khurd  
Pune 411 048  
Tel 683-1581

Bank of Baroda, Central Office  
3, Walchand Hirachand Marg,  
Ballard Pier, Mumbai 400 001  
Tel 261-6471

Standard & Chartered Grindlays Bank Ltd  
90, Mahatma Gandhi Road  
P.O. Box 725, Mumbai 400 001  
Tel 265-7918

Infrastructure Leasing and Financial Services Ltd. (IL&FS)  
The IL&FS Financial Centre  
Plot C-22, G Block  
Bandra-Kurla Complex  
Bandra East, Mumbai 400 051  
Tel. 653 3333 Extn.3334

Wednesday November 8, 2000 (Mumbai)

Meeting at Hotel Oberoi, Mumbai:  
Indian Bank's Association  
Centre 1, 6th Floor, World Trade Centre  
Cuffe Parde, Mumbai 400 005  
Tel. 218-2288

Infrastructure Development Finance Company Limited (IDFC)  
Ramon House, 2nd Floor  
169, Backbay Reclamation  
Mumbai 400 020  
Tel. 286 1000

ICICI Limited  
ICICI Towers  
Bandra-Kurla Complex, Bandra (E)  
Mumbai 400 051  
Tel. 653 6425 (Anil Malhotra – DRT)

Thursday November 9, 2000 (Mumbai)

Industrial Development Bank of India (IDBI)  
IDBI Towers, WTC Complex, Cuffe Parade  
Mumbai 400 005  
Tel : 218 2787 (G. Parameswaran – DRT), 218 9111 (Main)

Friday November 10, 2000 (New Delhi)

Small Industries Development Bank of India (SIDBI)  
10th & 11th Floor, Videocon Tower  
E – 1, Rani Jhansi Road  
Jhandewalan Extension  
New Delhi 110 055  
Tel. 368 2463 (Dharam Dev – DRT), 368 2473 – 77

Investment Information & Credit Rating Agency (ICRA)  
ICRA Building, 5th Floor  
26, Kasturba Gandhi Marg  
New Delhi 110 001  
Tel. 373 7875 (P K Choudhary – DRT), 335 7940 - 50

## APPENDIX 2

### Financial Institution Personnel Interviewed as part of Training Needs Assessment

Suggested Attendees for Future Training are indicated by  
\* = CEO Level ½ day Symposium  
\*\* = Extended 3-day Training for Project Appraisers

#### COMMERCIAL BANKS

##### Bank of Baroda

Dr. K C Chakrabarty, General Manager (Treasury)\*

##### Standard Chartered Grindlays Bank Limited

Dr. Rajeev Uberoi, Chief Compliance Advisor\*

#### BANKING TRADE ASSOCIATION

##### Indian Banks' Association

Dr. Bandi Ram Prasad, Chief Accountant\*

#### BANKING TRAINING INSTITUTIONS

##### National Institute of Bank Management

Dr. Ganti Subrahmanyam, Director\*

#### SPECIAL PURPOSE FINANCIAL INSTITUTIONS

##### Power Finance Corporation Ltd.

Mr. Tantra Narayan Thakur, Director (Finance & Financial Operations)\*

Dr. K K Govil, Director (Projects)

Mr. Satnam Singh, General Manager (Finance)\*\*

Mr. R. S. John, Addl. General Manager\*\*

##### Indian Renewable Energy Development Agency Limited

Dr. V Bakthavatsalam, Managing Director \*

Mr. A A Khatana, General Manager (PMES)\*\*

Mr. Debashish Majumdar, Director Technical\*\*

Dr. K Janakiram, General Manager Energy Conservation\*\*

## Financial TNA Mission and Objectives

- **Technical Assistance to the Banks/FIs for analysis of their portfolios from CC point of view**
- **Identify training materials, course providers and partners for training in GHG mitigation project development and financing**
- **Training of ~ 120 officers from Indian FIs/Banks to act as Educators within their organizations**

## Why India ?

- **Worlds 6th largest [3% of world] and 2nd fastest growing source of GHG emissions**
- **US and European interests to reduce GHG emissions in developing countries by buying carbon credits**
- **Clean energy development reduces pollution in industrial and urban areas and also provides energy security**
- **Positive GOI interest in projects designed to reduce growth of GHG emissions for sustainable development**

## India: Energy Scenario

- **Electric Power Generation: 8 to 10% annual growth and Supply/Demand gap is still 7 - 20 %**
- **Coal: accounts for about 70% of power generation**
- **Urban Transportation: constitutes as the next largest polluter (CO<sub>2</sub>, CO and hydrocarbons)**
- **With this growth scenario, potential is high for GHG emission reduction projects in industry, power and transportation sectors**
- **Carbon offsets financing improves chances of successful project development**

The Louis Berger Group, Inc

## India: Energy and Environment

- **Electric Power: 10% annual growth and Strong industrial demand growth**
- **Coal is primary fuel**
- **Power Capacity Build up via Renewable Energy growth is not as high as coal**
- **Potential for GHG emission reduction from industry, power and transportation sectors is high**
- **Potential for efficient, economical and environmentally attractive projects are high**
- **Carbon offsets financing improves chances of successful development**

The Louis Berger Group, Inc

## Indian Financial Sector-In transition

- **Breaking down of the traditional financing boundaries**
  - Emergence of Universal Banking
- **Shift from Traditional Project Finance to Corporate and retail Finance**
- **Changing nature of funding sources from approved securities to market based**
- **Increasing cost of funds and thinning spreads**
- **Opening up of domestic and international fund raising avenues**
  - Institutions geared up to work with international funding mechanisms

## Character of Indian Financial Sector

- **Multitude of Laws/Regulators for different sectors and for different aspects**
- **Multitude of Players in the Banking Sector :**
  - DFIs (ICICI, IDBI, IFCI, SIDBI, SFCs)
  - Private, PSU and foreign Banks
  - Insurance Companies
  - Special Purpose Institutions (HDFC, HUDCO, IREDA, PFC, ..)
  - Trusts & Mutual Funds, VCFs
  - NBFCs, Leasing and Financing companies
  - FIIs

## Key Environmental Aspects for Finance – Indian Perspective

- **Timing of application for finance –After obtaining statutory environmental clearances- No role in project design**
- **Environmental abatement costs- considered as “sunk costs” and time spent as “overrun”**
- **Project Risk Analysis – Inadequate considerations to environment risks**
- **Need for a uniform approach by all FIs**
- **International Scenario-MDBs, Banks have Institutionalized operating procedures**

## Financing of GHG mitigation projects - Current Scene

- **Limited sources e.g. IREDA**
- **Industry expectations-Concessional finance**
- **Inadequate security for investments a bottleneck due to low credibility of off-takers, recession etc.**
- **Low/ medium IRRs**
- **Need for additional / commercially sustainable sources of funds for clean energy technology**

### Financing of GHG mitigation projects - Future scenario

- **New tradable commodity-Carbon Offsets/Credits from reduction of GHG emissions “over BAU” technologies**
- **Possibility of structuring of projects considering revenue streams representing the Carbon Credits**
- **Estimated investment flows-up to \$ 10 billion (depending on price of Carbon)**
- **However ... the Financial sector has to be geared for GHG mitigation project development... hence**

### Our TNA Team covers a wide spectrum of GHG-related areas

	Energy/ GHG Issues	Environ. Technology Exports	US/Multilate ral Export Finance	Indian Banking Institutions	GHG Trading and Markets
Dr. S.N. Rao	XXXXXXX XXXXXXX XX				
Craig O'Connor		XXXXXXX XXXXXXX XX	XXXXXXX XXXXXXX XX		
Ted Yoder		XXXXXXX XXXXXXX XX	XXXXXXX XXXXXXX XX		
Vinay Deodhar				XXXXXXX XXXXXXX XX	
Matthew Varilek					XXXXXXX XXXXXXX XX

## Traditional Borrowing/Lending Issues

- Economic rationale for undertaking GHG project
  - Improved power supply
  - Reduction in operating costs
  - Added revenue from power gen.
- Choice of GHG Project over competing projects
- Collateral required
- Is lending based on balance sheet vs. cash flow – capturing the cash flows

## Useful International Examples: Case Study Poland

- **Poland National Fund for Env. Protection**
  - **US\$700 million in revenues from ecological tax**
  - **Revenues used to finance air pollution projects**
  - **Loan terms include: soft loans, interest rate buy-downs**
  - **Designates banks as on-lenders**
  - **Poland's Bank for Environmental Protection**

## Colombia Case Study: Regional Environmental Funds

- Revenues from pollution charges
- Designates implementing banks
- Provides grants, loans for municipal water treatment
- Projects approved on basis of cost effectiveness
  - Polluters driven to most appropriate tech.

## Carbon Market Issues: While little liability exists for Indian firms to address GHG, the revenue possibility is very real

- Demand based on anticipated Annex 1 emissions restrictions
- Sale of Indian offsets can provide upfront finance and boost project returns

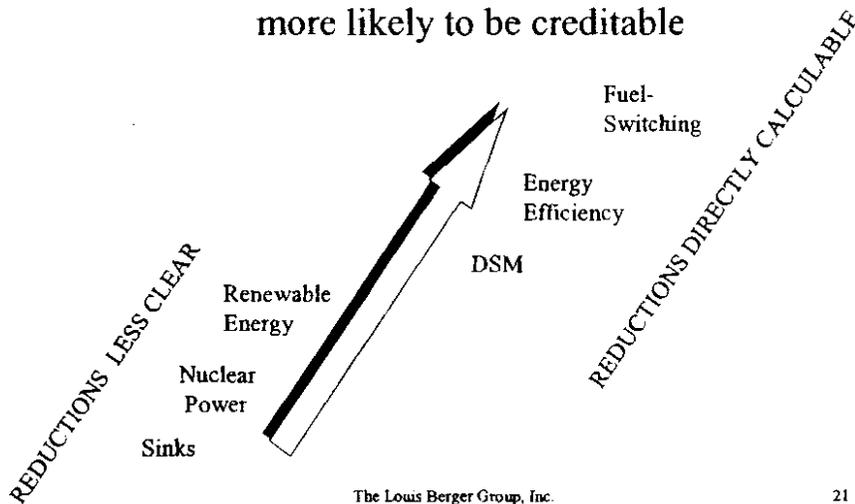
## One uncertainty is how money will be captured

- Rules for credit creation not yet established
- Complex monitoring, baseline assessment and verification scenario

## Preparation for rules now will enhance future revenue possibility

- Rules don't have to be guaranteed in order for transactions to occur
- Current demand flows from diverse sources
  - National governments (e.g. Netherlands, UK)
  - Voluntary company commitments (Shell)
  - International
- Transactions possibilities are diverse
  - Bilateral trades between companies
  - Carbon Funds (e.g. WB prototype carbon)

However we can anticipate which projects are more likely to be creditable



Your contribution to this TNA is invaluable...

- Provide project appraisal methods/analytical tools
- Identify limitations in considering environmental risks while approving projects
- Present level of understanding of GCC issues
- Suggest course contents
- Provide access to level of officials who could be trained to act as educators

## Next Steps after Facility Interviews

- **Deliver TNA report to USAID-India Dec/2000**
- **Begin identification of partners**
- **Identify trainers**
- **Design training methodology and course**
- **Identify trainees (~120 )**
- **Impart training ~ March/April 2001**

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## Contact Information

**LBG/GEP New Delhi Office**

**C-6/7, Safdarung Development Area**

**New Delhi 110 016 INDIA**

**Tel: 91-11-653-2024,25,26**

**Fax: 91-11-651-8807**

**E-mail: [getgepin@del3.vsnl.net.in](mailto:getgepin@del3.vsnl.net.in)**

**LBG/GEP Washington D.C. Office**

**1819 H Street, NW, Suite 900**

**Washington D.C. 20006 USA**

**Tel: 202-331-7775 ex. 602**

**Fax: 202-331-1058**

**E-mail: [ebrejla@louisberger.com](mailto:ebrejla@louisberger.com)**