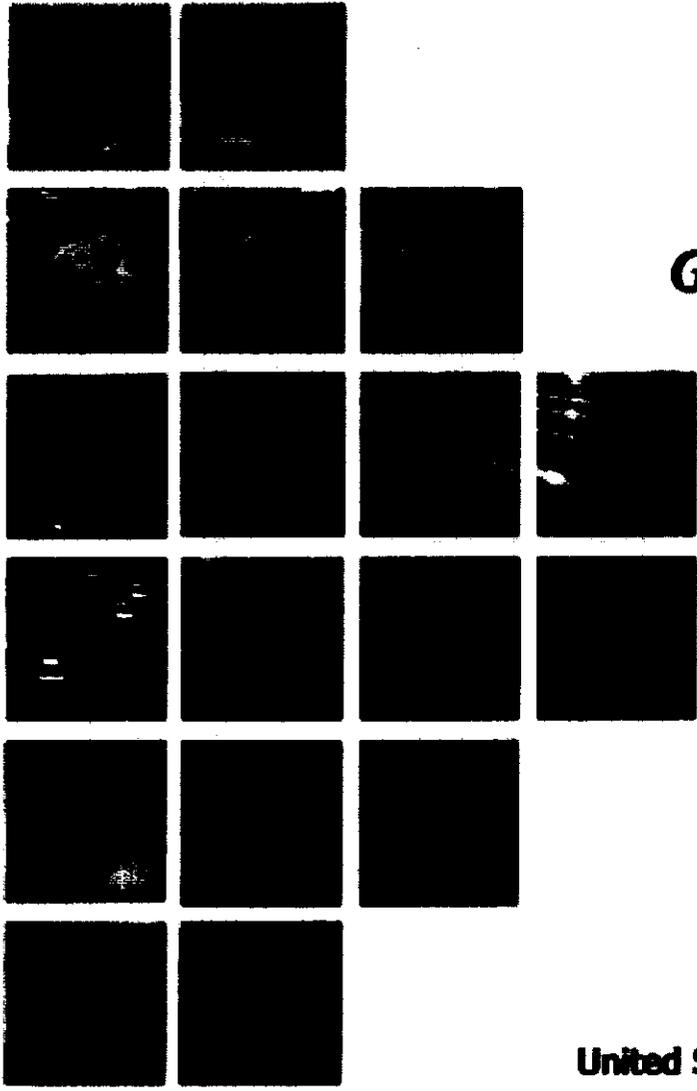


CLIN 5: Senior Policy Level Roundtables

Subtask 5.C Completion of the First Multi-Sector Roundtable Event



**Greenhouse Gas Pollution
Prevention Project -
Climate Change
Supplement**

A Program of the: 
**United States Agency for International
Development / India Mission**

Implemented by: 
**The Louis Berger Group, Inc.
Global Environment Team**

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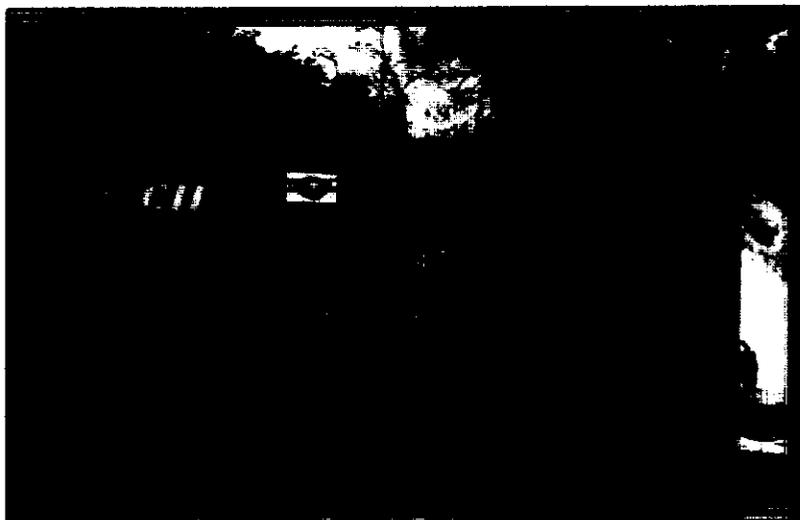
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I. EXECUTIVE SUMMARY

As the international climate change negotiations evolve, the fact remains that countries across the world continue to generate and emit greenhouse gas emissions (GHG) at the highest levels. In India, industry leaders and associations have long supported the charter to work toward establishing a clean, sustainable environment while ensuring industrial productivity. This goal of sustainability has simultaneously been challenged by the ever-growing demand for energy supply in India. In recent years, Indian industries have addressed these challenges and issues with the development of clean energy projects and GHG management interventions. The industrial measures taken have been found to enhance the bottomline efficiencies of organizations, while playing an integral role in improving the environment and the urban air quality. This proactive stance by industry is setting the course and is the first step toward reducing the rate of GHGs in India. As forward-thinking companies continue to position themselves for the future, they are considering two key questions: “Where do we go from here?” and “How do we maximize and leverage emerging opportunities that will reward our current GHG reduction endeavors?”

The Louis Berger Group, Inc. (LBG), in its implementation of the Greenhouse Gas Pollution Prevention Project - Climate Change Supplement (GEP-CCS) program of USAID/India, continues to work toward improving the understanding of climate change and to assist the project’s Indian partners to develop proactive strategies and instigate actions for reducing GHG emissions. The LBG/GEP-CCS program has worked closely with industry associations and “champion” industries in organizing roundtable events that have fostered dialogue and cooperation on widespread climate change/clean energy issues. Building upon these efforts, LBG/GEP-CCS formed a collaborative partnership with Environmental Defense (ED), a prominent U.S. based climate change oriented institution. The LBG/GEP-CCS and ED partnership created a unique blend of expertise and technical capabilities to organize a roundtable that could actively work with Indian industry on taking the next steps: the exploration of the basic and interconnected building blocks for the development of comprehensive GHG management programs that can effectively leverage market oriented mechanisms.

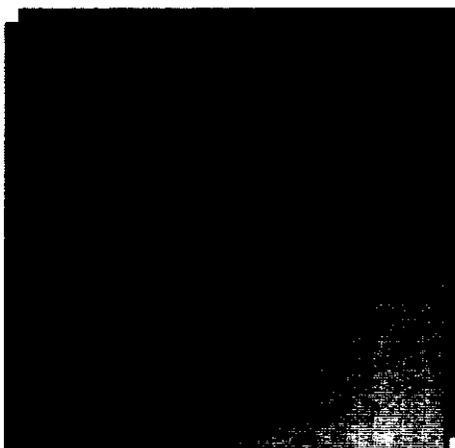
LBG/GEP-CCS and ED, in association with the Confederation of Indian Industry’s Environment Management Center (CII-EMC), organized a multi-sector roundtable on September 27-28, 2002, entitled *Embracing Global Climate Change: Using Market-Based Mechanisms for Global Competitiveness*. The objective of this roundtable was to provide participants with the fundamental building blocks for devising sectoral analytical frameworks and employ problem-solving tools to address GHG mitigation and to leverage international market-based mechanisms. The roundtable was designed to take industry members beyond GHG mitigation practices to an understanding of how to harness the power of markets to address the dual challenges of tempering climate change and securing clean and reliable power. Key Government of India (GOI) ministries, leading Indian financial institutions (FIs) and NGOs also participated in the roundtable. This multi-stakeholder participation was deemed necessary to ensure that the event would go beyond discussion and move toward sustained constructive engagement on climate change issues.

To foster understanding of the intricacies of market-based mechanisms, Ms. Annie Petsonk of Environmental Defense provided an international perspective on the development of the various market oriented mechanisms and on the international trends that have emerged. Ms. Petsonk described a growing global shift in government policies from the common command and control approach to new, flexible, incentive-based types of programs. The foundation of this new approach is built upon private sector commitment and the establishment of clear, sustainable economic, social and environmental goals. These goals will, in turn, provide accountability for GHG reduction targets and for meeting other environmental and bottomline goals.

Ms. Suzanne Young, of the LBG/GEP-CCS Project, outlined the essential prerequisites in order for India to utilize market-oriented mechanisms. Ms. Young described a market transformation that would clearly promote and encourage the utilization of energy efficient and renewable energy technologies, coupled with the systematic eco-labeling of goods. Such a transformation could be enabled under the mandate of the new Bureau of Energy Efficiency.

These transformation measures, if taken in unison with clear and transparent legal and institutional frameworks, could be decisive. For Indian industry to effectively leverage emerging international opportunities, Ms. Young expressed the need for policy instruments that would build industry sector strategies and establish financial mechanisms that consider GHG business models and accounting guidelines.

In some industrial areas, Indian industry has already taken proactive steps on GHG emissions. To highlight what leading Indian companies are doing, LBG/GEP-CCS invited representatives from Indian Aluminum Co. Ltd., and Tata Steel to share their best practices. In his presentation, Mr. S.V. Jambale of Indian Aluminum Co. revealed that a primary motivation behind his corporation's GHG reduction program, was a desire to reduce the company's dependence on exhaustible energy sources as a way to improve its sustainability as a business. Mr. Jambale also said that INDAL has found that the institutionalization of GHG programs has vastly improved their market competitiveness. Mr. Jambale described an intricate process and methodology that INDAL has incorporated into their operations to target the reduction of their GHG emissions. This process begins from an initial assessment, through extensive target setting, to consistent regular tracking. Mr. Jambale concluded with a message to industry that:



“The reduction in GHG emissions not only leads to controlling GWP, but also to cost reduction, provided (that) energy and production efficiency are targeted.”

Tata Steel is another prominent Indian institution that recognizes and has “reaped the benefits” of GHG emissions technological controls and management interventions. Mr. Sharma of Tata Steel presented a session on: *Devising a Corporate GHG Strategy in India*. Mr. Sharma explained that the quality of data and the understanding of abatement measures and options are a necessity for future successful corporate trading. He mentioned that Tata Steel undertook an extensive pilot system to maximize their understanding and learning of the least cost options for maximum GHG reduction. It was suggested that corporations should think about linking and integrating trading system compliances with corporate/management performance reporting to ensure a seamless integration. Mr. Sharma presented a few case examples of projects and systems examined using the World Resources Institute (WRI) GHG Protocol. The WRI Protocol has effectively assisted Tata in capturing their direct emissions and emissions without electricity, HFC and mobile combustion of fuels.

After companies have taken concrete steps to reduce their GHG emissions, and have captured and quantified these emission reductions in a systematic and transparent way, the next goal for many is to engage in emissions trading. A registry system provides a systematic review and verification of project information and positions the project and the company for participating in trading activities.

Mr. Wiley Barbour of Environmental Resources Trust provided a background and overview of the evolution of registry systems and a description of the systems that are currently in operation. Mr. Barbour explained how registry systems can provide a central, independent repository for credible information about emissions activities. Further, Mr. Barbour described how a registry system performs a critical data management and accounting role and serves as a ledger of all transactions. In much the same way that stock market listings perform a function in establishing a market value for shares by providing a register for stock activities, registries will also enable the development of a distinct GHG emissions "currency". Mr. Barbour also stated that the ultimate role of such registries, will, of course, be contingent upon the individual registry protocols. Mr. Barbour outlined the four key parameters to developing verifiable MRV protocols: 1) inventory design; 2) a methodological approach; 3) data management procedures; 4) verification requirements and reporting.

The motivation for reducing GHG emissions is not entirely due to pure economic considerations. The "triple bottomline" aspects of GHG emissions reductions are also a driver. There are a variety of side benefits that are derived from GHG reduction practices and technological innovations. Ms. Alina Averchenkova of Environmental Defense presented a session that illustrated the many ancillary and co-benefits of policies that are designed to mitigate GCC. The direct financial benefits that equate to fuel savings and/or potential revenues from emissions trading are relatively easy to quantify. There are, however, a host of ancillary and co-benefits from GHG emission reductions projects that accrue to the immediate labor force, the surrounding community and the company, alike. These benefits might be reflected in improved health, lowered mortality rates and environmental benefits (e.g. cleaner air, more biodiversity), and can also have a monetary impact (e.g. lower insurance rates, less sick days, higher productivity) on the community. GHG projects can also provide livelihood opportunities and spur technological innovation.

The second day of the roundtable focused on putting the ideas presented into action. A breakout exercise was designed for the participants, who were divided into small teams, to work through a series of questions to determine how India and industry can leverage emerging market-based mechanisms. Upon the conclusion of the individual team meetings, each team was asked to present the findings of their group. The overall response expressed from the respective groups was that transparency would be critical in providing the level of confidence necessary to ensure the effective leveraging of market-oriented mechanisms. The potential opportunities were viewed as not merely being economically advantageous, but also as having the potential to deliver substantial co-benefits considering the associated health and waste reduction impacts.

The extensive presentations and discussions on various market-based mechanisms provided a smooth segue into the U.S. EPA designed interactive emissions trading simulation. The purpose of the emissions trading simulation was to demonstrate how energy efficiency measures and emissions trading can reduce the costs of achieving an environmental goal. The trading simulation, which has two scenarios, one for emissions reductions through energy efficiency, and the other for emissions reductions through combined energy efficiency and trading activities, promotes analysis, strategy development and decision-making. Each team was asked to set a goal of reducing emissions of sulfur dioxide (SO₂) from power generation by approximately 60% during the next year. To make it less costly for companies to comply with the regulation, various technological and management interventions were recommended as control measures. The exercise proved to be a valuable experience and ultimately allowed participants to put theories into practice.

Overall, LBG/GEP-CCS and its partner organizations, ED and CII, were very encouraged and excited by the level of active participation by the roundtable participants. The roundtable has now "set the stage" for Indian industry and other stakeholders to chart their own course for devising corporate GHG reduction strategies. Each institution's process will, of course, be individually tailored to fit within institutional goals, however, the key elements of establishing clear and transparent environmental objectives and guidelines and applying the appropriate institutional/legal frameworks, will be requisites to entry by any institution. The GHG registry systems approach was deemed by many participants and CII as the key player to be the logical next step in positioning Indian industry to participate in the international emissions market and in creating a local trading market that has credibility. To ensure success of such a registry, industry, government and NGOs will need to continue to collectively employ clear and transparent protocols and guidelines to ensure a cohesive and systematic process.

The UNFCCC discussions held in India in the end of October, 2002 and the multiple side events sponsored by the private sector, will be instrumental in further developing the understanding of the existing and newly created GHG markets and provided an opportune forum for Indian stakeholders to input into the development of these markets and protocols.

II. BACKGROUND AND PREPARATIONS FOR THE ROUNDTABLE EVENT

Over the past few years, the LBG/GEP-CCS program has worked closely with industry associations and “champion” industries to create to foster dialogue and cooperation on widespread climate change/clean energy issues. These activities have catalyzed and will continue to build consensus and the political will for needed sectoral reform, and will lead to an integrated assessment and subsequent implementation of actions that reduce the rate of growth of greenhouse gas emissions (GHG). These forums have also catalyzed a number of industries to begin establishing standardized protocols and methodologies for measuring and monitoring GHG emission reductions.

A. *The First GEP-CCS Multi-Sector Roundtable Event*

Building upon the foundation of the earlier held roundtables and exchange activities, LBG/GEP-CCS designed a multi-sector roundtable entitled, *Embracing Climate Change: Using Market Based Mechanisms for Global Competitiveness*. The roundtable was designed to take industry members beyond GHG mitigation, to an understanding of how to harness the power of markets to address the challenges of tempering climate change and securing clean and reliable power. The roundtable was designed to explore cross-cutting industrial themes and perceived barriers to adopting GHG reduction technologies and/or practices and market access. Strategic Government of India (GOI) ministries, leading Indian financial institutions (FIs), and NGOs were invited along with industry to participate in this roundtable to ensure that the activity would go beyond a three-day discussion and toward sustained constructive engagement on climate change issues.

The roundtable was organized in association with the Confederation of Indian Industry’s Environmental Management Center and Environmental Defense. This strategic partnership brought together forward-thinking leading international experts to examine plausible sectoral and corporate strategies for the reduction of GHG emissions. The member companies of the *Partnership for Climate Action*, an innovative GHG reduction program of Environmental Defense, also participated during the roundtable event by creating a series of corporate best practices and ‘lessons learned’ from BP International and Entergy for the event. These case studies focused on the process of establishing corporate GHG targets and accessing market-based mechanisms.

B. *Objectives*

- To collectively address policy-oriented approaches, financial instruments and technological advances that build effective corporate GHG strategies
- To understand cross-cutting sectoral issues in building and accessing GHG market-based instruments

C. *Anticipated Outcomes*

- Support developed for establishing and enhancing corporate GHG strategies
- Industry provided with building blocks for devising sectoral analytical frameworks and problem-solving tools to address GHG mitigation and to leverage international market based mechanisms
- Cross-sectoral engagement fostered and linkages created to build India specific climate change strategies and consensus

D. Topical Areas and Themes Covered

- Corporate GHG Target-Setting – *International and India*
- Advanced GHG Management Systems
- Approaches for Leveraging International Market-Based Mechanisms
- Fundamentals of Emissions Measurement and Verification
- Models of Environmental Registry Systems
- Co-Benefits of GHG Corporate and Government Strategies
- Sectoral Based Opportunities to Reduce GHG Emissions
- Transparency and Fungibility in a growing GHG Market Place
- Multi-Pollutant Emissions Trading Scenarios and Intricacies

E. Roundtable Host and Key Contributing Organizations

Hosts Organizations

Greenhouse Gas Pollution Prevention Project - Climate Change Supplement (GEP-CCS)
The GEP-CCS Program is currently being implemented by The Louis Berger Group, Inc. (LBG) Global Environment Team and is a program of the United States Agency for International Development/India Mission (USAID/India). The program aims to build local capacity and create a forum to foster dialogue and cooperation on widespread clean energy issues between U.S. and Indian government, financial, private, and non-governmental stakeholders. These initiatives are designed to lead to an integrated assessment and subsequent implementation of actions that reduce the rate of growth of greenhouse gas emissions (GHG).

Confederation of Indian Industries - Environmental Management Center (CII-EMC)
The CII-EMC works toward promoting eco-efficient industrial operations and provides a wide range of environmental/energy services through an experienced team of well trained professionals. A primary focus of the CII-EMC is to build in-house capabilities in Indian industry to address environmental and energy issues effectively and pro-actively. EMC facilitates the utilization of national and international expertise through numerous seminars, workshops and training programs.

Environmental Defense (ED)
ED works on programs that improve global and regional air quality by reducing emissions of greenhouse gases and other pollutants. ED spearheads efforts to promote a sustainable energy future that reduces emissions, and enhances economic benefits, while protecting air and water quality. ED facilitates a multi-national company consortium that shares best practices and develops systematic guidelines for corporate GHG target-setting.

Key Contributing Organizations

Environmental Resources Trust, Ltd. (ERT)



Environmental Resource Trust (ERT) pioneers the use of market forces to protect and improve the global environment. ERT focuses exclusively on building markets that encourage private parties to serve their own best interests and the best interests of the environment. Working with private and public entities, ERT designed the *GHG RegistrySM* which records validated greenhouse gas emissions profiles to help create a market that will enable emissions reductions.

Indian Aluminum Company Ltd. (INDAL)



Indian Aluminum Company, Limited (INDAL), an Aditya Birla Group Company, has been a part of India's aluminum industry for over six decades. Incorporated in 1938, INDAL is a totally vertically integrated aluminum business. The Company's Hirakud Smelter-Power complex is the first in the aluminum sector in India to have attained ISO 14001 certification. INDAL has developed an extensive *8 Step Methodology* to identify, quantify, track and trade GHG emissions.

Tata Steel Corporation (TISCO)



Tata Steel strives to strengthen India's industrial base through the effective utilization of staff, materials and resources. Tata Steel employs advanced technology, promotes productivity, and seeks to ensure consistency with modern management practices. An innovative environmental management system approach has been operationalized with visible results in improved business performance and better environmental control of GHG emissions.

ITC Limited - Bhadrachalam Paperboards Division



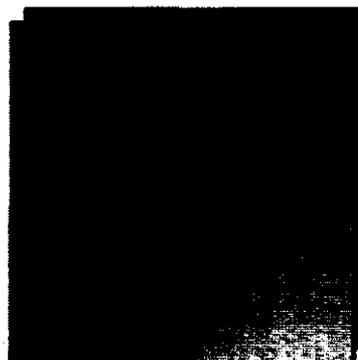
In a farsighted corporate effort to improve its competitiveness in terms of fiber availability while simultaneously enriching the environment, the ITC Ltd. Bhadrachalam Paperboards Division has launched a major social and farm forestry program with clonal eucalyptus plantations. Under this green initiative, it supplies three million saplings every year to farmers in Andhra Pradesh and obtains a part of its raw materials from these plantings. Large scale reforestation/tree-crop efforts have been employed on over 7,000 hectares of lands belonging to farming communities, providing both livelihood opportunities and environmental benefits. The company also disseminates its research know-how on best agricultural practices to farmers through free consultancy services.

F. Key Roundtable Invitees

The roundtable was designed to focus on those industry sectors that are considered energy intensive. The participating companies were drawn from CII's membership and included leading corporations with a progressive orientation. The companies participating came from the following sectors:

The roundtable provided a forum for a multi-stakeholder group to engage in dialogue designed to move the climate change discussion towards constructive engagement. Representatives from the Govt, financial institutions and the NGO community were therefore invited to participate in the event along with the CII corporate companies.

Please see Appendix B. for the list of confirmed roundtable participants.



III. FINAL PROCEEDINGS

The following final proceedings are from the *Embracing Global Climate Change: Using Market Based Mechanisms for Global Competitiveness* roundtable event held on September 27-28, 2002. The proceedings have been organized and structured to highlight the salient points of the respective presentations, speakers, and sessions. The final agenda can be found in Appendix A. and the key presentations can be found in Appendix E.

A. Day 1: Friday, September 27, 2002 - Presentations

Welcome Address

Mr. K.P. Nyati, Head, Environmental Management Division, Confederation of Indian Industry

The roundtable was opened with a *Welcome Address* from Mr. Nyati, Head-EMC, CII. Mr. Nyati called upon industry to focus on early action and to recognize the inherent opportunities in reducing GHG emissions and in improving energy efficiency. Mr. Nyati mentioned that the success of the June, 2002, study tour, organized by the LBG/GEP-CCS program, had laid the foundation for the roundtable event and so that the models examined during that visit could now be shared with a greater forum. Mr. Nyati challenged the participants to take advantage of the types of programs and tools introduced and to think creatively about how they could institutionalize them.

Opening Remarks

Ms. Suzanne Young, Chief of Party, LBG/GEP-CCS Project

Ms. Suzanne Young, as Chief of Party for the GEP-CCS Project, provided the opening remarks and welcomed the participation of the multi-industry sector audience, as well as the other participating stakeholders. Ms. Young also presented a brief background on GEP-CCS, a program of the USAID/India Mission. Since the umbrella program was launched in 1995, the core objective of the GEP has been to reduce CO₂ emissions. The program continues today and LBG is working in collaboration with the public and private sector toward developing policies and projects to reduce the growth rate of GHGs. The program also creates public-private partnerships and collaborates with bilateral, multilateral and private funders for CO₂ mitigation. Ms. Young encouraged everyone to examine the international models and identify which could be tailored to an Indian scenario.

Ms. Annie Petsonk, International Counsel, Environmental Defense

Ms. Petsonk provided a brief background of ED which is based in New York City, U.S. and specializes in the development of market-based mechanisms for environmental improvement. Ms. Petsonk framed the emerging challenges facing industry today including: operating in world where conditions are changing; an ever growing demand for electricity; responding to increased demands for water, far more prolonged droughts, weather related emergencies and flooding. Ms. Petsonk described an innovative partnership ED has formed with eight multi-national corporations (MNCs), the Partnership for Climate Action, which works toward developing alternative approaches to climate regulations. These MNCs, which are in a range of emission intensive sectors including energy, chemicals, oil, and gas production, have established global commitments to reduce emissions. Ms. Petsonk asked the participants to think about the question of: "How can your company use market based mechanisms and harvest a host of environmental benefits (better air, more efficient use of water, improved forestry)?"

Inaugural Address

Mr. John Smith-Sreen, Deputy Director, Office of Environment, Energy and Enterprise, USAID/India

In the inaugural address, Mr. Smith-Sreen stressed the vital importance to India, US, and the world, of the critical issues of vulnerability and adaptation to climate change. Mr. Smith Sreen went on to explain that the 100,000 MW losses have and will continue to lead to higher contribution to greenhouse gases and the warming of our planet. In collaboration with partners, USAID programs have led to 9.5 million tons of CO2 emissions avoided in India, resulting from its ongoing work with Indian industry in the active promotion of ISO 14000, the new electric car now driving on Delhi streets, DSM, power sector reform, and energy conservation among other initiatives. Mr. Smith-Sreen also cautioned that there continues to be a long road ahead. Mr. Smith-Sreen said that there is a need to identify industry "risk takers" who will be "first adopter" leaders to lead the pack. The economic development and environmental protection that is cherished should be intertwined in together into one solid intervention. He further mentioned that private sector champions will drive development and the "know-how" to take advantage of new technologies and carbon funds that will mature over time. Mr. Smith-Sreen stated that it was great to see the wide-spread private sector representation attending the event and hoped that each would learn from one another.

Building Blocks for GHG Market-Based Mechanisms-International Experience

Ms. Annie Petsonk, International Counsel, Environmental Defense

Ms. Petsonk emphasized that people will be seeking quality in market-based mechanism investments. The international community is moving toward quantifying the real "green value" for investments and this is driving the need to examine the fundamental building blocks. Ms. Petsonk provided a brief background of the science and economics of greenhouse gas emissions and explained how they are building up in the atmosphere. She explained that the GHG emissions can reside in the atmosphere from decades to centuries and provided a greater understanding of why developing a framework for early action is critical. Ms. Petsonk discussed the details of the new approaches which move beyond the standard command and control philosophy to tap environmental ingenuity and create incentives for compliance.

These approaches:

- Set environmental performance targets – usually total emissions,
- Stimulate competition to achieve targets better (i.e.: rewarding new ideas that are competitive, including over-compliance)
- Reward new ideas that achieve results cost-effectively (i.e.: people can make money with new initiatives.)
- Encourage compliance and going beyond mere compliance.

Ms. Petsonk stressed the importance of establishing clear environmental goals and accountability, and using actual emissions targets that give firms flexibility to compete to achieve environmental goals better, cheaper, faster. This approach has been a proven international driver for cost reductions. The key is to give public access to environmental performance and reward companies that have achieved progress. Ms. Petsonk discussed how, by capturing the marginal costs of control for environmental improvement, a fungible environmental commodity (like water or energy), can provide great incentives for environmental markets. *“If life gives you lemons, make lemonade”* she added.

A model was shown from the ED’s US SO₂ emissions dioxide trading program. This program, designed to address cross-border “Acid Rain” problems, targeted the problem of high sulfur coal in US and has resulted in companies achieving 100% compliance every year of the program’s operation. The program now requires the least number of EPA enforcement staff and frees up EPA’s resources for other activities. She explained that a tough cap can provide flexibility and allow for the banking or selling of excess allowances.

Moving toward GHG emissions, Ms. Petsonk felt that this emerging market will indeed be a competitive market and will include certified emissions reductions and/or a host of other programs being implemented voluntarily. The keys to a successful, systematic GHG trading market will be:

Ms. Petsonk explained that as a systematic process for entry into an uncertain GHG trading world would be required, ED developed the Partnership for Climate Action (PCA). The member companies that have joined this voluntary initiative are taking the following steps: 1. identifying sources and sectors that will be capped (boundary issues); 2. defining environmentally needed goals (what is dangerous and what is needed); defining emissions allowances, allocating allowances to emitters; 3. measuring and monitoring, (directly from smokestack or indirect, dependent on company specific practices and fuels; auditing by accredited third parties; data reported in registries); 4. deciding on potential registry functions (e.g. one issue is allowance certificates to ensure that emissions are not sold twice); 5. holding business units accountable (reporting on an annual or quarterly basis, exploring bonuses based on meeting targets); 6. addressing fungibility issues to ensure that a ton of total emissions reductions, reduced from a baseline, is fully equivalent to another ton of total emissions reductions, reduced from a baseline. Ms. Petsonk provided a series of international experiences drawn from the ECCP – UK CO₂ program that is up and running and coming to market up no later than 2005, and the Canada, US – SO₂ trading which is meeting in October to establish rules of trading.

Building Blocks for GHG Market-Based Mechanisms-India Experience

- Ms. Suzanne Young, Chief of Party, LBG/GEP-CCS Project

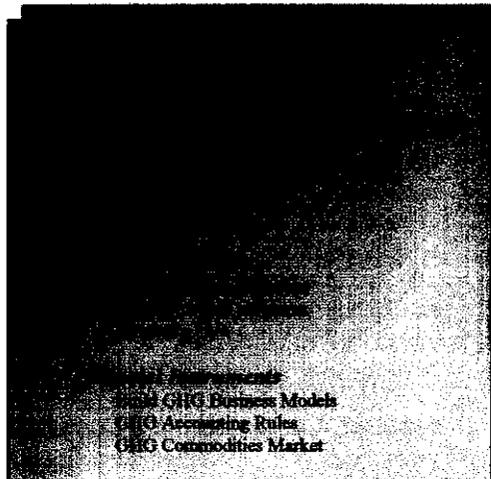
- Mr. Vinay Deodhar, Project Finance Specialist, LBG/GEP-CCS Project

- Mr. S.V. Jamble, General Manager, Resource Conservation & Environment Management, Indian Aluminum Co.

Ms. Young began with a brief overview of the GEP-CCS program, reiterating that the prime focus of the program is to work toward the basic goal of reducing the growth rate of GHGs in industry and urban areas. The GEP-CCS Industry experience has entailed active industry coordination with central and state governments to create public-partnerships solutions on energy related issues, demonstrating emerging market mechanisms, and assisting industry and financial institutions to explore GHG mitigation opportunities.

Ms. Young explained that a driving force for creating a conducive environment for market-based mechanisms in India lies with the creation of the landmark Energy Conservation Act, the subsequent establishment of the Bureau of Energy Efficiency and future energy labeling programs. The need for an effective institutional framework is an imperative and the new BEE could direct progress on this path.

Ms. Young stated that the new MoP/BEE regime could create a potential repository for energy supply and emissions tracking information that would lead to developing a more comprehensive emissions inventory. Such an inventory could provide an illustrative emissions profile for industry and for the country. Ms. Young also presented a model where a "Champion" industry member or a leader industry association, like a CII, could also serve as training, information and central clearinghouse on environment and energy information. Ms. Young stressed that early action will be a key component to competitive success and will position Indian companies to leverage emerging opportunities at the onset. The success of ISO 14000 certification was used as an example to show how going through the process (of preparing for certification) has led to corporate productivity/efficiency improvements and increased profitability, and that these same results could be expected when companies examine their own operations for energy efficiency and GHG emission reduction opportunities.



Mr. Vinay Deodhar the Project Finance Specialist for the LBG/GEP-CCS Project discussed the market solutions for the promotion of GHG mitigation. Mr. Deodhar outlined the prerequisites for successful market interventions. He demonstrated that market oriented strategies in the energy field should reflect the true cost of supply and mitigation. The removal of subsidies and cross subsidies coupled with the differentiating tariff for peak and off peak consumption will ensure a more conducive and robust marketplace. Mr. Deodhar felt that a more conducive environment was building in India through the adoption of the necessary financial instruments to encourage GHG project development. He discussed how through GEP-CCS project assistance, the Indian FIs have become actively involved in examining clean technology projects and how the FIs increased understanding complements the risk analysis processes in favor of project developers.

An important component of the Indian scenario session was the case study presented by Mr. S.V. Jamble of the Indian Aluminum Corporation that focused on the reduction of GHGs from INDAL's Aluminum operations. Mr. Jamble stated that although, under Annex B, there are no required caps for Indian companies on emissions, INDAL has been reducing emissions for over 5 years.

INDAL is one of the oldest (and greenest) companies producing aluminum in India. Having a credible data history for the old technology enabled INDAL to come up with a realistic baseline evaluation. These circumstances created an optimal setting for reducing GHGs on 3-40 year old technologies.

Mr. Jambic explained that INDAL has thrived being a vertically integrated company, and that this same vertical integration gives INDAL an institutional motivation for developing GHG reduction programs. INDAL has designed a systematic process/methodology for tracking their GHG emissions that includes:

- Identifying activities, products
- Quantifying GWP
- Setting targets for improvement
- Evolving technology and management options
- Incorporating (GHGs) into the business plan
- Integrating efforts with their existing ISO EMS methodology

Their current GHG tracking system has been designed for the various operating units using a UK based software. The outcome of the INDAL efforts has been quantified at 200,000 tons over the last 5 years and has resulted in the reduction of GHG emissions from several operational entities. INDAL has found that just adopting a policy of recycling aluminum scraps has reduced energy consumption considerably. INDAL's future plans include a Board Management set target to reduce over one million tons of GHG emissions during next the 5 years.

Corporate GHG Target Setting : A Case Study Analysis of BP and Entergy
Ms. Annie Petsonk, International Counsel, Environmental Defense

Ms. Petsonk provided an introduction to the case study examples from the Partnership for Climate Action members, BP and Entergy, that were showcased during this session. In her presentation, she addressed the much-asked question: "*Why do companies not automatically look for savings?*". Ms. Petsonk explained that this is due to a number of factors including the lack of information and the perception of high initial capital costs for "environmental" improvements. She also stressed that many companies that have profited from environmental initiatives have challenged incentive within their line engineers and inspired staff at all levels to come up with ideas. Sometimes the local driver for a company or a division of a larger multinational company to undertake energy efficiency programs has been an increase in the cost of energy. The session highlighted that the crucial components of the energy efficiency programs by BP and Entergy evolved around: energy measurement and accounting; operational optimization and maintenance of equipment; and energy investments in projects that were designed to lower energy usage.



The BP case study was shown by means of an exclusive video that illustrated live examples of BP's interventions on fuel efficiency, subsequent return from vehicles firing, getting alignment between the two shareholders. Overall, the case studies provided a corporate perspective of the benefit of reducing emissions = additional revenues, increased community participation, bottomline efficiencies. Below, is an illustrative list of the International BP case studies showcased during the roundtable event:

- **Case Study 1: Stopping Reagent Loss at Hull Chemicals, UK**
At Hull chemical works changing compressor seals saved 15,000 tonnes of CO2 equivalent per year and increased production of acetic acid by 20,000 tonnes.
- **Case Study 2: Energy Efficiency in Canada Gas**
Canada Gas engineers evolved many new techniques to make their large reciprocating engines more efficient, reducing CO2 emissions by 27% saving over \$1 million per year in fuel costs.
- **Case Study 3: Reducing Flare in the Gulf of Suez, Egypt**
Shareholder alignment and collaboration was critical in helping deliver improved environmental performance in GUPCO with flaring reductions of 40 million cubic feet of gas per day, air emissions reductions of 35% and enhanced revenue from additional gas production.
- **Case Study 4: Gas Control Valve Replacement in Western Gas, New Mexico, USA**
By changing a simple controller valve on the 4,000 wells in the Business Unit, Western Gas are reducing emissions by 500,000 tonnes of CO2 equivalent per year and sending 1.8 million cubic feet more gas to the market every day.
- **Case Study 5: Energy Awareness at Texas City, USA**
Applying a holistic approach to energy management, Texas City has made gains in efficiency equating to a reduction in CO2 of 250,000 tonnes per year plus a \$2 million energy saving per year.

The second case study presented focused on Entergy, the sixth-largest electric utility in the U.S. Dating back to 1998, the Entergy senior management recognized the issue of climate change as a high priority and decided that it should be a focus in the corporations operations. In November 2000, upon extensive analysis and review by an internal task force, a formal recommendation containing the new Entergy environmental strategy and action plan was presented to the CEO for approval and was subsequently accepted. The plan included:

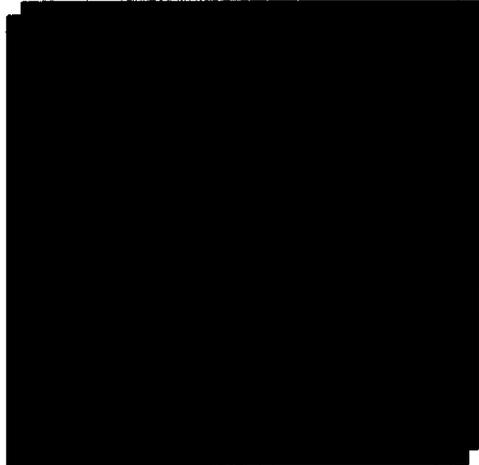
- **Proposed CO2 Emission Target:** *Stabilizing CO2 emissions at year levels 200 through 2004 with future targets considered in 2004.*
- **Oversight Executive Management Committee:** *Executive Environmental Forum would include senior managers representing all areas of operations that would guide and oversee environmental initiatives and target achievements.*
- **New Corporate Fund:** *US\$25 million in corporate funding was dedicated for internal emission reduction projects and external offset projects.*
- **Cooperative Relationships:** *Relationships were formed with Environmental Defense and the Partnership for Climate Action to achieve goals and share practices with like minded organizations.*

The Entergy progress to date has resulted in 38 internal GHG emission reduction projects.

Devising a Corporate GHG Strategy in India

Mr. R.P. Sharma, Head, Environmental Management, Tata Steel

Mr. R.P Sharma, the Head of the Environmental Management Division of Tata Steel, revealed that as early as 1990, Tata was developing a corporate strategy for GHGs. Mr. Sharma said that Tata understands and knows what benefits that these types of measures can bring to their industry and furthermore, Tata considers reducing GHGs a "real" business opportunity. Tata is concerned that the rate of GHG emissions continues to grow at an unprecedented pace. Mr. Sharma said that Indian corporates recognize the need for energy efficiency, yet, continue to lack solid initiatives. This gap between realization and action, he feels, has been driven by a legacy of traditional technologies which are inefficient but familiar, and that for some, the introduction of new, more advanced energy efficient technologies makes Indian business less confident about their ability to compete in the marketplace. He felt that the creation of the BEE and other Government initiatives could perhaps serve to instill a greater confidence level in India (for investing in energy efficient technologies). Mr. Sharma explained that Tata Steel is currently involved in corporate accounting and reporting standards, which reflect the guidelines developed by the World Resources Institute (WRI). The standards have institutionalized Tata's work toward defining objectives and goals (boundaries) and inventorization of GHGs. The Guiding Principles that Tata Steel have followed are included in the above inset:



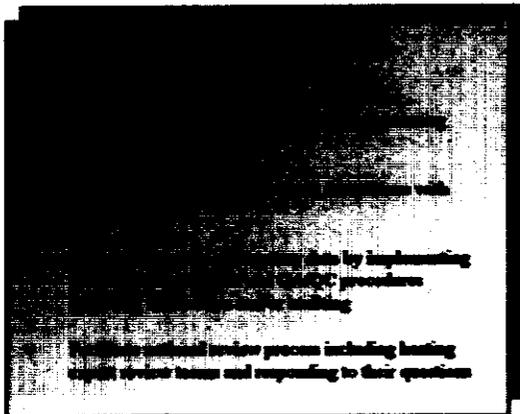
Mr. Sharma noted that many challenges lie ahead as the continuing international climate change negotiations and the Kyoto Protocol mature. He also noted that the outcome of these many discussions will better define the appropriate reporting boundaries, the scope of the inventories and qualify what emissions will be considered for trading. Mr. Sharma called upon the new MOP/BEE to fix the transmission and distribution losses and to work with industry in addressing this question Q: "Should we investing money, to improve our performance?" A: "Yes, Investing in energy efficiency equipment, will improve your competitiveness."

Mr. Sharma concluded his presentation with the mission statement of his division "Less raw material, less energy used, more profit, and better environment."

Environmental Registry Systems: Defining a Roadmap for India

Mr. Wiley Barbour, Director of Registry and Verification, Environmental Resources Trust

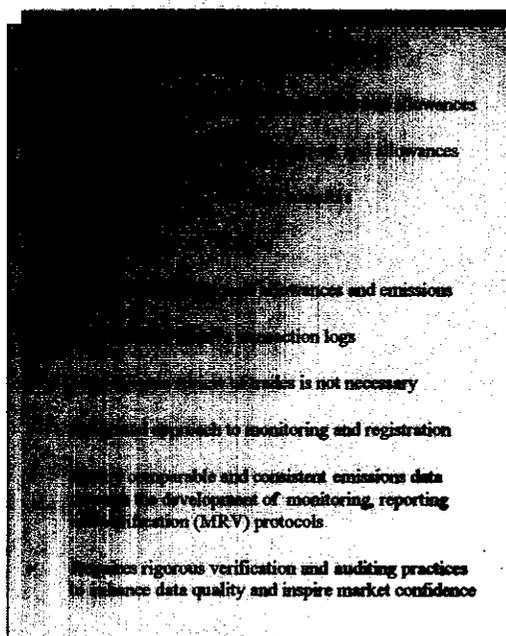
Mr. Wiley Barbour, the Director of Registry and Verification of Environmental Resources Trust, presented a session on the emerging GHG Registry systems. In his view, registry systems have become the "golden coin" for industry as they enable a smooth transition to a capped emission market and work toward developing a GHG emission "currency." Mr. Barbour outlined the distinction and highlighted the salient characteristics of a GHG inventory vs. registry system.



An emission inventory is an accounting of the amount air pollutants discharged into the atmosphere. Such inventories will typically include:

- Chemical or physical identity of the pollutants
- Geographic area covered
- Facilities and processes covered
- Time period over which emissions are estimated (periodicity)
- Types of activities that cause emissions

The information that is collected in an inventory model can be used by research and international inventory community representatives to develop trading registries and in assigning the amount tracked. The government can use inventory information in the design of new policy instruments and programs, as well as for international negotiations, climate and economic modeling. Lastly, corporate, state and other inventories can complement national systems and provide similar benefits to what the inventories sited in federal agencies provide.



Mr. Barbour explained the basics of GHG Registry systems. A well-designed registry program ensures measurable, verifiable, and comparable environmental results. Registries can apply to several types of environmental commodities based on design, however, currently, air emission registries are the most common. Mr. Barbour stated that registries have and will continue to encourage early, voluntary action to manage emissions and that these systems will continue to enable a smooth transition to a “capped emissions trading program. Market-oriented registry systems set the foundation for establishing clear, transparent measurement, verification and reporting standards. A registry system can also reduce transaction costs and establish a clear record of ownership. Mr. Barbour provided several U.S. domestic GHG registry case studies that represent an array of protocol and reporting procedures. These cases included:

- US Acid Rain Trading Program and Allowance Tracking System (ATS)
- US DOE 1605(b) GHG Registry
- California Climate Action Registry
- ERT’s GHG Registry System

Co-Benefits Analysis of Comprehensive GHG Strategies

Ms. Alina Averchenkova, Climate Change Associate, Environmental Defense

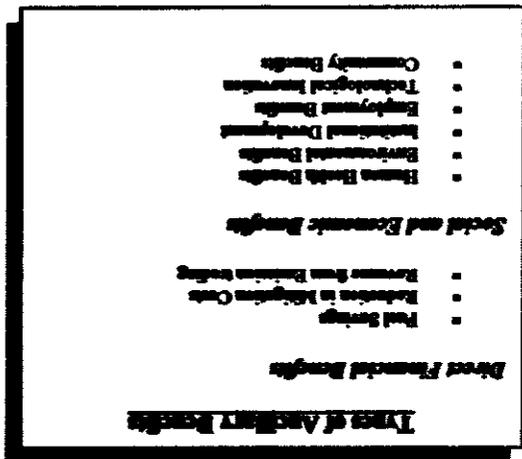
Ms. Alina Averchenkova, Climate Change Associate, Environmental Defense presented on an important but often ignored subject, the co-benefits attendant in the implementation of GHG reduction strategies. Ms. Averchenkova addressed a question that multiple stakeholders around the world continue to focus on “How do we combine local economic and social development goals with global environment goals. Current climate policies aim at the reduction of global GHG concentrations in the atmosphere. The primary benefits of such policies relate to the slowing of global warming, however they can also include ancillary or secondary benefits with most ancillary benefits being felt at local levels.

Ms. Avertchenkova explained that the "ancillary" benefits are the side benefits of policies that are exclusively designed to mitigate climate change, while "collateral" benefits refer to the non-climate benefits of GHG policies that are explicitly incorporated into the initial policy benefits. The drivers for ancillary benefits are the potential abatement of CO₂ emissions and other potent GHG emissions. The reduction of emissions can lead to the reduction of health and mortality rates and increase productivity.

The ancillary benefits relate to the direct financial as well as the social and economic development benefits. In developing and transitional economies, the direct financial, social and economic benefits constitute 90% of the ancillary benefits.

The quantification of these benefits is undertaken by evaluating the monetary and non-monetary measures. The choice of the analytical instruments depends on the geographical level of analysis, the nature of the questions being asked/the purposes of the study, and the availability of data.

Ms. Avertchenkova stated that identifying and quantifying the ancillary benefits of a project will allow developers, sponsors and other stakeholders a "true" understanding of the potential contributions of a greenhouse gas mitigation project to the local area. These additional factors, by moving beyond regulatory "compliance" towards meeting social accountability goals, can improve the attractiveness of a project to investors, governments, donor agencies and communities.



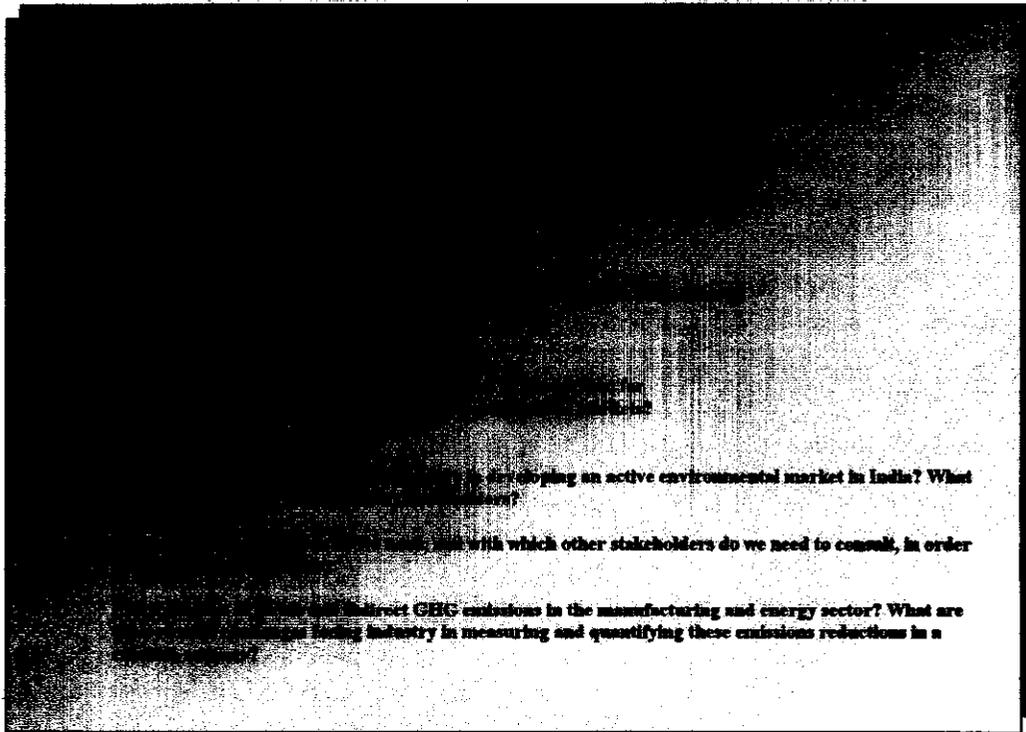
B Day 2: Saturday, September 28, 2002 - Presentations

Establishing GHG Market-Based Frameworks: Break-Out Groups and Presentations

The break-out group exercise was designed to focus on collectively deriving GHG frameworks that will address key policy, financial, and technological interventions required to develop greenhouse gas strategies. The exercise was structured by dividing the entire roundtable audience into teams of 6-7 individuals. These mixed stakeholder teams had individuals representing industry, financial institutions, government and NGOs.

The groups were asked to work through a series of questions that addressed the key parameters of leveraging market-based mechanisms. Over a one and a half hour timeframe, the groups considered the questions posed and engaged in animated discussions to identify the appropriate measures and conductive parameters that would be relevant for India.

The breakout session questions included the following:



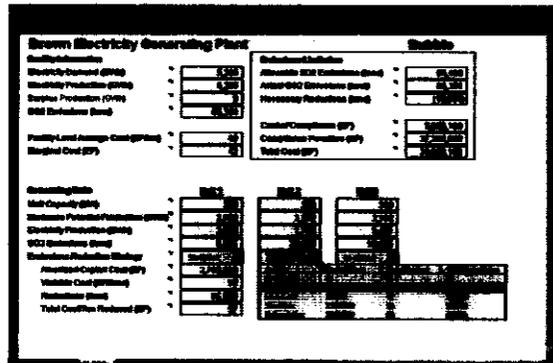
Upon the conclusion of the breakout group meetings, each group leader presented the findings and recommendations of the group. The full breakout group session presentations can be found in the Appendix C. of the report.



Interactive Group Exercise: A GHG Emissions Market Trading Simulation

The interactive group exercise was designed to lead the roundtable audience through an emissions trading simulation. The software used for this exercise was designed and provided by the U.S. Environmental Protection Agency. The purpose of the emissions trading simulation was to demonstrate how emissions trading can reduce the costs of achieving an environmental goal.

For the simulation, the roundtable audience was divided into 6 groups, averaging 6-9 people per team. Each team of participants was assigned to a specific electric generating plant in the fictitious country of *Ecoland*. In the case study, the government of *Ecoland*, facing severe environmental and public health problems, has set a goal of reducing emissions of sulfur dioxide (SO₂) from



power generation by approximately 60% during the next year. To make it less costly for companies to comply with the regulation, each electric generating plant can decide the most appropriate strategy for their facilities, including fuels, controls, and loading (i.e., how to distribute the electric production among the units). The simulation has two distinct scenarios:

- **First Scenario: Bubble** - Each team has a facility-wide emissions limit. If the team's facility-wide emissions are equal to or less than the emissions limit, the team is in compliance. The team is free to reduce emissions anyway possible. This scenario assisted teams to look at ways to maximize their energy efficiency and produce the best bottom line results for their company while meeting the energy supply demand of their customers as well as their emissions cap targets.
- **Second Scenario: Cap and Trade** - Each team has a facility-wide emissions limit, but they can add to or subtract from that limit by buying or selling allowances from/to other teams in addition to employing various energy efficiency strategies.

For both scenarios each facility must meet at least two requirements in addition to maintaining a healthy bottom-line. They must i) meet customers' demand for electricity by producing sufficient electricity; ii) possess at least one allowance for each ton of SO₂ emissions during the period.

The exercise was met with great enthusiasm from all the groups. The first scenario, during the bubble portion, proved fruitful for the various teams in exploring the different ways to reduce or eliminate emission reductions and remain profitable. Many teams chose to reduce energy consumption by installing new technological equipment.

Under the second scenario, with trading allowed, teams reviewed their company's GHG strategies, and then decided whether it was more sound to be a seller or buyer of emissions, then enthusiastically engaged in a frenzied trading session. The top \$ price per ton averaged around US\$1,000.00, however sellers insisted it was met by the demand from the market place.

The exercise proved to be a valuable experience in strategy formulation and decision making and ultimately allowed participants to put the theory of emissions trading into practice.

Vote of Thanks and Presentation of Certificates

Mr. K.P. Nyati, Head, Environmental Management Division, Confederation of Indian Industry

Mr. Nyati thanked all of the participants for their active involvement and attendance over the two-day event. He further mentioned that he was encouraged and excited to see how the June U.S. Study Tour visit organized by LBG/GEP-CCS with a handful of industry leaders, led to a roundtable event attended by over 150 participants over the two days. Mr. Nyati made it clear that it was necessary for industry to "take charge" and be the catalyst for moving government down a balanced path of growth and clean, sustainable industrial processes. Mr. Nyati added that CII will begin to take measures to identify how a suitable GHG Registry could be developed in India.

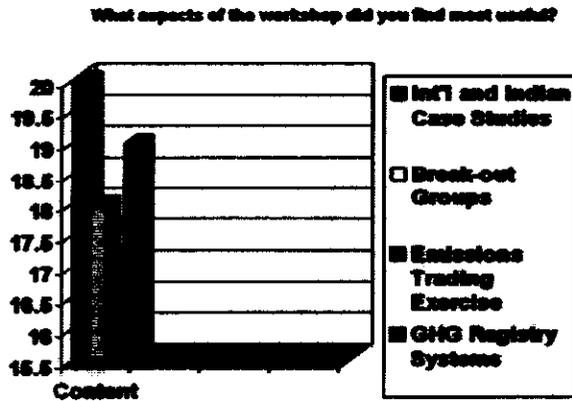
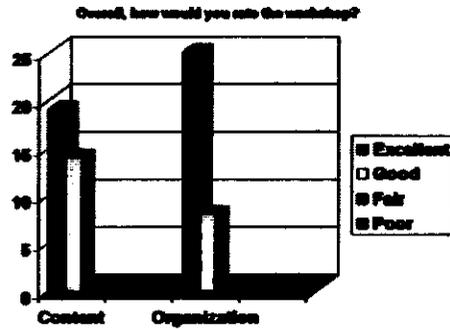
Ms. Suzanne Young, Chief of Party, LBG/GEP-CCS Project

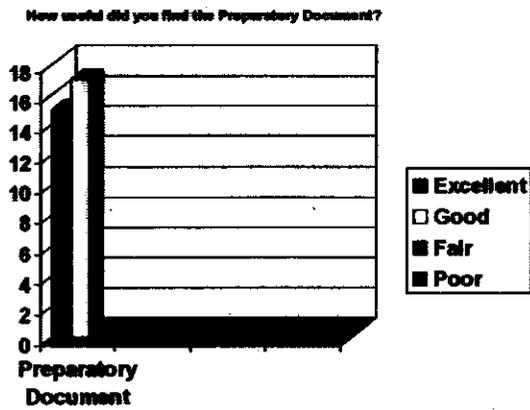
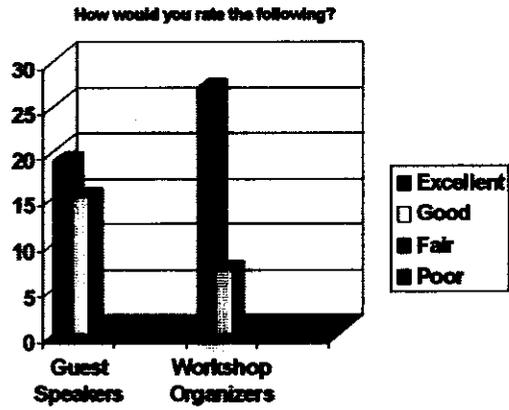
Ms. Young felt that the groundwork had now been set and it was up to the "champions" to take systematic steps in charting a course for reducing GHGs. Ms. Young thanked the sponsors and co-sponsors of the roundtable: US-AID, CII, ED and the key contributions made by ERT, INDAL, Tata Steel and ITC. She went on to mention that LBG/GEP-CCS will consider the attendees to be the "champions" for breaking down the barriers in the multi-stakeholder community and that they should continue to work toward defining the interventions suitable for India.

All of the participants were awarded an official "*Certificate of Achievement*" for their attendance and contributions over the two day roundtable event. The personalized certificates were signed by USAID/India, LBG/GEP-CCS, ED and CII.

IV. SUMMARY OF ROUNDTABLE RESULTS

The following are the results of the evaluation forms completed and received by the roundtable participants. The evaluation forms focus on the participant's opinion of the roundtable content, speakers, organizers and other recommendations. The original evaluation forms are available upon request.





APPENDIX A.

Agenda



**EMBRACING GLOBAL CLIMATE CHANGE:
USING MARKET-BASED MECHANISMS
FOR GLOBAL COMPETITIVENESS**

Organized by:

Greenhouse Gas Pollution Prevention Project – Climate Change Supplement
Implemented by The Louis Berger Group, Inc.
under the auspices of USAID/India

Environmental Defense

Confederation of Indian Industry

September 27-28, 2002
The Taj Mahal Hotel, New Delhi

Friday, September 27, 2002

- 08:30-09:30 Hrs. **Registration**
- 09:30-09:40 Hrs. **Welcome**
- Mr. K.P. Nyati, Head, Environmental Management Division,
 Confederation of Indian Industry
- 09:40-10:00 Hrs. **Opening Remarks**
- Ms. Suzanne Young, Chief of Party, LBG/GEP-CCS Project
- Ms. Annie Peterson, International Counsel, Environmental Defense
- 10:00-10:15 Hrs. **Inaugural Address**
- Mr. John Smith Sreen, Deputy Director, Office of Environment, Energy and
 Enterprise, USAID/India
- 10:15-10:45 Hrs. **Tea/Coffee Break**
- 10:45-11:30 Hrs. **Building Blocks for GHG Market-Based Mechanisms-
 International Experience**
- Ms. Annie Peterson, International Counsel, Environmental Defense
- 11:30-12:15 Hrs. **Building Blocks for GHG Market-Based Mechanisms-
 India Experience**
- Ms. Suzanne Young, Chief of Party, LBG/GEP-CCS Project
- Mr. Vinay Deodhar, Project Finance Specialist, LBG/GEP-CCS Project
- Mr. S.V. Jamble, General Manager, Resource Conservation & Environment
 Management, Indian Aluminum Co. Ltd.

These Building Block sessions will provide an overview of the fundamental and minimum elements for leveraging market-based mechanisms and how this has led to sectoral innovation. Fungibility and a background on the evolution of the SOx Cap and Trade market will be presented. Domestically, due to progressive Indian industry leaders, industry is well-positioned to leverage emerging international market-based mechanisms.

12:15-13:30 Hrs.

Lunch

13:30-15:00 Hrs.

Corporate GHG Target Setting : A Case Study Analysis of BP and Entergy
- Ms. Annie Peterson, International Council, Environmental Defense

Industry representative's first challenge is to define how they can move from a GHG voluntary commitment to actual practice (inventory, tracking), to then participating in a registry system or emissions market. Cases studies will be showcased from **BP and Entergy** that will illustrate the "roadmap" undertaken and the lessons learned in devising corporate GHG management systems.

15:00-15:30 Hrs.

Devising a Corporate GHG Strategy in India
- Mr. R.P. Sharma, Head, Environmental Management, Tata Steel

This session will focus on the domestic case study of Tata Steel and will examine the process they have undertaken in monitoring their GHG emission intensity. Valuable lessons learned will be shared on how this process was designed and developed.

15:30-16:00 Hrs.

Tea/Coffee Break

16:00-17:00 Hrs.

Environmental Registry Systems: Defining a Roadmap for India
- Mr. Wiley Barbour, Director of Registry and Verification,
Environmental Resources Trust

This session will examine those international and national environmental registry systems that have emerged in recent years. These registries can provide industry participants a systematic process to track and record direct emissions. A registry system is seen as the first step toward formally entering an emissions market while simultaneously developing the standards and practices for measuring and recording emissions.

17:00-17:30 Hrs.

Co-Benefits Analysis of Comprehensive GHG Strategies
- Ms. Alina Averchenkova, Climate Change Associate,
Environmental Defense

The benefits of reducing GHG emissions and devising corporate strategies go far beyond economic drivers. These strategies can serve as the cornerstone to providing social, health and community benefits.

17:30-18:00 Hrs. **Panel Discussion: Taking GHG Mitigation Measures to the Next Level**
Facilitator: Mr. Subrata Mazumder, South and Central Asia Director,
LBG/GET

Saturday, September 28, 2002

09:00-09:30 Hrs. Registration

09:30-10:00 Hrs. **Forest Sector Mitigation Projects: Carbon Benefits of Industrial Plantations**
Dr. H.D, Kulkarni, Chief Scientist, ITC Ltd., Bhadrachalam Paperboards

This session will provide an overview of the activities within the pulp/paperboards industry across the world and discuss how they balance growth, demand and supply. Dr. Kulkarni will introduce the ITC Initiative for Carbon Credits through Clonal Farm Forestry.

Recap of Day #1 Sessions and Discussions

Facilitator: Mr. Subrata Mazumder, South and Central Asia Director,
LBG/GET

10:00-11:30 Hrs. **Establishing a Sectoral GHG Market Based Framework: Break-Out Groups**

The break-out groups will focus on collectively devising GHG frameworks that will address those key policy, financial, and technological interventions required to actively develop GHG strategies. The groups will be asked to briefly present the findings of their break-out sessions. These inputs will be used to inform the afternoon panel discussion on identifying common and cross-cutting industrial GHG themes.

11:30-13:00 Hrs. **Group Presentations on Break-Out Session Discussions**

Facilitators:

- Ms. Annie Petsonk, International Counsel, Environmental Defense
- Ms. Suzanne Young, Chief of Party, LBG/GEP-CCS Project

13:00-14:00 Hrs. Lunch

14:00-16:30 Hrs. **Interactive Group Exercise: A GHG Emissions Market Trading Simulation**

Facilitator:

- Ms. Annie Petsonk, International Counsel, Environmental Defense
- Ms. Alina Averchenkova, Climate Change Associate, Environmental Defense

The audience will be led through an interactive exercise that will simulate an emission markets scenario. The participants will be provided sample project information and transaction term sheets to then interact with roundtable participants on creating transactions, alliances to bundle projects and broker deals. All transactions will be displayed using specialized software and will be shown on illuminated screens.

- 16:30-17:00 Hrs. **Sharing of Experiences and Lessons Learned: *Identifying Cross-Cutting Industrial GHG Themes***
Facilitator:
- Ms. Annie Petsonk, International Council, Environmental Defense
- Ms. Suzanne Young, Chief of Party, LBG/GEP-CCS Project
- 17:00-17:30 Hrs. **Vote of Thanks and Presentation of Certificates**
- Mr. K.P. Nyati, Head, Environmental Management Division,
 Confederation of Indian Industry
- Ms. Annie Petsonk, International Council, Environmental Defense
- Ms. Suzanne Young, Chief of Party, LBG/GEP-CCS Project
- 17:30-17:40 Hrs. **Closing Words**
Mr. K.P. Nyati, Head, Environmental Management Division,
Confederation of Indian Industry

APPENDIX B.

List of Confirmed Participants

List of Confirmed Roundtable Participants

1	A K Gupta	Asst Engineer (chemical)	Hindustan Insecticides Ltd
2	A Mohan Reddy	Director	Zenith Corporate Service
3	A.K Pamecha	Chief Manager (Env & Safety)	J.K Industries Ltd
4	Ajay Agarwal	Env. Engineer	Central Pollution Control Board
5	Ajay Raghava	AEE	CPCB
6	Amitava Banerjee	Dy General Manager (Technology)	Lurgi India Company Ltd
7	Arun Dey	Director	CII
8	Bharti Solanky	Assistant Vice President- EM&SD	Infrastructure Development Finance Company
9	David Kennedy		American Embassy
10	Dharam Pal	Director	Central Electricity Authority
11	Dr Aditi Halder	Sr Env Scientist	Development Alternatives
12	Dr B Sengupta	Member secretary	CPCB
13	Dr K C Khandelwal	Advisor	MNES
14	Dr Ravendra singh	Director-Env Statistics	Central Statistical Organisation
15	Dr Sarkar	Chief Manager	GAIL
16	Dr V M Shastri	Sr Dy Director-EMD	SAIL
17	Dr. A. MITRA	Director & Scientist F	Dept of Science & Technology
18	Dr. Anil Singh	Scientist	Central Road Research Institute
19	Dr. H D Kulkarni	Dy. GM	ITC
20	Dr. J K Rawat	Director	FSI
21	Dr. Rita Kumar	Sr. Scientists	CSIR
22	Dr.(Mrs) K K Saxena	Sr. Scientists	CPCB
23	Dr.M Sengupta		MOEF
24	Dr.S.V Reddy	Jt. Director	MOEF
25	E B V Kumar	Project Director	KLEI
26	Emani Ashok	Specialist- Environment	IDFC
27	G D Agrawal	Director (technical)	Indraprastha Power Generation Co
28	H P Singh	GM (Safety & Env protection)	IOCL-Refineries
29	J B Sodani	Exe. Director	MANTEC
30	K M Gupta	Advisor	M/s ACC Ltd.
31	K M Khan	M.P	Globe India
32	K.K.NARANG	Economic Advisor	MOEF
33	Kalpada Chatterjee	Head	Development Alternatives
34	Lor Danda	Sci. Office	American Embassy
35	M L Gupta	MD	Eternit Everest Ltd (an ACC group Company)
36	M V S Manian	Economic Advisor	J K Industries Ltd.
37	M.N.Murthy	Professor	I & G, New Delhi
38	Malma	Educationist	Bahai Temple
39	Mr A Agrawal	Dept Manager	GAIL
40	Mr J S Kamyotra	Senior Env Engineer	CPCB
41	Mr K M Gupta	Advisor-Liaison	ACC Ltd
42	Mr Satyaji Singh	Dy Secretary	FIMI
43	N Khan		
44	N.C Gupta	GM Operations	JK Paper Ltd.
45	N.K.Valecha	Vice President (HSE&F)	Reliance Industries Ltd.,
46	Nidhi Pasi	Research Assistant	Liberty Institute
47	P K Tyagi	Sr. Exe	JBM Auto Components Ltd
48	Prashant Vikram Singh	Senior Manager	PricewaterhouseCoopers (P) Ltd
49	Pratal Gupta	Research Associate	TERI
50	Pravin Gupta	Dep. Director	Central Electricity Authority
51	Priya Ghose	Science	U.S Embassy
52	Prof. A K Bhattacharya	Professor	SES, JNU.
53	R Balasubramanian		ICMA
54	R N Jindal	Sr. Env. Engineer	CPCB

Round Table on Embracing Global Climate Change September 27-28, 2002

List of Confirmed Roundtable Participants

55	R P Sharma	Head	TATA Steel
56	R. Narayn Moorthy	Secretary General	Indian Paper Manufacturers Association
57	R.K Gupta		Mother Dairy
58	R.N Jambal	SEE	CPCB
59	Rahul Dua	General Manager	SENES
60	Raja Bhattacharya	Info. Splst.	American Embassy
61	Rajesh Kumar	AGM (HR-TAX & HSE)	BHEL
62	Rajneesh Sareen	Project Associate	ICLEI
63	Raman Katyal	Manager - HSE	Honeywell Intl. India
64	Ramesh C Barar	MD	Nuchem Ltd
65	Ramesh Kukreja	Dy. Manager	NTPC
66	Ravi	Secy. AIPIA	AIPIA
67	Ravindra Kumar	Executive	JBM Auto Components Ltd
68	Rohit patra	Executive-QA	JBM Auto Components Ltd
69	S C Gandhi	Addl GM	Engineering Projects
70	S K Bezbaroa	Manager	ITC
71	S V Jambie	GM	INDAL
72	S.Balaji	Sr. Manager/ HSE	BHEL
73	S.C Sharma	Addl General Manager	Bharat Electronics Ltd.
74	S.K Thakar	Director	Central Electricity Authority
75	Saba Khan	Executive Officer	SIAM
76	Sanjay Mishra	Trade Advisor	Canadian High Comm.
77	Santosh Shidhaye	Asst. VP	Ecosmart Inida Ltd/ IL&FS
78	Sarju Singh	Director (Technical)	Indian Agro & Recycled Paper Mills Association
79	Shishoo Kumar	Deputy Manager-EMG	NTPC
80	A.T. Kusre	General Manager	ICICI Bank Limited, Mumbai
81	Sugato Sen	Asst. Director	SIAM
82	Surman Kumar	Research Assistant	Liberty Institute
83	T K Kumar	Chief Manager (S & EP)	IOCL
84	T R Kolam	Faculty	ASCL, Hyderabad
85	T Thangaraj	Technical Officer (Batteries)	India Lead Zinc Development Association
86	V K Goel	Tech. Advisor	Ministry of Commerce & Industry
87	V K Sehgal	Director & head	BIS
88	V N Das	Dir. EHS	Ranbaxy
89	Vinod Kumar	Asst Manager	SAIL
90	Y K Saxena	Asst VP-Env	Gujarat Ambuja Cement
91	Y R Shrivastava	DGM-EMG	NTPC

APPENDIX C.

Breakout Group Presentations



EMBRACING GLOBAL CLIMATE CHANGE: USING MARKET-BASED MECHANISMS FOR GLOBAL COMPETITIVENESS

September 27-28, 2002
The Taj Mahal Hotel, New Delhi

Break-Out Session Presentations

Group: I

Group Members:

- Mr H P Singh, IOC
- Mr S C Sharma, BEL
- Mr N K Valecha, RIL
- Dr S V Reddy, MoEF
- Mr R Katyal, Honeywell
- Mr. M K Sinha , Nerolac
- Mr. Sanjib Bezbaroa, ITC

1. What are the advantages and disadvantages of using market-based mechanisms?

Ans: - Advantages:

- Economic incentives
- Efficient usage of (Natural) resources
- Confidence of people involved / transparency
- Easy to implement

- Disadvantages:

- Chances of monopoly (few big players cornering the market)
- Fairness may be missing (polluter still pollutes)

2. What are our priorities for harvesting potential benefits and co-benefits through the use for market based mechanisms?

- **Industry Sector Priorities**
- **Company Priorities**
- **Community Priorities**

Ans: - Priorities listed:

- Company
- Industry
- Community

3. Identify examples of the potential co-benefits of GHG emission reductions in the manufacturing and energy sector?

- Ans:** Potential benefits for the manufacturing sector and the energy sector
- Environmental co-benefits:
 - Arresting global warming (reduction of SOX, NOX, PM)
 - Social co-benefits:
 - Increased employment
 - Health improvement
 - Waste reduction (Optimum utility of resources, materials).
 - Economic co-benefits:
 - Reduction in mitigation cost
 - Better resource usage

4. What infrastructure elements do we need, and at what levels, for development of and participation in new environmental markets?

- Ans :**
- Infrastructure (general)
 - Policy Framework at State/ Central Level
 - Agencies to address: measurement and verification
 - Registry (s) for emissions
 - Regulatory bodies

5. Who do you consider the key stakeholders in developing an active environmental market in India? What can Government do to support key stakeholders?

- Ans:**
- Industries
 - NGOs
 - Govt.(Central/ State Level)
 - Collaborative support among stakeholders

6. What further information do we need, and with which other stakeholders do we need to consult, in order to answer these questions?

- Ans :**
- Sector-wise details of existing systems in other countries and key learning for community
 - Status of various funding proposals from World Bank

7. Cite examples of direct and indirect GHG emissions in the manufacturing and energy sector? What are the potential challenges facing industry in measuring and quantifying these emissions reduction in a credible manner?

- Ans:**
- a. Direct:
 - i. Stacks of boilers; process heaters; flares
 - ii. Automobiles exhaust
 - b. Indirect:
 - i. Electricity (purchased)
 - ii. Transportation of RM/products

- **Potential Challenges**

- iii. **Obsolete technology**
- iv. **Revamping/ needing S/D**
- v. **Investments- Not justifying ROI**
- vi. **Reliable agencies for measuring/auditing**
- vii. **Fear (Govt.; NGOs; Public)**



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September 27-28, 2002
The Taj Mahal Hotel, New Delhi

Break-Out Session Presentations

Group: II

Group Members:

- Dr H D. Kulkarni, ITC
- Mr K K. Narang, MoEF
- Mr J K. Rawat, Forest
- Mr Subhash Rustogi, ITC
- Mr S Balaji, BHEL
- Mr R . Narayanan Moorthy, Indian Papers Mfrs. Assn.
- Mr R Singh, CSO

1. What are the advantages and disadvantages of using market-based mechanisms?

Ans: - Advantages:

- Technology innovations
- Marginalized cost group
- Beyond compliance

- Disadvantages:

- Easy for organized sector but not for unorganized - particularly in terms of availability and access to data.
- Demand supply situation
- Target setting for reduction if not (continually) stretched may de-motivate

2. What are our priorities for harvesting potential benefits and co-benefits through the use for market based mechanisms?

- Industry Sector Priorities
- Company Priorities
- Community Priorities

Ans: - Priorities:

Company benefits:

- Reduced costs
- Incentives from training

Industry benefits:

- Clean Technology

- Energy Efficiency

- **Community benefits:**

- Increased employment
- Clean Air
- Medical benefits
- Carbon credit incentives (sell/trade)
- Better quality life.

3. Identify examples of the potential co-benefits of GHG emission reductions in the manufacturing and energy sector?

- **Environmental**
- **Social**
- **Economic**

Ans: - Potential Benefits: Mfg. Sector/ Energy Sector

- **Environmental:**

- Clean environment (minimization of SOX, MOX, PM)
- Preservation of bio-diversity
- Conservation of Ecosystem/ Wildlife
- Disaster avoidance (Flood/Drought)

- **Social:**

- Better Health
- Education

- **Economic:**

- Eco-Efficiency
- Higher Agri/ Forestry productivity

4. What infrastructure elements do we need, and at what levels, for development of and participation in new environmental markets?

Ans : - **Institutional Framework**

- Base Line
- Monitoring and verification
- GHG Registry

5. Who do you consider the key stakeholders in developing an active environmental market in India? What can Government do to support key stakeholders?

Ans: - Industrial sector
Govt. Central/ State
NGOs
Community

6. **What further information do we need, and with which other stakeholders do we need to consult, in order to answer these questions?**

- Ans :
- Legislation/ regulation
 - Incentives/ disincentives
 - Registry role
 - Support stakeholders
 - International forum

7. **Cite examples of direct and indirect GHG emissions in the manufacturing and energy sector? What are the potential challenges facing industry in measuring and quantifying these emissions reduction in a credible manner?**

- Ans:
- International experience sharing
 - Basic mechanisms
 - Networking- national and international
 - Baseline establishment – a major challenge
 - Lifecycle considerations in areas like transport, etc.



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Break-Out Session Presentations

Group: III

Group Members:

- Mr. A Pamecha, JK Tyres
- Mr. N R Bheda, NGO, Chennai, Ex, MoEF
- Mr. S V Jamble, INDALCO
- Mr. A Banerjee, LURGI
- Mr T R Kolamu, Admin Staff College of India
- Dr. S Sarkar, GTI, GAIL

1. What are the advantages and disadvantages of using market-based mechanisms?

Ans: Advantages:

- Spreading out of tangible and intangible benefits
- Provides mechanisms for going beyond regulations through incentives
- Seeming unviable options may become economically and financially viable
- Flow of technology is possible and evolution of new technologies enabled

Disadvantages:

- Stakeholders expectations may not be met
- Credible monitoring mechanisms for certification and validation lacking

2. What are our priorities for harvesting potential benefits and co-benefits through the use for market based mechanisms?

- **Industry Sector Priorities**
- **Company Priorities**
- **Community Priorities**

Ans: - Priorities:

- **Industry Sector-I**
- **Community Sector- II**
- **Company Sector-III**

3. Identify examples of the potential co-benefits of GHG emission reductions in the manufacturing and energy sector?

- Environmental
- Social
- Economic

- Ans:**
- Iron and Steel
 - Thermal Power
 - Paper & Pulp
 - Cement
 - Petroleum
 - Sugar and Distilleries
 - Dairy

4. What infrastructure elements do we need, and at what levels, for development of and participation in new environmental markets?

- Ans :**
- List or registry of buyers
 - Registration authority
 - Approved monitoring agencies
 - Regulatory frameworks- national and international

5. Who do you consider the key stakeholders in developing an active environmental market in India? What can Government do to support key stakeholders?

- Ans:**
- Industrial associations and representatives

6. What further information do we need, and with which other stakeholders do we need to consult, in order to answer these questions?

- Ans :**
- Capacity building and enhancement of associations
 - Industries
 - Govt. Agencies
 - NGO's
 - Civil Society/ Community
 - Dissemination of information and transparency
 - Regulatory framework to be in place.

7. Cite examples of direct and indirect GHG emissions in the manufacturing and energy sector? What are the potential challenges facing industry in measuring and quantifying these emissions reduction in a credible manner?

- Ans:**
- Direct energy sources
 - Power
 - Petroleum Products
 - A mechanism to safeguard operation against default in meeting carbon exchange commitments
 - Lack of accreditation agencies for verification of the emissions



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Break-Out Session Presentations

Group: IV

Group Members:

- Dr V M Shashtri, SAIL
- Mr Vinod Kumar, SAIL
- Mr A Mohan Reddy, Zenith Corp
- Mr Sugato Sen, SIAM
- Mr Emani Ashok, IDFC
- Ms. Saba Khan, SIAM

1. What are the advantages and disadvantages of using market-based mechanisms?

Ans: - Advantages:

- Recognition of action already taken
- Driving force for new innovation
- Emission reduction beyond compliance
- Financial gains

- Disadvantages:

- Organization can still emit more
- Focus on particular pollutants
- Company vs. country objectives might mismatch
- May not benefit local neighborhood
- Trading system hard to understand

2. What are our priorities for harvesting potential benefits and co-benefits through the use for market based mechanisms?

- **Industry Sector Priorities**
- **Company Priorities**
- **Community Priorities**

Ans: - **Priorities:**

- **Country Sector Priorities:**
 - Sustainable development
 - Optimization of scarce resources
 - Protocol compliance

- Health safety

- **Company Priorities:**

- Energy efficiency
- Profit in business
- Corporate image

- **Community Priorities:**

- Clean water and air (reduction of local pollutants)
- Employment generation
- Education

3. Identify examples of the potential co-benefits of GHG emission reductions in the manufacturing and energy sector?

Ans

- **Environmental co-benefits:**

- Reduction in local pollutants
- Natural resource conservation

- **Social co-benefits:**

- Better health and standard of living
- Less medical cost
- Diversion of funds for education, etc.

- **Economic co-benefits:**

- Profitability
- Lower insurance premiums

4. What infrastructure elements do we need, and at what levels, for development of and participation in new environmental markets?

Ans :

- Information technologies
- Conducive Government policies
- Flexibility in policies
- An Exchange for carbon trading
- Brokerage Firms
- Certifying/ registry/ verifying agencies
- Flow of improved technologies

5. Who do you consider the key stakeholders in developing an active environmental market in India? What can Government do to support key stakeholders?

Ans:

- Industry – as the “Doers”
- Industrial association to provide a forum
- NGOs
- Financial institutions
- Research and Development and technology providers
- Government Support to provide:
 - Flexible Policies (Long Term)

- Conducive environment
- Regulatory role

6. **What further information do we need, and with which other stakeholders do we need to consult, in order to answer these questions?**

- Ans :
- Procedures and practices to set up the mechanisms:
 - Sector specific case studies
 - Creation of and maintenance of inventories
 - Successful Traders

7. **Cite examples of direct and indirect GHG emissions in the manufacturing and energy sector? What are the potential challenges facing industry in measuring and quantifying these emissions reduction in a credible manner?**

- Ans:
- Direct:
CO₂, SO₂, NO_x, CFC's, HFC's
 - Indirect:
Automobiles; CFC's, flow AC's, refrigerators; power

Challenge:

- Standardizing the monitoring and measurement techniques for data
- Need for certification bodies



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Break-Out Session Presentations

Group: V

Group Members:

- Mr P K Tyagi, Engineer, JBMA
- Mr. R. K. Patra JBMI
- Mr. Ravinder JBMA
- Mr. T. Thangaraj ILZDA
- Mr. M. N. Sivasubramanian DCPC
- Mr. Anil Singh CRR
- Mrs. K. K. Saxena CPCB

1. What are the advantages and disadvantages of using market-based mechanisms?

Ans: - Advantages:

- Command and control mechanism alone cannot achieve the intended benefit
- Increase in competitiveness
- Benefits to stakeholders
- Social and economic benefits across the board
- Market based systems are more organized can ensure voluntary compliance

- Disadvantages:

- Time bond approach may be difficult to achieve
- Market based mechanism may not be socially viable as intended
- Economic gain would then become the primary objective
- May not achieve polluter pays principle

2. What are our priorities for harvesting potential benefits and co-benefits through the use for market based mechanisms?

- Industry Sector Priorities
- Company Priorities
- Community Priorities

Ans: - Priorities:

- Emission trading
- Financial benefits and legal compliance
- Health and better quality of life

3. **Identify examples of the potential co-benefits of GHG emission reductions in the manufacturing and energy sector?**

- **Environmental**
- **Social**
- **Economic**

Ans: Co-benefits:

- Resource conservation, energy efficiency benefits
- Health benefits, air quality improvements
- Cost reduction, efficiency in production

4. **What infrastructure elements do we need, and at what levels, for development of and participation in new environmental markets?**

Ans : - **Infrastructure**

- Resource allocation, inventorization, registry and certification

5. **Who do you consider the key stakeholders in developing an active environmental market in India? What can Government do to support key stakeholders?**

Ans: - **Industry, NGOs, Community, financial institutions**
- **Govt. should provide legal and institutional support**

6. **What further information do we need, and with which other stakeholders do we need to consult, in order to answer these questions?**

Ans:

7. **Cite examples of direct and indirect GHG emissions in the manufacturing and energy sector? What are the potential challenges facing industry in measuring and quantifying these emissions reduction in a credible manner?**

Ans: - **Direct**

- **CO2, CH4**

- **Indirect**

- **Non CO2 Emissions, V12 Emission, NOX, SOX, Particulate Matter.**



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Break-Out Session Presentations

Group: VI

Group Members:

- Mr Rakesh Kumar, NTPC
- Mr Ramesh Kukerati, NTPC
- Mr Shishu Kumar, NTPC
- Ms Nidhi, Liberty Institute
- Mr Suman Kumar, Liberty Institute
- Mr R N Jindal,
- Ms B Sodani, Mantec Consultants

1. What are the advantages and disadvantages of using market-based mechanisms?

Ans: - Advantages:

- Flexibility in emission
- Cost optimization of pollution reduction
- It will provides incentive for efficiency, expressing ideas, using initiative and market instruments
- Fosters research and development

- Disadvantages:

- Limit the reduction possible, to market demand
- Everything is not rosy, SO₂ example
- Will work only there is huge differential

2. What are our priorities for harvesting potential benefits and co-benefits through the use for market based mechanisms?

- **Industry Sector Priorities**
- **Company Priorities**
- **Community Priorities**

Ans: - Industry Sector Priority

- Bulk quality power with efficient distribution may be through local industry association
- Better regulated quality power
- Augmenting shortages with more efficient, scale efficient, environmentally friendly solutions.
- Captive units through cooperation of local distributing agencies and industry associations/citizens groups

3. Identify examples of the potential co-benefits of GHG emission reductions in the manufacturing and energy sector?

- Ans :**
- Resource conservation, energy efficiency benefits
 - Health benefits, air quality improvements
 - Cost reduction efficiency

Examples of potential co-benefits of GHG emissions in the manufacturing and energy sector:

- Reduction and better balance of local impacts of global warming, like disturbed rains and humidity, temperature and decrease in extreme (weather) patterns
- Higher productivity
- Lower costs
- Greater room for flexibility by:
 - Low (er) health impact and lower health maintenance costs
 - Higher people productivity
 - More sustainable and productive and diverse forming biodiversity
 - More cost effective technology employed in manufacturing

4. What infrastructure elements do we need, and at what levels, for development of and participation in new environmental markets?

Ans: Need for:

- Legislative support/ actions at national and state levels
- Organizational support
- Motivation mechanisms like Montreal Protocol for developing countries for participation to maximum extent

5. Who do you consider the key stakeholders in developing an active environmental market in India? What can Government do to support key stakeholders?

- Ans:**
- Public pressure for environmental issues
 - Willingness of the industry (sectors)
 - Government role: to create awareness in communities and with financial institutions.
 - Govt. should provide legal & institutional support

6. What further information do we need, and with which other stakeholders do we need to consult, in order to answer these questions?

- Ans :**
- Industry
 - a. NGO's
 - b. Communities
 - c. Financial Institutions

7. Cite examples of direct and indirect GHG emissions in the manufacturing and energy sector? What are the potential challenges facing industry in measuring and quantifying these emissions reduction in a credible manner?

- Ans:**
- Direct- CO₂, CH₄
 - Indirect- Non CO₂, emission VIZ, NO_x, SO₂, Particulate matter



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Break-Out Session Presentations

Group: VII

Group Members:

- Mr M L Gupta, ACC
- Mr S C Gandhi, EPI
- Mr Santosh Shidhaye, IL&FS/E CO- Smart
- Mr Ajay Raghava, CPCB
- Mr A K Gupta, HIL
- Ms. Mehnaz Kohinoory, BHA)
- Mr. Arvinder s Brara, Mantec

1. What are the advantages and disadvantages of using market-based mechanisms?

Ans: - Advantages

- Economic incentives of market based mechanisms

- Disadvantages

- No grant funding
- Differentiation in applying actual emission reductions between developed and developing countries

2. What are our priorities for harvesting potential benefits and co-benefits through the use for market based mechanisms?

- Industry Sector Priorities
- Company Priorities
- Community Priorities

Ans **Priorities:**

- Industry Sector Priorities
 - Petroleum
 - Thermal power
 - Cement
- Company Priorities
 - Boilers
 - DG Sets

- Lightening Process

- Community Priorities
 - MSW Transportation

3. Identify examples of the potential co-benefits of GHG emission reductions in the manufacturing and energy sector?

- Ans:**
- Reduction in other pollutants- environmental benefits.
 - Improved health - social/societal benefits
 - Cost reductions - economic benefits

4. What infrastructure elements do we need, and at what levels, for development of and participation in new environmental markets?

- Ans :**
- Information clearing house
 - Emission registry
 - Global monitoring institution

5. Who do you consider the key stakeholders in developing an active environmental market in India? What can Government do to support key stakeholders?

- Ans:**
- Govt./ bilateral and multilateral development agencies
 - Technology developers
 - NGOs
 - Government's role:
 - Provide legal frame- work.
 - Facilitate identification of clean technology and awareness generation
 - Incorporation of economic tools in legislation

6. What further information do we need, and with which other stakeholders do we need to consult, in order to answer these questions?

- Ans :**
- Further info needs
 - Inventorization of emission
 - National communication on strategy

7. Cite examples of direct and indirect GHG emissions in the manufacturing and energy sector? What are the potential challenges facing industry in measuring and quantifying these emissions reduction in a credible manner?

- Ans:**
- Challenges: measuring emissions from indirect sources
 - Emission from utilities- indirect and emission from utilities- direct

APPENDIX D.

Select Roundtable Pictures

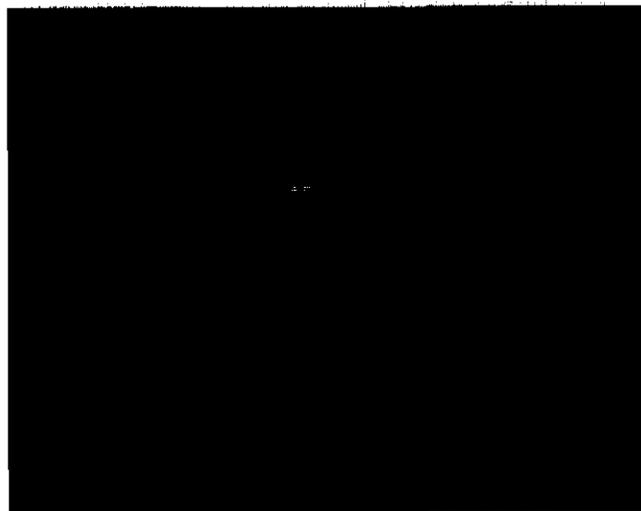
**EMBRACING GLOBAL CLIMATE CHANGE:
USING MARKET-BASED MECHANISMS
FOR GLOBAL COMPETITIVENESS**

ROUNDTABLE PICTURES

Day 1: September 27, 2002



The large roundtable audience listens attentively during the Building Blocks for GHG Market-Based Mechanisms session



Mr. R.P. Sharma discusses the GHG reduction strategies that Tata Steel has employed at all of their facilities



Mr. Wiley Barbour of Environmental Resources Trust talks with the Corporate Env. Management Team of ITC Ltd. on carbon sequestration initiatives



The video presentation created by BP International for the roundtable showcased 5 GHG reduction case studies from facilities across the world

Day 2: September 28, 2002



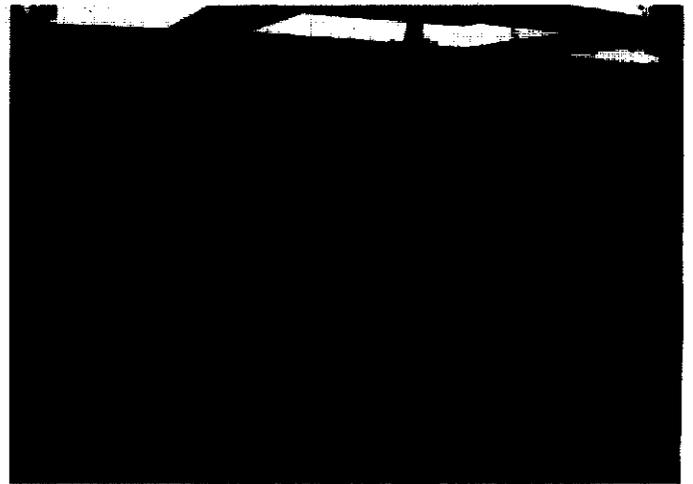
Mr. S.V. Jumble explains to participants the "8 Step Methodology" used by INDAL on assessing GHG emissions and impact



A view of the EPA Emissions Trading Software that was used during the interactive session



Emissions Trading Software Exercise "Team Orange" devise their strategy for lowering their CO2 emissions



Team members registering their emissions with the "GHG Registry" as they prepare for trading in the second round of the simulation

APPENDIX E.

Full Roundtable Program Book

APPENDIX F.

**Model Participant
Certificates**

Certificate of Achievement

Presented to:

for the Successful Completion of

**Embracing Global Climate Change:
Using Market-Based Mechanisms for
Global Competitiveness**

New Delhi, India — September 27-28, 2002

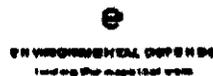
Mr. John Smith Sreen
USAID/India Mission



Ms. Suzanne Young
Greenhouse Gas Pollution
Prevention Project-
Climate Change Supplement



Ms. Annie Patsonk
Environmental Defense



Mr. K. P. Nyati
Confederation of Indian Industry

