Mission Report to India

1. **Name of the Researcher:** V. Anbumozhi

2. **Mission period:** 30 Jul, 2007 ~ 9 Aug, 2007

3. **Objectives of the Mission**:

1. To consult with potential research partner on the research construct, scope of works and invite for the KRC kick-off workshop.
2. To collect relevant information/views of resource persons on energy efficiency measures in India as an input for the IGES white paper chapter.
3. To have an appraisal of company level environmental management practices on emission and pollution as a part of scoping study.

4. **Schedule:**

Date	Details	Place
29 Jul (Sun)	Leave Osaka by TG673 Arrive in Chennai by TG 521	Chennai
30 Jul (Mon)	Visit Anna University , discussions with Dr. Nagendran Visit State Electricity Board: Hearing on energy measures (Obj #2) Visit state Industry Department and Pollution Control (Obj #3)	Chennai
31 Jul (Tue)	Hearing/interview with SME Business leader: Classic Leathers (Obj #2) Hearing/interview with Large Business Leader -SPIC (Obj#2)	Chennai
1 Aug (Wed)	Hearing/interview with large sized business – RR Spinning Mills (Obj #3) Hearing/interview with small business – Kasi tex (Obj #3)	Chennai
2 Aug (Thu)	Travel to Bangalore	Bangalore
3 Aug (Fri)	Hearing/interview with Mr. Rao, Institute for Social and Economic Change (ISEC)and former chairman of Central Electricity Regulatory commission [Obj #2]	Bangalore
4 Aug (Sat)	Holiday	
5 Aug (Sun)	Holiday	
6 Aug (Mon)	Hearing/interview with Business leaders: Biocon Chemical （Obj #2, #3） Hearing/interview with the rating company: Pricewaterhouse Coopers (Obj #2, #3)	Bangalore
7 Aug (Tue)	Visit Indian Institute of Management, discussions with Dr. Jose on IGES activities and IIMB activities and research plan (Obj#1, #3)	Bangalore
8 Aug (Wed)	Discussion with Dr. Jose, Dr. Jankiraman and Dr. Narayan on I research plan, scope and methods, KRC workshop etc (Obj #1, #3)	Bangalore
9 Aug (Thu)	Discussion with Dr. Jose, Dr. Jankiraman and Dr. Narayan on IGES activities and research plan, KRC workshop etc (Obj #1, #3)	Travel
10 Aug (Fri)	Leave Bangalore by TG326 (00:30~05:50) Arrive in Osaka by TG 620 (09:20 ~17:30)	Kobe

5. Points of discussion:

5.1 With Research Institutes on CEM

1. What are some of the particular challenges facing companies in practicing CSR/CEM?
2. How can companies be motivated to practice CEM? What type of regulatory, voluntary and market based instruments are presently available/being discussed?
3. What local conditions/pressures are influencing corporate environmental practise?
4. How can macro-economic policies and government incentives foster environmental actions among companies?
5. What are some examples of CEM practices, their importance and how they are locally embedded?
6. How can CEM help any business to succeed?
7. Is disclosure of environmental information is an option for showing environmnetal responsibility?
8. Is supplier assistance is an option for SME?
9. What initiatives are taken by stock listed companies to disclose their information? Any reporting/rating programs exist?
10. Are special metrics necessary to capture SME –specific CEM practices? If so what are they?
11. Is an International code of conduct for SMEs possible? What are some of examples of local standards?
12. Sometime buyers send mixed messages – higher environmental standard but lower price? Is there any coping mechanisms?
13. How can CEM build sales, develop the work force, boost enthusiasm and innovation, enhance trust in an enterprise, and increase a business's reputation and standing?
14. What does CEM mean to SMEs and their respective stakeholders?
15. In the context of CEM, how are SMEs different from large companies and what type of cooperation is feasible?
16. Can MNCs' codes of conduct be realistically applied to their SME suppliers?
17. Do MNCs have a responsibility to assist their SME suppliers in implementing CSR practices?
18. Do multi-lateral organizations like the WB, UNESCAP, UNIDO have role to play in the process?
19. What role can researchers play in implementing CEM practices?

5.2 With Policy Makers and Business On White Paper

1. What sort of performance improvement framework: Vision, targets and strategies exist at sectoral level/company level?
2. Legislation, policy, market and finance instruments favouring energy efficiency/saving.
3. Dysfunctional laws and main barriers to be highlighted by the White Paper.
4. Does international codes like ISO reflect the country/company context. What are the barriers? Do they need new standards?
5. Is there business cases of Supply Chain Management exist and if so, what form?

6. Does business associations/chamber of commerce promote environmental accreditation programs by member companies?
7. Can energy service economy concepts go along w/ sufficient economy and micro-credit principles?

5.3 With business on CEM

Area 1: Internal Environmental Management

1. Do you employ environmental manager?
2. Does an environmental programme exist?
3. Do you perform environmental audits for energy and wastes?
4. Do environmental goal exists?
5. Do guidelines for environmental behaviour exist?
6. Do you offer training in environmental management to the workers?
7. Do you perform measures to monitor the environmental management?

Area 2: Environmental Policy and Strategy

1. Does an environmental mission statement exist in the company?
2. Do unique environnemental standard existes?
3. Do you publish environmental report?
4. Do you consider public information disclosure as a responsible entrepreneurship?
5. Do you have any certification programmes?

Area 3: Environmental Standards for Production Line

1. Do you have environmental standards for the production process?
2. Do environmental standards for procurement exist?
3. Do environmental standards for suppliers exist?
4. Do environmental standards for distributors exist?
5. Do you perform energy management?
6. Do recycling programs exist?
7. Does any environmental risk management strategy exist?
8. Do you collect data on emissions and pollutions?
9. Do you foster environmental product innovation?

Area 4: Factors influencing implementation of environmental friendly production

Why did you implement an environmental management practice in the area internal environmental management/environmental strategy/environmental production or product standard?

1. Because of buyer pressure
2. Because of shareholder pressure
3. Because of government pressure
4. Because of pressure from peers/business associations
5. Because of economic reasons
6. Because of self-commitment

6. Outcome of the Mission

6.1 Minutes of Meeting - Consultative Meeting on Research on Corporate Environmental Management *(Bangalore 07- 09 August, 2007)*

1. IGES started the meeting with formal thanks followed by a presentation on the profile of IGES and activities at Kansai Research Center. The preliminary thoughts, objectives, mile stones, road map and expectations of the research on corporate environmental management were clearly conveyed.
2. Prof. Janakiraman made an observation that CEM can be looked from the three levels, firm/company; industry/sector and public policy while the last one controlling the previous two. He pointed out that the sector and study area need to be chosen on the background of their environmental implications as well as practicability of implementing the research. Industrial sectors like Steel, Automobile, Food processing, Sugar are highly resource dependent and sectors like chemicals, textiles, tannery, dyeing often cause local environmental problems. Available information and literature need to be looked before selecting the industries for further study.
3. Prof. Jose presented some of his experiences in corporate environmental management as observed at company level to deal with local, regional and global environmental issues. Potential study areas such as self-regulating capacity of firms, legal framework implemented by governments, judiciary activism, and market mechanisms were also discussed at length. Some good cases of public information disclosure and supply chain concepts as being implemented by a GTZ project were also introduced. He also pointed out that significant potential exists in these approaches, as part of voluntary approaches by private sector - which is new to some sectors. Considering IGES has roots and strengths, a comparative sectoral study with a case study approach also being proposed.
4. Dr. AGV Narayan made a note on supply chain environmental impacts in textile sector and its important role in local and regional level sustainability initiatives. The study sector has played a major role in the economic upliftment of communities while contributing to the national economy as well as recent environmental vows. The environmental aspects of that sector is least studied. A comprehensive study focusing on large companies and small power-looms spread across the region is suggested for the first year.
5. It is agreed that Prof. Janakiraman will be the focal point for Indian side, and further discussions and negotiations will be carried on accordingly. He will represent the team in Kobe Workshop. In all the, study focus has to be reasonably includes the environmental and social components, corporate and policy aspects. The case study analysis shall be holistic in nature cutting across disciplines, bringing out the uniqueness attached to each approach.
6. It was pointed out by Prof. Jose that conducting research in India is becoming expensive. Research assistants need to be employed for the specific tasks of interviewing, as questionnaire

survey is found to be ineffective. Travel and accommodation expenses are escalating in India, which has to be taken into consideration in deciding the business plan.

7. It is possible to conduct roundtable meeting in Banagalore, as prelude for structure survey. Round table is also an expensive task if that event is scheduled for a day. Hence, a modest form of meeting is agreed. Research partnership is visualized as equal partners and not as local consultants, which otherwise will increase the costs of research.
8. The basic structure of the output need to finalize in coordination with other country frameworks. Soon IGES and Prof. Jankiraman will design the detailed work plan, MOU and TOR for implementation of the study in India.

6.2 Summary of Consultation on White Paper *(on 30 Jul & 2 Aug @ Chennai & Bangalore)*

1. If this a chapter of White paper is targeting G8 meeting, it need to be bold and send a straight forward message.
2. India talked a lot about climate change and some commitments were made which are really implemented. It doesn't have any sectoral scenario or targets.
3. Even though Indian business look for CDM projects, very few are sanctioned, because complex mechanisms and verification systems.
4. For improved energy efficiency, both demand and supply must be managed.
5. Setting standards for all energy using equipment, monitoring them and imposing penalties for those who exceed the maximum levels can improve energy efficiencies.
6. An efficient operation of generation and distribution by renovating and modernizing old and small plants is a quick and low cost method. The average plant load factor for Indian plants in 2003-04 was 68.4% but in Bihar it was 37.6, Jharkhand 23.1 and North East 14.0, quite regional variability exisits.
7. NTPC has demonstrated ability in speedily improving efficiencies in old plants and this expertise must be exploited. There are technical as well as commercial losses of electricity. Reducing technical losses to international levels, from the present 10% will free more energy for consumption with no additional emissions.
8. India is not using 75% of its hydroelectric potential. This can add over 60000 MW of generating capacity. Similarly nuclear power (costs are not known) accounts for hardly 3% of our present total electricity generating capacity of around 120000 MW. But even if the world gives us better technology and uranium fuel, nuclear power will not exceed 5% of demand in twenty years.
9. There is potential for generating non-polluting power through windmills, solar panels and solar cells, harnessing geothermal energy, using biomass, and agricultural products, to generate energy. Wind speeds vary and hence wind power generation varies and must be supported by more certain base load power from coal or gas or nuclear.
10. Solar panels and cells are still high cost and useful for remote areas or household use. Geothermal energy is a technology still under experimentation. Biomass can help in small scale

generation and is useful for local village level generation and distribution without using the Grid. Cost reduction, and institutions to manage it commercially, must be developed.

11. Agricultural products like ethanol could, in a land short country like India, adversely affect availability of food. Further, all these sources are likely to produce more expensive power, in limited quantities in comparison to needs. This bunch of technologies has limited value for India.
12. Only coal of which we have large reserves, and gas which is being found in increasing quantities can meet the explosion in energy demand, even if all other sources are exploited fully. But Indian coal has high ash content.
13. To use more coal for more electricity generation and avoid substantial and proportionate increase in carbon emissions, requires technologies to get more energy out of the same quantity of coal and also reduce carbon emissions.
14. Some actions to consume less energy without hurting our comforts: improve energy efficiency of lighting appliances in use, tax inefficient appliances, change rules for buildings and factories to make them more energy efficient, set standards for energy using equipment, for example for our inefficient agricultural pump sets.
15. Available technologies or under development for reducing carbon emissions in generation are gasifying coal, pulverizing coal before use, washing coal, sequestering carbon emissions in underground caves or under the oceans, and using more efficient combustion to get more electricity from the same coal.
16. Advanced coal combustion technologies, with the use of supercritical steam cycle technologies and integrated gasification combined cycle plants reduce carbon emissions for the same amount of energy. Ultra mega power projects are to use supercritical technology. There is little policy focus to invent research and development on these technologies and to reduce their costs.
17. Asian countries could optimize on power usage through a regional grid. We could set common standards for generation and energy using equipment. We could share our experiences in renovation and modernization to get more out of old plants and to improve plant efficiencies. Most importantly, we could set up collaborative research and development in a network of laboratories over the region.
18. Fiscal measures can redirect demand to energy efficient equipment.
19. Increased taxes can shift consumers from polluting to non-polluting fuels, for example, from diesel or petrol to CNG.
20. Banks could lend on long tenures for energy efficient technologies so that repayment can be spread over more years. A shorter tenure puts greater burden on the immediate tariff that the consumer has to pay.
21. The most important alternative to coal is the use of gas for generating power. The cost of imported gas whether by sea or by land from Iran, Burma or Bangladesh will be substantially higher in cost than coal and result in non-affordable power tariffs. However, the substantial gas discoveries in recent years enable us to greatly increase the use of gas for generating power.

22. Gas does not have the pollution and emission problems associated with coal. But it must be priced at levels that the Indian power consumer can afford. Government should take its royalties from gas fields in kind, not cash, and use it for the central power and possibly, fertilizer plants. For private generators, independent tariff regulation of gas must be introduced.
23. This will be helped if India had a common independent Energy Regulator to determine tariffs for power, coal and gas as well as other renewable.
24. ESCO schemes are being promoted through bilateral aid projects of GEF and ADB.
25. Most of the current works on supply chain management deals with value analysis in a purely financial senses, with the emphasis on inventory reduction and saving valuable on time and resource use. Energy efficiency issues are less noticeable, but considered to be important.
26. EMS such as ISO doesn't appear to be a reliable substitute for appropriate and well enforced environmental regulation to improve energy efficiency.
27. Launch of decade on carbon neutrality (DCN) may be one way to raise awareness among business policy makers and will help identify different role for different actors.

6.3 **Summary of Hearing Survey on CEM practices** *(on 31 July, 1 & 6 Aug in Chennai & Bangalore)*

Evaluating the Environmental Performance of Studied Companies

Name of the company	Kasi textiles	Rajarajeshwari Spinning Mills	Classic	SPIC	Biocon
Industrial sector	Dyeing	Textiles	Leather	Chemical	Pharmaceuticals
Part of larger group	No	No	No	Yes	Yes
Number of employees	31	50	150	1200	800
Turnover in previous year	NA	NA	NA	Rs. 250 million	Rs. 130 million
Management style	Informal	Mostly formal	Mostly formal	Professional	Professional
Decision making style	Top-down	Top-down with consultation	Top-down with consultation	Bottom-up with consultation	Bottom-up with consultation
Communication style	Face-to-face	Face-to-face	Face-to-face	Mixed written with some consultation	Mixed written with consultation
Reduced air pollution			Yes	Yes	Yes

Reduced effluent generated			Yes	Yes	Yes
Reduced energy use	Yes		Yes	Yes	Yes
Reduced water use	Yes		Yes		
Reduced waste generated		Yes			
Re-use/recyle waste		Yes			Yes
Reduced impact of purchase		Yes	Yes		Yes
Save money as a result?		Yes		Yes	Yes
Increase sales as a result			Yes		Yes
Main prompt for action	Personal beliefs	Scope for cost cutting	Personal commitment	Diversification	Commitment of founders
Primary driver for change	Regulators	Buyers	Founders backed by employees	Regulators	Buyers
Primary barrier to change	Limited resources – time, tech & money	Limited management time and technology	Limited management time	Limited control over projects	Limited control over projects
Actively engaging with stakeholders	No	No	No	Yes. Publish environmental & social accounts	Yes. Publish environmental accounts
Standards for environmental management	No	PCB standards	PCB Standards	ISO 9000; BIS	ISO 14001
Use made of assistance schemes	No	Yes.	Yes	No	No
Costs: How	Management	Cash for	Some lost		Some lost

much time?	time	investment	sales		sales
How much money?	Not measured	Not measured	Not measured	Not disclosed	Not disclosed
Saved money as result?	No	Yes			Yes
Increase sales as result?		Yes			Yes
Level of progress	Active	Active	Active	Managed	Managed

General category of companies based on environmental performance (developed for the study)

Inactive	***Active***	***Managed***	***Pro-active***
No action taken to improve environmental performance	Action – adhoc in nature to improve environmental performance taken	Mangers invest time in improving environmental performance	Top management and employees pursue environmental stewardship

General observations

1. An initial challenge was to clarify the purpose of interview and the framework for discussion. For different practical reasons, it was crucial that a cordial atmosphere is developed by the accompanying local resource person. No sensitive information about pollution or emissions are asked in the beginning.
2. CEM was commonly explained as business commitment to environment friendly operations, and was said strongly related to beyond compliance voluntary actions for environmental protection.
3. Participants of the hearing survey stated that they are driven to environment friendly operations by community and government pressures, but face key economic challenges in implementing. They include lack of time, technology and finance and cost competitiveness.
4. Creation of strategic public partnerships, technical assistance, government backing of new environmental initiatives, a proper legal system and financial support were also mentioned as crucial factors that promote CEM practices.
5. At organizational level, those taking part in the interview said that SMEs view CEM as a continuous improvement process through which they can increase their production efficiency and quality and eventually their market share.
6. On other hand, large companies tend to engage in CEM once they obtained a strong market position and they commit for financial outlays, as and when their profit margin increases.
7. The development of SME specific self-help tools and monitoring instruments, guidelines might be helpful compliments to support the process. They also expressed that MNC play a critical role in facilitating CEM in SMEs. However, efforts to date have been ad-hoc in nature.

8. Interviewees expressed the opinion that reporting of the environmental information and technical assistance program from the suppliers shall be considered as proactive action that is not greatly influenced by external pressure. For large sized business, it is considered as self-commitment to the community/public.
9. High level of consciousness exists for saving electricity and reuse/resale of waste as business interest.
10. Several interviewees said that the introduction of international codes of conducts and Certification systems like ISO standards bring some market advantage. But they are also perceived as cultural imperialism by a large sized company.
11. Two of the interviewed large sized companies indicated that existing codes of conduct require elaborate reporting and disclose the information, but often not in the reach of their suppliers and hence they may need to mentor them.
12. Certificates, awards schemes, tax incentives were also mentioned as another motivating factor for environment friendly action by a family business.
13. All organizations displayed very limited knowledge of how much they had invested in CEM. Although they recognized that there had been cost in terms of management time, investment or both, none of them have actually measured the type of cost.
14. In nearly all the companies including two which are ISO certified, it was the case that environmental statements, standards/quantitative date for their plants are neither available nor want to disclose to the outsiders.

7. Professionals met during the Mission

7.1 Research

1. Prof. Janakiraman Moorthy
   Indian Institute of Management, Lucknow; Pearl School of Business, Haryana.
2. Prof. P D Jose
   Corporate strategy and Policy Areas, Indian Institute of Management, Bangalore
3. Prof. AGV Narayan
   School of Management, Sri Krishna Institute of Engineering & Technology, Coimbatore
4. Prof. Nagendran Moorthi
   Centre for Environmental Studies, Anna University, Chennai
5. Prof.R Sethumadhavan
   Institute for Energy Studies, Anna University, Chennai
6. Dr. Y. L. R Moorthi
   Professor of Marketing, Indian Institute of Management, Bangalore
7. Dr. Ganesh Prabhu
   Chairperson, Indian Institute of Management, Bangalore.
8. Dr. M Jayadev
   Professor of Public Policy Area, Indian Institute of Management, Bangalore.

7.2 Policy Makers:

1. Mr. S L Rao
   Former and first Chairman, Electricity Regulatory Authority of India, Bangalore
2. Mr. R Ramachandran
   Additional Chief Engineer, Tamilnadu Pollution Control Board, Chennai
3. Mr. P Subramani
   Director (Rtd), Tamilandu Electricity Board, Chennai

7.3 Private Sector:

1. Mr. Anil Agarwal
   President, Classic Leathers, Chennai
2. Mr. V Kannan
   Executive (materials), Classic Leathers, Chennai
3. Mr. Ponnaiyan Karthik Raja
   Deputy Director (operations), Southern PetroChemical Industries Corporation (SPIC), Chennai
4. Mr. VK Manoharan
   Engineer (operations), Southern PetroChemical Industries Corporation (SPIC), Chennai
5. Mr. Saravanan
   Executive Director, Sri Sowdeswari Mills (P) Ltd, Chennai
6. Mr. K. Kumar
   Manager (Operations), Sri Sowdeswari Mills (P) Ltd, Chennai
7. Mr. Vairam
   General Manager, Kasitextiles, Jalakanatapuram, Chennai
8. Mr. Rajarajan
   Technician (Electrical), Kasitextiles, Jalakantapuram, Chennai
9. Dr. Govindasamy Manickam
   Section Head – R&D Chemistry, Biocon Limited, Bangalore
10. Mr. A V Kameswara Rao
    Manager, Environment, Health & Safety, Biocon Ltd, Bangalore
11. Mr. Vedamoorthi Namasivayam
    Executive Director, PriceWaterHouseCopers Pvt Ltd, Bangalore
12. Mr. Rajkumar Sud
    Manager, PriceWaterHouseCopers Pvt Ltd, Bangalore

出張報告書／Mission Report

1. 出張者名／Name(s) of the people who were on mission

Xianbing LIU、Yutaka TAKAISHI

2. 出張期間／Period Covered:

12-22, September, 2007

3. 出張行程／Itinerary

09/12: Leave Osaka for Beijing;
09/13: Visit Environmental Economy and Policy Research Center, SEPA and Guanghua School of Management, Peking University;
09/14: Visit SINOPEC Beijing Research Academy of Chemical Industry and China Academy for Environmental Planning;
09/15: Weekend;
09/16: Leave Beijing for Guangzhou;
09/17: Visit South China Institute of Environmental Sciences, SEPA, and attend the activities of Hyogo environmental business delegation;
09/18: Attend the activities of Hyogo environmental business delegation;
09/19: Attend the activities of Hyogo environmental business delegation;
Leave Guangzhou for Nanjing;
09/20: Visit the School of Environment, Nanjing University;
Leave Nanjing for Suzhou;
09/21: Visit Environmental Protection Bureau of Suzhou New and High-tech Industrial Development Area, and two companies;
Leave Suzhou for Shanghai
09/22: Leave Shanghai for Osaka.

4. 出張目的とマイルストーン内での位置づけ／Purpose ＆Position in the Milestone

The main purpose of the trip is to visit potential research partners and consult with them on research priorities, scope of works of the 4th phase research project at KRC/IGES. A proper research network could be initiated after learning about the strong points and research experiences of the visited organizations and experts. Current status of corporate environmental management (CEM) in China is expected to be primarily understood. Additionally, the expert to be invited for KRC kick-off meeting should be fixed during the trip. Another task of the trip is to attend the activities of Hyogo prefecture environmental business delegation in Guangdong province. It is hoped to contribute as much as possible to Hyogo prefecture, one budget provider for IGES, for successful cooperation with Guangdong Province in environmental field.

The trip to visit Chinese environmental research organizations and meet with researchers there is to select proper research partners and establish research network in China for the core project at KRC/IGES. This is a key milestone for the project initiating. Preparation for kickoff meeting is another milestone in the working plan. Attending to the activities of Hyogo environmental business delegation has no straight linkage with milestones.

5. 成果／Results

In the 10 days, six related research institutes, one local environmental protection bureau (EPB) and two Japanese funded enterprises were visited (Minutes of the meeting with Chinese counterparts are in attachment 1 of list 2). All the activities of Hyogo prefecture environmental business delegation in Guangdong Province were participated (Minutes of the delegation activities see attachment 2 of list 2).

During the visit to the research organizations, we introduced Kansai Research Center as well as IGES as a whole. The 4th phase research project on CEM at KRC/IGES was explained accurately. As the response, basic information of each research organization was introduced in brief by the researchers visited. They especially explained their own research experiences on environmental policies and CEM strategies. They also expressed their opinions on current status of CEM in China and comments on the feasibility of KRC 4th phase research project. All of them showed their willingness to cooperate with IGES to do some researches on CEM in China.

Interesting and meaningful points are hereby briefly concluded after the discussion with these Chinese experts:

1) Current status of CEM in China: CEM in China appears to be quite complicated and can be classified to different levels with large spectrum. Many enterprises are still heavy polluters for surrounding environment and can not even meet national or local emission standards. Some others are performing pretty well. Many Chinese environmental legislations and standards on CEM are not well arranged. Besides the regulations themselves, enforcement efficiency is still very low due to different benefit needs of central and local governments, and limited capacities. Enforcement campaigns to industries have been used frequently by central government in the last decade. But the effectiveness is doubtable.

The two companies visited in this trip explained that it was actually the requirements from their mother companies to drive them behaving out of compliances. Of course, this has given them good reputation on business and they felt much easier to meet the stricter requirements from central or local governments.

2) Research needs: A combined approach which includes enforcement measures, economic incentives and other informal policy tools is necessary to face the increasing challenges of environmental problems. China has great needs for proactive policies which can ensure enterprises to improve their environmental performances continuously.

3) Research status: Research on CEM, especially on proactive strategies, is still scarce in China. The key research academies or centers under SEPA are focusing on the development of pollution control technologies, environmental planning, environmental consulting and other supportive works for SEPA's administration tasks. This indicates that China is still mainly relying on administrative tools for CEM. They are starting to do studies on environmental economic policies. So the study area at KRC/IGES does not overlap with what Chinese researchers in SEPA system are doing.

4) Research partners: It is encouraging to find that researchers in the two visited universities have done some good studies close to the topic of our 4th phase project. Nanjing University has a good team for the studies on CEM. They did the pilot project on information disclosure and rating of Chinese enterprises. Some case studies to discover the driving factors for CEM improvement have been carried out. It could be selected as the focal point for research cooperation. The professor at Guanghua School of Management, Peking University is good at theory study and conceptual model construction. He could be invited as a key member of the study. Others could be invited to attend depend on the research necessity and their strong points. The primarily considered Environmental Economy and Policy Research Center of SEPA is not recommended here since its researchers are always busy in assisting SEPA officials to deal with

daily management affairs. It is difficult for them to put sufficient efforts for cooperation studies.

5) Research direction: Proactive policies for CEM in China could be studied at a platform which covers both driving mechanism analyses and case studies for hypothesis certification. The key factors for the policies or strategies should be diagnosed. The effectiveness of the suggested polices should be quantitatively monitored. The detailed research contents and methodologies will be fixed after further discussions with research partners.

As an additional outcome, the leading professor from the School of Environment, Nanjing University was invited for KRC kickoff meeting in October.

Through the participation to the activities of Hyogo prefecture environmental business delegation, the communication with local organizations was supported. Simultaneously, it may become a kind of potential resources for our future research activities especially if doing case studies in southern Guangdong Province.

6. 今後の予定（フォローアップ）／**Follow up action**

1) Liaison with the professor from Nanjing University for preparing KRC kickoff meeting;
2) Discuss with related researchers to scope research works and fix working tasks;
3) Arrange a proper research network based on the defined research tasks and schedule;
4) Liaison with related environmental protection bureaus directly or through research partners for support for future case studies.

List：出張報告書の添付資料／**Attachments for this report**

Minutes of the Meeting with Chinese Counterparts

Attachment:

Minutes of the Meeting with Chinese Counterparts

During Sep 12-22, six research organizations, one local environmental protection bureau and two companies were visited. The minutes of the meeting with Chinese experts visited are as follows:

1. Guanghua School of Management, Peking University

Time: Sep 13, 2007;

Person visited: Dongning YANG, Ph.D., Associate professor;

From 2000, Prof. Yang started to do researches on environmental economics and environmental policies. His research topics focused on corporate environmental management (CEM) and environmental performance assessment after 2003, and have extended to corporate social responsibility (CSR) very recently.

He is doing studies on CEM mainly in two areas. One is to analyze the decision making mechanism of manufacturer by establishing structural models which could indicate the relationships of the manufacturer and its stakeholders (e.g., decision makers, operational supporters and others with relations). Another is to do case studies to certify the hypothesis and the constructed conceptual models. Based on his studies, Chinese enterprises were found to be quite reactive to improve their environmental management performance and tend to extremely rely on authoritative decision makers. The impact forces from employees, surrounding communities and business partners are only playing limited roles.

He also did some studies on the assessment of CEM performance by analyses of physical material flow and affiliated monetary factors. For instance, he observed the response of capital market to the informal enforcement campaigns recently such as Environmental Impact Assessment Storm, etc.

2. The Cleaner Protection Center, SINOPEC Beijing Research Academy of Chemical Industry

Time: Sep 13, 2007;

Person visited: Hongwei QI, Division chief, Senior engineer;

Xin LI, Senior engineer;

This center is belonging to the environmental institute under SINOPEC Beijing Research Academy of Chemical Industry. Besides the center, the environmental institute has

other 4 laboratories (2 for pollution control technologies, 1 for environmental impact assessment, 1 for environmental monitoring).

In the past, this center has done cleaner production (CP) auditing for nearly 20 chemical enterprises. It once acted as the management office for a big cooperation project on CP between Canadian central government and China National Development & Reform Commission (NDRC). This center is assisting SINOPEC to do studies on CP technological guidelines drafting and evaluation indicators development. There are 8 formal researchers in the center.

From their experiences, the main driving force for chemical enterprises to implement CP is the subsidies from local government. For example, in Beijing, the municipal government will cover all the expenses of CP auditing for the enterprises if the cost is less than 100 thousand CNY. 70% will be paid by the government if the expense is higher than 100 thousand CNY. The enterprises which are voluntary to implement CP are much more interested in the future subsidies from local government for the investment of pollution control equipments.

A few Chinese state owned large companies are opening their environmental management information through website, annual sustainable report and so on. But for their branch companies or factories, the environmental information disclosure does not exist. For chemical industry in China, the present supplier management mainly focused on the requirements for product quality and cost. Some enterprises have specific requirements to their suppliers due to the needs of ISO14001 certification and systematic management of health, safety and environment (HSE). For chemical industry, a special supplier chain management on environment is the requirement to the service provider who helps the company to do regular checking and repairing annually.

3. Institute for International Environ. Policies, Policy Research Center for Environ. & Economy, State Environmental protection Administration (SEPA)

Time: Sep 14, 2007;

Person visited: Guomei ZHOU, Deputy director, Ph.D., Professor;

Gang CHEN, Ph.D., Engineer;

This institute is a newly arranged research unit under Policy Research Center for Environment and Economy, SEPA. There are 4 laboratories in the institute (bilateral, multilateral, regional and environmental policies).

The researchers in the institute have some working experiences on international cooperation projects such as CEM performance evaluation, environmental management of small

and medium enterprises (SMEs), environmental investment, etc. They are doing some studies on environmental economic policies as green procurement, eco compensation mechanism, water management policy. A project on CSR is under planning and negotiation with EU.

Simple comments to the 4th phase project at KRC/IGES were put forward. One point is that the environmental management for SMEs could learn from Japanese experiences. Another point is that the environmental management information disclosure was not well implemented in western regions in China. Economic incentives could be an effective to encourage the corporate to disclose their information.

4. Chinese Academy for Environmental Planning, SEPA

Time: Sep 14, 2007;

Person visited: Shunze WU, Department director, Ph.D., Professor;

The academy is directly affiliated with SEPA. Its task mainly focuses on environmental planning at national and regional level. Four aspects as objectives, total pollution load, pollution control projects and investments are the main contents for environmental planning. There are 5 departments under the academy (consulting, water, air, ecology, and strategic planning).

The researchers in the academy once participated in a project on corporate information disclosure which was funded by World Bank. Since energy conservation and emission mitigation became the theme of environmental protection for the 11th five year plan (2006-2010) in China, some strategies are suggested by them to encourage enterprises to reduce emissions by providing awards or subsidies. The academy is doing studies with Tsinghua University and Development Research Center of State Council to seek good policies for emission mitigation. Pollutant emission trade policy at regional level, within a drainage area and a large enterprise group is another key research topic of the academy.

5. South China Institute of Environmental Sciences, SEPA

Time: Sep 17, 2007;

Person visited: Zhencheng XU, Deputy director, Professor;

Keystone LAM, Director of research management division, Professor;

Xiaochun PENG, Deputy director of municipal environ. research center, Ph.D.;

This institute has long history. It was set up in 1973 and became an affiliated organization of SEPA in 1984. The main research topics covered water pollution control, marine environmental protection at the beginning phase. The research areas extended to the management of POPs, cleaner production and industrial waste management in recent years

along with the expansion of the needs for environmental problems. In 2005, Municipal Environment Research Center was founded in order to do studies for specific environmental problems appeared in economically advanced regions such as in southern Guangdong province and Peal river delta.

On CEM, this center provided certain of centralized pollution control schemes for textile industrial parks. They did some policy studies on the management of recycling of e-waste and waste vehicles, which is one of Guangdong characterized industries. They are also consulting for the implementation of cycling economy in 9 pilot cities in Guangdong province. It was suggested by them to select the waste recycling enterprises as part of targets for CEM project.

6. School of Environment, Nanjing University

Time: Sep 20, 2007;

Person visited: Zhenwei YUAN, Ph.D., Associate professor;

Junjie GE, Lecturer;

Beibei LIU, Lecturer;

Professor Jun BI, deputy dean of the school, appointed his main research team members to meet with us since he had an urgent mission. He confirmed to attend KRC/IGES kickoff meeting. In School of Environment at Nanjing University, the group leaded by Professor Bi is big research team on environmental management. It has nearly 30 members including professors, lecturers, and doctor & master candidates. They are doing studies in three areas: Industrial ecology, Environmental risk control at regional level, and Environmental policy analysis.

This group leaded the information disclosure pilot project which was funded by World Bank and did many case studies in CEM behavior evaluation in Jiangsu Province where Nanjing University is located. Some environmental economic policies such as pollutant emission trading and green credit have been studied in Taihu Lake. They have cooperation experience with Asian Development Bank on developing sustainable development indicators. They also have close partnership with some foreign university such as Yale University in US, etc.

On the research topics of CEM in China, the current status was outlined in brief by the researchers interviewed. Although the research on CEM is new in China, CEM may be improved through several measures. The basic thing is to strengthen the environmental enforcement at local level. The enforcement efficiency of local EPB is a key barrier. The second important thing is to balance the benefits of enterprises, governments at different levels and

other related stakeholders by economic tools. The last is to encourage public participation to give more pressures for CEM improvement.

On the feasibility of doing research by questionnaire survey in China, n key point based on their experiences is to ask the understanding and support from related government authorities (e.g., local EPB). 40-80% of the posted questionnaires to the companies could be collected in case of cooperating with local EPBs. Otherwise, the response ratio was quite low and could not meet the needs for analyses.

The industries with high environmental impacts were clarified by hearing from them. Heavy chemical industries such as textile, petroleum refinery and chemical products manufacturing could be research targets in Jiangsu Province.

7. Environmental Protection Bureau, Suzhou National New and Hi-tech Industrial Development Area

Time: Sep 21, 2007;

Person visited: Yonggang WANG, Deputy director general;

Li YUAN, Engineer;

Suzhou National New and High-tech Industrial Development area is located in the west region of Suzhou city, Jiangsu Province. The planning region is 258 Km^2 and developed area is 52 Km^2. It was listed as China national pilot ecological industrial park in 2003 and appointed as national pilot region for the development of cycling economy in 2005. The Environmental Protection Bureau under the administration commission of the area is pushing the improvement of CEM by institutional arrangement, legislative tools, construction planning and specific fund for cycling economy development. Environmental performances of many companies within the area were greatly improved through emission mitigation, proper hazardous waste management, waste recycling, water reutilization, and green partnership with suppliers. The industries which could connect and complete the eco-cluster between existing industries are encouraged to join in the industrial park. It is the key duty for local government to develop public infrastructures such as water supply system, ecological parks etc. The green surrounding environment naturally became pressure for corporate to improve their environmental behaviors.

8. Canon (Suzhou) Inc. and Sony Chemicals (Suzhou) Co., Ltd.

Time: Sep 21, 2007;

Person visited: Haiyang LV, Assistant manager of Canon (Suzhou) Inc.;

Haoxue HU, General Manager of Environ. Safety Department, Sony Chemicals

(Suzhou) Co., Ltd.;

Canon (Suzhou) Inc. and Sony Chemicals (Suzhou) Co., Ltd. are Japanese funded companies with location in Suzhou New and High-tech Development Area. Compliance of environmental legislations is not problem for both of them. Canon (Suzhou) Inc. discloses its environmental information through annual environmental report of the Group. Sony Chemicals (Suzhou) Co., Ltd. published the CSR report in 2006. Both companies have good environmental management systems. They have specific requirements to their suppliers through green partnerships. Canon (Suzhou) Inc. does certification to its suppliers once every 2 years based on its global green procurement criteria.

The biggest driving force for the visited two companies to behave out of compliance is the requirements from their mother companies. It is easier for them to face stricter requirement from Chinese central or local governments. The pressures from surrounding communities and customers are still not obvious at present probably because they are not heavy polluters.