No.

Japan International Cooperation Agency (JICA)
Board of Investments (BOI)
of Department of Trade and Industry(DTI)

The Study on Environmental Management with Public and Private Sector Ownership (EMPOWER) in the Republic of the Philippines

Final Report Summary

September 2003

EX Corporation

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Preface

In response to a request from the Government of Republic of the Philippines, the Government of Japan decided to conduct the Study on Environmental Management with Public and Private Sector Ownership (EMPOWER) in the Republic of the Philippines and the study was implemented by the Japan International Cooperation Agency (JICA).

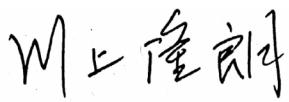
JICA sent a study team, led by Mr. Masato Ohno of EX CORPORATION and organized by EX CORPORATION to the Republic of the Philippines 7 times from February 2002 to September 2003.

The team held discussion with the officials concerned of the Government of the Philippines, and conducted related field surveys. After returning to Japan, the team conducted further studies and compiled the final results in this report.

I hope this report will contribute to the promotion of environmental management in the Philippines and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Philippines for their close cooperation throughout the study.

September 2003



Takao Kawakami
President
Japan International
Cooperation Agency

Waste Minimization Pilot Project

Kemwerke (Chemical)

AMIC (Foundry)

Workshop in Manila

Waste Minimization Pilot Project

Workshop in Cebu

Ecolabeling Program Pilot Project

Launching Event , March 10, 2003

Former First Lady Amelita Ramos,
Chairperson of Clean and Green Foundation

Seminar and Round Table

Top Management Seminar(Manila Peninsula Hotel)

Action Plan Round Table

IEM Exhibit

Exhibit（Manila Peninsula Hotel）

IEM Exhibit

Exhibit（SM Megamall）

Exhibit（SM Megamall）

Lunching of IEM Knowledge Network

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Exchange Rate: PHP ≒ 2.2 yen
US$ ≒118.58 yen

Abbreviations

A	ACDI-VOCA	Agricultural Cooperative Development International-Volunteer Overseas Cooperative Agency
	ADB	Asian Development Bank
	APO	Asian Productivity Organization
	APRCP	Asia Pacific Roundtable for Cleaner Production
	ARMM	Autonomous Region of Muslim Mindanao
B	BAC	Bids and Awards Committee
	BEMP	Best Environmental Management Practices
	BEMS	Building Energy Management Systems
	BFAD	Bureau of Food and Drugs
	BOI	Board of Investments
	BPS/DTI	Bureau of Product Standards of the Department of Trade and Industry
	BSMBD/DTI	Bureau of Small and Medium Business Development/DTI
C	C&GF	Clean and Green Foundation Inc
	CAA	Clean Air Act
	CAMPI	Chamber of Automotive Manufacturers of the Philippines
	CAR	Cordillera Autonomous Region
	CBR	Confidential Business Report
	CDC	Clark Development Corporation
	CEOs	Chief Executive Officer
	CP	Cleaner Production
D	DA	Department of Agriculture
	DAO	Department Administrative Order
	DAP	Development Academy of the Philippines
	DBM	Department of Budget and Management
	DBP	Development Bank of the Philippines
	DENR	Department of Environment and Natural Resources
	DFE	Design for Environment
	DILG	Department of Interior and Local Government
	DOE	Department of Energy
	DOF	Department of Finance
	DOH	Department of Health
	DOST	Department of Science and Technology
	DTI	Department of Trand and Industry
E	EAPS	Environmental Aspects in Product Standards
	ECC	Environmental Compliance Certificate
	ECOP	
	EESSIS	Evaluation of Environmental Standards for Selected Industrial Sub-Sectors
	EIA	Environmental Impact Assessment
	EIS	Environmental Impact Statement
	EISCP	Environmental Infrastructure Support Credit Program
	ELP	Eco-labeling Program for the Philippines
	EMA	Environmental Management Accounting
	EMB/DENR	Environmental Management Bureau/ Department of Environment and Natural Resources
	EMS	Environmental Management Systems

E	EMSAP	Environmental Management System Accreditation Program
	ENMAP	Energy Management Association of the Philippines
	ENRAP	Environmental and Natural Resources Accounting Project
	EPA	Environmental Protecton Agency
	EPE	Environmental Performance Evaluations
	EPIC	Environmental Management Program for Industrial Competitiveness
	EPMD/DOE	Environmental Protection and Monitoring Division /Department of Energy
	ERA	Environmental Risk Analysis
	ESCO	Energy Service Company
	ESP	Environmental Service Provider
	ESWMA	Ecological Solid Waste Managemnet Act
F	F.O.B.	Free On Board
	FDIs	Foreign Direct Investments
	FPA	Fertilizer and Pesticide Authority
G	GDP	Gross Domestic Product
	GEC	Global Environmant Center Fundation
	GIS	Geographic Information System
	GNP	Gross National Product
	GOP	the Government of the Philippines
H	HEEM	Highly Energy Efficient Motors
	HW	Hazardous Wastes
	HWM	Hazardous Waste Management
I	IEC	Information, Education, Communication
	IEM	Industrial Environment Management
	IEMP	Industrial Environmental Management Project
	IEPC	Industrial Efficiency and Pollution Control Program
	IISE	Industrial Initiatives for a Sustainable Environment
	ILO	
	IPCT	Integrated Program on Cleaner Production Technologies
	IPP	Investment Priority Plan
	IRR	Implementing Rule and Regulations
	ISO	International Organization for Standardization
	ITDI/DOST	Industrial Technology Development Institute/ Department of Science and Technology
J	JICA	Japan International Cooperation Agency
L	LBP	Land Bank of the Philippines
	LCA	Life Cycle Assessment
	LGU	Local Government Unit
	LLDA	Laguna Lake Development Authority
	LLES	Laguna Lake Environmental Study
M	MAP	Management Association of the Philippines
	MBIs	Market-Based Instruments
	MISSI	Monthly Integrated Survey of Selected Industries
	MNC	Multinational Companies
	MOA	Memorandum of Agreement
N	NCR	National Capital Region
	NEDA	National Economic Development Authority
	NRIPS	National/Regional Industry Prioritization Strategy
	NSCB	National Statistical Coordination Board
O	OECF	Overseas Economic Cooperation Fund of Japan
	OIP-BOI	Office for Industrial Policy
P	P2	Pollution Prevention
	PAB	Pollution Adjudication Board
	PAEAP	Philippine Association of Environmental Assessment
	PATLEFAM	Philippine Association of Tertiary Level Educational Institutions

P	PBE	Philippine Business for the Environment
	PCA	Pollution Control Assessment
	PCAPI	Pollution Control Association of Philippine Industry
	PCO	Pollution Control Officer
	PCSD	Palawan Council for Sustainable Development
	PD	Presidential Decree
	PEIA	Philippine Environmental Industries Association
	PEMAS	Philippine Environmental MAnagement System
	PEPP	Philippine Environmental Partnership Program
	PEZA	Philippine Economic Zone Authority
	PHILFOODEX	Philippine Food Processors and Exporters Organization, Inc.
	PICPA	The Philippine Institute of Certified Public Accountants
	PIP	Packaging Institute of the Philippines
	PMAI	Philippine Metalcasting Association Inc.
	PMA	Pollution Management Appraisal
	PMS	Performance Monitoring System
	PNS	Philippine National Standard
	POA	Philippine Oil chemistry Association
	PPCI	Philippine Chamber of Commerce and Industry
	PREMIS	Pollution Reduction and Environmental Management Information System
	PRIME	Private Sector Participation in Managing the Environment
	PSIC code	Philippines Standard for Industrial Category code
	PSMA	Philippine Suger Millers Association
	PSSD	Philippine Strategy for Sustainable Development
	PULPAPEL	Pulp and Paper Manufacturers Association
	PVR	Public Version Report
	PWPA	Philippine Wood Producers Association
S	SBMA	Subic Bay Metropolitan Authority
	SEIPI	Semi-conductor and Electronics Industries of the Philippines
	SKEM	Survey of Key Manufacturing Establishments
	SMEs	Small and Medium Enterprises
	SPIK	Samahan sa Pilipinas ng mga Industriyang Kimika
	SS	Suspended Substances
	SW	Solid Wastes
T	THW	Toxic and Hazardous Waste
	TLRC	Technology Livelihood Resource Center
	TOC	Total of Organically bound Carbon
	TSD	Treatment, Storage and Disposal
	TSP	Total Suspended Particles
U	UNDP	United Nations Development Programme
	UNIDO	United Nations Industrial Development Organization
	URBAIR	Urban Air Quality Program
	USAID	United States Agency for International Development
V	VA	Value Analysis
	VOCs	Volatile Organic Compounds
	VSMD	Variable Speed Motor Drives
W	WB/PEM	World Bank: Philippines Environment Monitor
	WHO	World Health Organization
	WHRS	Waste Heat Recovery Systems

Chapter 1

Current Status of Environment and Manufacturing Industry in the Philippines

1 Current Status of Environment and Manufacturing Industry in Philippines

1.1 Current Status of the Philippines Manufacturing Industry

1.1.1 Importance of Manufacturing Industry in the Philippines Economy

The manufacturing industry has been playing a vital role in the growth of the Philippines economy since late 1990s. The figures shown in Table 1.1.1 below indicate the relative importance of manufacturing industries in the Philippines.

Table 1.1.1 Contribution of Manufacturing Industry to the Philippines Economy

Economic Indicator	Contribution of Manufacturing Industry
GDP	25% of GDP (Year 2000).
Employment	10% of the total employment (Year 2000)
Trade (Export)	90% of the total export value (Year 2000)
FDIs	90% of the total FDIs (Year 2000)

The large coverage of manufacturing industry in export and FDIs clearly shows its importance in international trade and investment market in the Philippines.

Meanwhile, the analysis of sub-sector wise contribution of manufacturing industry to the Philippines socio-economy indicates relative importance of specific sub-sectors Table 1.1.2.

Table 1.1.2 Relative Importance Specific Sub-Sectors of Manufacturing Industry in Terms of Major Socio-Economic Indicators

Sub-Sector	Contribution to Socio-Economy					
	No. of employees (thousand)	Ranking	Value-added	Ranking	Export Value (FOB in million US$)	Ranking
Food	185	1	103,559	1	285	6
Wearing Apparel	154	2	-	-	2563	3
Electrical Machinery and Apparatus	148	3	77,246	2	22,178	1
Transport Equipment	40	5	40,819	5	5,909	2
Textile	55	4	-	-	249	7
Chemicals	-		48,281	4	327	5
Wood-based	-		-	-	593	4
Petroleum Refineries	-		68,1531	3	-	-

Source: National Statistical Coordination Board. The Philippine Statistics 2001 Edition.

The above sub-sectors of manufacturing industry will be given primary attention in terms of their relative importance to the Philippines economy. Proper consideration upon environmental management will also be more required for these sub-sectors so as to prevent negative impacts on their products in the international market due to low environmental performance.

1.2 Environmental Pressures by the Manufacturing Industry in the Philippines

1.2.1 Air

The overall implication for manufacturing industry is that, while the most significant air pollution sources are from households and vehicles, the growth of manufacturing industry also poses an increasing threat to the ambient air quality. The USAID-supported Industrial Environmental Management Project (IEMP) and Environment and Natural Resources Accounting Project (ENRAP) gave several sub-sectors of manufacturing industry primary importance in terms of the levels of pollution load. As to the air and water pollutants, ENRAP made a ranking of pollution load by sources as well as regions. Table 1.2.1 below shows the sub-sector wise ranking within manufacturing industry.

Table 1.2.1 Sub-Sector Wise Ranking of Pollution Load in Manufacturing Industry (Air Pollution)

Sub-Sector (Manufacturing)	NCR and Region 4		Region 7	
	Particulates	SO_2	Particulates	SO_2
Cement	1	2	2	1
Sugar	2	4	1	3
Petroleum Refining	4	1	-	-
Beverage and Liquor	5	8	4	2
Coconut Oil Refining	9	5	-	-
Flour	3	6	3	-
Paint and Varnish	6	9	-	-
Pulp and Paper	7	3	-	-
Rice and Corn Milling	10	10	-	5
Wood and Wood Products	8	7	-	4
Fertilizer Manufacture	-	-	5	-
Tanning and Leather	-	-	-	-
Bakery	-	-	-	-

Note: The above ranking is made in accordance with the comparison of pollutants volume among sub-sectors. The volume of pollutants were estimated by making use of the sub-sector wise industrial production data in the Philippines and emission factor data of the above pollutants per unit production taken from USEPA inventory. The ENRAP data omits other air pollutants such as NO_x, VOCs, CO, and so forth. If these were included, it would raise the priority of other sub-sectors.

The above table indicates relative importance of specific sector such as cement, sugar, and petroleum refining in addressing air pollution control. It also shows the difference in sources of air pollution between regions.

1.2.2 Water

The impacts of manufacturing industry are i) a minority, but still significant share of urban BOD and SS, especially from livestock, food and beverage and dye and textile industries, ii) an increasing share of toxic and heavy metal pollutants, originating from industrial chemical and fertilizer industries, tanneries, foundries and metal finishing, pulp and paper production, entering both surface and sub-surface water, and iii) health impacts of these toxics, whose effects have not been properly assessed in the Philippines, but which may be more serious than realized. More research is urgently needed on this matter. Shows the sub-sector wise ranking within manufacturing industry in terms of water pollution loads based on the ENRAP Study.

Table 1.2.2 Sub-Sector Wise Ranking of Pollution Load in Manufacturing Industry (Water Pollution)

Sub-Sector (Manufacturing)	NCR and Region 4		Region 7	
	BOD	SS	BOD	SS
Cement	-	-	-	
Sugar	1	-	1	4
Petroleum Refining	-	-	-	
Beverage and Liquor	3	1	-	2
Coconut Oil Refining	2	2	-	3
Flour	-	-	-	
Paint and Varnish	-	-	-	
Pulp and Paper	4	3	-	6
Rice and Corn Milling	-	-	-	5
Wood and Wood Products	-	-	-	
Fertilizer Manufacture	-	-	-	1
Tanning and Leather	5	-	-	
Bakery	-	-	-	

Note: The above ranking is made in accordance with the comparison of pollutants volume among sub-sectors. The volume of pollutants were estimated by making use of the sub-sector wise industrial production data in the Philippines and emission factor data of the above pollutants per unit production taken from USEPA inventory. Since the above ranking only covers the estimation of BOD and SS loads, it still needs further elaboration through incorporation of the loads by other toxic pollutants.

1.2.3 Wastes

HW from industry and hospitals comprise a significant, and rapidly growing proportion of the waste problem. The main generating sectors of industrial HW are fabricated metal, plating and machinery, chemicals, food and beverage, tanning and textiles. Although EMB is

making efforts to address HW[1], there is a general lack of awareness of the dangers of HW, and its health and economic impacts need urgent study. Higher priority needs to be given to its monitoring, transport and safe disposal. The lack of effective HW management in the country is dissuading foreign investment and is likely to hamper the image and sales of Philippine products in overseas markets. A major means to reduce solid wastes would be for industry to take greater responsibility for the eventual fate of their products through 'extended producer responsibility'. This should be a major area of attention for industrial leaders and government policy.

[1] A Master Plan has been prepared and a feasibility study is being prepared for a HW treatment plant.

Chapter 2

Current Status and Issues of IEM

2 Current Status and Issues of IEM

2.1 Current Status and Issues of IEM by Individual Companies

2.1.1 Interview surveys on IEM activities by individual companies

Under the EMPOWER project, an interview survey was conducted for CEOs and PCOs (Pollution Control Officer) to gather information on current IEM activities.

(1) Environmental Management System (EMS)

The ratio of the companies that have established EMS against the companies surveyed in the same sector is summarized in Table 2.1.1. The ratios of the ceramic industry and the pulp and paper industry that are the apparatus industry with high environmental load are low. Establishment of EMS is a challenge to many companies.

Table 2.1.1 Ratio of EMS Implementation by Industry

Industry Sector	# of Company Surveyed	Ratio of EMS Implementation	Ratio of Env. Report Published
Food	30	0.33	0.50
Foundry & forging	8	0.38	0.38
Chemical	31	0.39	0.55
Metal	10	0.40	0.50
Pulp & Paper	5	0.20	0.60
Machinery	5	0.00	0.20
Other	11	0.18	0.45
Total	100	0.32	0.49

Although the purpose of the report preparation was not surveyed, the report is assumed to be prepared for environmental management and reporting to the business owner/top executive. The report does not seem to be for public and customer relations because only 6 companies out of 49 make the report open to the public.

(2) Relationship between primary environmental management items and EMS implementation

The most important items among EMS are target setting for reduction in environmental loads, monitoring and evaluation of environmental performance, and preparation and disclosure of environmental reports; they are considered as essential. Levels of production management and environmental management vary by implementation of these items. Table 2.1.2 shows

companies' EMS implementation levels by implementation of the three primary environmental management items.

Table 2.1.2 Companies Implementing the Three Primary Environmental Management Items and EMS

Implementation of the Three Primary EM Items (A)		Establishment of Env. Section (B)	Ratio (B/A)	EMS Implementation (C)	Ratio (C/A)	ISO14001 Acquisition
3 items	29	23	0.79	19	0.66	8
2 items	12	10	0.83	3	0.25	1
1 item	20	11	0.55	6	0.30	1
None	39	15	0.38	4	0.10	-
Total	100	56	0.56	31	0.31	10

Note: PCOs' answers are used for EMS Implementation (C).

There are 41 companies that implement two or more of the three primary items and 31 EMS. Among the 100 companies surveyed, 30 to 40% of them have reached at a certain level of EMS while the rest of the companies have room to promote EMS.

(3) Factors to Advance and Hinder Environmental Management

1) Interested Agenda on Business Management by CEOs

1. Productivity improvement : 2.5 (21 companies)
2. Quality improvement : 2.9 (21 companies)
3. Marketing strategies and networking : 3.6 (21 companies)
4. Improvement of financial situation : 3.7 (14 companies)
5. Development of new products and technology : 4.5 (9 companies)
6. Expand productivity and products : 4.7 (8 companies)
7. Implementation of environmental management : 4.9 (2 companies)

Note: Numbers represent the total ranking score divided by numbers of respondents ranked the corresponding options.

As one can expect, productivity and quality improvement are ranked high while environmental management is hardly a business agenda.

2) Business Owners/Top Executives' Motivation for Environmental Management

1st:	Legal requirements (legal compliance)	4.18
2nd:	Internal motivation including social responsibility and cooperate ethic	4.30
3rd:	Cost saving through material and energy conservation	5.88
4th:	Productivity improvement	6.27
5th:	Request from parent company or clients	8.79
6th:	Request from share holders	9.30
7th:	Relationship between competitors (including decision made by industrial association)	9.61
8th:	Request from consumers	9.78
9th:	Request from environmental NGOs	9.83

10th:	Request from financial institutions	10.35
11th:	Others	11.71

3) Incentives for Environmental Management

Figure 2.1.12 shows incentives for implementing environmental management recognized by business owners/top executives. Cost reduction was selected by most of the companies (72), followed by tax break for good environmental performance (59 companies), and social recognition (55 companies). The companies that selected reduction in permission fees or other charges are 47, and they are mainly form the sectors with large wastewater load such as food processing, pulp and paper, textile (dyeing), and chemical manufacturing (lubricant, sulfuric acid, pharmaceuticals, cosmetics).

4) Factors to Hinder Environmental Management

Many companies listed financial constraints as a factor to hinder environmental management. Lack of information and human resources were also selected by more than one-third of the respondents. Attention should be paid that more than 30% of the companies listed a lack of affordable external environmental services and information about credible environmental service providers as factors to hinder environmental management.

2.1.2 Issues of IEM Promotion by Individual Companies

(1) Summary of Current Status

As was disclosed through the company survey conducted within the EMPOWER project, many enterprises recognize the necessity of complying with the environmental regulations. However, managers' main interest is the improvement in productivity and product quality. Their interest in IEM is low. It was found that only a small number of the companies surveyed have established EMS and that 60 % of them have inadequate system. According to the survey of the 30 enterprises that participated in the former waste minimization projects, commitment of company's top management as well as early realization of the benefit are factors triggering waste minimization efforts.

According to the interview survey of the 100 enterprises in the 18 sectors as well as the survey of the 30 companies that participated in the former waste minimization projects, priority issues expressed by company mangers and decision makers are improvement in productivity and product quality. IEM was of the lowest priority among management issues including financial improvement, new product development, and sales increase.

IEMP supported individual companies to reduce environmental loads. Hundreds of companies implemented measures, but their continuity was evaluated as low. Reasons of that include employees' resistance to giving up an operation practice that seems to be good to them, large amount of time and efforts needed for data collection and monitoring in order to persuade business owners to take IEM actions, and low awareness of company's top management. The awareness of the top management is a very important factor for the continuity (USAID, 2000).

(2) Preconditions for Promotion of IEM

It is necessary to confirm preconditions that need to be met for IEM promotion. Preconditions have been identified as follows through the survey.

- A manager holds strong willingness to expand his/her business.
- A company has a stable management and is willing to increase competitiveness.
- A company has an established system for production and quality control, especially good housekeeping practice.
- A manager recognizes environmental management as a part of business management.
- Employees share the IEM concept and have a willingness to work on the realization of the concept.

The bottom line is that IEM cannot be effectively implemented at any company without manager's strong willingness to integrate IEM into business management and prospect of company's business expansion. Manager's determination and energy to improve and reorganize its business are preconditions for development of IEM. There are companies that satisfy the preconditions in the Philippines; a question is how to increase the number of these companies.

Because top management of SMEs has a large managerial power within company, top management's commitment is crucial in promotion of waste minimization. Considering their interest, it is more effective to take an approach aiming at productivity improvement through input-output control rather than an approach aiming at reducing environmental loads. The former approach leads to reduction in production costs through improved resource productivity. Tangible benefit in the form of cost reduction provides the top management with an incentive for taking measures. It is appropriate that the Ministry of Industry and Trade and other relevant ministries in charge of supporting the manufacturing industry would take an initiative to implement policy measures with the productivity improvement approach.

(3) Future Agenda

It is hoped that those who have sound business management and have reached a certain IEM level should further improve IEM to an international level, strengthen their competitiveness, and do the following:

- Establishment of EMS
- Introduction of environmental accounting
- Development of environmentally sound products
- Preparation and dissemination of an environmental performance report
- Implementation of supply chain management

On the other hand, those without sound business management and adequate IEM level need to start with reforming company management and production management, and then further extend their efforts to improvement of resource productivity.

1) Diffusion of IEM to Top management

In view of the fact that companies with high competitiveness and growth potential implement an IEM of high level, it is important to increase awareness of top management of these companies with respect to IEM concept and its benefits including const reduction.

It is expected that the Philippines Chamber of Commerce and Industry and Management Association of the Philippines would encourage companies to implement IEM by telling many success stories to top management.

2) Production Management – First Priority

In order to implement higher level of IEM, it is important to establish production management system including process analysis, quality and cost control, delivery control and higher flexibility. It is expected that companies would strengthen IEM by assessing all the business process including environmental aspects, and by reducing operation costs to get some financial saving.

3) Development of IEM

Reduction of environmental loads (emission) through production process control should be set as a goal prior to taking end of pipe (EOP) measures.

It is true that compliance with effluent and emission standards is a priority issue for companies, and it is inevitable for companies to take some EOP measures to some extent.

Improvement of resource productivity would lead to the reduction in both input material costs and EOP investment/operation costs.

4) Information Acquisition and Human Resources Development

Acquisition of CP technology information is not easy for many companies. Sources of CP information include databases prepared by UNDP, EPA of USA, and GEC of Japan. Not many companies are aware that CP information is available from these sources, and therefore companies should be informed of these sources.

A company needs a process engineer to apply measures obtained from these data sources. PCO is very precious human resources for IEM promotion. Generally, chemical engineers take a position of PCO, and they have a basic capacity to be a process engineer. Therefore, PCOs should be trained not only for dealing with environmental issues but also production management.

5) Establishment of Implementation Structure for IEM Movement Similar to That for Quality Control

It is important that all company employees involved in production should understand common objectives of IEM, participate in IEM, and contribute to improvement. Companies that have implemented QC movement would find it relatively easy to introduce IEM.

6) Establishment of EMS

Essential activities of EMS are measurement of activities and performance, and management of such information, without which environmental performance cannot be improved. Establishment of EMS is a prerequisite for IEM. There is an international standard for EMS such as ISO14001. However, it would not be absolutely necessary for local companies to obtain ISO 14001 accreditation; establishment of a system to accredit EMS with easier procedure and reasonable costs is expected.

7) Relationship with the Public

Without informing the people about their environmental actions or performance, it would be difficult for a company to attain trust of the society. It is hoped that leading companies should prepare and publicize their environmental performance reports. Such disclosure of information has a secondary effect. Companies in the same line of business would begin to pay attention to people's voice, and therefore are encouraged to follow the leading company, and prepare and publicize environmental reports.

2.2 Current Status and Issues of IEM Promotion by Industry Associations and Others

2.2.1 IEM Promotion by NGOs and Industry Associations

(1) IEM Promotion by Professional Associations

1) Philippine Association of Environmental Assessment Professionals（PAEAP）

PAEAP is an association of EIA professionals and is mainly composed of individual environmental consultants. It is involved in training on EIA and accreditation system for EIA prepares.

2) Pollution Control Association of Philippine Industry (PCAPI)

PCAPI is an association of Pollution Control Officers (PCOs). PCAPI plays an important role in advancement of PCOs' skills and knowledge.

3) Philippine Business for the Environment (PBE)

PBE is a non-governmental organization that acts as advocate on IEM. It plays a central role in IEM promotion such as provision of IEM information and IEM seminars. Under the USAID/USAEP, PBE provided service to industry with a database of environmental technologies (classified as End of Pipe, Clean Production, and Performance Monitoring). Under the PRRIME project funded by UNDP, PBE mobilized and help industry associations to prepare Business Agenda 21 (see (2) of this section).

4) Philippine Environmental Industry Association (PEIA)

PEIA was an association of environmental industry. It was established in 1995, composed of 70 member companies.

5) Clean and Green Foundation (C&GF)

C&GF was established in 1994 and has been engaged in volunteer activities to clean up parks and towns in Metro Manila. Based on the Memorandum of Agreement to implement the ecolabeling program (ELP) signed by concerned agencies and institutions, C&GF was selected as Secretary of the Philippine ecolabeling program.

6) Management Associations of the Philippines (MAP)

MAP is not an environmental NGO, but it has an important role as the only association of the top management in the country. With the assistance of, MAP developed a video and a manual on best environmental management practices to increase top management's

awareness. MAP is very influential among industry circles, and is able to raise funds without much problem. However, many CEOs lack time to pursue interests and issues.

7) Philippine Institute of Certified Public Accountants (PICPA)

PICPA, the national organization of accountants in the Philippines, is promoting EMS and CP. It provides a two-day course on environmental cost assessment to track and assess environmental costs within a company as a tool for implementing CP projects.

(2) Current Status of IEM Promotion by Industry Associations

1) IEM Promotion by Industry Associations

Many industry associations have been formed and a good number from various industrial sectors have inclinations for proper industrial environmental management. A total of 83 industry associations signified strong interest in environmental management in terms of formulating their own Business Agenda 21[1], which was coordinated by PBE.

Table 2.2.1 Current BA 21 Activities of Business Associations

Association	Activities
1.PSMA	Policy advocacy Information support to members
2. Polystyrene	Participation on some environmental for and recycling for foam polystyrene food packaging material
3. SPIK	Promotion of Responsible Care Program
4. PWPA	Helping DENR in the formulation of environment-related IRRs
5. PULPAPEL	Solid waste/paper sludge project with DOST Recycling/solid waste project with DENR ISO 14001 certification for paper mills
6. PIP	Campaign to reduce, reuse, recycle and substitute Eliminate some form of packaging to reduce municipal and industrial solid waste
7. PMA	Seminars on ISO 14001
8. CAMPI	Provide complete list of toxic substances Campaign for segregation and on-site/off-site recycling Reduce electric, water and emission standards compliance on new product
9. Oleochemical	Conduct basic environmental education materials to members Distribute environmental education materials to members thru newsletters
10. SEIPI	Strategies for hazardous waste disposal shared among members and adopted by companies

[1] Prepared under the PRIME project funded by UNDP.

Association	Activities
	Enhanced compliance of member companies to discharge permit and other regulations Implementation of DAO 37; environmental monitoring teams and environmental monitoring fund Participation in for on Clean Air Act Implementing Rules and Regulations
11. PEIA	Advocacy on environmental issues and concerned education and training of members Networking with other environmental organization Close coordination with concerned government agencies
12. PICPA	Active promotion of Environmental Management Accounting and Cleaner Production
13. Printing	provide good environment for workers use of alternative materials such as water-based inks
14. Philfoodex	Awareness and basic environmental seminars for members
15. ENMAP	Training seminars on energy efficient technologies for the industry information dissemination through newsletter "The Energy Manager" Seminars on new developments in new and renewable energy sources (NRES) Monitoring of commercialization of NRES

(3) Current Status of Environmental Service Providers

IEM Service providers in the Philippines are divided into two groups: engineering and consulting firms.

There is few company that manufactures complicated flue gas treatment facilities and waste treatment facilities, which are imported from overseas. The engineering firms are mainly providing products related to EOP but not services to firms for reducing environmental load.

The consulting firms are providing services for ECC procedures, which a company needs to obtain, and for wastewater monitoring. There will be demands for consulting services for establishing and auditing EMS within a company. It is quite difficult to recruit personnel who have experiences in process engineering and production practices relevant to a client company, which is indispensable for those who provide consulting services in the field. Development of human resources who have experiences in process engineering is a key to enhance the capacity of the consulting firms.

On the other hand, Development Academy of the Philippines (DAP) is training technical professionals for production management. DAP is the Philippine representative of the Asian Productivity Organization (APO) and promoting Green Productivity, whose concept is basically same as that of CP.

If the ESPs in the Philippines are interested in providing consulting services in the field of CP, waste minimization, and production management, they needs to conduct a new market development.

2.2.2 Future Issues of IEM Promotion by Industry Associations and Others

(1) Future Issues in NGOs

Issues common to all NGOs in future concern the need for organizational strengthening and enhanced activities.

It is anticipated that the PBE, which has a solid track record as an advocate of IEM and is socially recognized, will play a leading role in future IEM. However the PBE is hampered by an extremely fragile financial base and is unable to secure or deploy sufficient project funds or high-level specialist staff for the provision of services. If the PBE is to advocate and work for the dissemination of IEM, it needs to bolster its financial base through increasing member companies and to enhance its functions and services as an IEM center. In particular, the PBE is expected to play a focal role in the network with related agencies.

C & GF, which serves as the secretariat of ecolabel, needs to enhance its organization to fulfill that role, as well as securing funds to achieve autonomous running of the ecolabel program. The challenge ahead concerns raising social awareness of ecolabeled products and thereby promoting greater understanding of the value and increasing the level of use of such goods among companies.

PCAPI needs to strengthen its financial base through increasing the number of individual and group PCO members.

In addition, although it already implements a variety of training programs, it should seek to improve the contents of training with a view to raising the capability of PCOs. In Japan, there is a sector-specific certification system for pollution control officers, and a similar system is also going to be established in Thailand. In the Philippines, too, it is hoped that methods (not necessarily a system) are discussed with a view of raising the status of training course completion certificates.

Concerning the Philippine Environmental Industries Association, it is difficult to gauge activities from the outside. It is immediately desirable to strengthen information dissemination and to provide links to the information network.

(2) Future Issues in Industry Associations

1) Enhancement of Implementation Capability

Follow-up survey on the industry associations that participated in BA21 revealed that the biggest outcome of this venture was that the participation boosted their understanding of IEM. It can thus be seen that industry associations need to play a very important role in promoting IEM, however, issues to be tackled before this revolve around how to enhance their organizations and, in cases where there is not enough economic muscle to establish specialist secretariats and so on, how to establish organizations for promoting functions to external circles. Concerning this point especially, it is recommended that an organization be established within the Philippine Chamber of Commerce and Industry.

2) Preparation of an IEM Action Plan by Each Industry Association

An effective approach in the future may be to select model companies, particularly in industry associations that have expressed intent to tackle waste minimization in BA21, and share their approaches and experiences concerning waste minimization with other companies in their associations. Through implementing such an approach, it is anticipated that business owners will become aware of the conditions and significance of activities by other companies in their sectors and will be encouraged to implement such activities themselves.

(4) Future Issues in Service Providers

Concerning productivity assessment services and consultant services on environmental management systems, future market development efforts are required. It is particularly desirable to strengthen counseling functions and to develop systems for rewarding companies that succeed in raising productivity, etc. There is also an urgent need to train technicians (consultants) who can implement productivity assessment and to create an environment in which SMEs in the Philippines can readily make use of such personnel.

First of all, it is urgently necessary to build the training setup for environmental management, while at the same time nurturing consultants.

2.3 Current Status and Issues of IEM Measures by Government Organizations

Following 13 government organizations have been involved in IEM promotion:

1) Board of Investments Department of Trade and Industry (BOI)

2) Department of Environment and Natural Resources Environmental Management Bureau (EMB) and Pollution Adjudication Board (PAB)

3) Laguna Lake Development Authority (LLDA)

4) Philippine Economic Zone Authority (PEZA)

5) Department of Science and Technology (DOST)

6) Board of Products Standards（BPS）

7) Department of Energy (DOE)

8) Department of Health (DOH)

9) National Economic Development Authority (NEDA)

10) Department of Interior and Local Government (DILG)

11) Technology Livelihood Resource Center (TLRC)

12) Development Bank of the Philippines (DBP)

13) Land Bank of the Philippines **(**LANDBANK)

2.3.1 IEM Measures by Government Organizations

(1) Implementation of IEM Measures

1) Philippine Agenda 21

The Philippines established PCSD (Philippine Conference on Sustainable Development), whose secretariat is DENR, to promote actions under the commitment for the international agreement on the establishment of a sustainable society. PCSD prepared the Philippine Agenda 21, which defines roles of industry and the public to achieve sustainable development. President of the Philippines ordered the society to comply with the international agreement and take actions for the establishment of sustainable society.

2) Identification of current pollution status

DENR/EMB and DTI/BOI conducted studies to identify impacts of industrial activities on the environment with the support from aid organizations.

2) –1 Pasig River Study (PR), 1990

In 1990 supported by a Danish institution our studies on the nature of pollutant and its impact on ambient aqua environment of the Pasig River in Philippines were curried out. PRRC, Pasig River Rehabilitation Commission, has been working on the Pasig river environmental

management and rehabilitation projects with a financial aid from ADB since August of 2000 to June of 2006.

2) –2 Industrial Efficiency and Pollution Control Program (IEPC), 1991-1992

This study was implemented by the Department of Environment and Natural Resources (DENR) from 1991 to 1992 with funding from the United Nations Development Programme (UNDP) and the World Bank. The Study covering Metro Manila identified the main source of toxic and hazardous wastes and significant contributors in industries.

2)-3 Laguna Lake Environmental Study (LLES), 1993

The Study identified that BOD load was the major pollutant while increase in hazardous waste generation became serious and persistent. An important achievement of the Study was the recommendation of BOD load-based water pollution charge system, which was later applied by LLDA as the Environmental User Fee System.

2)-4 Philippine Environmental and Natural Resources Accounting Project (ENRAP) Phase III, 1998

ENRAP, which had originally started since 1991, focused in its Phase III on depreciation of natural resources and pollution impacts. The study mapped hot-spots, places where immediate actions must be taken for its environment protection, among all of the polluted areas. It also identified what sort of action was needed for particular areas.

2)-5 Urban Air Quality Program (URBAIR) and Metro Manila Air Quality Improvement Sector Development Program, 1994

URBAIR was a comprehensive quantitative study which analyzed and modeled air pollutions sources, evaluated their impact on health and the economy, and made policy recommendations. With the outcome of the URBAIR MMAQISDP, Metro Manila Air Quality Improvement Sector Development Program 1998-Dec 2003, commenced with budgets offered by ADB and JBIC.

2)-6 Environmental Degradation due to Selected Economic Activities, 2000

In 2000 this UNDP-aided study on pollutant resources in industries was conducted by the National Statistical Coordination Board (NSCB).

2)-7 Master Plan Study on Hazardous Waste Management (HWM), 2001

DENR/EMB carried this study with supports from JICA which was the comprehensive study on hazardous waste management in the Philippines. It estimated the sector-wise hazardous

waste generation based on the actual generation data collected from HW generators registered officially. It provided important data sets of sector wide HW generation.

2)-8 Philippines Environment Monitor (WB/PEM), 2000-2002

The Study summarized description of green (natural resources) and brown (pollution) agenda in the Philippines. It also showed key environmental indicators, hot spots, and recent changes in environmental quality.

2)-9 Industrial Environmental Management System (IEM/GIS), 2001-(on-going)

EMB is going to design and establish a GIS system to consolidate all the monitoring information on industrial emissions (from all media) for the purposes of their administrative operations (e.g. tracking permissions) and for environmental planning.

3) EMS

3)-1 Standardization of EMS

Bureau of Product Standards has adopted ISO14001, an international EMS standard, as Philippine National Standard (PNS) 1701 (EMS - specifications with guidance for use), ISO14004 as PNS1704 (EMS - general guidance on principles, systems and supporting techniques, 1996) and ISO14010 as PNS1710 (guidelines for environmental auditing, 1996).

3)-2 Environmental Management System Accreditation Program (EMSAP)

The Bureau of Product Standards of the Department of Trade and Industry (BPS/DTI) formally launched the EMS Accreditation Scheme in October, 2002 whose system accredited ISO14001 auditors.

3)-3 Industrial Initiatives for a Sustainable Environment (IISE), 2001-2002

The USAID-DENR project Industrial Initiatives for a Sustainable Environment, IISE, used EMS to sustain advocacy of pollution prevention following the Industrial Environmental Management Program, IEMP.

3)-4 Private Sector participation in Managing the Environment (PRIME)

PRIME was an environmental project of the United Nations Development Programme (UNDP) with the Board of Investments of the Department of Trade and Industry (BOI/DTI). PRIME undertook a pilot program to set up EMS in a group of SMEs and promoted ISO 14001 EMS through strategic training of company and government personnel.

4) Inventory of Pollution Abatement Technologies/Best Practices

4)-1 Waste Minimization Database

USAID-supported IEMP (1993-1998) accumulated numerous data from its 143 volunteer firms that participated in pollution management appraisal (PMA). Since some time has past, the database is not competently utilized.

4)-2 Preparation of Sectoral Guidebooks

The Development Bank of the Philippines (DBP), through the Environmental Infrastructure Support Credit Program (EISCP) of the Overseas Economic Cooperation Fund of Japan (OECF), produced sectoral guidebooks in 1999 as an evaluation guide of its account officers for environmental projects. These guidebooks are for the following industries: coconut oil milling and refining; cement; fish canning; beverage; pig farming; and pulp and paper.

5) Preparation of Sectoral Guidebooks

The Development Bank of the Philippines, DBP, produced sectoral guidebooks as an evaluation guide of its account officers for environmental projects.

6) Nation-wide standardization of Ecolabel

With an aid from UNDP PRIME program BPS/DTI set about ISO14024-based Philippine Ecolabel program concept plan and standardized the program.

7) Promotion of voluntary actions by companies

7)-1 The Philippine Environmental Partnership Programme (PEPP)

With the assistance of IISE, the Philippine Environmental Partnership Program (PEPP) was established in June 2000. DAO on PEPP was prepared in May, 2003. This enabled that incentives were given to a company employing EMS, environmental management plans, environmental reports, and publication of environmental reports. The incentives were financial and technical ones such as advantages in reports for DENR, acquisition of ECC and so on.

8) Pilot projects for IEM implementation

8)-1 Integrated Program on Cleaner Production Technologies (IPCT)

A Center managed by of DST/ITDI offers seminars and trainings for SMEs (Basic Ecology and Economics; Clean Production Assessment and Waste Minimization in Automotive

Repair Shops), technical assistance through technology review, feasibility study, sampling, analysis and monitoring, fund sourcing, and information from CP technology database.

8)-2 Industrial Environmental Management Project (IEMP)

The USAID-supported Industrial Environmental Management Project (IEMP) was the first project to demonstrate that pollution prevention pays. It started in 1992 and ended in 1998. The following describes the processes involved and results achieved.

8)-2-1 Environmental Risk Ranking System

The IEMP assisted DENR to establish an environmental risk ranking system called the National/Regional Industry Prioritization Strategy (NRIPS). The purpose was to identify and rank industry sub-sectors and individual firms presenting the greatest relative potential risk to public health.

8)-2-2 Recruitment of Volunteer Firms

A strategy to recruit volunteer firms for IEMP demonstration is to convince firms that pollution prevention pays. The marketing approach is the use of pollution management appraisal (PMA). Incentives for and obligations of PMA volunteer firms were established by DAO 17 in February 1993.

8)2-3 Pollution Management Appraisal

The IEMP introduced in the Philippines the PMA process, which is a multi-phased, systematic procedure for identifying, selecting, and implementing waste minimization and improved waste management.

9) Evaluation of Environmental Standards for Selected Industrial Sub-Sectors (EESSIS), 1997

EESSIS is a detailed study on affordability of the existing environmental standards for a few polluting industrial sectors based on detailed data gathered at the plant level. The industrial sub-sectors covered include power generation and cement and sugar industries.

10) Potential Use of Market-Based Instruments

10)-1 Potential Use of Market-Based Instruments for Environmental Management in the Philippines (ADB-MBIs), 1997

ADB conducted a study to review structure of environmental management effectiveness of various MBIs in the Philippines in 1997.

10)-2 An Assessment of Fiscal/Financial Incentives for Environment Project (IISE/Fiscal and Finance), 2001

This study was the first comprehensive review and assessment of existing fiscal and financial incentives available in the Philippines.

(2) Future Issues

1) IEM Policy Direction

Policy actions in the field of IEM in the Philippines have mainly been implemented with assistance from aid organizations from the 1990s onwards. Next, it is necessary to ensure thorough compliance with the law. However, the EMB/DENR and its local offices, which are the competent authorities in the environmental field, are unable to carry this out due to structural limitations imposed by budget constraints. Since this problem is linked to the fiscal constraints of the government, it cannot easily be solved.

There are two approaches to promoting industrial pollution countermeasures in the Philippines; the first is the conventional approach of bolstering legal regulations and enforcement systems, and the second is to seek voluntary compliance with the law by securing the participation of pollution sources.

As can be gathered from the measures reviewed in previous sections, the Philippines is shifting weight from the former to the latter approach, which comprises the following aspects.

- Establishment of EMS:

Help business owners understand that by establishing EMS in companies, not only does this ensure voluntary compliance with the law, but also be effective in reducing environmental countermeasure costs.

- Pilot implementation of waste minimization and CP:

Promote understanding of the significance of IEM through showing the effects of implementing waste minimization and CP. In doing this, make it possible for companies to comply with the law.

- Awareness-raising of business owners:

Provide this kind of information to business owners, government agencies and associations with a view to enlightening related persons.

- Examination of economic instruments:

Utilize economic instruments, for example, environmental user fees, preferential tax treatment, public soft loans, in order to encourage more companies to take part in IEM.

- Dissemination of Ecolabels

Promote greater environmental awareness among companies by means of ecological products.

- Flexible approach to application of environmental laws:

Relax applications of environmental laws and regulations and provide other incentives with respect to voluntary efforts by companies.

Further bolstering of this policy direction is the issue that faces the Philippines in the future. For this reason, it is essential for coordination to take place between related ministries and agencies. The competent authority, the EMB/DENR, is the regulatory organization and takes the approach of controlling companies. Meanwhile, strengthening of voluntary IEM by companies needs to be started from the improvement of business management and productivity improvement. BOI/DTI takes the approach of implementing environmental investment as a management improvement measure.

It is hoped that the BOI/DTI and EMB/DENR examine future necessary measures for promoting IEM in consideration of past activities and compile them into action plans, while at the same time carrying out mutual adjustment and checking with each other.

2) Future Impediments and Necessity for IEM Action Plans

According to the fiscal deficit, the IEM measures need to be deployed under support from aid organizations for the immediate future.

Until now IEM projects have been commenced under support from numerous aid organizations, however, the activities have not been well coordinated. As a result, there are cases of overlapping projects, as well as cases where past achievements have not been fully exploited. Therefore it is desirable for each government agency to prepare its own IEM action plan to avoid such wastefulness. In order to implement such action plans and achieve results, it is desirable for each organization to seek support from aid organizations where necessary.

3) Lessons from Projects by Aid Organizations in the Past

3)-1 Promotion of IEM Information Sharing

USAID has noted from its own projects that approaches to reducing environmental load implemented in IEMP tend not to be replicated to other companies. Information was not provided to other companies because plant managers thought that the results (countermeasure plans) of pollution control assessments (PCA) were only intended for the targeted plants, and because there was no forum for such information to be shared. It has also been pointed out that factories unable to comply with environmental standards were worried about being driven to closure if such information was shared with other companies (USAID, 2000). Considering these points, it is necessary to promote sharing of IEM information within industries.

3)-2 Promotion of Information Exchange through Participation by Industry Associations

Industry associations played a major role in the approach to pollution countermeasures that Japanese companies took during the era of rapid economic growth. The staging of workshops to exchange information and pass on know-how from larger companies to SMEs in each industry aided the promotion of environmental countermeasures among Japanese companies as a whole. The Philippines also has industry associations, however, hardly any of them possess even a full-time secretariat. As a result, even if information is provided to industries, it does not filter down to the grassroots level.

Regarding the approach to cutting pollution load in IEMP, participating companies have so far been solicited on an individual basis. In the future, however, by introducing an approach combined with measures to organize industry associations (selection of model companies by industry associations, sharing of model company experiences, and clarification of industry-wide approaches), it is possible that wider sharing of experience will be promoted.

3)-3 Facilitating Use of Accumulated Information

Through projects such as IEMP, IISE and PRIME, etc., valuable information that companies can utilize in promoting IEM has been compiled regarding such items as EMS, environmental accounting, waste minimization and fundraising methods for environmental investment, etc. These bodies of information are stored in project implementing agencies (governments and donors), university libraries, financial institutions and NGOs. Moreover it is expected that much more information will be prepared by related agencies in the future. In order to avoid overlapping with existing information and to provide information that corresponds to the

needs of information users, in the future it will be necessary for information providers to build a system for continually improving the content and form of information.

Furthermore, as more and more websites comes to be started in line with the implementation of projects, useful information is now available on the Internet. However, since some of these sites cease to be accessible when projects finish, it will be necessary to build websites independently of projects so that IEM information continues to be provided.

4) IEM Promotion Measures in Need of Strengthening

In particular, the most fundamental issue that needs to be tackled in promoting corporate IEM in the Philippines from now concerns how to promote greater understanding among greater numbers of business managers of the need for IEM and the need for implementation as an aspect of management improvement and productivity improvement.

First of all, in order to deepen this understanding among business managers, it is desirable to deploy measures separately according to advanced companies and companies that are late-developing.

Steps by advanced companies:

- Awarding system of advanced companies
- Greater advocacy of IEM and social contribution by advanced companies
- Support of development of IEM technical tools
- Encouragement of participation in an international IEM community
- Dissemination of IEM tools:
  - Introduction of environmental accounting
  - Promotion of ecolabel utilization
  - Promotion of utilization of environmentally conforming design and LCA, etc.
  - Implementation of take back systems for used products
  - Green procurement and supply chain management
  - Introduction of CP
  - Building of recycling networks

Steps by late-developing companies:

- Seminars and awareness raising activities
- Support for development and dispatch of skilled personnel for management improvement

- Provision of opportunities for participation in pilot management improvement and CP projects
- Provision of training opportunities for engineers
- Information provision
- Strengthening of economic incentives
- Development and enhancement of industry associations

2.3.2 Current Status and Issues in Environmental Laws and Regulations

(1) Current Status

Law compliance must be the essential part of IEM. Basically the Philippines has established a legal system for controlling activities having impacts on the environment.

1) Effluent control

In the Philippines, effluent standards for hazardous substances are at the world level, however, it is said that many companies failed to comply with the standards. Major reason for that is the government does not have sufficient budget to enforce the standards by conducting on-site inspections on operation of wastewater treatment facilities.

Applying the effluent standards for organic substances may not help to improve the water pollution in the water that the effluent is discharged into. On the ground of this circumstance, a new Clean Water Act has been in the process of preparation. The new standards would be stricter; those for existing facilities are integrated into those for new facilities, and all the wastewater treatment facilities are covered. In addition to the new standard, the stricter standards, environmental user fees and permission systems for wastewater discharge are also proposed.

2) Emission control

Clean Air Act of 1990 (RA 8749) provides emission standards for point sources. The emission standards for hazardous substances are very strict. Like effluent control, compliance with the emission standards is not confirmed since necessary monitoring has not been fully conducted.

3) Hazardous waste management

Toxic Substances and Hazardous Wastes Control Act (RA6969) defines the basic framework of management of toxic substances and treatment of hazardous wastes. The IRR of RA6969, DAO 92-29, provides detailed regulations.

4) Industrial Waste Management

All the non-hazardous industrial wastes are handled as municipal wastes under the jurisdiction of LGUs. The management of such waste is subject to Ecological Solid Waste Management Act (RA9003).

5) Recycling Policy

The Philippines has not prepared a recycling policy so far, but Ecological Solid Waste Management Act (RA9003) lists minimization of waste generation and recycling of waste as the basic policy. Recycling of both municipal and industrial wastes is necessary; the important issues are to promote establishment of collection system of used products/wastes for recycling and how to put products using recycled materials in the market.

Without demand for the recycled products and existence of recycling industry that utilizes collected materials/wastes, recycling cannot be completed even if used products/wastes are collected.

6) Environmental Impact Statement System and Environmental Compliance Certificate

Presidential Decree 1586 was issued to establish an environmental impact statement (EIS) system in 1978. Section 4 of the Decree provides that the President of the Philippines may, on her/his own initiative or upon recommendation of the National Environmental Protection Council, by proclamation declare certain projects, undertakings or areas in the country as environmentally critical. It prohibits implementation or operation of the projects or undertakings without first securing an Environmental Compliance Certificate (ECC) issued by the President or her/his duly authorized representatives.

7) Pollution Control Officer (PCO)

The Letter of Instruction (LI) No. 588, August 19, 1997, defines PCO. It requires any facility generating or treating pollutants to have a PCO.

8) Regional Regulations

The Laguna Lake Development Authority deals with issues on Laguna Lake development plans and programs and budgetary planning. The LLDA issues a permit to point sources of water pollution within the Laguna Lake watershed and charges environmental user fee.

Local government units (LGUs) have authority and function concerning the environment defined in the environmental laws, namely Clean Air Act and Ecological Solid Waste Management Act.

(2) Future Issues

1) From Regulation to Voluntary Control

Although statutes, discharge standards and control standards have been established for stack emissions, effluent and wastes generated by industry, such legislation is not thoroughly enforced. The following factors are listed as leading this weakness of enforcement capacity (Mertz et al., 1998):

- DENR Regional Offices are in charge of monitoring factories targeted by regulations; however, they are unable to implement sufficient monitoring due to shortages of personnel, means of transport (cars), travel expenses, analysis instruments and reagents, etc.
- Since final judgments concerning punitive measures such as plant closure in cases of infringements are entrusted to the Pollution Adjudication Board (PAB), DENR Regional Offices cannot make decisions on the spot.
- It takes a number of months for reports on violations to reach the PAB from DENR Regional Offices, and analysis findings become often out of date.
- Due to lack of personnel, DENR Regional Offices have to make decisions concerning compliance or noncompliance with standards based on just one round of sampling; however, companies claim that a single set of samples is not representative of actual operating conditions.
- An inventory of hazardous wastes was compiled in 2002, however, since there is still no inventory concerning wastewater and air pollution, it is not possible to conduct appropriate administrative measures. Moreover, even though companies submit reports relating to hazardous waste control and ECC, there are no means of checking the reports and putting them to use in developing administration.

It will not be possible to resolve and improve these problems in a short time. Accordingly, it may be more effective to switch from monitoring by regulatory agencies to an approach of promoting voluntary monitoring by companies and disclosing information about the monitoring results so that the society as a whole can monitor the environmental performance of companies.

The issue in the future will be to build up this kind of partnership with companies.

2) Legislative Adjustment for Promotion of IEM

The following issues need to be tackled in order to promote IEM by companies.

1. Examination of legal inducements to promote corporate IEM is desired. In particular, it is hoped that inducement of IEM based on PEPP (DAO03-14) and establishment of an EMS certification system for SMEs will be realized.

2. In the DAO96-37 Procedural Manual, applicability of Definition V in Article 3 of DAO96-37, i.e. "Project or Undertaking – any activity, regardless of scale or magnitude, which may have significant impact on the environment," is subject to review by the EMB, and judgment criteria for factories targeted by such review are not disclosed. Many factories not having critical environmental impacts are required to secure an ECC, and this is a burden for SMEs especially. It is desirable to see the clarification of ECC procedures and examination of measures for relieving the burden of SMEs that are aiming to secure an ECC (simplification of procedure, relaxation of reporting obligation, and so forth).

3. As a further step to enhance policy and promote systemization, it is desirable to legally require environmentally sound procurement by public agencies as a means of supporting corporate environmental improvements and supply chain management.

4) Planning of Recycling Policy

RA9003 (Ecological Solid Waste Management Act), which was enacted in 2001, requires the DTI to plan measures for expanding the recycling market, however, this has not yet been carried out due to staff and budget shortages. The early planning of such measures is required together with the inventorying of recyclable materials. Moreover, since RA9003 does not include any stipulations on the legal obligation of parties (in particular industries) other than the state and local governments with regard to recycling, it will be necessary in the future to establish the legal basis for recycling by industry. For this reason, an important issue concerns the establishment of a recycling law and a law concerning the recycling of individual goods (for example, containers and packaging).

2.3.3 Economic Incentives

(1) Current Status of Economic Incentives

As incentives to encourage investment in IEM, there are public loans by DBP and Land Bank and preferential tax treatment for investment by BOI. As one of the effective systems to

reduce wastewater discharge, LLDA employs the Environmental User Fee system, and the fee system is applied nation-wide by DAO in 2003.

1) Tax privileges based on BOI Investment Priority Plan

According to the latest Investment Priority Plan (IPP) of the Philippines in 2002, some tax incentives became available for the following environmental projects:

- Development or conversion of industrial ecosystem
- Self-regulation at the Plant/Firm Level
- Establishment of Toxic and Hazardous Waste (THW) Merchant Facilities
- Establishment of waste handling facilities/sewerage systems for industrial/ municipal wastes (modernization may include rehabilitation)
- Testing/measuring services for emission and effluent and other related environmental parameters (for industrial and vehicular engines preferably with rehabilitation facility)

In addition to the above activities, if energy conservations comply with the specific requirement provided in the IPP, they are also subject to tax incentives.

2) Financial Incentives

Financial incentives for IEM promotion include provision of low interest loans and inclusion of environmental considerations as one of the lending conditions. As for the latter incentive, only three banks in the Philippines require a company to have an ECC as their lending conditions. Since companies could borrow money from the other banks that do not require securing an ECC as prerequisite for borrowers, a mechanism to encourage corporate IEM activities through loans does not function well.

Development Bank of the Philippines (DBP) and Land Bank of the Philippines (LBP) have low interest loans for investment in IEM. Japan Bank for International Cooperation (JBIC) and the government of Germany provide funds for these loans. The low interest loans have not been utilized by a large number of companies, and the funds are often under utilized.

According to the assessment of financial incentives for environmental projects (USAID, 2001) conducted as a part of the IISE project revealed restraining factors for SMEs to use the low interest loans as follows:

- A lender (banks) fails to prioritize cleaner production and/or cost reduction because its weak ability in technical support to SMEs.
- Upon evaluation of loan application, banks do not usually include environmental benefits and cost reduction as judgment criteria.
- Requirements for collateral are strict (DBP would accept shared-collateral).

- Environmental awareness of borrowers is low.
- Although SMEs have capital demand for improvement work, the improvement work is not eligible for the low interest loans.

Other reasons of low utilization of low interest loans by SMEs were identified as follows from interviews with DBP and LBP staff under the EMPOWER project.

- Conducting a feasibility study on capital investment and filing a loan application accrue costs (although DBP provides technical support to SMEs for the feasibility study, not all the SMEs could receive such support due to limited budget for the technical support).
- SMEs fail to fulfill profit requirements for the loans (usually environmental investment would not increase profits). Relaxing the requirements is being discussed at DBP.
- The government is slow to issue permits necessary for SMEs to establish facilities contributing to improvement of their environmental performance.
- SMEs do not recognize advantage of cost-saving from Cleaner Production.

3) Environmental User Fee System

LLDA collects levies on effluent discharged into Laguna Lake based on BOD load. According to the interview with LLDA under the EMPOWER project, BOD load was decreased by 55% at the time of 1997, and 73.6% at the time of 1999 compared with the load before the introduction of the environmental user fee. The system is evaluated as well functioning in terms of reduction in BOD load. The environmental user fee is determined by BOD level and volume of wastewater.

Under this charging system, a company would face unexpectedly hefty fees if the company discharges large volume of effluent with high BOD concentration. Therefore, there is a strong incentive for companies to reduce volume and BOD concentration of effluent. According to LLDA, the annual BOD load discharged to Laguna Lake was reduced to 202 ton in 2002 from 5,403 ton in 1997 (merely 4% of the BOD load in 1997).

The revenue from the user fee is used for monitoring and so forth by LLDA.

(2) Future Issues for Economic Incentives

1) Greater Appeal of Financial Incentives

In the assessment of financial incentives for environmental projects, recommendations are given for accelerated depreciation, exemption of taxation and duties on environmental equipment (imported and domestic products), and so forth. In addition to the review of

fines and penalties, these recommendations should be examined and worked into legislation by related ministries and agencies.

2) Functioning of Financial Incentives

In order to make financial incentives more functional, it is necessary to encourage environmental consideration by financial institutions when making judgments on loans, to improve conditions for providing funds to environmental investments, to enhance the technical support capacity of financers, and to enlighten the awareness of borrowers.

3) Introduction of Other Incentives and Disincentives

Concerning other environmental incentives and disincentives utilizing the market mechanism, proposals have been put forward in a study by the ADB concerning the levying of tolls on water consumption and air pollutant emissions over certain levels, fuel taxation based on constituent pollutants, trading in wastewater discharging rights, and so forth (ADB, 1997); however, these measures have not yet been introduced. It is necessary to promote examination among related ministries and agencies with a view to realization based on the study findings.

2.4 Conclusion: Summary of IEM Action and Policy Issues

2.4.1 Future Issues for Promotion of IEM in Corporations, NGOs and Industry Associations

(1) Future Issues for Promotion of IEM in Corporations

Future issues are discussed in detail in Section 2.1.3, however, the most essential point is that business managers gain a true understanding that, in order for companies to voluntarily promote IEM, implementing measures to improve productivity and to realize cleaner production from the viewpoint of management improvement will make it possible to simultaneously reduce production costs and environmental loads.

It is hoped that the business managers who understand this will implement IEM as an element of management improvement, broadly advertise the results of this to the general public and contribute to the society by becoming IEM leaders.

(2) Future Issues for Promotion of IEM in NGOs and Industry Associations

Issues concern the clarification of IEM advocating centers and how to enhance and improve the organizations, finances, functions and services of those centers. It is also necessary to clarify the division of roles of related NGOs and industry associations, to construct networks and to improve the quantity and quality of support for companies attempting to tackle IEM.

In order for industry associations to implement industry-wide IEM, they need to prepare action plans that give more specific expression to Business Agenda 21. Then, they need to manage the implementation of these plans. However, the fundamental problem impeding this is the dearth of organizational capability within such organizations. Since this is not something that can be solved easily, it is desirable to create an environment where secretariat functions for promoting IEM can be established within the said NGOs and the Philippine Chamber of Commerce and Industry.

2.4.2 Issues of IEM Promotion Measures by Government Organizations

Current status and issues of government IEM policies are summarized below.

Table 2.4.1 Activities that related to IEM and their Political Issues

Measures			Efforts Made	Future Agenda
Measures to promote voluntary actions	Awareness-raising, capacity building of business owners	Seminars	Many seminars have been held by PBE, MAP, and APRCP.	・ Coordination of IEM seminars and integration of information
		Recognition system	Award system is in place such as DTI's Philippine Quality Award.	・ Establishment of a recognition system that promotes SME's environmental management
		Information Provision	Manuals and leaflets on waste minimization, EMS, and other IEM related topics have been developed and published. An environmental information center for Philippine industry has been set up in PBE.	・ Establishment of a system to continuously improve contents and provision methods of IEM information ・ Establishment of a clearing house of IEM information
		Training of production / environmental management auditors	Trainings for PCOs have been held.	・ Training of technical experts who can audit production and environmental management ・ Enhancement of training on cleaner production
Measures	Promotion of	Development and implementation of voluntary action plan	84 industry associations declared to participate in Business Agenda 21 for sustainable development.	・ Implementation

Measures			Efforts Made	Future Agenda
		Technical assistance to Waste Minimization	IEMP & IISE projects provided technical assistance to individual companies for introducing waste minimization and developed manuals on waste minimization. Private company's cooperation at ITDI was realized for technical development.	・ Approach from resource productivity improvement ・ Increase in business owners / executives support to IEM ・ IEM promotion by industry associations
		Introduction of EMS	Awareness raising, technical assistance, trainings for local consultants, and development of relevant manuals for introduction of EMS have been conducted in IISE and PRIME projects.	・ Reduction in procedure costs for EMS certification (establishment of local accreditation body) ・ Incentives to introduce EMS ・ Promotion of environmental report preparation and disclosure
		Environmental Accounting	PICPA commenced trainings on environmental accounting	・ Promotion of introduction of environment accounting to individual companies
		Ecolabel	Secretariat has been established for introduction of an ecolabeling program	・ Establishment of standard procedures for management of the Ecolabeling program ・ Accreditation of the ecolabel and promotion of ecolabeled products
		Green procurement	None	・ Dissemination of supply chain management
		Recycling promotion	None. Each factory takes its own action for recycling promotion.	・ Promotion of recycling and DFE
Support for legal compliance	Emission control (including Monitoring)		Emission and effluent regulations as well as regulation on hazardous waste management have been set.	・ Introduction of voluntary monitoring
	Appointment of Pollution Control Officers		According to factory type and size, appointment of PCOs is mandated.	・ Accreditation of PCO's technical levels
	Promotion of recycling used products		DTI is mandated to formulate measures to expand the recycling market by RA9003.	・ Development and implementation of policies to develop recycling industry ・ Clarification of industry's roles in recycling
Economic	Tax exemption		Tax exemption is given for investment in environmental projects (including energy saving) listed in "Investment Priority Plan".	・ Increase the use of the exemption system

Measures		Efforts Made	Future Agenda
	Low interest loan	DBP and LBP provide low interest loans for environmental investment.	・ Increase the use of the loan system
	Environmental user fee	User fee system has been introduced for wastewater discharge into Laguna Lake based on BOD load.	・ Identification of the results of the existing fee system ・ Application to other areas

Chapter 3

Development Strategy for Industrial Environment Management

3 Development Strategy for Industrial Environment Management

3.1 Fundamentals for Development of Environment Management in Industry Sector

3.1.1 Fundamentals and Issues of Environment Management in Industry Sector

One of the important findings identified in the EMPOWER project is that every industrial enterprise increasingly recognizes the necessity of complying with the environmental laws and regulations provided in the Philippines. However, many of SMEs, due to their small and limited management and financial capacity, are still facing the difficulty in investing pollution control or environmental management.

Meanwhile, the large industries, which have already achieved major successes in their businesses and held enough management and financial capacities, are usually active in environmental management. They are also strengthening their competitive power in the market. The gap between LEs and SMEs is getting bigger and bigger in their competitiveness as well as management and financial capacities. For the SMEs, environment management is nothing more than the additional factor that increases their production cost and makes their businesses more difficult. The top priority of SMEs is given to the increase in their productivity and profit with no or minimized additional investment.

The first step of IEM for the SMEs in the Philippines is to stabilize their businesses through improvement of their production processes and quality of products with the financially viable measures. IEM policies, measures and technologies have to be identified in consideration of such needs of SMEs.

3.1.2 Relationship among Stakeholders in IEM

Although stabilization of business management is the starting point for development of IEM, the awareness of management executives in IEM is another key of taking the first step for IEM. In this regard, it is of great importance how the business enterprises build their relationship with other relevant stakeholders, i.e. government, consumers, business groups, citizens, and so forth. Figure 3.1.1 illustrates the relationship between the business enterprises with other relevant stakeholders.

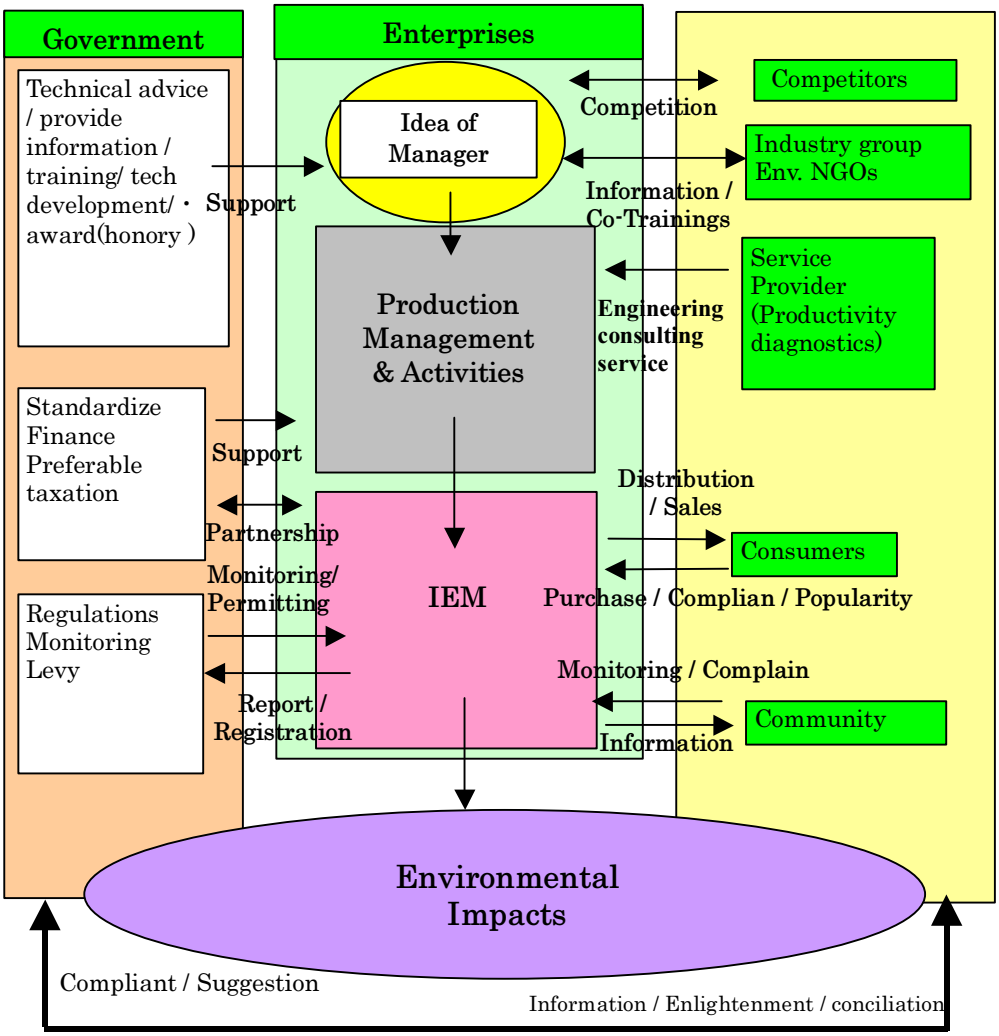

Figure 3.1.1 Relationship between the business enterprises with other relevant stakeholders

3.1.3 Keys of IEM Development

(1) Different level of IEM development between LEs and SMEs

The results of factory survey identify the difference in the level of IEM between LEs and SMEs. SMEs are required to improve and stabilize their business performance through proper management of production process and quality control of products before full-scale implementation of IEM. IEM promotion needs different approach depending on the level of business conditions of each enterprise, especially between LEs and SMEs.

(2) New social roles of the enterprises in sustainable society

Commercial product is the interface between the manufacturing industries and consumers. The commercial product, through its product lifecycle ranging from procurement of raw materials, production, and distribution to consumption and disposal, creates a long-range impacts upon the environment. All the industrial enterprises are responsible for minimizing all these potential environmental impacts (Extended Producers' Responsibility) as well as for disclosing such information correctly to the consumers.

(3) Roles of NGOs, industry groups and environmental service providers (ESPs)

To raise understanding and awareness of IEM among the industrial enterprises, the roles of industry groups and NGOs are important as the sources of information as well as human resources who provide and transfer proper technologies and know-how. Environmental Service Providers (ESPs) are also expected to take the leading role of building the market of environmental business in the Philippines through provision of environmental services that benefit industrial enterprises in terms of pollution control as well as increasing production efficiency and reduction of production cost.

3.2 Basic Policies for Promotion of IEM in the Philippines

3.2.1 Definition of the IEM Promotion Policy

IEM promotion policy hereby proposes the orientation of governmental intervention in the activities of industrial enterprises and other stakeholders for the purpose of promoting IEM. Environmental compliance is the precondition of proper industrial activity that has to be followed by every enterprise on a voluntary basis. The IEM promotion policy here focuses on the policies from the viewpoint of industrial development authority, in this case, the standpoint of BOI/DTI that defines IEM as an essential part of proper industrial development in the Philippines.

Although the IEM promotion policy focuses on how BOI/DTI should make policy interventions in the industrial activities, it also discusses the roles of other authorities since coordinated efforts among government ministries and agencies are also required for proper development of IEM in the Philippines.

3.2.2 Major Constraints

The government budget that can be allocated to IEM promotion is very limited in the Philippines. Human resources are also limited in number as well as their expertise in the field of IEM. The Project recognizes that these two are the main constraints of the government in promoting IEM in the Philippines. The policies and measures for IEM

promotion have to be formulated in due consideration of them so that they can be implemented within the capacity of current government.

3.2.3 Major Targets of IEM Promotion

(1) Targets of IEM activities

The IEM promotion policies in this Project focus on production process management in the Philippines that are the ones currently defined as pollution prevention (PP), waste minimization (WM), cleaner production (CP) or green productivity. Incorporation of pollutants reduction into production process management is the main target of IEM in this Project. Combining the environmental management system with the production management system within the factories and business enterprises is the organizational basis for achieving this IEM target.

The production process management originally aims at reducing the loss of industrial input, which is conducive to lowering production cost and increasing productivity as well as quality of products. It also simultaneously reduces emissions of pollutants and minimizes the environmental load arising from industrial activities. The production process management is the win-win approach that contributes to improvement of industrial productivity as well as protection of the environment.

(2) The roles of IEM in competitiveness of the Philippines Industry and growth of national economy

To compete and survive in the international market, the Philippines industry has to comply with the international environmental standard of industrial activities. In this regard, IEM is an essential part of the sustainable economic growth of the Philippines. Promotion of IEM is also a good opportunity for the Philippines industry to recognize the importance of efforts not just in the area of environment, but also innovation of business management, productivity improvement, quality control of the products and development of new business market.

(3) Focuses on SMEs and consumers

1) SMEs

Most of the Philippines domestic capital based industries categorized as SMEs are usually troubled with their weak financial, technical as well as human resources capacities and obliged to keep day-to-day management of their businesses. The government support has to be first given to SMEs so that they can introduce IEM within their limited capacities. The IEM promotion Policy here also primarily focuses on SMEs.

2) Consumers' understanding of environment issues

Consumers' support is the basis of the business activity. Although not all the industrial enterprises provide their products directly to the consumers, all of the products finally go to consumers, end-users of the products. In this regard, environmental education and raising awareness of environment among consumers are important roles of the government so that the efforts of the industries in IEM can be properly recognized by the consumers.

3.2.4 Policies and Measures to Promote IEM

This section discusses the basic framework of policies and measures to promote IEM. As discussed in the former section, the major issues to be addressed are identified as follows:

- Awareness of corporate managers on the importance of IEM,
- Establishment of organizational mechanism for conducting IEM within each business enterprise, and
- Improvement of productivity through implementation of IEM

The policies and measures to promote the above efforts are identified as follows:

- IEC Measures to promote voluntary efforts of business enterprises
- Legal and regulatory supports to implementation of IEM
- Financial/economic incentives to promote IEM

(1) IEC measures to promote voluntary efforts of business enterprises

1) Awareness and capacity building of business enterprises in IEM

The measures for awareness and capacity building of business enterprises in IEM mainly consist of:

- Seminars/workshops
- Provision and dissemination of IEM information
- Establishments of awards or public recognition measures for remarkable efforts of IEM
- Training of human resources working for IEM within the business enterprises

IEC measures should also focus on motivating the businesses to conduct IEM through presentation of the possible benefits obtained from IEM such as reduction of production cost, increase in productivity, improvement of product quality, and so forth.

2) IEM tools

IEM tools have mainly two categories, i.e. environmental management software such as guidelines, or manuals for corporate environmental planning, EMS, environmental accounting, green purchasing, etc, and hardware such as waste minimization, cleaner production, recycling and so forth. IEM tools have to be properly designed or modified to adapt to the conditions of IEM and technical/financial capacity of the Philippines industries.

3) Building relationship among stakeholders

To disseminate IEM among the Philippines industries, a close relationship has to be built among relevant stakeholders, especially the government, industry groups and environmental NGOs in the Philippines.

(2) Legal and regulatory supports to implementation of IEM

Legal and regulatory supports may include promotion of self-regulation by industries through granting a grace period of enforcing the laws and regulations, establishment of the Philippines version of standardized environment management system, licensing system of pollution control officers (PCOs) and other experts working for IEM, and so forth. Legal and regulatory supports for promotion of recycling are also areas that are not yet well addressed in the Philippines.

(3) Financial and economic instruments

With the financial assistance of donors, financial assistances are provided to some of the environment investment activities in the form of low interest loan, as well as tax reduction and exemption. There are some issues to be addressed for increase in the use of these financial assistance programs since the requirement of utilizing them is still difficult to comply especially for SMEs. As to the economic instruments, Pollutant charge system is currently applied by LLDA.

In applying economic instruments, the issue of equality has to be properly considered. In addition, the use of collected charges is another issue of primary attention. The fund collected from pollution charges should be reallocated for pollution control or environmental protection purposes as much as possible. Current system of pollution charge needs to be reviewed and revised in this regard.

3.2.5 Scenario of IEM Development in the Philippines

In promoting IEM in the Philippines industry, difference in scale and capacity of industrial enterprises has to be properly considered. The approach of IEM promotion should be differentiated especially between LEs and SMEs.

The current level of IEM in the Philippines industry can be illustrated as shown in Figure 3.2.1.

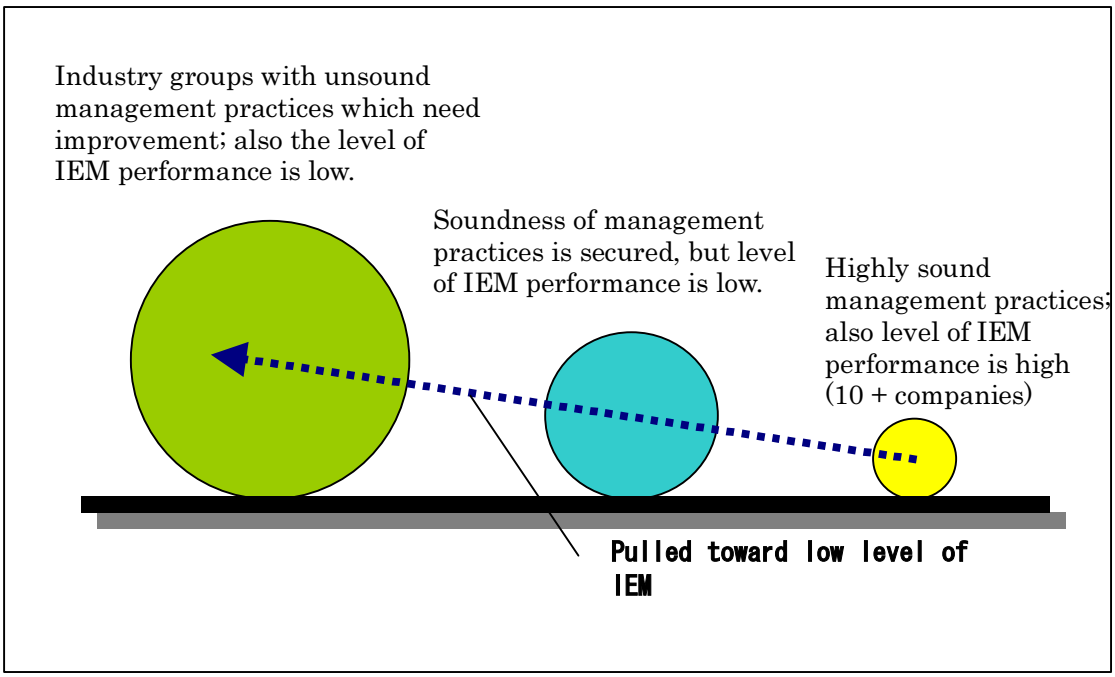

Figure 3.2.1 Current level of IEM in the Philippines industry

Through the application of different measures to the industries depending upon the levels of production and management capacity, the average levels of business and industrial environment management will increase in the Philippines industry.

Industrial enterprises are always aware of the behavior of other enterprises dealing with same or similar products. If the level of IEM in one enterprise increases, it will influence the others to keep up with him. The government should contribute to creation of such trend in IEM in the Philippines.

Figure 3.2.2 illustrates a developed level of IEM in the Philippines Industry. There are a number of technologies that can increase productivity as well as reduce pollutant emissions. Although some of such technologies require large capital investment, there are also no or low cost technologies that SMEs can apply within their technical and financial capacity. SMEs can start with such no or low cost technologies with their focus upon improvement of productivity and quality of products. Once they succeed in productivity improvement and gaining more profit, they can take the next step of IEM with the increased technological and financial capacity.

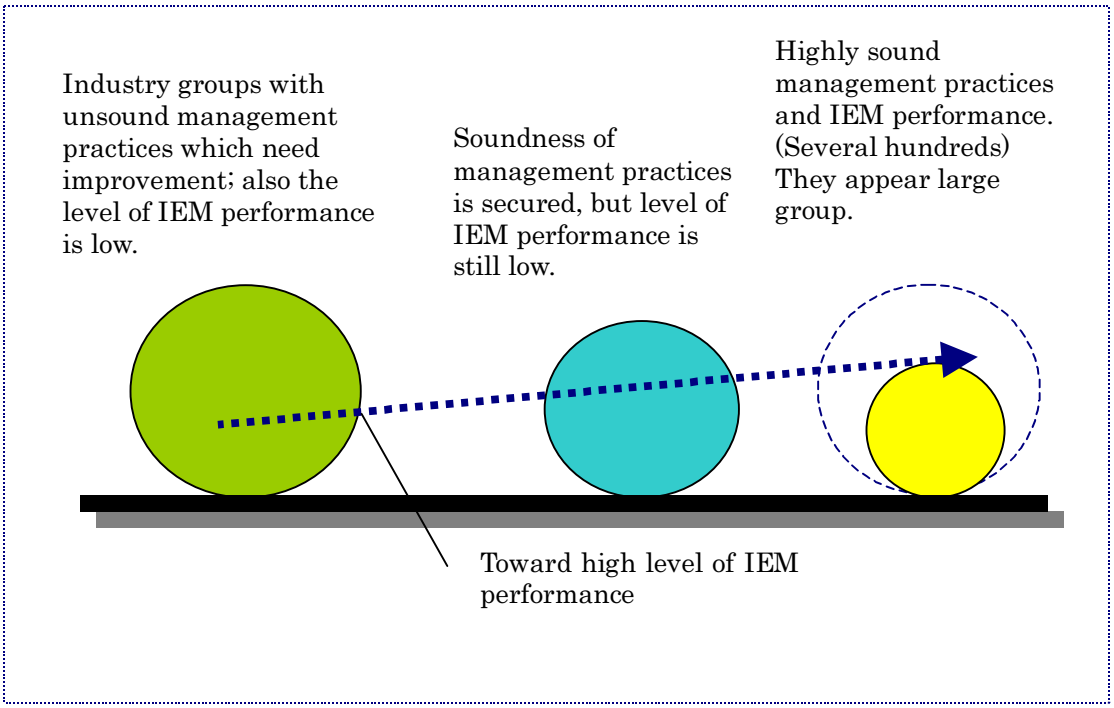

Figure 3.2.2 Developed level of IEM in the Philippines Industry

With the increase of environmental awareness in the Philippines, especially in consumers, IEM will be an important part of industrial activities to increase value-added of their products.

3.3 Identification of Priority Areas

3.3.1 Priority of Environmental Issues

The focus of the Project should be given to minimize environmental load of industrial activities. The first priority should be given to minimization and control of the pollutants having high risk to human health, followed by those that have higher risk to living and global environment. In terms of global environment, greenhouse gases and ozone depleting substances are of great importance. In formulating the IEM Action Plan, the Project needs to consider criteria for setting the priority of pollutants, as well as the localities threatened by them.

3.3.2 Priority of Industry Sector

Reviewing the prior studies and available data in the Philippines as well as the experience in Japan and other countries, the Project identified the priority sectors of industry through the evaluation of the following indicators:

- Impacts of the industrial activities that can be quantified as air pollutant emissions, water pollution loads, and amount of solid waste generations (especially hazardous waste).
- Potential impacts of the industrial activities that can be estimated from the energy, water, and raw materials input, as well as the current processes applied dominantly in the Philippines industry.

In addition, taking into account the major concern for environmental management of SMEs in the Philippines, the ratio of SMEs by each sub-sector of industry is also considered in identifying the priority sectors.

As the result of evaluating all the available data from prior study works as well as those conducted by the team, the Project identified 19 sub-sectors as the priority of promoting IEM as shown below.

- Beverage
- Cement manufacturing
- Chemical products (industrial and agrochemical)
- Coconut-based milling, refining and spirit distillation
- Cosmetics
- Electroplating and metal finishing
- Food processing - tuna and small-scale processing
- Glass and glass products
- Machinery and tool manufacturing
- Metal foundry and forging
- Offset printing
- Petroleum products
- Pharmaceuticals
- Plastics and rubber
- Pulp and paper manufacturing
- Soap and detergents, cleaning agents
- Spinning, textiles and dyeing
- Sugar milling and refining
- Wood-based industries

3.3.3 Priority of Policy Instruments

Considering the weakness in institutional and financial capacity of the Philippines Government, the first priority should be given to suasive measures that can promote voluntary IEM activities by industries with comparatively lower cost. In determining the priority of policy instruments to promote IEM, the Project considers the criteria given as follows:

- Policies contributing to both improvement of productivity, competitiveness and environment in lower cost of investment,
- Policies serving especially for development of IEM by SMEs,

- Policies that are expected to show identifiable effect within the short-term of 2 to 3 years,
- Policies that are expected to have spillover effect upon IEM by industries,
- Policies that promote voluntary efforts of IEM by industry groups and NGOs,
- Policies contributing to establishment of the network among the relevant stakeholders including industrial enterprises, industry groups, environmental service providers, government and so forth,
- Policies contributing to building public and private partnership in IEM,
- Policies that can be continuously monitored about their progress and effects,
- Policies that promote self-sustaining development of IEM by industries.

There are various measures to promote IEM that can be utilized depending on the levels of IEM development within the individual industries. Figure 3.3.1 illustrates the hierarchy of IEM.

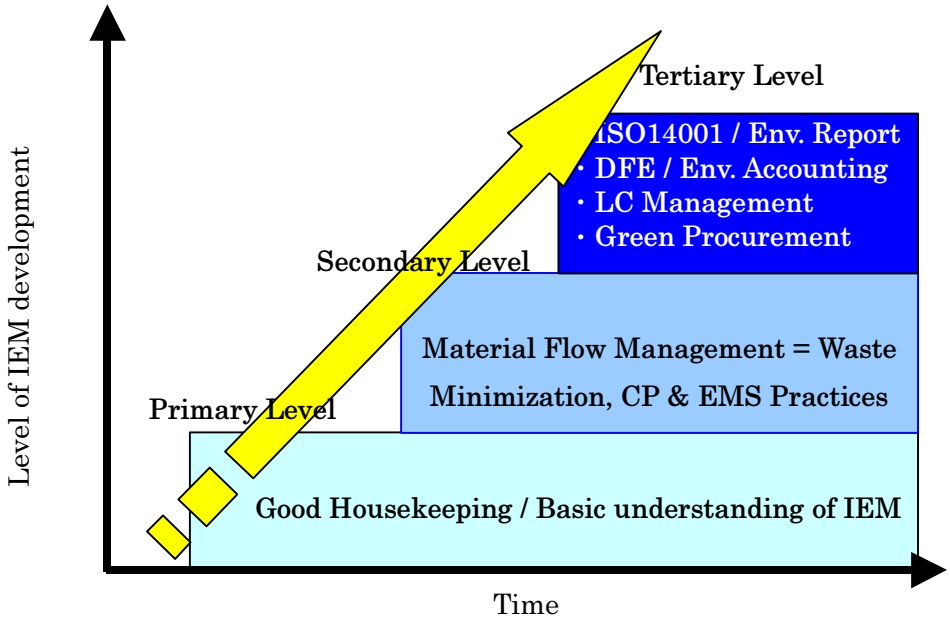

Figure 3.3.1 Hierarchy of IEM

According to the survey on industrial enterprises conducted in the Project, a considerable number of the Philippines industries are still at the primary level of IEM where proper housekeeping of industrial activities and basic understanding of IEM are required. The priority of IEM promotion has to be given to achievement of primary and secondary levels of IEM by the Philippines industries.

3.4 Basic Framework of IEM Promotion

3.4.1 IEC Measures to Promote Voluntary IEM by the Philippines Industry

(1) Awareness and capacity building of corporate managers and other key stakeholders in IEM

To raise awareness and capacity of IEM among corporate managers in the Philippines industries, the following IEC measures are required to disseminate the information more deeply and widely to the Philippines industry.

1) Establishment of IEM information center

PBE, an environmental NGO, has been taking the leading role of providing information to the industries through various media (internet, publications, seminars, etc.). The Project strengthened that function of PBE through the pilot project of building 'Integrated IEM Information Network'. The Project recommend that the above initiative should be further enhanced through expansion of current network with industries and other stakeholders in one hand and continuous update and accumulation of IEM information and data stocks.

2) Compilation of IEM best practices in the Philippines

The Project, through the pilot project of 'Waste Minimization', formulated several waste minimization manuals based on the actual experience of WM by the Philippines industries. These types of manuals reflecting the actual experience and know-how gained from them need to be further formulated for each industry sub-sector so that other industries can learn from such living examples. The idea of compiling the best IEM practice of the Philippines industry comes from the above recognition of current conditions of IEM.

3) Development of IEM leaders in the Philippines industry

To raise awareness of the Philippines industry on IEM, it is necessary to provide advices from someone, i.e., IEM leaders, who is credible and has extensive experiences in the field. There are IEM training courses in foreign donor organizations; therefore, the Project suggests setting up a plan and systematically sending personnel to those training courses and then disseminates their knowledge and know-how in the Philippines industry.

(2) Measures to increase IEM practices in the Philippines industry

1) Development of Action Plans on Waste Minimization and CP in industry

The Project formulated several action plans in its pilot projects on Waste Minimization for some industrial associations, including food processing, paper & pulp, chemical, and metal casting industries. Development of such action plans in other industries should be followed.

The GOP is recommended to promote the development of IEM action plans focusing on WM and CP for encouragement of such measures in industry associations.

2) Upgrading of Corporations Implementing IEM

The corporations having the potentials to implement IEM at higher level are required to take the lead in their associations to disseminate implementation of IEM.

3) Strengthening Support for NGOs and Industry Associations

NGOs and industry associations are the key incubators of promoting IEM while they usually faces difficulties in terms of fund, human resources to play their principal roles. Strengthening the capacity of NGOs and industry association is also required to support formulation and implementation of IEM action plans in the Philippines Industry.

3.4.2 Legal and Regulatory Support

(1) Deregulation and Promotion of Voluntary Measures

The Existing laws and regulations are intricate and sometimes overlapped among them in the Philippines. Further efforts may be required especially for the following issues:

- Integration and simplification of permits system ("facility permit" and "one-window application," etc.)
- Careful guidance on the compliance with laws and regulations
- Relaxation of the financing requirement for SME by public/private bank (lowering the current hurdles of loan requirement, e.g. collateral requirement, etc.)

As to the voluntary measures on IEM, DENR formulated its basic legal framework in the Department Administration Order of 2003 (DA2003-14) on the Philippine Environmental Partnership Program (PEPP). PEPP promotes various voluntary measures including simplified EMS certification, eco-labeling, voluntary agreement on environment management with nearby residents or LGUs, and so forth. To implement PEPP, legal, regulatory and policy coordination is required among the relevant government authorities including BOI-DTI, DENR, etc.

(2) Other Policies and Measures Needed for Further Promotion of IEM

The following policies and measures may be needed to further promote IEM in the Philippines:

- Green procurement policy
- National recycling policy

- National EMS accreditation system
- Eco-industrial Park Development Policy

BOI should concentrate on further development and dissemination of currently promoted green procurement policy and development the National Recycling Policy, as required in the Ecological Waste Management Act. Joint efforts may be required for establishment of the national EMS accreditation system among the relevant government authorities including BOI, BPS, DENR and so forth. The eco-industrial park development policy may be first promoted to more advanced industrial areas, e.g. the industrial areas managed by PEZA.

3.4.3 Economic Incentives

Responding to the success of effluent charge system applied by LLDA, DENR plans to expand the system to nation wide. On the other hand, the existing financial and economic incentives on environmental investment are still not well utilized by the Philippines industries especially SMEs. To further promote the above financial and economic incentives, the following issues need to be properly addressed:

- Assessment on the impact of effluent charge system upon reduction of pollution load, estimation of collected charges, and examination on the proper use of collected charges.
- Assessment of the current financial and economic incentives on environmental investment to adapt them to be more easily availed by SMEs.

As to the effluent charge system, the use of collected charges as the fund for environmental investment by industries. The keys of increasing the use of current financial and economic incentives lie on further public relations of the incentives, lowering the hurdles of loan requirement for SMEs, and establishment of new incentives such as credit guarantee of SMEs by the GFIs such as DBP.

In addition, various recommendations have been made by prior policy studies carried out in the Philippines so far. As is the case of legal and regulatory measures, the result of prior studies need to be reviewed in terms of their political, technical and financial feasibility in the Philippines.

Chapter 4

Industrial Environment Management Action Plan

4 Industrial Environment Management Action Plan (IEMAP)

4.1 Basic Framework of IEMAP

4.1.1 Background and Objectives

The industry sector in the Philippines occupies 34% of the Gross Domestic Product (GDP) in 2000. The manufacturing industry, among others takes an important role in terms of contributing to 72% of GDP in the industry sector; employing 2.8 million people (10% of the total employment); occupying 90% of total export and foreign direct investment in the country.

The growth of population, industrialization and urbanization over the past 50 years has increased pressure on the consumption and pollution of the natural resources in the Philippines. The degradation of natural resources seriously threatens the country's economic and social development.

Further delay of proper IEM may threaten sustainable development of socio-economy in the Philippines in the following perspectives:

- **Increased risks to human health, which will increase social cost of the country in terms of medical and health care.**
- **Decreased global competitiveness of the Philippines Industries due to its less concern for the environment.**
- **Decline in foreign capital investment in the Philippines due to its insufficient environmental management capacity and performance.**
- **Missed opportunities of the industries in adopting innovative production technologies to increase their productivity, income as well as environmental performance.**

With regard to this situation, IEMAP is formulated as a collaboration work between BOI and JICA under "Environmental Management with Public-Private Ownership (EMPOWER)" project.

The objective of IEMAP is:

To guide BOI in promoting global competitiveness and economic growth by raising industrial efficiency and productivity through optimum environmental performance through:

- **Encouraging self-reliant IEM activities by industry sector,**
- **Promoting further development of IEM activities through provision of various incentives/disincentives, and**
- **Clarifying the roles of each stakeholder in promoting IEM.**

4.1.2 Scope of IEMAP

The EMPOWER project formulated the 3 (three) priority action plans as mentioned below:

- **Action Plan on IEC Measures to Promote Voluntary IEM,**
- **Action Plan on Legal and Regulatory Support for IEM, and**
- **Action Plan on Economic Incentives to Promote IEM**

4.2 Action Plan on IEC Measures to Promote Voluntary IEM

4.2.1 Objectives

The objective of the action plan on IEC measures to promote voluntary IEM is:

Expanded dissemination of voluntary IEM by individual industries through implementation of the following action programs with public private partnership:

- □ **Development and operation program of the integrated IEM information/knowledge network**
- □ **Expanded dissemination program of IEM implementation industries**
- □ **Training program of IEM promotion leaders**
- □ **IEM best practice guidance/manual publication program**

4.2.2 Development and operation program of the integrated IEM information/ knowledge network

(1) Background and Objectives of the Program

Information and information sources are fragmented among various public and private institutions in the form of document, reports, electronic media and so forth. This dispersion of IEM information makes it difficult for individual industries to obtain reliable information in their limited time.

To address this situation, the integrated IEM information/knowledge network aims at establishing the one-stop-shop to provide IEM information, knowledge and know-how through continual validation and improvement of the latest information collected from the sources so that it can be more useful to individual industries.

(2) Program Components

1) IEM Information/Knowledge Clearinghouse

The IEM information/Knowledge Clearinghouse (IEM Clearinghouse) is defined as the IEM information platform, which improve and provide all the information obtained from domestic and international sources in a user-friendly manner. The main contents of IEM Clearinghouse will consist of:

- Downloadable files of IEM related publications, reports, and project documents and hyperlinks to the related websites,
- Environmental related laws, regulations, and policies (downloadable files and hyperlinks),
- Information about financial and economic incentives available in the Philippines in relation to implementation of IEM (links to relevant GFIs, and other institutions)
- IEM technology database and search engine
- List of environmental service providers (ESPs)
- Notification of IEM seminars, workshops, and other relevant events.

The above information has already been partially uploaded in the web-based IEM information system (http://www.iem.net.ph).

2) IEM Referral Services System

The IEM Referral Services System (IEM-REF) aims at providing so-called custom-made information in response to the needs of individual industries. In the IEM-REF, the users submit the prescribed “Information Request Form” on the website while the IEM-REF operators will reply with the compiled information in response with it.

This system will also be designed to respond to the ESPs, requesting potential clients of their technologies and services. In this regard, IEM-REF is expected to play the role of mediating between industries and ESPs through matching of required technologies and services with their holders.

This kind of information exchange and business trade is expected to be expanded to the areas of IEM technologies and services in IEM-REF.

(3) Implementation Plan of the Program

The 3 (three)-year implementation plan of the program is mentioned below.

1) Establishment of the program implementation mechanism (2.5 months)

a. Selection of program implementation partners and allocation of tasks

Table 4.2.1 Potential Program Implementation Partners and Their Roles

Partner	Roles
PBE	・Operating body of the IEM-NET in the pilot project in the integrated IEM information/knowledge network ・Operating body of the website in this program
BOI/DTI	・Function as secretariat / coordinator of this program ・Information provider of IEM information (fiscal instruments, and others) ・Information provider for permits and licensing on factory establishment
EMB/DENR	・Information provider of environmental laws and regulations ・Information provider of permits and licensing for compliance on environmental laws / regulations
ITDI/DOST	・Information provider of technology / measures on IEM ・Technical assistance for assessing IEM implementation by individual industry
PEZA, LLDA	・Provision of unique information on IEM implementation within their jurisdiction
GFIs (DBP, LBP)	・Provision of information on mechanism that offer financial support
Industrial Associations	・Provision of information on IEM implementation by industrial association or individual enterprises ・Advising for program operation in viewpoint of users
ESPs	・Provision of information on available technologies and/or services in IEM adoption for enterprises ・Advising for program operation in viewpoint of service providers
Donor organizations	・Dispatch experts who hold technical knowledge and experience ・Technical / financial assistance for program operation

b. Preparation and conclusion of MOA on the program establishment

c. Establishment of program implementation mechanism

2) Design and Installation of IEM-NET (5 months)

a. Examination on the design and contents of IEM-NET

b. Selection and Procurement of Hardware and Software

c. Installation and Operation of IEM-NET

3) Marketing and Promotion of IEM-NET (Regular Task)

4) Evaluation of the program implementation in the program supervision committees

(4) Program Implementation Schedule (3 years)

Table 4.2.2 Program Implementation Schedule

Outputs / Actions		1st year											
		1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
Program Implementation Schedule													
1)	Establishment of the program implementation mechanism	2.5 month											
	a) Selection of program implementation partners and allocation of tasks	1 month											
	b) Preparation and conclusion of MOA on the program establishment		1 month										
	c) Establishment of program implementation mechanism			1 month									
2)	Design and Installation of IEM-NET						5 month						
	a) Examination on the design and contents of IEM-NET				1 month								
	b) Selection and Procurement of Hardware and Software					2 month							
	c) Installation and Operation of IEM-NET							1 month					
3)	Marketing and Promotion of IEM-NET						Regular Task						
4)	Evaluation of the program implementation in the program supervision committees												0.5 mon

(5) Fund Raising Measures and Expected Effects of the Program

1) Fund raising measures

The program plans to start with provision of ready-made and custom-made information on IEM as its main services. Based on the reactions and needs of IEM-NET users, its service may be expanded to the total IEM consulting service to individual industries and formulation of IEM related projects in cooperation donor agencies.

As far as limiting the current services to the above information provision, the required incremental cost will range from 10 to 20 thousand dollars annually including the manpower and computer maintenance and operation. The fund to cover this incremental cost will be shared by each program partner while fee collection from users will also need to be considered if the area of services is expanded. In addition, collection of advertisement fee may be possible if the number of access to IEM-NET increases enough as the potential market of advertisement.

2) Expected effects of the program

Since the progress and achievement of other priority actions recommended in this EMPOWER project will also be uploaded in IEM-NET, this program is expected play a role of information and PR center of this IEM Action Plan.

The information about the needs of IEM-NET users is also expected to support formulation of more appropriate IEM promotion policies to adapt to local conditions of the Philippines industry.

This program needs to be operated in consideration of the above potential benefits to be obtained in the future.

4.2.3 Expanded dissemination program of IEM implementation industries

(1) Background and Objectives

The EMPOWER project conducted waste minimization pilot projects through selection of 1 (one) factory from each of 4 industrial sub-sectors, namely for processing, chemical, paper and pulp and metal casting. Each of the selected 4 (four) factories, through the actual experience of waste minimization, recognizes its importance in terms of IEM as well as productivity improvement.

The purpose of this program is to disseminate IEM activities through real recognition of its importance by industries in terms of its environmental benefit as well as economic benefit obtained from productivity improvement and lowering of production cost per product. The program targets at implementation of model IEM activities by 40 factories in 3 (three) years, covering 10 (ten) sub-sectors including 4 (four) above.

(2) Program Components

As clearly shown in chapter 3, there is a big gap in the level of IEM implementation among the industries in the Philippines.

The program first focuses on promotion of good housekeeping and waste minimization through material flow management especially in SMEs in the Philippines through implementation of model IEM activities. Proper recognition on the advantages of IEM among the owners of SMEs is of primary importance in this program.

Subsequently, the program will promote further upgrade of the IEM activities among the SMEs who have already experienced its advantages through model activities. It also requires such SMEs to disseminate their experience and know-how to other SMEs.

(3) Program Implementation Plan

1) Implementation of the demonstration projects on good housekeeping and waste minimization

Distribution of sub-sectors selected are as shown in the table below.

Table 4.2.3 Distribution of Sub-Sectors Selected for Demonstration Projects

Industry types	Factories for Demonstration Project (target)
4 industries selected for "Waste Minimization" pilot project in EMPOWER Project (Pulp/paper, chemical, food processing, metal)	Implement the demonstration project for 3 factories from each sub-sector within 3 years. (1 factory in each year for each sub-sector.
New industries (select 6 sub-sectors from the priority industry)	Implement the demonstration project for 4 factories from each sub-sector in next 3 years

a. Selection of the sub-sectors of demonstration project (1.5 months)

b. Preparation of training program for demonstration project (1 month)

c. Implementation of trainers' training (1 month)

d. Implementation of demonstration projects (7.5 months)

Table 4.2.4 Process of Demonstration Project Implementation

STEP 1:	Pre-assessment of Factory Operation • Each industry will prepare and organize assessment team and resources. • Divide production process into unit operations • Prepare process flow diagrams linking unit operations, establish a "working group on training program," and program materials – i.e. textbook
STEP 2:	Analysis of Material Balance • Measurement and record of process input and output data. • Analysis of material balance
STEP 3:	Identification of Waste Minimization options Identify and evaluate the waste minimization options from viewpoint of economic feasibility, technological availability, environmental performance improvement effects.

	• Energy savings (efficient use of energy) • water use reduction • efficiency improvement of raw materials use • internal reuse and recycling of wasted materials
STEP 4:	Formulation of IEM Action Plan on a factory basis Formulate the "Waste Minimization Action Plan" containing following elements: • Set up quantified targets • Action and technologies applied with their estimated effects • Estimated cost of implementing the action plan • Time schedule of the action plan
STEP 5:	Start-up workshops for implementing the "IEM Action Plan" Hold workshops for each individual industry that formulated the waste minimization action plan, and revise the Action Plan through sub-sector group discussions and advices from experts.
STEP 6:	Implementation of IEM Action Plan • Implementation of IEM Action Plan. • Recording the key indicators. • Compilation of the results into reports for the workshop.
STEP 7:	Evaluation workshops on IEM Action Plan Through presentation of the results of demonstration projects, each industry transfers their experiences to other enterprises, receives advices from experts for improvements.

2) Upgrade and Expansion Program of IEM Activities

The industries that have already reached IEM level of good housekeeping and waste minimization through their own efforts, supports of the demonstration projects, etc. will be required to further upgrade their level of IEM as well as transfer their technology, knowledge, and know how to other factories so that the level of IEM can be raised industry wide.

a. Introduction of higher IEM activities by the demonstration factories

The examples of higher level of IEM activities includes:

- Introduction of more dynamic CP technologies such as production process change,
- Implementation of advanced voluntary IEM activities, e.g. environmental cost accounting (ECA), environmental management System (EMS), voluntary environmental action plan, environmental reporting, and so forth, and
- Implementation of IEM before production (product design, material procurement) as well as after production (use, consumption and disposal of products), such as life cycle assessment (LCA), design for environment (DfE), and so forth.

b. Transfer of IEM technology, knowledge, and know-how to other factories by demonstration factories

The factories implementing demonstration project will be required to transfer their technologies, experience, knowledge, and know-how to other factories. Since the demonstration factories are the important information sources of IEM to other factories, proper transfer and dissemination of their experience will be their obligation for the overall development of IEM in their sub-sectors.

(4) Roles of Program Partners

Table 4.2.5 Roles of Program Partners

Partners	Roles
BOI/DTI	・Program managing body ・Chairperson and secretariat of "committee for selecting sub-sectors of demonstration projects" ・Program support on industrial policy and development investment ・Organizer of the demonstration project ・Support for industry's organizational effort
ITDI/DOST	・Technical advice on implementing the demonstration project ・Lecturers for the "trainer training" ・Introduction of higher IEM activities
EMB/DENR	・Lead agency in adjustment and formulation of legal/regulatory measures for promoting environmental compliance by industries
GFIs (DBP, LBP)	・Provision of preferred credit to participating firms of demonstration projects including adoption of higher IEM technologies
Industry Associations	・Organize and lead the demonstration project and introduction of higher IEM technologies within the industry
Demonstration participating industry	・Dissemination and introducing IEM within industry ・Trainers for other industry to new demonstration project after their demonstration project is completed
ESPs	・Technical advice for participating industry for the demonstration (TDI/DOST jointly) ・Lecturers of the "trainer training" ・Consulting services for industry intended to implement higher IEM technologies / activities

(5) Program Implementation Schedule

Table 4.2.6 Program Implementation Schedule

Outputs / Actions	1st year											
	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
Program Implementation Schedule												
1) Implementation of the "Good Housekeeping / Waste minimization / material flow management" demonstration project												
a) Selection of industry sub-sectors	1.5 month											
b) Preparation of training programs and materials		1 month										
c) Training of the trainers			1 month									

Outputs / Actions	1st year											
	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
d) Technical workshop on assessment of factory operation				0.5 month								
e) Assessment of factory operations					7.5 month							
2) Upgrade and Expansion Program of IEM Activities												
a) Introduction of higher IEM activities by the demonstration factories												
b) Transfer of IEM technology, knowledge, and know-how to other factories by demonstration factories												

(6) Fund Raising Measures and Expected Effects of the Program

1) Fund raising measures

The action plan estimates the cost of this program as shown in the table below.

Table 4.2.7 Estimated Implementation Cost of the Program

Unit: US$

Activity / Item	Quantity	Unit price	Estimated Cost
IEM Demonstration Project (target 40 enterprises/factories in 10 industries)			**260,000**
(1) Cost for training of trainers	10 Trainers (1 per industry type)	4,000	40,000
(2) Implementation of the demonstration projects (40 enterprises / factories)			220,000
a. Training for factory assessment	40 (1 per enterprise)	500	20,000
b. Demonstration	40 enterprises	5,000	200,000

The total cost of the program is estimated 260 thousand US dollars for the 3 years of action plan period. It only includes the cost of first phase demonstration project and does not include the cost of introducing higher IEM activities as well as transfer of their experience to others since the action plan considers that such activities have to be made as a voluntary activity of demonstration factories.

The implementation cost of demonstration project is estimated 6.5 thousand US dollars per factory including the cost of trainers' training. Since most of selected demonstration factories are financially weak SMEs, financial assistance from GOP as well as donors is required to cover the above cost.

Another option of raising the fund for demonstration project is the provision of fund from the members of industry groups that the demonstration factories belong to while the

demonstration factories are required to transfer their technologies, experience, and know-how as much as they can to other factories within the industry groups.

2) Expected Effects of the Program

This program is expected to disseminate good housekeeping and waste minimization practice among 40 factories over 10 sub-sectors through implementation of demonstration projects. Moreover, the overall level of IEM activities in the Philippines industry will also be raised through transfer of technologies, experience, and know-how of demonstration factories to others.

It is also expected that the demonstration factories will make further efforts of upgrading their level of IEM activities. However, further enhancement of IEM may require larger capital investment, therefore financial and economic supports may be required.

4.2.4 Training program of IEM promotion leaders

(1) Background and Objectives

The factory survey done by the EMPOWER project clearly indicated that environmental awareness at the managing executive level influences performance level of IEM in the factories. Many IEM demonstration projects had been carried out with the assistance of donors and other organizations for the purpose of promoting cleaner production, EMS, and so forth, but such experience was usually limited to the demonstration factories themselves and not disseminated to others.

To properly address these issues, IEM promoters need to be raised in public as well as private sectors so that strong leadership of IEM can be taken with public and private partnership. This program aims at raising such IEM promotion leaders in the Philippines in collaboration with the Expanded dissemination program of IEM implementation industries given above. This program first targets raising IEM promotion leaders in 10 industry sub-sectors.

(2) Program Components and Implementation Plan

This program consists of "IEM Promotion Leader Training" and "IEM Dissemination by IEM Promotion Leaders". The implementation of each sub-program is presented below.

1) IEM Promotion Leader Training

a. Formation of Program Steering Committee and Technical Working Group

b. Selection of IEM promotion leaders

Table 4.2.8 Process of Selecting IEM Promotion Leaders

STEP 1:	Recruiting IEM Promotion Leaders Prepare materials to recruit IEM promotion leaders and recruit them though various medias. The material should state requirements as well as advantages to become an opinion leaders which include trainings and business opportunities.
STEP 2:	Selection of the Leaders and Official appointment The "Program steering committee" will select the IEM Promotion leaders based upon clear selection criteria. Take appropriate measures in case industry participation for recruiting the IEM promotion leaders turns low, ask cooperation from model industries and corporations participating other IEMAP programs so that suitable leader will be selected. Upon selection, the "program steering committee" will officially appoint the of the IEM promotion leaders.

c. Training of IEM promotion leaders

d. IEM promotion by leaders

Based on the IEM dissemination action plan prepared above, the IEM promotion leaders will conduct promotion activities to their target industrial sub-sectors through seminars, workshops, and so forth.

(3) Roles of Program Partners

The table below identifies the roles of program partners.

Table 4.2.9 Roles of Program Partners

Partners	Roles
BOI/DTI	・Program implementing body ・Function as chairperson and secretariat of the "program steering committee" ・Management of leader training program
ITDI/DOST	・Lecturer of the leader trainings (IEM technical aspects)
EMB/DENR	・Lecturer of the leader trainings (legal aspects)
GFIs (DBP, LBP)	・Lecturer of the leader trainings (IEM financial aspects)
Industry Associations	・Dispatch of the leaders ・Support the leaders after the trainings finished for promotion of IEM in industry base.
Industry implementing demonstration	・Candidates for the leaders
ESPs	・Lecturer of the leader trainings (IEM technical aspects)
Donor Organizations	・Accept the leaders as trainees or dispatch experts to the trainings

(4) Program Implementation Schedule

Table 4.2.10 Program Implementation Shedule

Outputs / Actions		1st Year											
		1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
Program Implementation Schedule													
1)	Selection of IEM opinion leaders												
	a) Recruit of IEM opinion leaders	2.5 month											
	b) Selection of the leader and official appointment	1 month	1 month										
2)	Training of the Leaders			1 month									
3)	IEM promotion by the Leaders								8.5 month				
4)	Review and evaluate in workshops for promotion activities								0.5 month				0.5 month

(5) Fund Raising Measures and Expected Effects of the Program

1) Fund raising measures

The cost of the program is estimated as shown in the table below.

Table 4.2.11 Estimated Cost of the Program

Unit: US$

Activity / Item	Numbers	Unit price	Estimated Cost
IEM Promotion Leader training program			**58,000**
(1) Training of the leaders	3 times	6,000	18,000
(2) IEM promotion such as seminars by the leaders in their respective industry	10 times	3,000 (3 days)	30,000
(3) Evaluation seminars and other meetings	10times	1,000	10,000

The total cost of the program including leader training in 10 sub-sectors and dissemination activities by the trained leaders is estimated 58 thousand US dollars in the first year. The cost per leader is 5.8 thousand US dollars in the first year.

The above cost does not include oversea training or dispatch of overseas experts to train the leaders. If the program can apply for the cleaner production training program currently available in JICA, the cost of overseas leader training will be lowered.

The cost of dissemination activities carried out by IEM promotion leaders should be covered by the members of their industry groups in principle. It is important for individual industries or industry groups to pay the fees for seminars and workshops since free

participation sometimes lowers their intent of obtaining something from seminars and workshops.

2) Expected Effects of the Program

This program is defined as the supplementary program of "Expanded dissemination program of IEM implementation industries". There are considerable number of industries of advanced IEM performance in the Philippines except those who has conducted IEM demonstration activities with the support of EMPOWER project or other donors' assistance. Utilization of such industries, especially foreign affiliated ones, as the IEM promotion leaders will further promote dissemination of IEM in the Philippines.

4.2.5 IEM best practice guidance/manual publication program

(1) Background and Objectives

As clearly indicated in the EMPOWER project, various IEM technologies, knowledge, and know-how are compiled in the form of guidebooks, reports, and so forth in the Philippines. However, many of them are kept separately by the public and private institutions that carried out the activities, so that they could not be efficiently utilized by individual industries.

This program aims at compiling such fragmented IEM information, knowledge, experience, and know-how into guidance/manuals of IEM best practice for efficient use by the Philippines industries. It targets at preparation of such guidance/manuals for 10 industrial sub-sectors within the 3 years.

(2) Program Implementation Plan

IEM best practice guidance/manual will be prepared in accordance with the steps shown in the table below.

Table 4.2.12 Process of Preparing IEM Best Practice Guidance/Manual

STEP 1:	**Formation of Technical Working Group** Establish a "working group" for publication of manuals by relevant bodies including BOI. The members should be from institutions such as DENR, DOST, and DBP that have experienced publication of related reports, as well as private industries who have experiences in model project or hold many expertise like PBE.
STEP 2:	**Selection of Industry Sub-Sectors** In coordination with other programs of this priority action, the working group will select appropriate sub-sectors to be engaged in this program
STEP 3:	**Compilation and Technology Assessment of Best IEM Practices from Secondary Sources, including Internet Search** Best IEM Practices in various industry sectors will be searched from the Internet and other databases. The new acquisitions will be stored in the databank of the IEM Information Network. The searched and data-banked information will be subject to technology

	assessment by DOST/ITDI and qualified ESPs for applicability or adaptability to the Philippine industries. Environmental cost accounting will be prepared for the promising best practices.
STEP 4:	**Case Study of Local IEM experience especially EMPOWER pilot and demonstration projects** The best practices for local IEM experience will be studied and documented. The local industries will include primarily the model firms of EMPOWER.
STEP 5:	**Experts' Workshop / Write shop** Series of workshops/write shops will draft and eventually finalize the Codes of Best IEM Practices by Industry sector based on the primary and secondary sources of information. The Codes will be presented to the target users in industry for final evaluation and acceptance.
STEP 6:	**Publication and Dissemination of Codes of Best IEM Practices by Sector** Publish and distribute the Codes to target users preferably to industry associations that prepared action plan. The manual will be used in workshops to disseminate the IEM in the Philippines.

(3) Roles of Program Partners

Roles of program partners are shown in the table below.

Table 4.2.13 Roles of Program Partners

Partners	Roles
BOI/DTI	・Lead implementing body ・Secretariat of the Technical Working Group
ITDI/DOST	・Provision of information / advice / editorial for development of the manual
EMB/DENR	・Provision of information / advice / editorial for development of the manual
GFIs (DBP、LBP)	・Provision of information / advice / editorial for development of the manual
Industry Associations	・Responsible for editing of manuals by industry
Individual Industries	・Develop the manuals for their industry
ESPs	・Provision of information / advice / editorial for development of the manual
Donor Organizations	・Provision of information / advice / editorial for development of the manual

(4) Program Implementation Schedule

Table 4.2.14 Program Implementation Schedule

Outputs / Actions		1st Year											
		1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
Program Implementation Schedule													
1)	Formation of Technical Working Group	1 month											
2)	Selection of Industry Sub-Sectors		1 month										
3)	Compilation and Technology Assessment of Best IEM Practices from Secondary Sources					6 month							
4)	1st Experts' Workshop / Write shop								2 month				
5)	2nd Experts' Workshop / Write shop											1 month	
6)	Publication and Dissemination of Codes of Best IEM Practices by Sector												1 month

(5) Fund Raising Measures and Expected Effects of the Program

1) Fund Raising Measures

The total cost of the program is estimated as given in the table below.

Table 4.2.15 Estimated Cost of the Program

Unit: US$

Activity / Item	Quantity	Unit price	Cost
IEM best practice guidance/manual publication program			**50,000**
(1) Cost of Manpower	2MM / sector	1,500	30,000
(2) Workshops	10 times	1,000	10,000
(3) Publishing the Manuals	1,000 copies	10	10,000

The cost of IEM best practice guidance/manual should be covered by their users, i.e. the Philippines industry. The cost of guidance/manual is estimated approximately 5 thousand US dollars per sub-sector. It can be covered by the allocation of the fund from members of relevant industry groups or associations.

2) Expected Effects of the Program

The sub-sector wise IEM best practice guidance/manual is designed as the basic handbook of IEM used by individual industries. It is expected that dissemination of this guidance/manual

will raise awareness of IEM and its advantage in industry production, so that IEM activities will be further promoted.

In addition, the guidance/manual will be uploaded in IEM-NET and periodically renewed and updated on the website. It will enable more dynamic use of this guidance/manual by the industries.

4.3 Action Plan on Legal and Regulatory Support for IEM

4.3.1 Objectives

The objective of the action plan on Action Plan on Legal and Regulatory Support for IEM is :

To develop basic institutional framework of promoting IEM through improvement and new establishment of legal, regulatory, and policy measures by the following programs:

- **Philippine Environmental Partnership Program (PEPP) Promotion Program**
- **Dissemination Program of BOI's Green Procurement Policy**
- **National Recycling Policy Formulation Program**
- **Review Program of Existing Legal and Regulatory Framework of IEM**

4.3.2 Philippine Environmental Partnership Program (PEPP) Promotion Program

(1) Background and Objectives

Together with other laws such as Ecological Solid Waste Management Act (RA 9003), Pollution Control Law (PD 984 Sec 6), and Environmental Code (PD 1152), the Department of Environment and Natural Resources (DENR) issued on June 2, 2003 an Administrative Order (DAO 2003-14) creating the Philippine Environmental Partnership Program (PEPP) to support industry self-regulation towards improved environmental performance.

EMB/DENR and BOI/DTI jointly developed PEPP, and convinced DOST, Development Bank of the Philippines (DBP), Land Bank of the Philippines (LBP), and Union of Local Authorities of the Philippines (ULAP) to join the program. PEPP includes new approaches such as the application of voluntary agreement on environment management to SMEs in place of strict application of regulations.

Considering the above trend of legal and regulatory system in the Philippines, the Action Plan aims at promoting implementation of PEPP.

(2) Program Implementation Plan

PEPP promotion program will be implemented in accordance with steps shown below.

1) Development of institutional framework for PEPP support (6 months)

Table 4.3.1 Process of Developing Institutional Framework for PEPP Support

STEP 1:	**Organization of a working committee to develop the institutional framework of partnership**
STEP 2:	**Discussion and agreement for realizing PEPP** Discuss and agree on institutional responsibilities, synchronized assistance, schedules and criteria for target industries, and procedures for availability of incentives, evaluation and monitoring, and training requirement in the working groups. The institutional framework should also guide or complement IEM demonstration project.
STEP 3:	**Drafting of guidelines, manual and documents for PEPP participation and partnership**

2) Roundtable discussions with industries

3) Preparation of PEPP information and PR materials

4) Participation in PEPP by IEM demonstration factories

(3) Roles of Program Partners

Roles of program partners are shown in the table below.

Table 4.3.2 Roles of Program Partners

Partners	Roles
BOI/DTI	・Lead agency for program implementation ・Chairperson and secretariat for the inter-agency liaison committee and working group.
EMB/DENR	・PEPP implementing body ・Formulate and develop guidelines and PEPP implementing policy
ITDI/DOST	・Technical support for PEPP implementation in IEM ・Advising in guideline development from technical aspect
GFIs (DBP, LBP)	・Financial assistance for industries within framework of PEPP
Industry Associations	・Support and recommendation to industries on PEPP and deregulation ・Supporting model adoption of PEPP (selection of enterprises)
Demonstration industry	・Implement the project based on PEPP (prepare PEMAS, environmental performance review)

(4) Program Implementation Schedule

Table 4.3.3 Program Implementation Schedule

Outputs / Actions	1st Year											
	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
(1) Development of institutional framework for PEPP support												
(2) Roundtable discussions with industries												
(3) Preparation of PEPP information and PR materials												
(4) Participation in PEPP by IEM demonstration factories												

(5) Fund Raising Measures and Expected Effects of the Program

1) Fund Raising Measures

The cost of the program is estimates as shown in the table below.

Table 4.3.4 Estimated Cost of the Program

Unit: US$

Activity / Item	Estimated Cost
1. Philippine Environmental Partnership Program (PEPP) Promotion Program	**6,700**
(1) Hold roundtable discussion	2,700
(2) Develop information materials and PR activities	4,000

Since this program is designed to promote implementation of PEPP, GOP should cover its cost in principle. The cost of the program will also be within the budget capacity of relevant government authorities in relation to PEPP.

Participation in PEPP by IEM demonstration factories, on the other hand, will require their voluntary partnership.

2) Expected Effects of the Program

PEPP will serve as a test of policy conversion from command-and-control to voluntary control with public private partnership. PEPP also has similar objectives of this action plan, i.e. integration of various policy measures including laws and regulations, financial/economic incentives, and IEC tools. In this regard, integration of the action plan with PEPP is expected to further promote implementation of IEM by the Philippines industry.

4.3.3 Dissemination Program of BOI's Green Procurement Policy

(1) Background and Objectives

BOI, as the output of the pilot project carried out in the EMPOWER project, adopted the Green Procurement Policy in March 2003.

The dissemination program of BOI's Green Procurement Policy aims at extending it to other DTI institutions as well as other government authorities in the Philippines.

(2) Program Implementation Plan

This program consists to the activities mentioned below.

1) IEC activities to other government authorities

2) Technical assistance for interested agencies

3) Additional designation of products preferably procured under Green Procurement Policy

(3) Roles of Program Partners

The main actor of this program is BOI, the implementing agency of Green Procurement Policy. As to the expansion of designated products for green procurement, BOI will work together with "Clean and Green Foundation, who joined designation of the first green procurement products in "Green Choice Philippine" under the eco-labeling pilot projects in the EMPOWER project.

(4) Program Implementation Schedule

Table 4.3.5 Program Implementation Schedule

Outputs / Actions	1st Year											
	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
A. Dissemination Program of BOI's Green Procurement Policy												
(1) Identification of issues and constrains on BOI's Green Procurement Policy	■	■	■	■	■	■	■					
(2) IEC activities to other government authorities							■	■	■	■		
(3) Technical assistance for interested agencies											■	■
(4) Additional designation of products preferably procured under Green Procurement Policy	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	

(5) Fund Raising Measures and Expected Effects of the Program

1) Fund Raising Measures

The total cost of the program is estimated as shown in the table below.

Table 4.3.6 Estimated Cost of the Program

Unit: US$

Activity / Item	Estimated Cost
Dissemination Program for Green Procurement	25,000
a. Hold roundtable discussion	3,000
b. Training seminars and workshops	3,000
c. Supporting the Green Choice Philippines	24,000

BOI, as the implementation body of Green Procurement Policy, should cover the cost of roundtables, seminars and workshops for its dissemination from its budget allocation.

As to the cost of additional designation of green procurement products in cooperation with Green Choice Philippine, financial support from other government authorities as well as the potential producers of green procurement products, and so forth.

2) Expected Effects of the Program

Dissemination of green procurement policy is of great importance in raising environmental awareness not just in the production activity, but all the product life cycle ranging from design to consumption and disposal of the products. It will promote upgrade of IEM level in the Philippines industry.

4.3.4 National Recycling Policy Formulation Program

(1) Background and Objectives

Although the Ecological Solid Waste Management Act (RA 9003) mandates that BOI shall formulate the national recycling policy, there are many issues not yet solved to do it including:

This program aims at making solution to the above issues and marking the beginning of recycling in the Philippines.

(2) Program Implementation Plan

The Program is proposed as a one-year program implemented in accordance with the following steps.

1) Preparation of a national inventory of recyclable materials

A national level inventory of recyclable materials will be established so as to identify the market potential of recycling businesses in the Philippines. The national inventory will be built by conducting the surveys shown in the table below.

Table 4.3.7 Process of Building National Inventory of Recyclable Materials

STEP 1:	Collect information about existing inventory on recyclable materials
STEP 2:	Examine current status of recycling industry in the Philippines
STEP 3:	Examine the composition of general and industrial wastes (study on recyclable materials)
STEP 4:	Evaluate recycling market in the Philippines
STEP 5:	Prepare inventory of resources that can be recycled
STEP 6:	Review issues for improving recycling

2) Formulation of policies to promote the recycling industry

- Profiling of recycling industry
- Market analysis for recyclable materials
- Research on recycling practices in other countries, including restrictions such as use of certain hazardous substances in products

3) Examination of legal/regulatory framework and incentives to promote recycling

- Laws, regulations and incentives on recycling
- Practical application of extended producer responsibility (EPR)
- Methodology for planning recycling targets for each recyclable materials and waste product
- Recycling stakeholders and their respective roles

4) Formulation of the National Recycling Policy

- National and regional collection and utilization targets by recyclable material and waste product
- Development plan of materials recovery facilities
- Recycling promotion plan
- Standards for recycled products and environment-friendly products
- Legal/regulatory framework for promotion of recycling
- Framework of economic incentives to promote recycling
- Promotion of green purchasing policy
- R&D plan on recycling technology
- Other necessary issues

5) Formulation of the Action Plan on Recycling

The national recycling policy formulated above may needs to be further specified with the clearly defined policy and program targets for short-term (2 to 3 years). In this regard, the action plan on recycling will be formulated to clarify the targets and roles and responsibilities of each relevant stakeholder.

(3) Roles of Program Partners

Formulation of the national recycling policy is also the responsibility of BOI, as provided in the Ecological Solid Waste Management Act. However, in terms of its relevance to the environment management, EMB/DENR also has serious concern for this policy. BOI/DTI and EMB/DENR will be the lead government authorities in formulation of the national recycling policy. The utilization of environmental consultants may be required for implementation of the surveys given above.

(4) Program Implementation Schedule

Table 4.3.8 Program Implementation Schedule

Outputs / Actions	1st Year											
	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
(1) Preparation of a national inventory of recyclable materials												
(2) Formulation of policies to promote the recycling industry												
(3) Examination of legal/regulatory framework and incentives to promote recycling												
(4) Formulation of the National Recycling Policy												
(5) Formulation of the Action Plan on Recycling												

(5) Fund Raising Measures and Expected Effects of the Program

1) Fund Raising Measures

The cost of this program is estimated as shown in the table below.

Table 4.3.9 Estimated Cost of the Program

Unit: US$

Activity / Item	Estimated Cost
National Recycling Policy Formulation Program	**39,000**
a. Preparation of a national inventory of recyclable materials	8,000
b. Formulation of policies to promote the recycling industry	4,000
c. Examination of legal/regulatory framework	6,000
d. Formulation of the National Recycling Policy	18,000
e. Formulation of the Action Plan on Recycling	3,000

Although the formulation of national recycling policy is the responsibility of BOI, it may be difficult for BOI to cover all the cost arising from the surveys required for that policy formulation. Financial assistance from other government authorities or donors may be needed.

2) Expected Effects of the Program

The importance of national recycling policy is placed on provision of the baseline information on potential market of recycling business in the Philippines through implementation of detail field surveys. Furthermore, the policy implication regarding recycling such as legal/regulatory framework and economic incentives will have a big influence upon the corporate behavior on recycling of all the relevant businesses including waste generators, recyclers, haulers, and treaters. In this regard, national level recycling policy is of great importance to promote recycling in the Philippines.

4.3.5 Review Program of Existing Legal and Regulatory Framework of IEM

(1) Background and Objectives

There seem a number of policy issues to be addressed so that IEM can be further promoted. Such issues may include:

- Weak enforcement of IEM-related laws and regulations; uneven playing field
- Poor compliance by SMEs due to their limited technological and financial capacity

With regard to this current situation, this program aims at identifying the issues of current laws and regulation through a comprehensive review of legal and regulatory framework of IEM in view of the regulating authority (government) as well as the regulated community (industry).

(2) Program Implementation Program

This program will consist of the following activities.

1) Comprehensive review of enforcement conditions of existing laws and regulations in relation to IEM

2) Consultation with industry or corporate leaders on their perspective and recommendations on compliance with and enforcement of industry-relevant environmental laws

3) Experts' Workshops on assessment of the issues of current legal and regulatory instruments and possible measure to address them

4) Multi-stakeholder roundtable discussion on the recommendations made in the expert's workshop

5) Drafting, consultations and social marketing on proposed revision of laws and/or new bills promoting IEM

(3) Roles of Program Partners

The roles of program partners are given in the table below.

Table 4.3.10 Roles of Program Partners

Stakeholders	Roles
BOI/DTI	Lead agency in formulating and disseminating policies and measures for promoting IEM adoption (Green Procurement Policy, Recycling Policy, etc.)
EMB/DENR	Lead agency in adjustment and formulation of legal/regulatory measures for promoting environmental compliance by industries
DOST	Provision of technical input to the lead agencies; dissemination of information on cleaner production technologies and pollution prevention
Banks	Examination and establishment of financial assistance scheme in enforcing and implementing the above legal/regulatory and policy measures
Industry associations, NGOs	Provision of input to the above activities in terms of their needs of assistance and difficulties in complying with the laws/regulations or implementing the policies
Local Government Units	Promote the programs at local level; form partnerships with industries and local offices of lead agencies.

(4) Program Implementation Schedule

Table 4.3.11 Program Implementation Schedule

Outputs / Actions	1st Year											
	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
(1) Comprehensive review of enforcement conditions of existing laws and regulations in relation to IEM												
(2) Consultation with industry or corporate leaders on their perspective and recommendations on compliance with and enforcement of industry-relevant environmental laws												

Outputs / Actions	1st Year											
	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
(3) Experts' Workshops on assessment of the issues of current legal and regulatory instruments and possible measure to address them					■	■						
(4) Multi-stakeholder roundtable discussion on the recommendations made in the expert's workshop						■	■	■				
(5) Drafting, consultations and social marketing on proposed revision of laws and/or new bills promoting IEM								■	■	■	■	■

(5) Fund Raising Measures and Expected Effects of the Program the table below outlines the expected cost and benefit of implementing this priority action plan

1) Fund Raising Measures

The cost of this program is estimated as shown in the table below.

Table 4.3.12 Estimated Cost of the Program

Unit: US dollar

Activity/Cost item	Amount	Unit	Total Cost
Policy reform for critical IEM issues			**18,900**
(1) Evaluation of current laws/regulations	4 man-month	3,000	12,000
(2) Consultation with industry	3 workshops	1,000	3,000
(3) Experts' workshops	3 workshops	1,000	3,000
(4) Multi-stakeholder roundtables	3 roundtables	300	900

This program aims at efficient ad effective enforcement of laws and regulations; therefore it has to be carried out as a part of government efforts under national budget in principle. It may be also possible to receive assistance from donors and international aid agencies such as ADB and the World Bank since many of them continuously provide policy support in the area of environment in the Philippines.

2) Expected Effects of the Program

The impacts of this program only arises if amended or new laws and regulations and enacted and enforced as its result. Review of current laws and regulations is an essential task of government officials so as to comply them with their original purposes.

4.4 Action Plan on Economic Incentives to Promote IEM

4.4.1 Objectives

The objective of this priority action plan on establishment of innovative financial/economic incentives to promote IEM adoption is

To promote IEM adoption by industries through a package of market-based instruments (MBIs), including fiscal, financial and psychological measures targeted to various industrial sub-sectors. This would be pursued through the following strategies:

- □ **Gap analysis of existing and potential fiscal, financial and economic measures to promote IEM,**
- □ **Select, design and evaluate additional economic incentives on IEM,**
- □ **Advocate and adjust instruments according to the feedback by the regulated community, and**
- □ **Social marketing of new economic incentives on IEM.**

4.4.2 Issues to be addressed:

- Examination on the effectiveness of market-based instruments (MBIs) to improve IEM under conditions of weak enforcement and limited compliance with environmental laws and regulations,
- Examination on reaction of industry to negative economic incentives such as environmental charges and taxes, and measures needed to address these concerns,
- Improvement and adjustment of the current financial assistance scheme on IEM investment based on identification the issues for potential users of such assistance,
- Promotion of policy dialogue between the regulating authorities (government) and regulated community (industry) regarding the application of improved or new economic incentives.

4.4.3 Program Implementation Plan

To accomplish the objective above, the EMPOWER project proposes the following activities to be carried out by the relevant stakeholders in IEM.

(1) Review of the current economic incentives

The performances of various existing financial and economic incentives are comprehensively reviewed. This review may consist of the following activities.

- Review studies and current status on impacts of key fiscal instruments implemented in the country affecting IEM (e.g. LLDA's user fee, fuel pricing, tax breaks),
- Review hurdles in banking sector (especially GFIs such ass DBP and LBP) in promoting IEM,

- Survey stakeholders on perceived benefits and gaps,

1) Feasibility assessment of financial and economic incentives

Based on prior studies on the evaluation of currently applied economic incentives as well as those addressing the feasibility of introducing new MBIs in relation to IEM, comprehensive reexamination of such prior studies will be made for the purpose of identifying appropriate economic incentives and their system designs to best reflect local conditions in the Philippines. The potential economic incentives to be assessed may include:

- Product charges (Charges to the products that may have impacts upon the environment by their use, consumption, and disposal)
- Presumptive charges on industrial inputs (water, energy, materials),
- Expansion of air and water pollution charges,
- Increased fines for non-compliance,
- Deposit/refund system for containers, batteries, tires, etc.,
- Tax relief on imported IEM equipment,
- Limited and focused subsidies (e.g. hazardous wastes disposal fees for SMEs, relocation subsidies to industrial estates for SMEs),
- Training of bankers for improvement of banking practices (interest rates, collateral, guarantees, loan evaluation methods) to assist IEM by SMEs,
- Including good IEM practices in evaluations by credit rating agencies.
- Promotion of efficient energy and water consumption through application of progressive utility pricing (electricity, water supply, wastewater treatment, etc.)
- Grant type assistance to SMEs in obtaining consulting services on productivity improvement, EMS and other IEM activities.

Based on the preliminary design of implementation mechanism, Feasibility of the above incentives will be evaluated to identify the most applicable ones in the Philippines. The selected most applicable economic incentives will be made in the form of draft amendment bill of current incentives or new drat bills.

2) Advocacy and consensus building for approval of the proposed incentives

To realize the bills recommended above, the following advocacy and consensus building activities will be carried out:

- Prepare information materials appropriate for policy makers
- Conduct meetings with management and staff of concerned institutions (DENR, NEDA, DOF, BOI, BSP and GFIs), with industry associations, selected LGUs and relevant NGOs and academe,
- Lobbying to parliamentary members

If some of the amendment or new bills are officially approved, the following activities need to be carried out.

- Preparation of manual/guidelines for management and operation of amended/new incentives
- Preparation of manual/guidelines for applicants for obtaining amended/new incentives
- Training of personnel who manages and operates amended/new incentives

(2) Roles of Program Partners

Table 4.4.1 Roles of Program Partners

Key Stakeholders	Main Roles
BOI/DTI	Coordination and adjustment of existing financial/economic incentives to meet the needs of industries (especially SMEs)
DENR	Provision of input regarding the minimum environmental compliance level required for industries so that the area of financial and economic support can be properly established.
DOST	Technical input regarding the identification of IEM technologies to be given financial/economic supports for IEM Promotion.
Banks (DOF, DBP, LBP)	Coordination and adjustment of existing financing system to specifically meet the needs of industries (especially SMEs)
Industrial Associations	Provision of input regarding the needs and constraints of adopting IEM in terms of financing and economic difficulties

(3) Program Implementation Schedule

Table 4.4.2 Program Implementation Schedule

Outputs / Actions	1st Year											
	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
(1) Review of the current economic incentives	■	■										
(2) Feasibility assessment of financial and economic incentives			■	■	■	■						
(3) Advocacy and consensus building for approval of the proposed incentives							▒	▒	▒	▒	▒	▒

(4) Fund Raising Measures and Expected Effects of the Program

1) Fund Raising Measures

The cost of this program is estimated as shown in the table below.

Table 4.4.3 Estimated Cost of the Program

Unit: US dollar

Activity/Cost item	Amount	Unit	Total Cost
1. Review of existing financial and economic incentives			**6,000**
2. Feasibility assessment of additional measures			**18,000**
3. Advocacy and consensus building of new incentives			**10,000**
(1) Preparation of PR materials	-	-	5,000
(2) Roundtables	10	500	5,000
4. Institution/capacity building for implementing new/improved incentive			**20,000**
		Total	54,000

Examination of economic incentives discussed here is the responsibility of policy making and implementation authorities of IEM; therefore the cost estimated above should be allocated from national budget in principle. It may be also considered to receive technical and financial assistance from donors and international aid agencies, who continuously provide assistance in this area such as USAID, the World Bank, and ADB.

Chapter 5

Planning of the Pilot Projects

5 Planning of the Pilot Projects

5.1 Objective of the Pilot Projects

The EMPOWER project through implementing pilot projects aims to enhance capacity of NGOs and industry associations that are counterparts of government organizations implementing policies to promote IEM.

5.2 Conditions for Planning on the Pilot Projects

5.2.1 Results of Surveys to Identify Current IEM Practices

The JICA Study Team had identified current IEM practices, such as accomplishments of the existing IEM projects, development of IEM activities at plant level, and IEM activities by other relevant parties. The important findings from the surveys are summarized below.

(1) Accomplishments of Major IEM Projects

- IEM projects funded by USAID and UNDP are comprehensive efforts continuously implemented for more than three years.
- IEMP (1992-1998) and IISE (1998-2001) projects supported by USAID helped DENR to prepare IEM guidelines by sector and encouraged individual companies to tackle waste minimization. However, the IEMP project was evaluated low in sustainability and replicability by USAID. According to USAID (2000), lack of top management commitment was a major hurdle to sustain implementation of pollution prevention measures, and lack of opportunities to share information about pollution prevention measures among the companies in the same sector and fear of being punished due to sharing information (sharing information may reveal that they are not in compliance with the regulations) were the factors to prevent replication of pollution management appraisal recommendations.
- The PRIME project (1999-2001) was highly evaluated for its achievement. Especially, Business Agenda 21 (BA21) listing actions towards sustainable development, which was compiled by PBE was one of the major results. In addition, the PRIME project promoted understanding of necessity of IEM in the business sector.

(2) IEM implementation at plant level

- Most of the companies in the Philippines that have obtained ISO14001 certification are foreign firms. Major local companies have not implemented sufficiently IEM.
- The owners/top management recognizes promotion of environmental management is the least priority.

- Lack of financial resources, human resources, information about cost-effective measures, affordable external experts, and credible environmental service providers are listed as factors hindering IEM promotion.

(3) Activities of Relevant Parties to Promote IEM

- PBE and Clean and Green Foundation have been identified as parties that bridge the industry sector and government organizations. PBE plays a central role to promote IEM; it is involved in raising awareness of business owners/executives and providing information. Clean and Green Foundation is a NGO established by the first lady of former President Ramos and designated as Secretariat of the Philippine ecolabeling program. These two NGOs are working with the industry sector although there are other environmental NGOs.
- Major industry associations participate in BA21; taking actions are the future agenda for the participants. Some industry associations recognize that their member companies are not so eager to implement BA21.
- Among government organizations, the Environmental Division of ITDI/DOST provides technical assistance regarding IEM and CP.
- BOI, the Philippine counterpart of the EMPOWER project, is the government organization that is best fit to be in charge of promoting IEM. It is expected to take an initiative especially in providing economic incentives, planning recycling policy, and practicing green procurement.

5.2.2 Issues for IEM Promotion

Future agenda for individual companies, NGOs, and industry associations to promote IEM are

(1) To deepen business owners/top executives' understanding of importance of IEM

(2) To empower capacity of relevant parties, specially NGOs, to promote SME's environmental management

(3) To establish a system which provides useful/effective information to owner/top executives

(4) To set private sectors a target of manufacturing ecolabeld product

(5) To enhance economic incentives

(6) To establish recycle policy that mentions more concretely business liability for recycling

(7) To facilitate access to information on service providers

(8) To establish a coordination system of seminars conducted by various bodies.

5.3 Next Steps for IEM Promotion and Pilot Projects under the EMPOWER project

5.3.1 Policy on Selection of Pilot Project Plans

To narrow down areas suitable for pilot projects under the EMPOWER project, following criteria were used:

- The project should contribute to enhancement of capacity of the implementer of policies to promote IEM and its counterpart NGOs.
- No massive investment is necessary.
- The project is expected to be self-sustainable and expandable after the project period.
- The project should be completed within a short period (about 8 months), and results will be realized.

5.3.2 Preparation of Draft Pilot Project Plans

(1) Waste minimization pilot project

Based on the results of the company surveys carried out under the EMPOWER project and the review of the past IEM projects, important factors for successful IEM promotion are awareness raising of business owners/executives, shift in approach from reduction in environmental load to improvement of resource productivity, IEM promotion by industry associations, and sharing experiences of model companies. Waste minimization (including CP) means input management at production processes, which increases resource productivity leading reduction in environmental load and consequently increase in competitiveness. The JICA Study Team assumed that business owners/executives are likely to support the concept of waste minimization and that selecting model companies from the industry associations participated in BA21 and sharing experiences of the model companies within the industry sector.

PBE, which manages BA21, and Environmental Division of ITDI/DOST, which provides technical assistance in the field of IEM and CP were expected to be an implementing body of the waste minimization pilot project. Target of the capacity building through the pilot project implementation was industry associations' encouraging and managing their member companies' IEM activities and ITDI's providing technical assistance to IEM promotion.

(2) IEM Information System Pilot Project

To provide IEM information that matches users' needs, there should be a system that ensures continuous improvement of contents and providing methods of IEM information established by IEM information providers. Other issues to be addressed include consolidation of

scattered information, transformation of existing information into electronic files, and establishment of a system to provide information about environmental service providers and seminars on IEM. PBE has been providing IEM information to the industry sector, and it is desirable to strengthen its function.

The JICA Study Team assumed PBE as an implementing body. Target of capacity building was PBE's managing the website on IEM information and playing the central role in IEM information provision in cooperation with IEM information providers.

(3) Ecolabeling program and green procurement pilot project

Ecolabeling program has been supported by the EPIC project by UNDP, and the EMPOWER Project intended to support the areas that were not covered by the EPIC project and implement the plot project in cooperation with EPIC. The JICA Study Team assumed Green Procurement supports the ecolabeling program as declaration of green procurement policy by government agencies could increase demand for ecolabeld product.

(4) Others

Issues on financial and Economic incentives and recycling policy were addressed in the action plan.

(5) Selection of Pilot Project

The JICA Study Team proposed the three pilot projects on waste minimization, IEM information system and ecolabeling program and green procurement at the EMPOWER Steering Committee meeting held in Aug.20, 2003, and the members agreed on the plans in principle.