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PN-ACQ-665

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SECTION 1

LIFE-OF-PROJECT PERFORMANCE EVALUATION SYSTEM

Administrative Report No. 00/2

April 2000

Submitted by:

Chemonics International, Inc.

Under Contract No. 492-C-00-98-00029-00
Associated Number 492-0444
United States Agency for International Development

April 25, 2000

Ms. Priscilla P. Rubio
Cognizant Technical Officers
Office of Environmental Management
U.S. Agency for International Development
Ramon Magsaysay Building
1680 Roxas Boulevard

Subject: **Life-of-Project Performance Evaluation System**

Project: **Industrial Initiatives for a Sustainable Environment (IISE) Contract No. 492-C-00-98-00029-00**

Dear Ms. Rubio:

In accordance with the requirements of the subject contract, we are pleased to submit a copy of the Life-of-Project Performance Evaluation System prepared by our Performance Evaluation and Monitoring Expert, Dr. Mircea Enache.

This report represents a comprehensive, project monitoring and evaluation plan. It includes indicators that will measure progress towards results for the primary and sub-results of the project.

If you have any questions regarding this report, please do not hesitate to contact me.

Sincerely,

John A. Dorr, Ph.D.
Chief of Party

Enclosures

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1. Executive Summary

Chemonics was awarded the IISE contract by USAID on July 24, 1998. IISE will operate in the Visayas and Mindanao regions of the Philippines, with national policy and institutional strengthening to be supported by Cebu-based operations. The objective of IISE within 4 years is twofold: 1) implement environmental management systems (EMS) in 400 companies/ organizations, 200 of which will be certified to ISO 14001 or another recognized international EMS (EMAS, Green Globe, others); 2) reduce pollution from industrial and other discharging facilities by a percentage to be agreed upon in the near future between Chemonics and the major Philippine implementing agencies: Department of Trade and Industry (DTI), Department of Environment and Natural Resources (DENR), and the Philippine Coast Guard (PCG).

EMI Systems, Inc. was hired to provide technical assistance toward the needs associated with Activity Number 17 under the Project Mobilization and Management component of the IISE Annual Work Plan. The objective of the assignment is to produce a comprehensive plan that will enable project managers to monitor, evaluate and describe progress toward activities, milestones, and results. Specific tasks are to identify, evaluate and select appropriate indicators; identify the source, scope, volume, quality and timing indicator input data; describe analytical and other assessment procedures; and design output and reporting formats.

Performance Monitoring and Evaluation

EMI Systems is proposing the development of a performance monitoring and evaluation system on two levels: the IISE project level, and the industrial partner level.

1) The Life-of-Project Performance Milestone System is based on the IISE Results framework, it uses project level performance indicators and its main objective is to monitor, evaluate and describe progress toward activities, milestones, and results.

2) The Industrial Partner Performance Monitoring and Evaluation System on the other hand, is based on industrial partner specific data and performance indicators, and it uses an input-process-output, systems approach analytical framework to evaluate and monitor industrial partners' performance in reducing industrial pollution and progressing towards ISO 14001 certification.

The two systems are closely inter-related, as the industrial partner performance M&E system feeds directly into the life-of-project performance milestone system. Each industrial partner's success towards reducing pollution and obtaining certification is a measure of success for the IISE project overall. Summarized results of all industrial partners' activities under the project will be reported as progress benchmarks and milestones.

Internal IISE Use. Moreover, the industrial partners database and analytical procedures will produce invaluable results for internal IISE project use, as comparative assessment of problems, actions, and performance by the industrial partners will help the IISE management and technical

staff identify over-performers and under-performers against expected outcomes, and single out success stories and failures.
By attempting to explain the patterns of results and performance of industrial partners by sector and geographic sites, IISE staff will have additional analytical support for the following activities:

- identifying new industrial partners;
- refining its methodological approach;
- prioritizing actions;
- optimizing resource allocation, i.e. time, attention, local consultant deployment

The two performance monitoring and evaluation systems proposed will build on the strength of, and will enforce the analytical and reporting/communication capability of PITAMS, the Project Information, Tracking, Analysis and Management System currently being developed by the MIS group in IISE.

Marketing the EMS/CP Approach. The IISE faces key challenges in achieving its objectives and project results, because of the weak, or lack of, demand on the client side. There are no strong incentives for local firms to vigorously and fully pursue the project objectives. They might refuse to cooperate, might fear to reveal their proprietary business information, or might refuse to believe that anything like CP/EMS could be profitable or otherwise in their best interest. Firms' management might feel they cannot spare time from the urgent demands of business and might delegate project-related responsibilities to lower-level staff.

By sharing information and explanation on over-performers and under-performers against expected outcomes, and by demonstrating success stories to the top management of the prospective industrial partners, IISE can enhance its relationship with the end client, and enroll more firms in the project.

Advising the Industrial Partners. The results of the comparative analysis of the activities and performance of existing clients can also be used to advise them on the best course of action, as well as educate new clients on the objectives and the steps of the IISE approach to pollution reduction and ISO 14001 certification.

Training Local Consultants. In addition to providing support to IISE staff in advising the industrial partners and marketing the CP/EMS approach, the Industrial Partners Performance M&E system could be used for training the local consultants, and to a certain degree, for training the industrial partners' technical staff.

Sharing Results with Government and Donor Organizations. The results of the analytical and assessment procedures can also be shared with the Government and Donor Organizations, as well as USAID/Philippines, and can provide support to discussing project and sector strategy. The user-friendliness and communication facilities of the software proposed by EMI Systems to be used for the development Performance M&E System offer such facilities for discussion and brainstorming as the system was designed as an interactive assessment tool with outputs projected on meeting or board rooms screens.

Software Solution

EMI Systems is proposing to use its proprietary software for strategic assessment and decision support (MapDecision) as the software platform for the development of the Industrial Partner Performance Monitoring and Evaluation System.

MapDecision allows users to compare industrial facilities, perform multiple attribute evaluation, rank, weight and group cases, explore and explain patterns, target and allocate resources based on formulas. It is a tool for strategic assessment, policy dialogue, monitoring and evaluation, which combines available quantitative data with the judgments of participants in the dialogue, i.e. experts, policymakers and stakeholders.

The software allows the user to import raw data tables in various formats (Dbase, FoxPro, Paradox, MS Access, Lotus, Excel), compute indicators (ratios, percentages, etc) and format the data for analysis. *MapDecision* imports geographic files in Arcview GIS format (shape files) or scanned maps on which a layer of points can be superimposed, representing the locations of the industrial facilities. The proposed functionality of *MapDecision* as a software platform for the M&E systems is detailed in Section 4 of the report.

The *MapDecision* software was installed by EMI Systems in the IISE office in Cebu and a preliminary database was developed together with the IISE staff, in particular with the MIS group and the specialists in the IER questionnaire, KAP survey and P2/CP assessment and analysis. Several procedures based on the limited data set currently available were demonstrated to the IISE staff and initial training was provided to the MIS group in computing values for the indicators, developing the database, scanning area maps, editing the point map of the industrial partners, linking the database with the maps, using the software procedures and interpreting the results of the analysis.

A sample of *MapDecision* analytical output is shown in the attachment to this report.

Data Confidentiality

While the raw data provided by the industrial partners is confidential, and cannot be disclosed to third parties, the analytical outputs and summarized results could conceivably be made public and shared with other industrial clients and government and donor organizations provided measures are taken to protect the identity of individual firms. Thus the valuable lessons drawn from the comparative analysis of the challenges faced by, and the performance of the various industrial partners can be used to advise the firms, market the approach, train the consultants and strategize with government and donor partners.

The Next Steps

Under the proposed IISE Conceptual Framework, one of the proposed indicators for the Intermediate Sub-Result 2.3 is strengthening GOP environmental policy and decision support. It requires developing a decision support system/infrastructure for area assessment in year 2000.

The Industrial Partner Performance Monitoring and Evaluation System is a good start towards developing such a system; however, several steps are to be taken in order to achieve the objective:

a) A complete set of data has to be developed for a number of industrial partners, showing the sequence: baseline data > action > impact on environment.

b) The proposed preliminary set of indicators should be checked and validated/developed by the IISE specialists.

c) Data redundancies should be eliminated in order to clean the methodology and reduce the future cost of administering surveys and interviewing industrial partners.

d) The conceptual model must be calibrated by running sensitivity tests and selecting the most appropriate procedures.

e) The complete analysis should be performed on the available data from industrial partners and the results of the analysis should be interpreted and brainstormed by the IISE project staff.

f) Once complete data is available for a large number of industrial partners, the analysis should be refined and enriched by analyzing firms separately by industrial sector and by geographical area/location.

g) The methodology and the software must be tested in consultant and client training activities, as well as new partners identification.

h) A detailed plan must be developed for reporting results and disseminating project information in the format allowed by the software.

i) The software system must be installed in USAID/The Philippines and in DENR, and initial exposure and training to the two agencies must be provided.

Realistically, steps a) to e) can be taken in the first and second quarters of year 2000, while steps f) to i) can be achieved most likely in the third and fourth quarters.

2. Life-of-Project Performance Evaluation System

The Life-of-Project Performance Milestone System is a combination of the *USAID Results Framework for IISE* and the *IISE Conceptual Framework.* It uses project level performance indicators and its main objective is to monitor, evaluate and describe progress toward activities, milestones, and results.

The *USAID Results Framework for IISE* includes the strategic objective, SO4 Result 3, two intermediate results and five intermediate sub-results. Each intermediate sub-result is quantified by an IS-R Indicator, with a specified unit of measure. We are proposing to add to the list several additional indicators described in the *IISE Conceptual Framework.* From the extensive list of indicators in the framework, only the most important and relevant have been selected and added to the USAID Results Framework.

The proposed final IISE Conceptual Framework is the following:

STRATEGIC OBJECTIVE 4:
ENHANCED MANAGEMENT OF RENEWABLE NATURAL RESOURCES

SO Performance Measures

IISE SO4 Indicator: Risk to environmental and human health
Unit of Measure: Percent reduction of pollutants within exposure pathways
Targets: 1998=0; 2000=5%; 2001=10%; 2002=20%

SO4 RESULT 3:
IMPROVED MUNICIPAL COASTAL ENVIRONMENTAL MANAGEMENT

Targeted results of IISE Activity:

- 200 firms, plants and organizations within selected sectors located in 5 coastal areas will have a 20% average reduction from current levels of industrial pollution
- 75 industries will be certified to ISO 14001 or another internationally recognized standard

Result 1:
EMS and CP techniques and methods demonstrated, installed and impacts monitored; EMS/CP implemented in designated sites and industries

Performance Measures

IS-R Indicator: EMS/CP implemented in designated sites and industries
Unit of Measure: number of firms, plants and organizations with effective EMS/CP
IS-R Targets: 1998-0, 1999-0, 2000-50, 2001-200, 2002-400
IS-R Indicator: ISO 14001 (or other) certification
Unit of Measure: number of firms, plants and organizations with ISO 14001 (or

other) certification
IS-R Targets: 1998-0, 1999-0, 2000-25, 2001-100, 2002-200

Sub-Result 1:
Enhanced community awareness of EMS/CP through information, education and communication

Performance Measures

IS-R Indicator: enhanced community awareness of EMS/CP through information, education and communication
Unit of Measure: percent increase in community EMS/CP awareness
IS-R Targets: 1998-0, 1999-15%, 2000-30%, 2001-45%, 2002-60%

IS-R Indicator: direct access to EMS/CP information
Unit of Measure: information clearinghouse in place
IS-R Targets: 1998-0, 1999-0, 2000-0, 2001-1, 2002-0

Sub-Result 2:
Institutional and policy support environments for EMS and CP adoption established; policy incentives favoring adoption of EMS/CP established

Performance Measures

IS-R Indicator: policy incentives favoring adoption of EMS/CP enacted
Unit of Measure: number of policy measures supporting EMS/CP enacted
IS-R Targets: 1998-0, 1999-1, 2000-3, 2001-1, 2002-1

Sub-Result 3:
Institutional capacity to support adoption of EMS/CP installed

Performance Measures

IS-R Indicator: institutional capacity to support adoption of EMS/CP installed
Unit of Measure: a national EMS/ISO 14000 accreditation program established
IS-R Targets: 1998-0, 1999-0, 2000-1, 2001-0, 2002-0

IS-R Indicator: laboratory and training institutions accreditation
Unit of Measure: no. of laboratories and training institutions accredited
IS-R Targets: 1998-0, 1999-0, 2000- , 2001- , 2002-

Strengthening of GOP core competencies to support EMS/P2/CP implementation

Performance Measures

IS-R Indicator: strengthening GOP environmental policy and decision support
Unit of Measure: Decision support system/Infrastructure for area assessment established
IS-R Targets: 1998-0, 1999-0, 2000-1, 2001-0, 2002-0

IS-R Indicator: strengthening the environmental research
Unit of Measure: environmental research agenda established
IS-R Targets: 1998-0, 1999-0, 2000-0, 2001-1, 2002-0

The Milestone Plan enables project managers to monitor, evaluate and describe progress toward activities, milestones, and results. It is proposed that the annual reporting follow the above format.

3. Industrial Partners Performance Monitoring and Evaluation

3.1. Conceptual Framework

The objective of this task is to:

- Create a model of project impacts (relationship among interventions and indicators) to guide design of project M&E and database systems.
- Document the intensity, type, and impact of project interventions.
- Monitor project impacts on the environment, including changes in baseline data and usefulness of current and new data sources.
- Design a functional system to integrate M&E results directly into project reports.

The *Industrial Partner Performance Monitoring and Evaluation System* is based on industrial partner specific data and performance indicators, and it uses an input-process-output, systems approach analytical framework to evaluate and monitor industrial partners' performance in reducing industrial pollution and progressing towards ISO 14001 certification. The industrial partner performance M&E system feeds directly into the life-of-project performance milestone system. Each industrial partner's success towards reducing pollution and obtaining certification is a measure of success for the IISE project overall. Summarized results of all industrial partners' activities under the project will be reported as progress benchmarks and milestones.

The Concept. The concept is best represented by the following sequence of events describing each industrial partner as a sub-system of the broader socioeconomic and environmental system:

Initial status of the system > *Initial status of the environment* > *Interventions* > *Impact on the system* > *Impact on the environment*

By analyzing the impact of various project interventions, patterns and trends will be identified which will allow the IISE project staff to improve the project strategy in order to maximize future impacts and to build sustainability.

The Methodology. The detailed information collected from each industrial partner is translated into quantitative information, i.e. into a small number of key indicators: *status* indicators, *action* indicators and *impact* indicators. The assessment methodology and software developed by EMI Systems allows the user to group indicators in classes, for analytical convenience. While both the classes and the indicators proposed are tentative and open for discussion by specialists and stakeholders, the initial analysis includes the following classes of indicators, which was in part determined by the source of data and the specific assessment or analytical activity involved:

Class	*Description*	*Data Source*
Assess	The indicators measure the industrial partner's organization, QMS, OSH, and environmental preparedness, and include the walk-thru findings	IER questionnaire
Know	The indicators measure the industrial partner's	KAP Survey

	awareness, understanding and knowledge vis-à-vis the environmental issues related to production	
Eval	The indicators estimate the cost and ease of implementation of P2/CP measures, benefits, problems and actions	P2/CP (first round)
Baseline	The hardest data in the model, the baseline indicators measure the initial potential environmental impact and the solid and hazardous waste	R2M2 Model and MTM Model
Action	The action indicators measure the IISE staff and certified consultants' interventions, as well as the industrial partners' interventions to P2/CP	IISE PITAMS P2/CP (second round)
Result	The impact indicators measure the reduction in the final potential environmental impact and in solid and hazardous waste, along with the industrial partners' benefits in materials and operations reduction, and increased access to capital and new markets	R2M2 Model Ind. Partner Reports

The list of tentative indicators is given in the section below.

3.2. Analytical Framework

3.2.1. Types of Indicators

The table below shows the preliminary indicators proposed, including their code, type (class), definition and data source.

Code	*Type*	*Indicator Definition*	*Data Source*
GEO_INFO	Assess	General Organizational and Certification Info	IER Survey
QMS_INFO	Assess	Quality Management System Info	IER Survey
OSH_INFO	Assess	Occupational Health & Safety Info	IER Survey
ENV_INFO	Assess	Environmental Info	IER Survey
WALK_THRU	Assess	Walk Through Findings	IER Survey
RES_ALLOC	Assess	IISE Resource Allocation Strategy	IER Survey
KNOW_ATT	Know	Industrial Partner Knowledge and Attitude (1-5)	KAP Survey

GOVT_INV	Know	Gov't & Other Parties Involvement (1-5)	KAP Survey
LAW_REG	Know	Environ. Laws, Regulations & Certification (1-5)	KAP Survey
EMS_CP	Know	Awareness of EMS, CP and IISE (1-5)	KAP Survey
COST_EASE	Eval	Estimated Cost & Ease of Implementation (0-4)	P2/CP (first)
BENEFITS	Eval	Estimated Environmental Benefits (0-10)	P2/CP (first)
PROBLEMS	Eval	Expected Problems (0-5)	P2/CP (first)
ACTIONS	Eval	Expected Actions to be Taken (0-8)	P2/CP (first)
PEI*_1	Baseline	Initial Risk-reduced Potential Environ. Impact	R2M2 Model
SOLID_WASTE_1	Baseline	Initial Mass Flow Rate of Waste Streams (Solid Waste)	MTM Model
HAZ_WASTE_1	Baseline	Initial Mass Flow Rate of Waste Streams (Hazardous Waste)	MTM Model
IISE_TIME	Action	Time (Hours) Spent by IISE Staff with the Industrial Partner	IISE PITAMS
CONS_TIME	Action	Time (Hours) Spent by IISE-Certified Consultants with the Industrial Partner	IISE PITAMS
#_TRAINED	Action	Number of Ind. Partner Employees Trained	IISE PITAMS
%_TRAINED	Action	Percentage of Ind. Partner Employees Trained	IISE PITAMS
EX_TRAINED	Action	Number of Executive Mgmt Staff Trained	IISE PITAMS
INVEST_PR	Action	Value of Investments in New Environment-Friendly Processes (Percent of Production Value)	P2/CP (second)
INVEST_CP	Action	Value of Investments in Cleaner Production Technology (Percent of Production Value)	P2/CP (second)
INVEST_PC	Action	Value of Investments in Pollution Control Technology (Percent of Production Value)	P2/CP (second)
PEI*_2	Result	Final Risk-reduced Potential Environ. Impact	R2M2 Model
PEI*_RED	Result	Risk-reduced PEI Reduction	R2M2 Model
SOLID_WASTE_2	Result	Final Mass Flow Rate of Waste Streams	MTM Model

		(Solid Waste)	
HAZ_WASTE_RED	Result	Mass Flow Rate of Waste Streams Reduction (Hazardous Waste)	MTM Model
MAT_COST_RED	Result	Percentage of Materials Costs Reduction	Ind. Partner
OPER_COST_RED	Result	Percentage of Operation Costs Reduction	Ind. Partner
ACCESS_CAPITAL	Result	Percentage Increase in Access to Capital	Ind. Partner
NEW_MKT_INDEX	Result	Index of Access to New Markets (Percentage of Sales on New Markets)	Ind. Partner
ISO_14001	Result	ISO 14001 Certification	Ind. Partner

All data is quantitative and reasonably robust in order to be able to apply the various ranking, rating and statistical procedures of the EMI Systems' decision support system, MapDecision. Large numbers of questions in the *IEP Questionnaire*, which have a dichotomous or multiple-choice structure, have been combined into just one quantitative indicator, with a continuous range of values for the industrial partners.

The *KAP Survey*, which is the most subjective segment of collected data, was structured in such a way as to be able to develop a small number of indicators whose values are scores from 1 to 5 (both positive and negative). The exact methodology for developing the indicators from a large number of survey answers is presented in the section 3.2.2 below.

Data Confidentiality. While the raw data provided by the industrial partners is confidential, and cannot be disclosed to third parties, the analytical outputs and summarized results could conceivably made public and shared with other industrial clients and government and donor organizations provided measures are taken to protect the identity of individual firms. Thus the valuable lessons drawn from the comparative analysis of the challenges faced by, and the performance of the various industrial partners will be used to advise the firms, market the approach, train the consultants and strategize with government and donor partners.

3.2.2. Indicator Source, Scope, Measurement and Timing

Most of the summary indicators in the M&E database were developed from the *IER Questionnaire, KAP Survey* and *P2/CP assessments* and analysis. This section describes how the values for various indicators were computed as weighted sums. Each answer in the questionnaire yields a number of possible points. The more important questions have been marked by the IISE specialists with a star (weight=2) while the critically important ones have two stars (weight=3). For example, in the IER questionnaire, an industrial partner would accumulate points for the GEO_INFO indicator by adding the points accumulated from the answers to questions G1, G2, G3 and G4 (times 2).

a) Initial Environmental Review (IER) Questionnaire

	Question	*Points*	
	General Organizational and Certification Information (GEO_INFO)		
	G1 – written statements	0-3	
	G2 – organizational chart		0-1
	G3 – quality manager, environ dept, PCO, environ officer, OHS dept, safety engineer, HSE manager		0-8
*	G4 – ISO 9001/2, ISO 14001, OSHMS 18000, SA 8000, other	0-5	
	Quality Management Systems Information (QMS_INFO)		
**	Q1 – methods (inspection, quality control, quality assurance ISO 9001/2/3, QMS principles contained in ISO 9004	0-4	
**	Q2 – QMS apply to whole organization, production or facilities only	0-3	
**	Q3 – measure & monitor quality	0-1	
	Q4 – maintain records	0-1	
*	Q5 – conduct quality audits		0-1
*	Q6 – audits: in-house, outside, both		0-2
	Occupational Health and Safety Information (OHS_INFO)		
*	O1 – identified the OHS hazards	0-1	
*	O2 – assessed the risks to human health	0-2	
*	O3 – identified health & safety risks legislation	0-2	
**	O4 – methods to manage OHS risks		0-8
**	O5 – personnel health monitoring program		0-1
**	O6 – objectives and targets to reduce the risk	0-1	
**	O7 – monitor and measure OHS performance	0-2	
	O8 – maintain records of OHS performance		0-1
*	O9 – conduct OHS audits		0-1
*	O10 – audits (in-house, outside, both)	0-2	
	Environmental Information (ENV_INFO)		
*	E1 – is impact on environment known	0-1	
*	E2 – identified impact on environment	0-1	
*	E3 – identified the natural resources to operate facility	0-1	
**	E4 – methods to manage and eliminate/reduce impact	0-8	
*	E5 – identified environmental impact legislation	0-2	
**	E6 – challenges in RA 6969 (HW), PD 984 (Air/Water), PD 1586 (ECC), none	0- (-3)	
**	E7 – objectives & targets re environmental performance	0-2	
**	E10 – hazardous chemicals used at facility		0- (-10)
*	E11 – track hazardous chemicals (records and estimates)	0-3	
**	E12 – major hazardous wastes generated	0- (-10)	
**	E13 – emergency response procedures	0-1	
**	E16 – monitor & measure environmental performance	0-2	
	E17 – maintain records of environmental performance	0-1	
*	E18 – environmental audits		0-1
*	E19 – audits (in-house, outside, both)	0-2	
**	E21 – notice of violation, cease and desist order (DENR)	0- (-2)	
**	E22 – community pressure or PR problems		0- (-1)
*	E23 – mechanism to respond to complains		0-1

Walk Through Inspection (WALK_THRU)

**	W2 – walk through findings		0 – (-15)

IISE Resource Allocation Strategy (RES_ALLOC)

**	R1 – service provider		0-1
**	R2 – environmental impacts readily identifiable	0-1	
**	R3 – quality, environmental or OSH management system		0-3
*	R4 – supply chain leverage		0-1
**	R5 – managerial commitment to IISE program	0-1	
**	R6 – resources for IISE program	0-1	
*	R7 – prospects for certification	0-2	
**	R8 – prospects for measurable pollution reduction		0-2

** Maximum degree of importance of question
* Lower degree of importance of question
(Degree of importance of questions estimated by Cathy Alvarado, IISE-Cebu)

b) Environmental Awareness Benchmarking Study (KAP Survey)

QUALITATIVE PHASE - Focus Group/In-depth Interview Guide

Discussion Points
Legend: 5 - Maximum Awareness, 1 – Completely Unaware

			1	2	3	4	5
A.		**KNOWLEDGE AND ATTITUDE OF ENVIRONMENTAL PROBLEMS**					
1		What are the key social issues facing locality these days?					
2	**	Where is the environment headed for in the locality?					
3	**	What is causing environmental degradation?					
4	**	How concerned should people be about environmental problems?					
5	**	How has industrial pollution contributed to environmental degradation?					
6	**	What is the cause and effect of industrial pollution? How do people view this issue?					
7	*	What is the impact of industrial pollution to human health? What is the impact to economic development?					
8	*	Any cases of damage caused by industrial pollution in the local area?					
9		How do you compare that pollution in the past?					
10	*	What are the cause and effect between preventing/reducing industrial pollution and profits increase?					
11	*	Can the damage still be reversed? How?					
12	**	What can citizens like us do about this?					
13	*	Do they consider themselves stakeholders/owners of the environment?					
14	**	What is the industry's role on the problem? What can it do?					
15	*	How do you think prevention of industrial pollution affects corporate image					
16	*	Who should pay for the cost of repairing the damage?					

B.		AWARENESS OF GOVERNMENT'S ROLE					
1	**	What is the role of DENR in reducing industrial pollution? What have they done? What are their current activities?					
2	**	How actively are local representatives of DENR doing?					
3	*	What is the role of DTI and BPS in reducing industrial pollution?					
4	*	How actively are local representatives of DTI doing?					
5	**	What is the role of local political leaders in reducing industrial pollution?					
6		Do you know any private sectors working on reducing industrial pollution?					
C.		AWARENESS OF LAWS AND REGULATIONS					
1	**	Any environmental laws and regulations for industrial pollution? Are there adequate laws?					
2		How much do you think that the existing environmental laws are adequately enforced?					
3	**	How do industries react to existing environmental laws and regulations?					
4		If there were new environmental laws and regulations in the future, how would industries react?					
5	**	Have you heard of ISO 9000? 14000? What are they? What are the benefits to be certified? Do they mean anything to your company?					
6	*	Is your organization ISO9000 or ISO14000 certified? Why or why not?					
7	*	Have you heard of OSH? What does it mean? Does your organization have an OSH program?					
8	**	Have you heard of IER? Has an IER been conducted in your organization?					
9	**	Are you aware of any prevention practices currently being used by local industry?					
10	*	Do you know what pollution prevention practices should be done by local industry?					
11	**	Are there any prevention practices your company currently implementing?					
12	*	Does your company belong to any organization that promote pollution prevention?					
13	*	How do industries generally feel about to be involved in promoting pollution prevention?					
14	**	Have you heard of Environmental Management System? Or Cleaner Production? What do they mean?					
15	*	Does your organization practice EMS or CP?					
16	**	Have you heard of IISE? What are the services provided by IISE?					
17	**	Impressions about IISE's work and activities?					

** Maximum degree of importance of question
* Lower degree of importance of question
(Degree of importance of questions estimated by Emi Abierta, IISE-Cebu)

c) IISE P2/CP Assessment

The IISE P2/CP Assessment questionnaire is very technical and details the technological processes which take place at the industrial partners' facilities. For example, under the MSE approach, the impact of chemicals found in industrial processes and in their associated waste streams is evaluated for several different impact categories. These include:

1. Global warming potential,
2. Acid rain potential,
3. Photochemical oxidation potential,
4. Ozone depletion potential,
5. Aquatic toxicity potential,
6. Terrestrial toxicity potential,
7. Human toxicity potential by ingestion, and
8. Human toxicity potential by inhalation or dermal exposure.

For firms' performance monitoring and evaluation purposes, a very small number of questions are considered in the data model. The proposed questions are the following (included in the list of indicators in Section 4.1):

Question	***Points***
Estimated Cost & Ease of Implementation (COST_EASE) high, low or no cost, very difficult, moderate and easy to implement	*0-4*
Estimated Environmental Benefits (BENEFITS) Reduced ozone depletion potential Reduced global warming potential Reduced acid rain potential Reduced photochemical oxidation or smog-forming potential Reduced human toxicity potential by ingestion Reduced human toxicity potential by inhalation or dermal exposure Reduced aquatic toxicity potential Reduced terrestrial toxicity potential Reduced the use of RP 28 / POPs chemicals Reduced the use of other hazardous materials	*0-10*
Expected Problems (PROBLEMS) Anticipated problems with compatibility with production Negative impact on compliance Added health and safety (industrial hygiene) concerns Additional labor/expertise or other resources Space or utility limitations in the buildings	*0-5*
Expected Actions to be Taken (ACTIONS) Process equipment Personnel training Installation / Site preparation	*0-8*

Utility Connections / Systems
Permitting
Input Materials
Disposal / Treatment
O & M Labor and/or Supplies

PEI and WASTE Computations

A fundamental task of the project is to conduct in-plant P2/CP assessments. The IISE project will result in the conduct of P2/CP assessments at 400 firms and a 20% reduction in pollution. To accomplish this, a "baseline" must be established at each facility that documents the current characteristics and flow of its hazardous waste streams. These data and information will be gathered by teams of appropriately trained personnel including those familiar with the processes being evaluated and P2 engineers, at a minimum. After gathering facility information, the P2 engineer will evaluate the data, establish the pollution baseline, and prepare an "alternatives evaluation." Following implementation of P2/CP alternatives, the updated potential risk would be compared to the baseline level.

The IISE Project assumes that environmental risk is an appropriate parameter for measuring P2/CP progress. Reduction of environmental risk can be quantified in a relative sense by comparing baseline risk to the risk determined following implementation of P2 alternatives. The proposed methodology for measurement is based on research conducted by the US EPA.

For the purpose of monitoring and evaluating the industrial partners' performance, the baseline indicators used in the IISE project are the following:

- Initial Potential Environmental Impact (PEI_1)
- Initial Risk-reduced Potential Environmental Impact (PEI*_1)
- Initial Mass Flow Rate of Waste Streams (WASTE_1)

The method proposed by Millennium Science & Engineering (MSC) for establishing the baseline and measuring progress is to "measure" the level of potential risk for each chemical appearing in any of a facility's waste streams. Two models are proposed for utilization, The Risk Reduction Measurement Model (R2M2) and The Mass Tracking Model (MTM).

The Risk Reduction Measurement Model (R2M2). The first model would be used where the waste streams of the process contain IISE-targeted chemicals. All processes would be investigated using the R2M2 unless the waste streams in the process do not contain target chemicals or chemicals likely to be added to the list of targeted compounds. Targeted chemicals are currently those on the Philippines list of 28 chemicals (RP 28) from RA 6969 and the Priority Organic Pollutants (POPs) list. Additional chemicals may be added to the target list later as needed to expand the use of the risk reduction model.

The WAR algorithm. The model proposed by MSE for quantification of pollution-related risk reduction as a function of environmental impact for the chemicals of concern is based on the

WAR algorithm. EPA's WAR algorithm has been designed to evaluate the relationship of competing process alternatives. One can apply the concepts of the WAR algorithm to establish an impact baseline and measure improvement over time.

The algorithm assumes that each chemical stream entering and exiting a process possesses an inherent property, its potential environmental impact (PEI). The PEIs for input and output streams are evaluated separately. For example, the PEI associated with the output streams of a process is calculated by analyzing each of the waste streams generated from the process. Each of the specific chemicals for each waste stream are evaluated. Based upon the impact category values associated with each chemical, the concentration of the chemical in the waste stream, and the mass flow rate of the waste stream, the PEI is determined for each chemical in each waste stream. The PEI of the process is the sum of the PEI for all the chemicals in all the waste streams of the process. After the scores for each chemical are determined, they are normalized within each category.

R2M2 Description. One of the limitations of the WAR algorithm is that the relative risk or probability of environmental impact is not addressed. For the IISE project, risk reduction is a key objective for the P2/CP program; progress measurements, therefore, should be a function in terms of risk reduction. The Risk Reduction Measurement Model is proposed as a useful variation of the WAR algorithm to accommodate the need to account for risk reduction. A modification to the WAR algorithm for this project incorporates a new parameter accounting for the probability of the waste stream being released to the environment in certain cases.

The introduction of a risk coefficient, □, is proposed to modify the WAR equation. Incorporation of □ modifies the result of the WAR algorithm to yield a term PEI*, which can be called "risk-reduced potential environmental impact." PEI* must be calculated for each process in which R2M2 is employed.

The Mass Tracking Model (MTM). The second model would be used to measure reduction of chemicals contained in waste streams of a process that do not contain targeted chemicals. This model accounts for sheer reduction in mass flow rates of waste streams. The MTM would be used when the process does not contain targeted chemicals in any of the waste streams, or does not contain chemicals likely to be added to the list of targeted chemicals in the waste streams.

3.2.3. Analytical and Assessment Procedures

Analytical and Policy/Decision Support System. EMI Systems is proposing to use its proprietary software (*MapDecision*) as the software platform for the development of the Industrial Partner Performance Monitoring and Evaluation System.

MapDecision allows users to compare cases (industrial facilities), perform multiple attribute evaluation, rank, weight and group cases, explore and explain patterns, target and allocate resources based on formulas. It is a tool for strategic assessment, policy dialogue, monitoring and evaluation, which combines available quantitative data with the judgments of participants in the dialogue, i.e. experts, policymakers and stakeholders.
The software allows the user to import raw data tables in various formats (Dbase, FoxPro, Paradox, MS Access, Lotus, Excel), compute indicators (ratios, percentages, etc) and format the

data for analysis. *MapDecision* imports geographic files in Arcview GIS format (shape files) or scanned maps on which a layer of points can be superimposed, representing the locations of the industrial facilities.

Analytical and Performance Monitoring and Evaluation Functions. The proposed basic functions of the Performance M&E of Industrial Partners System are the following:

- ***Establishing benchmarks and standards:*** facilitate adapting standards to fit a broad variety of local circumstances and support the development and testing of new standards.

- ***Monitoring change and performance:*** allow the user to monitor the changes in time of industrial firms' conditions and performance.

- ***Developing indices and composites***: allow the user to describe an entire aspect of a problem by developing indices and allowing stakeholders to play scenarios and reach consensus.

- ***Identifying regional and sector problems:*** allow the user to identify regional and sector problems by ranking, grouping and plotting the industrial firms on the map. Report on the specific problems of the firms in point.

- ***Evaluating performance:*** allow the user to evaluate overall performance against inputs (human and financial resources). The is that of a "black box" where inputs and outputs shed light on the processes inside the "black box". The system can identify over-performers and under-performers.

- ***Analyzing relationships:*** help the user understand the interaction and relationships between inputs and outputs of the production processes of the industrial partners.

- ***Playing what-if scenarios***: support the development of action plans for improving environmental performance by developing "what-if" scenarios based on the developed models.

- ***Targeting based on criteria of need and resources***: support targeting of resources (time and money) where the environmental needs are greatest.

- ***Index-based resource allocation***: using indices or composites to allocate resources (time and money) where the needs are greatest. Allows a "proportional allocation" (per industry) to be adjusted in accordance to an index of environmental (industrial pollution) need developed in consensus by the stakeholders.

- ***Exploring local trade-offs***: allow the user to identify possible local trade-offs of strengths between neighboring industries. The purpose of this function is to promote local dialogue and transparency, to empower industrial firms with information, tap local resources and decrease the dependency on central government incentives for a better environment.

The complete framework for the analytical procedures will be developed when all the data for a number of industrial partners are collected and computerized, including the second round of P2/CP assessment and analysis (to determine impacts on environment and pollution reduction).

The **recommended sequence of procedures** (to be enhanced by application) is the following:

- Establishing performance benchmarks for individual indicators, such as QMS_INFO or OSH_INFO and mapping all firms against the benchmarks.

- Developing composite indices for all classes of information, i.e. ASSESS, KNOW, EVAL, BASELINE, ACTION and RESULT.

- Mapping and analyzing the contents of each index for all firms. Developing report cards which show what priority actions are needed for each industrial partner.

- Developing alternative composite indices and running sensitivity tests, in order to calibrate the evaluation method.

- Improve the methodology, and streamline and simplify (by eliminating redundancies) the survey instruments in order to reduce assistance costs and maximize the number of industrial partners assisted.

- Identifying over-performers and under-performers among the industrial partners.

- Evaluating overall firm performance for the complete assistance cycle by ranking firms according to *Inputs* (ASSESS, KNOW, EVAL and BASELINE), *Process* (ACTION) and *Outputs* (RESULT). Identify firms for priority interventions.

- Target firms needing immediate assistance according to several criteria, for example below average performance in both ENV_INFO and QMS.

- Analyze relationships between indicators in order to develop an explanatory model of performance, i.e. to determine which are the key factors improving performance.

- Developing scenarios for optimum intervention (most impact for least effort) based on the explanatory model.

- Run resource allocation scenarios to optimize the overall assistance to the industrial partners. Resources include money, time, expertise and information.

- Explore trade-offs between industrial partners within the same sector, which could reduce the overall cost of P2/CP.

A sample of analytical output using the limited database currently available in IISE (six indicators in the ASSESS class for 32 industrial firms located in Cebu and Lapu Lapu City) is shown in the Attachment to this report.

3.3. IISE Project Strategic Applications

3.3.1. Internal IISE Use

Moreover, the industrial partners database and analytical procedures will produce invaluable results for internal IISE project use, as comparative assessment of problems, actions, and performance by the industrial partners will help the IISE management and technical staff identify over-performers and under-performers against expected outcomes, and single out success stories and failures.

By attempting to explain the patterns of results and performance of industrial partners by sector and geographic sites, IISE staff will have additional analytical support for:

- identifying new industrial partners;
- refining its methodological approach;
- prioritizing actions;
- optimizing resource allocation, i.e. time, attention, local consultant deployment

The two performance monitoring and evaluation systems proposed will build on the strength of, and will enforce the analytical and reporting/communication capability of PITAMS, the Project Information, Tracking, Analysis and Management System currently being developed by the MIS group in IISE.

3.3.2. Advising the Industrial Partners

The results of the comparative analysis of the activities and performance of existing clients can also be used to advise them on the best course of action, as well as educate new clients on the objectives and the steps of the IISE approach to pollution reduction and ISO 14001 certification.

3.3.3. Marketing the EMS/CP Approach

Some of the key risks and challenges to IISE implementation are related to IISE's industrial partners:

- Firms may refuse to cooperate, or may fail to share their experience for fear of revealing proprietary business information, or that they are not in compliance with environmental regulations.
- Firms may feel they cannot spare management time from the urgent demands of business.
- Firms may refuse to believe anything like CP/EM could be profitable or otherwise in their best interest.
- Old technology and equipment used by many SMEs may prove resilient to gains from P2/CP.
- Firms may lack the funds to invest even small amounts in CP/EM changes or in the initial assessments because of the general economic slowdown.

By sharing information and explanation on over-performers and under-performers against expected outcomes, and by demonstrating success stories to the top management of the prospective industrial partners, IISE can enhance its relationship with the end client, and enroll more firms in the project.

3.3.4. Training the Local Consultants

In addition to providing support to IISE staff in advising the industrial partners and marketing the CP/EMS approach, the Industrial Partners Performance M&E system could be used for training the local consultants, and to a certain degree, for training the industrial partners' technical staff.

3.3.5. Sharing Results with Government and Donor Organizations

Some of the key risks and challenges to IISE implementation are related to local and central government partners, NGOs, industry and business associations and other partners:

- Local government may be so focused on attracting new investment that it will not press anything on business that it believes business does not want, especially under adverse economic conditions.
- NGOs may see cooperating with business rather than confronting it as selling out their principles.
- Industry and business associations may see their role as protecting their industry members from outside forces rather than helping them to change.
- Key government agencies may lack sufficient local staff and resources to be effective participants.
- LGUs may not support CP/EM because of lack of staff and other resources.
- GOP may lack sufficient counterpart funding to be active partners, or sustain collaborative activities.
- The combined effort needed among multiple actors affecting corporate action for CP/EM may be difficult to achieve and sustain.

The results of the analytical and assessment procedures can also be shared with the local and central government partners, NGOs, industry and business associations and other IISE partners, and can provide support to discussing project and sector strategy. The user-friendliness and communication facilities of the software proposed by EMI Systems to be used for the development Performance M&E System offer such facilities for discussion and brainstorming as the system was designed as an interactive assessment tool with outputs projected on meeting or board rooms screens.

The Department of Trade and Industry (DTI) will play a major role in promoting and implementing the CP/EM as a tool to improve business performance. DTI's primary concerns are better business performance and the protection of export markets. Business adoption of CP/EM is a means to obtain an ISO 14001 certification, and ultimately to attain global competitiveness for Philippine exports. IISE will help DTI to become an advocate of CP/EM.

The Department of Environment and Natural Resources (DENR) will be an IISE partner by harmonizing its policies with DTI's and strengthening local capacity in environmental management, monitoring, and enforcement.

The Philippine Coast Guard (PCG) will focus on reducing maritime pollution. IISE will assist the PCG to incorporate CP/EM in regulating the shipping industry.

IISE will be responsible for building national awareness of the advantages of CP/EM and related policies in a cost-effective way, and in coordination with the CRM media network.

3.4. The Next Steps

The *MapDecision* software was installed by EMI Systems in the IISE office in Cebu and a preliminary database was developed together with the IISE staff, in particular with the MIS group and the specialists in the IER questionnaire, KAP survey and P2/CP assessment and analysis. Several procedures based on the limited data set currently available were demonstrated to the IISE staff and initial training was provided to the MIS group in computing values for the indicators, developing the database, scanning area maps, editing the point map of the industrial partners, linking the database with the maps, using the software procedures and interpreting the results of the analysis.

Under the proposed IISE Conceptual Framework, one of the proposed indicators for the Intermediate Sub-Result 2.3 is strengthening GOP environmental policy and decision support. It requires developing a decision support system/infrastructure for area assessment in year 2000.

The Industrial Partner Performance Monitoring and Evaluation System is a good start towards developing such a system; however, several steps are to be taken in order to achieve the objective:

a) A complete set of data has to be developed for a number of industrial partners, showing the sequence: baseline data > action > impact on environment.

b) The proposed preliminary set of indicators should be checked and validated/developed by the IISE specialists.

c) Data redundancies should be eliminated in order to clean the methodology and reduce the future cost of administering surveys and interviewing industrial partners.

d) The conceptual model must be calibrated by running sensitivity tests and selecting the most appropriate procedures.

e) The complete analysis should be performed on the available data from industrial partners and the results of the analysis should be interpreted and brainstormed by the IISE project staff.

f) Once complete data is available for a large number of industrial partners, the analysis should be refined and enriched by analyzing firms separately by industrial sector and by geographical area/location.

g) The methodology and the software must be tested in consultant and client training activities, as well as new partners identification.

h) A detailed plan must be developed for reporting results and disseminating project information in the format allowed by the software.

i) The software system must be installed in USAID/The Philippines and in DENR, and initial exposure and training to the two agencies must be provided.

Realistically, steps a) to e) can be taken in the first and second quarters of year 2000, while steps f) to i) can be achieved most likely in the third and fourth quarters.

4. ATTACHMENT
M&E SOFTWARE ILLUSTRATIVE OUTPUT

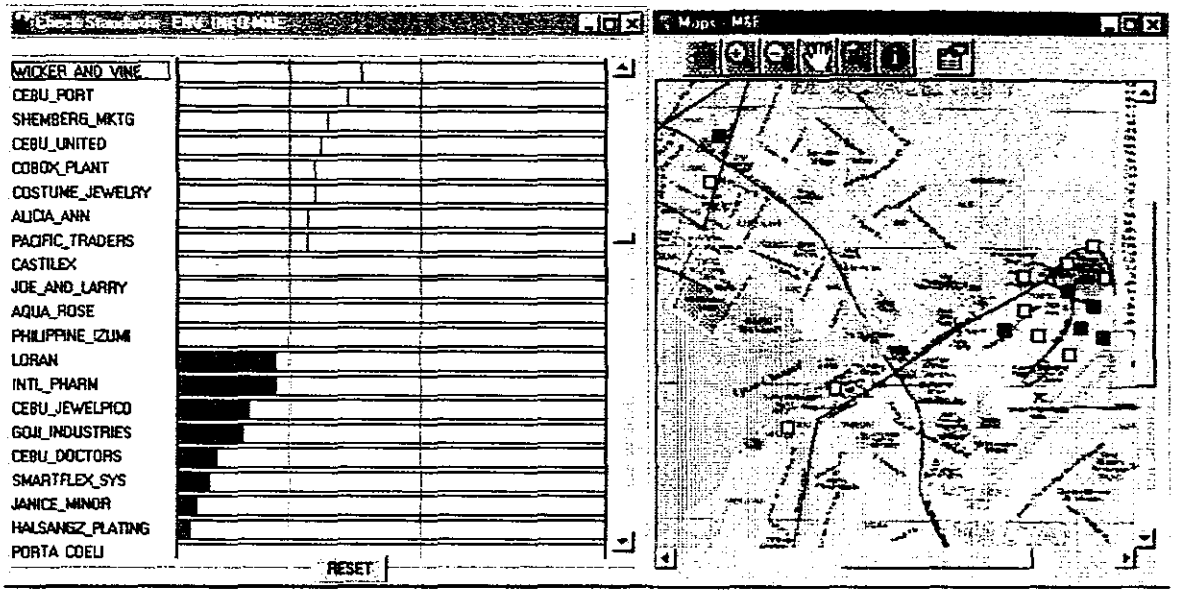


FIGURE 1. BENCHMARKING: Mapping the ENV_INFO Indicator

The industrial firms have been grouped in three groups, according to ENV_INFO performance. The color code follows the traffic signs: green is for best performance, red is for poor performance and yellow describes an intermediate situation.

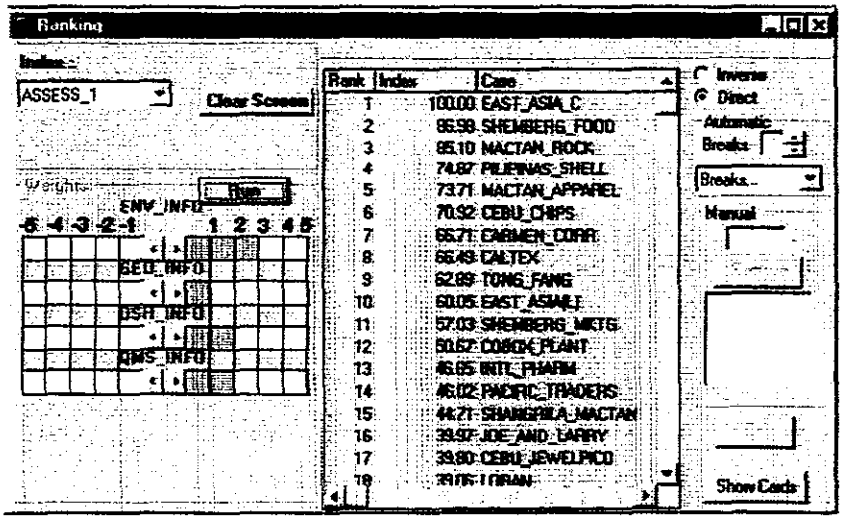


FIGURE 2. PERFORMANCE ASSESSMENT: Mapping the composite index ASSESS_1.

The structure of the composite index is shown on the left; it is made of four indicators with weights varying from 1 to 3. Industrial firms are ranked according to the overall values of ASSESS_1.

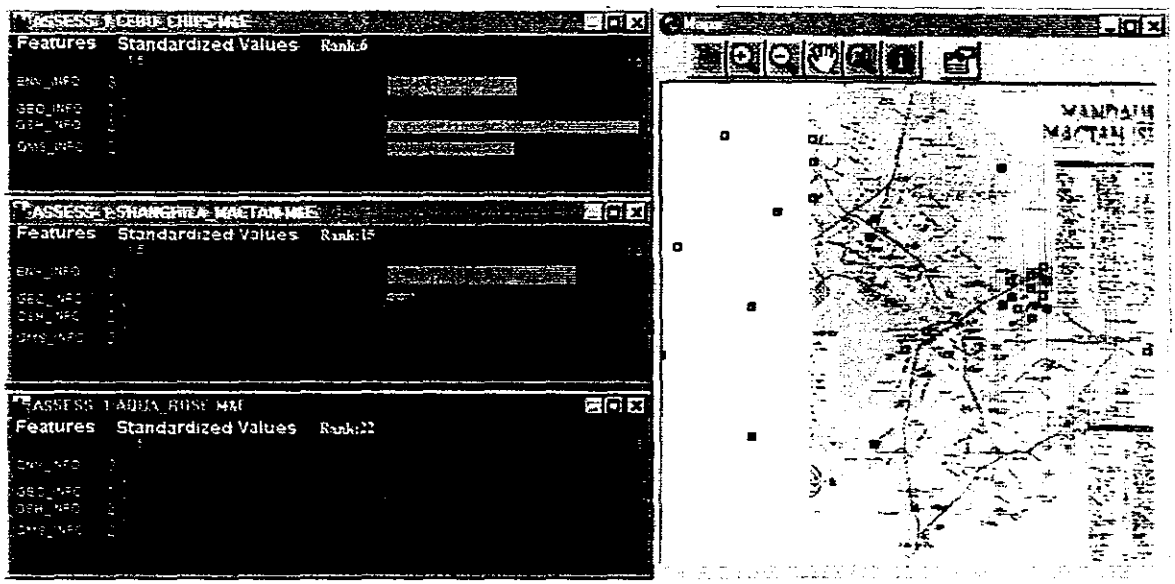


FIGURE 3. COMPARATIVE FIRM PERFORMANCE: Mapping the ASSESS_1 index.

Firms are grouped in five groups and displayed on the map, together with report cards showing the standardized values of the indicators composing the index. The values show in green if they are higher than average, and red if they are below average.

ASSESS_1	WALK_THRU	RES_ALLOC
EAST_ASIA_C_#1	SHANGRILA_MACTAN_#1	PILIPINAS_SHELL_#1
SHEMBERG_FOOD_#2	SMARTFLEX_SYS_#2	CEBU_CHIPS_#1
MACTAN_ROCK_#3	PHILIPPINE_IZUMI_#2	COBIOX_PLANT_#3
PILIPINAS_SHELL_#4	PACIFIC_TRADERS_#2	PACIFIC_TRADERS_#4
MACTAN_APPAREL_#5	MACTAN_APPAREL_#2	CARMEN_CORR_#4
CEBU_CHIPS_#6	JOE_AND_LARRY_#2	CALTEX_#4
CARMEN_CORR_#7	GOJI_INDUSTRIES_#2	SHEMBERG_MKTG_#7
CALTEX_#8	CEBU_DOCTORS_#2	PORTA_COELI_#7
TONG_FANG_#9	CEBU_CHIPS_#2	HALSANGZ_PLATING_#7
EAST_ASIA(L)_#10	EAST_ASIA_C_#2	CEBU_JEWELPICO_#7
SHEMBERG_MKTG_#11	EAST_ASIA(L)_#2	CEBU_PORT_#7
COBIOX_PLANT_#12	COBIOX_PLANT_#2	SHEMBERG_FOOD_#12
INTL_PHARM_#13	CASTILEX_#2	TONG_FANG_#13
PACIFIC_TRADERS_#14	CARMEN_CORR_#2	MACTAN_APPAREL_#13
SHANGRILA_MACTAN_#15	AQUA_ROSE_#15	INTL_PHARM_#13
JOE_AND_LARRY_#16	INTL_PHARM_#16	GOJI_INDUSTRIES_#13
CEBU_JEWELPICO_#17	CEBU_UNITED_#16	COSTUME_JEWELRY_#13
[redacted]	[redacted]	PHILIPPINE_IZUMI_#18
GOJI_INDUSTRIES_#19	CALTEX_#16	AQUA_ROSE_#19
PHILIPPINE_IZUMI_#20	TONG_FANG_#20	ALICIA_ANN_#20
ALICIA_ANN_#21	ALICIA_ANN_#20	CEBU_DOCTORS_#21
AQUA_ROSE_#22	CEBU_JEWELPICO_#20	WICKER_AND_VINE_#22
HALSANGZ_PLATING_#23	COSTUME_JEWELRY_#20	JOE_AND_LARRY_#22
CASTILEX_#24	HALSANGZ_PLATING_#24	CASTILEX_#22
PORTA_COELI_#25	WICKER_AND_VINE_#25	[redacted]
CEBU_UNITED_#26	SHEMBERG_MKTG_#25	SMARTFLEX_SYS_#26
WICKER_AND_VINE_#27	PILIPINAS_SHELL_#25	SHANGRILA_MACTAN_#26
COSTUME_JEWELRY_#28	MACTAN_ROCK_#25	MACTAN_ROCK_#26
CEBU_PORT_#29	JANICE_MINOR_#25	JANICE_MINOR_#26
CEBU_DOCTORS_#30	SHEMBERG_FOOD_#30	EAST_ASIA(L)_#26
JANICE_MINOR_#31	CEBU_PORT_#31	EAST_ASIA_C_#26
SMARTFLEX_SYS_#32	PORTA_COELI_#31	CEBU_UNITED_#32

FIGURE 4. FIRM RANKING ACCORDING TO THREE CRITERIA

All industrial firms are ranked according to index ASSESS_1 and indicators: WALK_THRU and RES_ALLOC. Discrepancies in ranks for a firm show uneven performance and possible data problems.

TARGET - M&E

	1	2	3	4	5	6
ENV_INFO				0.23	-0.18	0.20
GEO_INFO					0.22	-0.08
OSH_INFO	0.67				0.16	-0.04
QMS_INFO	0.23					0.00
RES_ALLOC	-0.18	0.22	0.16			-0.28
WALK_THRU	0.20	-0.08	-0.04	0.00	-0.28	

FIGURE 5. CORRELATION MATRIX

The matrix shows higher correlation values between indicators in darker color. When all data are collected, the matrix becomes the building block for an explanatory model of firm performance.

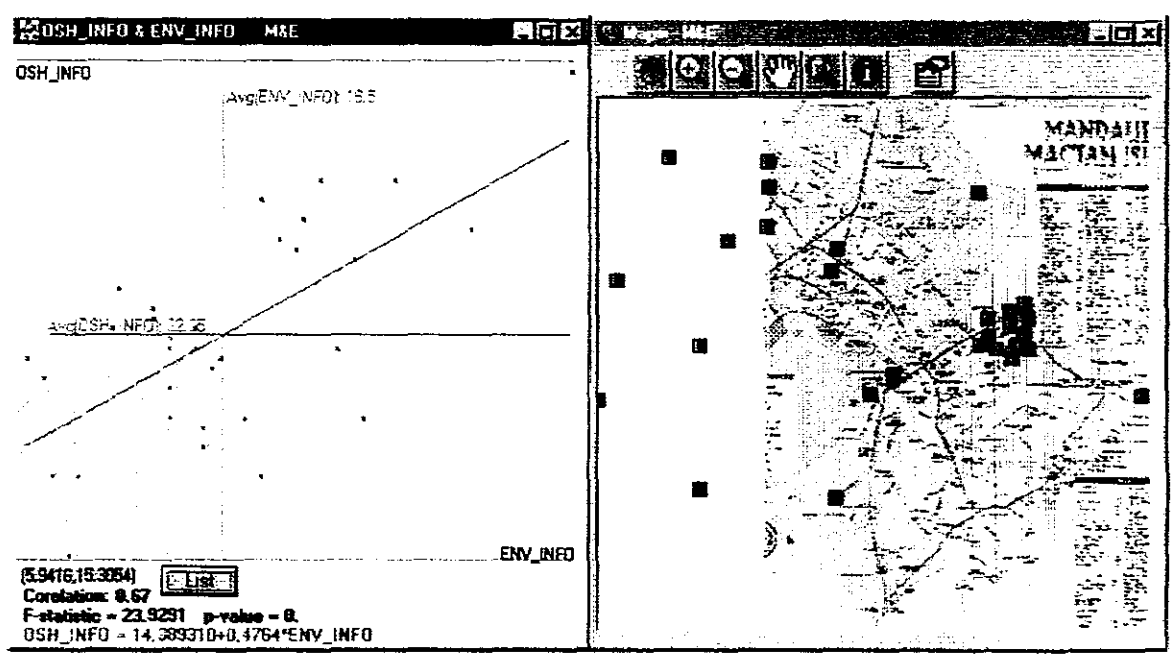


FIGURE 6. TARGETING FIRMS FOR PRIORITY INTERVENTIONS

A quadrant analysis targeting procedure allows the user to target firms with lower-than-average performance in (in this case) ENV_INFO and OSH_INFO. Clicking the *List* button list all the selected firms' names.

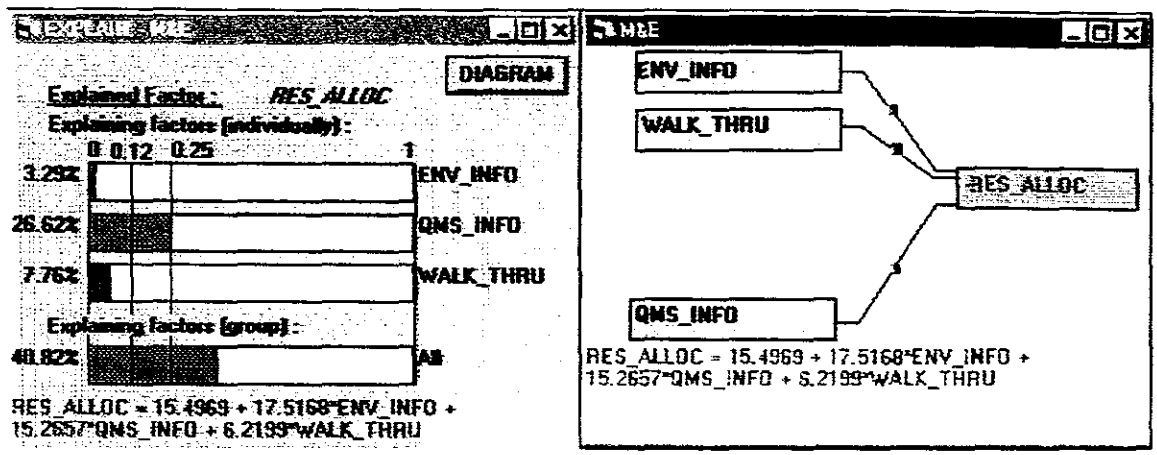
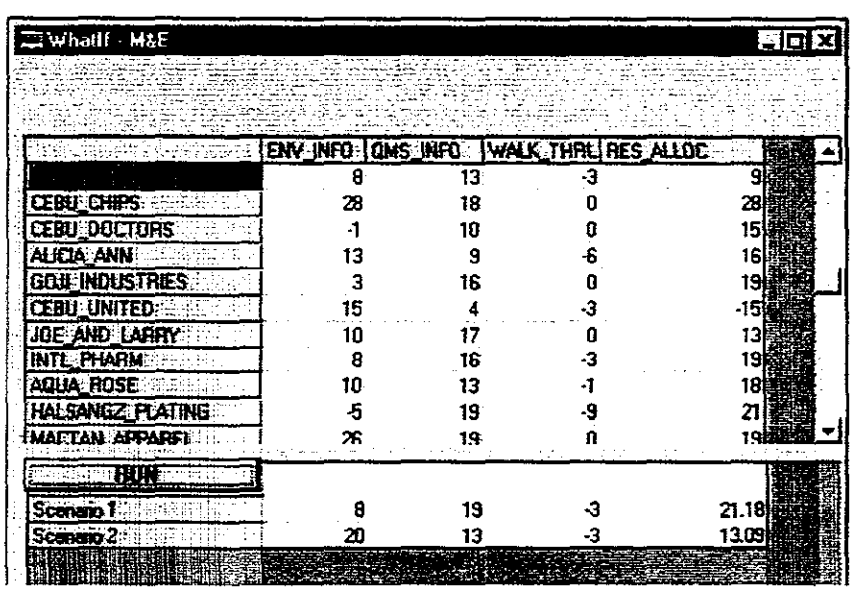


FIGURE 7. DEVELOPING AN EXPLANATORY MODEL

In the example above, the bars show what percent of variation in RES_ALLOC is explained by the variation in ENV_INFO, QMS_INFO and WAK_THRU indicators, as well as the combined explanation of the three indicators together.
A graphic display of the model links is shown on the right.



WhatIf - M&E

	ENV_INFO	QMS_INFO	WALK_THRU	RES_ALLOC
	8	13	-3	9
CEBU_CHIPS	28	18	0	28
CEBU_DOCTORS	-1	10	0	15
ALICIA_ANN	13	9	-6	16
GOJI_INDUSTRIES	3	16	0	19
CEBU_UNITED	15	4	-3	-15
JOE_AND_LARRY	10	17	0	13
INTL_PHARM	8	16	-3	19
AQUA_ROSE	10	13	-1	18
HALSANGZ_PLATING	-5	19	-9	21
MAETAN_APPAREL	26	19	0	19
RUN				
Scenario 1	8	19	-3	21.18
Scenario 2	20	13	-3	13.09

FIGURE 8. DEVELOPING SCENARIOS FOR ACTION

Based on the explanatory model, scenarios can be developed where hypothesized changes in the explanatory indicators show the expected change in the explained (target) indicator, in this case RES_ALLOC.

SECTION 2

LIFE-OF-PROJECT PERFORMANCE EVALUATION MODEL

Administrative Report No. 00/2

April 2000

Submitted by:

Chemonics International, Inc.

Under Contract No. 492-C-00-98-00029-00
Associated Number 492-0444
United States Agency for International Development

Table of Contents

1. Reviewed and Updated Results Framework
2. Reviewed and Updated Performance Evaluation Model
3. Data Collection Requirements, Timing and Responsibilities

1. Reviewed and Updated Results Framework

The most recent *USAID Results Framework for IISE* includes the strategic objective, SO4, one Activity Result, and three Sub-Results (see the diagram below). Each Sub-Result has a Performance Measure, quantified in an Indicator, with a specified Unit of Measure and specific Targets related to project implementation.

The three Sub-Results (community awareness, policy incentives, and institutional capacity) have been designed to converge towards four very important basic premises of the IISE implementation:

- Institutionalization
- Sustainability
- Replication
- Measurement of Results and Sub-Results

Past projects such as IEMP have been weak in institutionalization, sustainability and replication. That is why IISE needs to adopt a "wholesale" approach and to support mechanisms and activities which would develop in DENR and DTI the capacity to continue to increase community awareness of EMS/CP, deliver the policy incentives favoring adoption of EMS/CP and institutionalize the adoption of EMS/CP (in other words, to use effectively "carrots and sticks").

It must be admitted that the IISE is building on a rather weak local understanding and motivation for implementing EMS/CP. That is why the project, while developing activities towards the achievement of the three Sub-Results, has adopted a complementary approach to performance monitoring and evaluation, which will become more and more effective as data builds up on partner firms, and as success stories develop from the project activities. This complementary approach is described in *Section 1: Life-of-Project Performance Evaluation System*. The tasks identified in this SOW will complete, test and demonstrate the effectiveness of this model, as described in Sections 3 and 4 of this Report.

In the meantime, the project performance monitoring and evaluation system will follow closely the project activities falling under the three established Sub-Results. Additional monitoring and evaluation mechanisms have been proposed in brainstorming sessions with the IISE specialists – international and local.

Sub-Result 1: Enhanced Community Participation

A very compact questionnaire was developed to follow up on the impact of the awareness training sessions on the IISE industrial partners. The feedback instrument is targeted at the industrial partners only, although the training involved many other participants and members of the community at large.

Results Framework for IISE

Strategic Objective 4: Enhanced Management of Renewable Natural Resources

SO Performance Measures

Indicator: Risk to environment and human health
Unit of Measure: Percent reduction of pollutants within exposure pathways
Targets: 1998=0; 1999=0; 2000=5%; 2001=10%; 2002=20%; 2003=20%

Activity Result: Industrial Inititatives for A Sustainable Environment

Result of IISE Activity:

- A minimum of 200 firms within selected sectors located in 5 coastal areas will have a 20% average reduction from current levels of industrial pollution
- Of these 200 firms, 50 will be certified to ISO 14001 or another internationally recognised standard

Indicator : EMS/CP implemented in designated sites and industries

Unit of Measure : number of firms, plants, and organizations with effective EMS/CP

Result Targets : July 1998 - 0
July 1999 - 0
July 2000 - 10
July 2001 - 50
July 2002 - 200
July 2003 - 400

Sub-Result 1:
Enhanced community awareness of EMS/CP through information, education and communication

Sub-Result 2:
Policy incentives favoring adoption of EMS/CP established

Sub-Result 3:
Institutional capacity (DENR, DTI, private sector) to support adoption of EMS/CP installed

USAID Performance Measures

Indicator : enhanced community awareness of EMS/CP through information, education and communication (e.g., IEC plan/modules, flyers, letters of interest from industries, seminars and conferences, information and clearing house)

Unit of Measure: percent increase in community EMS/CP awareness

Targets:
July 1998 - 0
July 1999 - 0
July 2000 - 10%
July 2001 - 30%
July 2002 - 60%
July 2003 - 80%

USAID Performance Measures

Indicator: policy incentives favoring adoption of EMS/CP enacted

Unit of Measure: no. of policy measures supporting EMS/CP enacted

Targets:
July 1998 - 0
July 1999 - 1
July 2000 - 3

USAID Performance Measures

Indicator: programs established that will support adoption of EMS/CP (e.g., national EMS accreditation program, training needs analysis, training programs, decision support systems, environmental research agenda).

Unit of Measure: no. of programs established

Targets:
July 1998 - 0
July 1999 - 0
July 2000 - 3
July 2001 - 1
July 2002 - 0
July 2003 - 0

The questions in the half-page questionnaire are graded in order to provide an indication of the degree of impact of the awareness training, i.e. the success rate:

- awareness of EMS/CP and IISE
- understanding of EMS/CP
- commitment to do something in the future about EMS/CP
- commitment to do something soon, provided there is some assistance
- commitment to enroll now in the pilot project
- currently enrolled in the pilot project
- acting on their own towards EMS/CP implementation

The piloted questionnaire was designed to take an executive manager only a few minutes to fill out – by just checking out several boxes. The questionnaire will be sent to the industrial partners by fax email and followed up with a call from IISE to the executive officer involved.

If the piloted questionnaire yields the expected results, a similar instrument will be developed for the next IISE training sessions, which will be targeted to certain clients.

Sub-Result 2: Policy Incentives

The monitoring and evaluation activities are focused on the environmental pact with DENR and DTI and on tracking and supporting a series of incentives, from fiscal and financial incentives to regulatory relief.

Sub-Result 3: Institutional Capacity

The monitoring and evaluation activities are focused on the programs established that will support adoption of EMS/CP, for example: accreditation program and training programs. The decision support system developed by EMI Systems will become increasing effective in institutionalizing the EMS/CP, as more data are available on the industrial partners, and cause-effect patterns and success stories emerge. Within 12-18 months, the system should be able to prove reduction of costs and revenue increase of firms following EMS/CP implementation, thus demonstrating intrinsic incentives to the firms (Sub-Result 2).

2. Reviewed and Updated Performance Evaluation Model

The *Performance Monitoring and Evaluation Model* is based on industrial partner specific data and performance indicators, and it uses an input-process-output, systems approach analytical framework to evaluate and monitor industrial partners' performance in reducing industrial pollution and progressing towards ISO 14001 certification. Each industrial partner's success towards reducing pollution and obtaining certification is a measure of success for the IISE project overall. Summarized results of all industrial partners' activities under the project will be reported as progress benchmarks and milestones.

The Concept. The concept is best represented by the following sequence of events describing each industrial partner as a sub-system of the broader socioeconomic and environmental system:

Initial status of the system	>	*Initial status of the environment*	>	*Interventions*	>	*Impact on the system*	>	*Impact on the environment*

By analyzing the impact of various project interventions, patterns and trends will be identified which will allow the IISE project staff to improve the project strategy in order to maximize future impacts and to build sustainability.

Measuring the Pollution Reduction Impact on Human Health. The impact analysis was designed to respond directly to the *Strategic Objective 4: Enhanced Management of Renewable Natural Resources*, by recognizing the risk to environment and human health. Data provided by the two rounds of implementation of the R2M2 Model and MTM Model, together with GIS mapped information on zoning and residential patters, watersheds and wind patterns, will allow the calculation of percent reduction of pollutants within exposure pathways.

The Methodology. The detailed information collected from each industrial partner is translated into quantitative information, i.e. into a small number of key indicators: *status* indicators, *action* indicators and *impact* indicators. The assessment methodology and software developed by EMI Systems allows the user to group indicators in classes, for analytical convenience. The initial analysis includes the following classes of indicators (Table 1), which was in part determined by the source of data and the specific assessment or analytical activity involved:

Table 1. Performance monitoring and evaluation indicators

Class	*Description*	*Data Source*
Assess	The indicators measure the industrial partner's organization, QMS, OSH, and environmental preparedness, and include the walk-through findings	IER questionnaire
Know	The indicators measure the industrial partner's awareness, understanding and knowledge vis-à-vis the environmental issues related to production	KAP Survey
Eval	The indicators estimate the cost and ease of implementation of P2/CP measures, benefits, problems and actions	P2/CP (first round)
Baseline	The hardest data in the model, the baseline indicators measure the initial potential environmental impact and the solid and hazardous waste	R2M2 Model and MTM Model
Action	The action indicators measure the IISE staff and certified consultants' interventions, as well as the industrial partners' interventions to P2/CP	IISE Info P2/CP (second round)
Result	The impact indicators measure the reduction in the	R2M2 Model

	final potential environmental impact and in solid and hazardous waste, along with the industrial partners' benefits in materials and operations reduction, and increased access to capital and new markets	Ind. Partner Reports

Changes in the list of indicators. The list of tentative indicators developed by EMI Systems during the previous assignment (1999) has been revised in brainstorming sessions with specialists from Chemonics' home office and IISE staff in Cebu.

The following changes in the list of indicators (Table 2) have been considered necessary to those originally proposed (see *Section 1: Life-of-Project Performance Evaluation System*):

Table 2. Changes in performance monitoring and evaluation indicators

1. The list of IER indicators has been reduced and simplified.

2. Certain indicators derived from the IER Survey are redundant and their use in the model has been modified. The WALK_THRU indicator is based on data provided by the IISE consultants and will be used to verify the information reported by the industrial partner with the situation observed by the IISE consultants during the walk-through. The IISE Resource Allocation Strategy indicator (RES_ALLOC), being generated by the project, will be used to determine allocation of resources within the IISE project activities framework. The final list of *IER indicators* is the following:

Code	*Type*	*Indicator Definition*	*Data Source*
GEO_INFO	Assess	General Organizational and Certification Info	IER Survey
QMS_INFO	Assess	Quality Management System Info	IER Survey
OSH_INFO	Assess	Occupational Health & Safety Info	IER Survey
ENV_INFO	Assess	Environmental Info	IER Survey
WALK_THRU	Assess	Walk Through Findings	IISE Consultants
RES_ALLOC	Assess	IISE Resource Allocation Strategy	IISE-generated

3. The KAP indicators are the same.

4. The P2/CP indicators have been modified by breaking up the Estimated Cost & Ease of Implementation (COST_EASE) into two separate indicators. The Expected Actions to be Taken (ACTIONS) indicator was removed from the quantitative database, because it pertains to the list of activities. Consequently, the final list of P2/CP indicators is the following:

Code	*Type*	*Indicator Definition*	*Data Source*
COST	Eval	Estimated Cost of Implementation	P2/CP (first)
EASE	Eval	Estimated Ease of Implementation	P2/CP (first)
BENEFITS	Eval	Estimated Environmental Benefits	P2/CP (first)
PROBLEMS	Eval	Expected Problems	P2/CP (first)

5. The R2M2 and MTM Model indicators are the same.
6. The quantitative database by industrial partner will be expanded to include EMS data and ISO data.

3. Data Collection Requirements, Timing and Responsibilities

The specific tasks to be accomplished during the period March 20 – June 1 are the following:

- Expand database to include KAP and P2/CP data, and integrate with R2M2 Model
- Revise indicators, clean data and methodology, calibrate model via sensitivity analysis
- Add information to scanned maps to support R2M2 model
- Conduct complete analysis on expanded data, and interpret results
- Provide training
- Demonstrate integrated R2M2 and EMI models/systems

The May demonstration of the performance monitoring and evaluation model will be limited to the analysis which can be performed with the data on industrial partners available at that time. No realistic impact analysis will be possible in May because there will be no round 2 data on P2/CP and R2M2 model. However, hypothetical data could be inputted into the system strictly for the purpose of demonstrating its functionality and usefulness under the IISE project.

For the purpose of demonstration, the database will be limited to the 37 industrial partners in the Mactan – Lapu Lapu area. While it is impossible to have data for all indicators for the 37 industries, an effort will be made to identify the overlap of IER survey industries and the KAP survey industries. Also, realistically, EMS and ISO data will not cover all 37 cases, while P2/CP and R2M2 data might also not be available for all industries. The goal, however, of the exercise is to be able to demonstrate how identifying success stories will in the end prove useful for building the EMS/CP awareness, and providing incentives and support to institutionalization.

Sustainability of the quantitative industry-based performance monitoring and evaluation model within the IISE project itself is a major concern for EMI Systems. The steps towards insuring the sustainability are:

- Developing the complete model for the application of the system, even if all data is not available.
- Collecting and processing data for the other sites: Davao, Bohol, Cagayan de Oro and General Santos, during the March 20 – June 1 period.
- Providing – in May 2000 - hands-on training for building a complete database using the data available for the other sites mentioned above. For that purpose, Mrs. Aniela Ghita of *EMI Systems* will be available to IISE during the period May 15 – 20, and will be working directly with the IISE MIS group, led by Mrs. Marilou Haban.
- Providing – in May 2000 – training for policy level applications of performance evaluation model and software. For that purpose, Dr. Enache of *EMI Systems* will be available to IISE during the period May 15 – 20, and will be working directly with the IISE specialists in developing analytical, evaluation and resource allocation scenarios.

- Providing follow up support by *EMI Systems* to IISE for the period of the project.

The data collection requirements, timing and responsibilities during the period March – May 2000 are detailed in Table 3:

Table 3. data collection requirements, timing and responsibilities during the period March – May 2000

Data	*Ind. partners*	*Deliverables*	*Responsibility*
Davao data	10-20 industries	list of industries, map, location	M. Haban
Bohol data	10 LGUs	list of industries, map, location	M. Haban
Cagayan data	10 IERs	list of industries, map, location	M. Haban
Gral Santos	IER data	list of industries, map, location	M. Haban
Deadline for IER tables: April 15			
Data	***Ind. partners***	***Deliverables***	***Responsibility***
KAP data	overlapping industries	survey data and indicators (processed)	J. Dorr M. Haban
Deadline for KAP data: April 1			
Data	***Ind. partners***	***Deliverables***	***Responsibility***
P2/CP data	existing pilot industries	P2/CP processed indicators	J. Limtin
Deadline for P2/CP data: April 30			
Data	***Ind. partners***	***Deliverables***	***Responsibility***
R2M2/MTM data	existing pilot industries	R2M2/MTM processed indicators	D. Rice (MSE)
Deadline for R2M2/MTM data: April 30			
Data	***Ind. partners***	***Deliverables***	***Responsibility***
IISE assistance Data	existing pilot industries	time spent persons trained	J. Limtin
Deadline for IISE assistance data: April 30			

Data	*Ind. partners*	*Deliverables*	*Responsibility*
Zoning, hydro And meteo data	existing pilot industries	zoning, hydro and meteo data (planning agency in Cebu)	C. Alvarado M. Haban
Deadline for zoning & other data: April 30			