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## ***PROJECT PROFILE***

Project Title : Industrial Initiative for Sustainable Environment  
(formerly Municipal Coastal Environment Initiative)

Grant Number : 492-0444

Project Type : Environmental Protection

Project Sites : Cebu, Bohol, Davao, Cagayan de Oro, and  
General Santos City

Funding Agency : U. S. Agency for International Development  
(USAID)

Project Cost : Grant - US \$ 6,000,000 (originally \$8,168,000)  
GOP Counterpart – P19.05 Million

Project Duration : July 1998 – December 2002

Implementing Agencies: DENR, DTI

Project Contractor: Chemonics International

Target Beneficiaries: Industries, LGUs, local agencies and  
business organizations

## **EXECUTIVE SUMMARY**

The Industrial Initiatives for Sustainable Environment (IISE formerly known as Municipal Coastal Environment Initiative or MCEI) is a joint project of the Department of Environment and Natural Resources (DENR) and the Department of Trade and Industry (DTI). It has the primary objective of promoting Environmental Management System (EMS) and Pollution Prevention (P2) or Cleaner Production (CP). As one of the three (3) components of the Natural Resources Management Program (NRMP), IISE's specific contribution in NRMP's goal of enhanced management of renewable natural resources is the prevention of pollution in the uplands, lowlands and coastal areas through voluntary implementation by industry of such proactive environmental management tools as EMS and P2/CP. In brief, DENR's main interest in the project is environmental protection while that of the DTI is making local companies become globally competitive through adoption of an international management standard.

The performance targets of the project are 300/75/20. It means three hundred (300) business firms/organizations are implementing EMS of which seventy five (75) will be certified to ISO14001. The 300 organizations implementing EMS should be reducing pollution by at least twenty percent (20%).

The project has three sub-results, namely: a) Enhanced community awareness of EMS/P2/CP through Information, Education and Communication (IEC), b) Policy incentives favoring adoption of EMS/P2/CP established, and c) Institutional capacity building to support adoption of EMS/P2/CP installed. The three sub-results were designed to institutionalize the primary objective of IISE and, if possible, within the project lifespan, serve as the means to attain the above performance targets.

As of August 2001, Chemonics, the project contractor, reported a total of two hundred ninety seven (297) organizations implementing EMS. Of these 297 firms/organizations, twenty five (25) were reported to have achieved ISO14001 certification.

### **1. Information, Education and Communication Program - Accomplishments**

IISE conducted a total of more than thirteen (13) EMS and P2/CP Orientation-Seminars with a cumulative participation of more than eight hundred (800) professionals both in the government and the private sector. It trained participants from industry, the regional offices of the Department of Science and Technology (DOST), the academe particularly the three hundred (300) member-colleges and universities of the Philippine Association of Tertiary Level Educational Institutions for Environmental Planning and Management (PATLEPAM), Non-Government Organizations/Private Volunteer Organizations (NGOs/PVOs) in Cebu, Bohol and Davao and representatives from the mass media.

IISE also trained the officials and technical staff of the central and regional EMB offices on EMS and Pollution Prevention. Together with IISE-hired and

IISE-trained environmental consultants, they have been instrumental in introducing EMS and Pollution Prevention provisions in recent environmental laws such as the Clean Air Act, the Solid Waste Management Act and the proposed Clean Water Act. These EMS seminars and trainings have brought clearer understanding of EMS and its merits to officials of the Environmental Management Bureau and the DENR enough to motivate them to implement their respective EMS in order to improve their management of their own environmental aspects and impacts while serving as paragon or example to their stakeholders. Trained EMB staff particularly from the Environmental Education and Information Division (EEID) has also been serving as speakers on EMS awareness seminars organized by different organizations including Malacañang and Local Government Units (LGUs).

## 2. EMS/P2 Policy Support Development - Accomplishments

As a result of its series of industry and multi-sectoral policy dialogues and consultations held in 1999, IISE succeeded in determining the pulse, perception and needs of industry and other stakeholders on industry's environmental performance improvement through EMS and P2/CP. In these dialogues, industry particularly Small and Medium Enterprises (SMEs) raised their need for such incentives and assistance as recognition, financial support, technical and technology information assistance, education and training and fiscal incentives.

As a result, the project completed two studies on fiscal incentives and financial assistance for industry. It also inputted EMS provisions in the proposed DAO Revising the Rules and Regulations of the Environmental Impact Assessment System providing certain regulatory assistance to companies implementing EMS. And it drafted a DENR Administrative Order (DAO) promoting government-industry partnership or cooperation towards improved environmental performance by industry while espousing self-regulation.

The said DAO took a span of about four and a half years to finalize and four DENR Secretaries until its approval. The DAO was signed and launched by Secretary Elisea G. Gozun on June 2, 2003 and presented as DAO 2003-14 entitled "*Creating the Philippine Environment Partnership Program to Support Industry Self-Regulation towards Improved Environmental Performance*". This DAO encourages self-regulation by offering various forms of assistance and incentives to industry through two tracks. The first track or Track 1 will grant a recognition reward or the DENR Seal of Approval plus regulatory privileges to establishments with proven superior environmental performance through EMS and P2/CP. The second track or Track 2 will provide various forms of regulatory assistance to establishments which are not yet fully complying with environmental laws and regulations but aim for environmental excellence through EMS and P2/CP. In this Program, the DENR has forged partnerships with DTI, DOST, Development Bank of the Philippines (DBP), Land Bank, Asian Institute of Management (AIM), Union of Local Authorities of the Philippines (ULAP) and the Economic Mobilization Group (EMG). These partners shall also provide industry with assistance which they may need such

as education and training, financial assistance, technical and technology information assistance and fiscal incentives.

To strengthen the collaboration of the DENR and DOST on Pollution Prevention/Cleaner Production under the PEPP umbrella, IISE facilitated the *DENR-DOST MOA on Pollution Prevention/Cleaner Production*.

### 3. Institutional Capacity Building - Accomplishments

IISE engaged in the capacity building of institutions as a strategy to sustain EMS and P2/CP promotion. While Chemonics focused its resources in private sector institutional strengthening, the GOP used its resources in building up the government sector.

Chemonics trained forty nine (49) environmental consultants in the private sector on EMS and Pollution Prevention. With these trainings, IISE aimed to expand the pool of local EMS consultants. IISE also provided inputs in the development of private sector institutions that will comprise the Philippine EMS Accreditation Program (EMSAP). These are the EMS Accreditation Board through the Bureau of Product Standards (BPS) of the DTI, the EMS Auditors Registration Body through the Philippine Association of Environmental Assessment Professionals (PAEAP) and a local EMS Certifying Body through the Philippine Exporters Confederation.

The project also assisted the Bohol Provincial Government, the Environmental Management Bureau (EMB) and the Board of Investments (BOI) in their EMS implementation. It assisted the University of Southern Philippines (USP) in the development of its Master or Graduate Program in Environmental Management that included courses on EMS.

IISE also explored the feasibility of using Geographic Information System as tool for decision making. It developed the Industrial Environmental Management Geographic Information System (IEM GIS). This application was intended to serve as platform to harmonize the monitoring requirements of all national environmental laws. Its ultimate objective is to determine the level of environmental compliance and ecological risks of establishments as starting point for EMS/P2/CP advocacy. But lack of time served as barrier to its pilot implementation. IEM GIS, however, was provided in DAO 2003-14 as decision support system for PEPP strategic planning, program monitoring, review and evaluation.

To test DENR-EMB's partnership with Local Government Units (LGUs) aside from EMS implementation undertaken in Bohol by the Provincial Government, IISE with EMB teamed up with the Batangas Provincial Government-Environment and Natural Resources Office (PG ENRO) in the development and pilot-testing of environmental planning applications using Geographic Information System (GIS). Together with the cities and municipalities of Batangas, the PG ENRO in consultation with EMB, identified possible areas of cooperation such as solid waste management and monitoring/assessment of air, water, forestlands, mining and quarry sites, and environmental impact assessment projects. The project completed a GIS-based sanitary landfill

sites suitability assessment with solid waste management being the topmost priority of the Province. This study was presented to the Batangas PG ENRO and later to the Secretariat of the National Solid Wastes Management Commission (NSWMC). Presently, the Secretariat through the USAID-assisted Environmental Governance Project (ECOGOV) has been using the IISE GIS Facility in mapping open, controlled and closed dumps sites in the country aside from finding suitable sites for sanitary landfill.

#### 4. Enhancement of Regulatory Enforcement - Accomplishments

IISE also contributed in efforts to strengthen the country's environmental regulatory enforcement, a key motivating factor in other countries for industry's interest to improve its environmental performance and management. IISE's contributions took the form of a benchmarking study of EMB regional laboratories as well as financial assistance in the upgrading of EMB laboratories in the project's pilot areas of regions 7, 10 and 11.

The project also made an inventory of 1,625 companies in its three pilot regions as potential target of future EMS/P2 advocacy. This inventory was sampled for desk top testing of the Industrial Environmental Management Geographic Information System (IEM GIS).

#### 5. Project Management

As a multi-agency, multi-partner project, IISE was beset with management and implementation concerns at the outset. This was due to three factors, namely the nature of performance-based contracting entered by USAID with Chemonics, the absence of implementation arrangement between and among all involved parties and, lastly, the stand of Chemonics that the government has no role in IISE with the DENR being perceived as a disadvantage to their recruitment efforts because of its regulatory function.

The performance-based contracting arrangement between USAID and Chemonics gave the latter freedom to implement the project as it deemed fit regardless of DENR's comments or inputs. This has resulted to confusion and disagreements. These concerns were resolved with the signing of a Project Implementation Letter (PIL) by the DENR, DTI, USAID and Chemonics. The PIL provided implementation arrangements which delineated roles, responsibilities and complementation of various parties in project activities.

IISE is managed at two levels. First, by the Executive Management Committee (EMC) which reviews the progress of the project monthly and resolves all issues and concerns. The EMC consists of the DENR/EMB, DTI, USAID and Chemonics. Secondly, by the Intermediate Results Team (IRT) which reviews quarterly the project work plans relative to its directions. The IRT comprises of members of the EMC plus invited representatives from the academe, industry and NGO.

## 6. Project Implementation

The roles of the government and the private sector in IISE were clarified through the IISE Operational Framework which the DENR- IISE Project Management Office developed. This framework shows that the government and its institutional partners can play a role as demand catalyst for EMS and P2/CP through IEC, policy support and training of champions and communicators in the government and civil society. When demand for EMS/P2 is created, the private sector can play the role of service providers particularly in EMS and P2/CP consulting, auditing, certification of EMS to international standard and accreditation of certifying bodies and environmental auditors. In effect, as this operational framework shows, the EMS/P2/CP market can be pumped prime with the government managing the demand for EMS/P2/CP and the private sector supplying the needed services.

## 7. Performance Targets Issues

A basic flaw in the project design is the counting time for the numerical performance targets. Both EMS implementation, ISO14001 certification and pollution reduction can be measured over a year or more after EMS is established by an organization. Since participation by industry is voluntary in nature and may occur at various stages of the project including its terminal year, the numerical targets of 300/75/20 may be totally achieved only or even surpassed after the project's four-year lifespan assuming that project participants pursue their EMS continuously. However, based on validation of selected companies in Regions 7 and 10, EMS implementation can be postponed by a participant because of its voluntary nature, lack of accountability with external parties or stakeholders, lack of information on the financial advantages of EMS and P2/CP and its classification as a "want" rather than a "need"- a major factor in a company's prioritization of expenses as an effect of the economic crunch that hit the country.

Moreover, the attainment of ISO14001 certification by an organization is a better indicator of project success since certification not only assures that an organization's EMS has been properly and completely documented but appropriate EMS programs including those that will reduce pollution have been identified and being implemented. Along this line, the presence of external party auditor to periodically audit the system and performance of an EMS can be a great factor in ensuring that it is maintained based on the requirements of ISO14001 and the state and community objectives of pollution reduction/prevention, regulatory compliance and resource conservation.

A second issue related to the performance targets concerns the preoccupation of Chemonics to deliver the numerical targets. Chemonics has to deliver fifty (50) firms implementing EMS as early as 1999 or the first year of the project's actual operation. This acted as a pressure which seemed to have diverted the contractor's attention and budget more to its own recruitment activities than the full development of the three sub-results during the first year of the project.

## 8. IISE Phase- in Plan

There are three IISE project components that will be phased into EMB. These are its IEC Program, the Philippine Environment Partnership Program (PEPP) and its GIS Facility (subject to completion of the Ecogovernance Project).

The IEC Program shall consist of *a Training Manual for Communicators on EMS and Pollution Prevention; a Guidebook on EMS, Pollution Prevention and Environmental Cost Accounting; and, a Video-documentary of EMS and P2 Success Stories.*

On the other hand, the PEPP, now an official DENR Program at EMB through DAO 2003-14, came at a time when IISE has already ended. As such, there is a need for other sources of funds to support the Program during its originally planned three phases, namely the *Preparatory Phase*, the *Piloting Phase* and the *Post Review and Assessment Phase*. The DAO will be implemented through Self-Regulation and Management Coordinating Units to be created at the EMB Central Office for Track 1 and EMB Regional Offices for Track 2.

Lastly, the GIS Facility built by IISE is intended to be phased into EMB to serve as a tool in the various planning, research, policy development and management concerns of the Bureau. This facility comprises of hardware, software and GIS -trained personnel.

## 9. Lessons Learned

The project was able to attain some interesting results and gained useful lessons inspite of the cut in the USAID Grant made in the early part of year 2001.

First, it showed that pollution reduction is feasible with EMS implementation. Three ISO14001 certified private companies have reported pollution reduction ranging from 7% to 82%. The ISO14001-certified Bohol Provincial Government, on the other hand, reported reduction in its energy and water consumption by 10% and 7%. The 130 firms which participated in the IISE Joint Implementation Program have likewise identified waste streams and percentage reductions targeted for achievement within specified periods of time using predetermined actions or interventions. Quantifying the actual level of reduction in pollutants arising from those actions, however, will require continued follow-up after project completion.

Second, a higher level of participation in the project may be achieved by lowering the cost of EMS implementation. This lesson was gained after IISE employed the Joint Implementation Program (JIP) which it designed. In JIP, several firms were clustered together under the supervision of one Consultant. The participating companies share half of the cost of the EMS Consultant with the other half shared by Chemonics. An effect of the introduction of JIP is the jump in participation by local companies in year 2000 from zero in 1999.

EMS costs may still be lowered with the establishment in the country of its own EMS Accreditation Program. This Program will provide accreditation services to ISO14001 certifying bodies operating locally as well as EMS Auditors Registration Body- a move that will lower the registration costs of EMS auditors and the accreditation of ISO14001 certifying bodies. Presently, such accreditations are being sought (and paid in dollars) in foreign-based organizations.

To lower the cost of certification, IISE also convinced the Board of the Philippine Export Confederation (PhilExport) through a Feasibility Study to catalyze an ISO14001 certifying body for SMEs, a decision presently hampered only by the need of PhilExport for an upfront investment of PHP 7 Million.

The other key lessons learned in the project are the following:

- 1) The management and implementation of a multi-agency or multi-partner project like IISE can be made easier and more effective with the preparation of an operational framework and a Project Implementation Letter approved by the donor, implementing agency and the other key players of the project. There is also a need for a modification or redefinition of performance-based contracting by USAID to suit capacity building projects like IISE;
- 2) EMB/DENR can promote EMS and P2/CP through a variety of mechanisms or actions. From a liability as viewed by the project contractor because of its police function, EMB-DENR can be transformed into an asset by using its image as regulatory enforcer as leverage to encourage EMS and P2/CP adoption by industry through a scheme of "stick" and "carrots". The PEPP DAO, for example, which offers regulatory assistance and other incentives has generated interest from industry especially those companies which are not fully complying with regulations;
- 3) Consistent with the voluntary nature of EMS and P2/CP as state policies, there is a need to inform and educate all stakeholders particularly industry on the operation and financial gains aside from the other merits of an EMS and a Pollution Prevention Program
- 4) The Provincial Government though its environmental unit (i.e., the *PG Environment and Natural Resources Office in Batangas or its equivalent like the Bohol Environmental Management Office in Bohol*) is an effective entry point for environmental cooperation program between DENR/EMB and LGUs particularly on EMS and P2/CP advocacy and spatial-based environmental planning. Provincial level planning and monitoring with PG-ENROs and the DENR/EMB's provincial offices can make environmental management more manageable and practical.

## 10. Future Issues

### Philippine Environment Partnership Program (PEPP)

The Philippine Environment Partnership Program (PEPP) will definitely contribute to the institutionalization, sustainability and replication objectives of IISE. However, it has to address a potential issue which may affect its implementation. This issue involves the readiness of EMB/DENR to pursue creatively a meaningful cooperation or partnership program with industry. Balancing this cooperation program with the Bureau's environmental police function is a challenge in terms of actual implementation. In the Department of Environmental Quality (DEQ) in Michigan, United States, this dilemma was resolved with the creation of a non-regulatory business assistance office in the Department which coordinates with its regulatory offices vis-à-vis the provision of regulatory incentives to a company. And in Sacramento, California, coordination of various assistance needed by an establishment from different agencies and organizations is undertaken by the Business Environment Resource Center (BERC). BERC, a body created by the concerned agencies, has a Steering Committee comprising of the said agencies which, among others, review and approve BERC's Work and Budget Plan.

A related issue is how the government will take EMS and P2/CP as state policy- i.e., a "must" which industry should comply or a "want" that can only be encouraged through assistance and incentives. As a "want" where accountability or external pressure does not exist, EMS implementation can be stopped or postponed by an establishment especially during times of economic slowdown. This observation is particularly true in the absence of data which can convince decision-makers in a company of the financial benefits of an EMS and P2/CP.

Lastly, there is a need to identify the means and agree on the end goals of the PEPP. The PEPP is intended to be a Program of Assistance for industry to encourage industry self-regulation through EMS and P2/CP. Such self-regulation should ensure the attainment of excellence in both environmental management and performance by industry with agreed upon indicators. A good model of such self-regulation is the Clark Field Economic Zone which was deputized by EMB Region 3 to pursue environmental regulatory functions among industry locators of the economic zone subject to DENR's reporting requirements and oversight. How this self-regulation will be attained in an establishment level which is not part of a contiguous economic zone or a member of an industry association will require creativity akin to those of the Michigan DEQ which created a coordinative non-regulatory business office within DEQ or the agencies in Sacramento, California which created BERC.

### Geographic Information System (GIS)

The implementation of GIS built by IISE to support the management of industrial pollution and, generally, environmental planning, research and policy development at EMB/DENR is faced with a sustainability issue. Its

usefulness to EMB will depend on the level of appreciation and sophistication of EMB decision makers. There is also a need to develop a long-term GIS Strategy at EMB.

A very important issue in the development of a GIS Strategy at EMB involves the creation of a GIS Unit at EMB separate from the MIS Unit. *IISE has partnered with the EMB MIS staff in its GIS applications but this cooperation failed miserably* because of the other demanding tasks of the said unit as follows:

- a) Assistance to various offices of the Bureau in the development, update and maintenance of database management applications for records tracking;
- b) EMB website development and maintenance;
- c) Electronic Daily Time Record (DTR) development and management;
- d) Establishment and maintenance of Local Area Network (LAN) and internet in both the EMB Central and Regional Offices;
- e) Maintenance of all EMB computer hardware or equipment,
- f) Assistance in the preparation of Powerpoint presentations for EMB officials, and
- g) Routinary checking and routing to concerned officials and staff of Emails sent through the EMB website

#### Post Project Action Agenda

IISE has contributed significantly to the number of EMS implementation and ISO14001 certification of local business firms and other organizations. However, it has a number of unfinished businesses that should be pursued, as follows:

- 1) Relative to the reported performance targets, there is a need to follow up the progress of EMS implementation by the 297 companies and organizations reported by the project contractor and perhaps more importantly their level of success in reducing pollution. This can be done in the context of the PEPP. Through the PEPP, DENR/EMB with its institutional partners has the opportunity to review and address the barriers encountered by an establishment to sustain its EMS and P2/CP implementation. A turn around of failed EMS and P2/CP implementations will enhance the legitimacy and relevance of the PEPP.
- 2) With regards to the initiatives of the project to attain sustainability, institutionalization and replication, results can be long term with gestation period depending on the implementation of the PEPP. These initiatives include not only the PEPP but also the IISE components being phased into EMB, namely its IEC Program and its GIS Facility. Said IEC and GIS Facility, however, can be used to support the PEPP. Their effectiveness have to be measured in terms of improving industry's environmental regulatory compliance and should be evaluated as a policy and program concern.

- 3) However, the use of Geographic Information System to support decision-making will need the preparation of a *GIS Strategy at EMB*.

Such strategy should include, among others, the identification and prioritization of the GIS applications of the Bureau for strategic planning, research and/or policy development, the creation of a GIS Unit or Geo-Information Laboratory preferably under the supervision of the Planning/Policy Division of EMB or the Pollution Research Section of the Research and Development Division, the conduct of appreciation courses for the top management of the Bureau in both central and regional offices in support of and as follow-up to the GIS Strategy and the identification of GIS partners within the government and other institutions mainly for data exchange, sharing of resources including expertise and collaboration in priority areas of concern.

An example of a workable partnership tested by IISE was EMB's collaboration with the Provincial Government Environment and Natural Resources Office (PG-ENRO) which is the LGU counterpart of DENR at the provincial level. This cooperation piloted with the Batangas PG ENRO in IISE's GIS work promoted sharing of resources, knowledge and skills building in both EMB and the Provincial Government and the setting of common environmental planning agenda for the province.

- 4) DAO 2003-14 has to be pursued cautiously because PEPP is an innovative program that may be misinterpreted or implemented incorrectly by EMB, an agency which has been used for many years to regulatory activities to manage industrial pollution.

DAO 2003-14 should be implemented in three phases, namely the Preparatory Phase, the Piloting Phase and the Post-Piloting Review and Assessment Phase. Thereafter, the PEPP can be implemented as a regular program of the Bureau made mature and stronger by the piloting phase.

The Preparatory Phase should include the following: the preparation of the PEPP Procedural Manual to provide the implementation details of Track 1 and Track 2; and, the creation and preparation of Self-Regulation Management and Coordinating Units (SRMCU) including the orientation of concerned EMB personnel. These activities may take a maximum of six (6) months to finish.

The Piloting Phase should be given a period of at least three (3) years, enough to complete the installation of an EMS and the monitoring of pollutants reduction in participating establishments for Track 2. This is premised that participation in Track 2 will be based on priority industry sectors determined during the Preparatory Phase.

The Review and Assessment Phase should be done after the Piloting Phase. This third phase shall review the implementation of the PEPP as a Program to implement such state policies as self-regulation, government-industry cooperation, EMS implementation and emphasis on pollution

prevention. These policies should be evaluated in terms of promoting improved environmental regulatory compliance of industries and in minimizing the generation and/or use of toxic chemicals and hazardous wastes by industry on voluntary basis.

## **I. Project Description**

### **1. Project Summary**

The NRMP-IISE aims to supplement the other ongoing USAID natural resources/environmental program initiatives under Strategic Objective No. 4- enhanced management of renewable natural resources.

Specifically, IISE aims to closely complement the strategy of the Coastal Resources Management Project (CRMP) by helping the industries located along coastal areas in addressing their negative impacts to coastal resources.

It builds on the completed Industrial Environmental Management Project (IEMP) which pioneered the development and implementation of Waste Minimization Programs (also known as Pollution Prevention or Cleaner Production) to local industries.

Originally, the project's performance targets are 400 firms implementing EMS where 200 are certified to ISO 14001 resulting to 20% pollution reduction (400/200/20).

With the USAID budget reduction in 2001 and upon concurrence of the IISE Executive Committee, these targets were reduced to 300/75/20.

### **2. Objectives and Scope**

IISE aims to promote the widespread adoption of Environmental Management System with Pollution Prevention/Cleaner Production (EMS/P2/CP) among local industries as a government strategy to enhance the management of renewable natural resources

Sub-results or components include:

- 1) Subresult 1: Enhanced community awareness of EMS/P2/CP through information, education and communication (IEC);
- 2) Subresult 2: Policy incentives favoring adoption of EMS/P2/CP established;
- 3) Subresult 3: Institutional capacity building to support adoption of EMS/P2/CP installed

### 3. Rationale

#### 3.1 Relationship to USAID Strategy

The Government of the Philippines (GOP) and the Government of the United States of America through the U. S. Agency for International Development (USAID) forged an agreement for the implementation of the Natural Resources Management Program (NRMP) under Strategic Objective (SO) No. 4 (enhanced management of renewable natural resources). The program aims to assist the GOP in developing an environment conducive to ecologically sound and sustainable economic growth with specific attention to forests and coastal resources management as well as industrial pollution prevention. The inclusion of three components in NRMP is based on their interrelationship. While much of the threat to upland resources is coming from coastal populations including their industrial activities, coastal areas are susceptible to the instability and degradation of upland areas as well as the accelerating pace of industrialization both in the coastal zone and the uplands. In view of these observations, there is a need to link coastal resources management policies and implementation strategies with complementary policies and strategies on forest resources and industrial environmental management. It is in this context that the Coastal Resource Management Project (CRMP) and the Municipal Coastal Environment Initiative (MCEI) components of NRMP were conceived. NRMP emphasizes actions favorable to strategic alliances and partnerships with the community especially with sectors whose activities can be the potential causes of resource degradation.

MCEI was later renamed Industrial Initiative for Sustainable Environment (IISE) to reflect two things. First, the project focuses on industry affecting ecosystems in both uplands and lowlands rather than the municipal coastal environment alone. Second, the project will depend on the voluntary initiative of industry to improve its environmental management and performance through EMS and P2/CP.

The expected results of IISE are a minimum of 300 industries within selected sectors located in eight coastal areas 75 of which should be certified to ISO 14001 or another internationally recognized standard and reducing on the average by 20% the current levels of generated pollutants.

IISE will complement Intermediate Result # 1, which is 3,000 km of coastlines managed for sustainable harvests by the year 2002. In the areas where IISE and CRMP are co-located, IISE will be integrated to directly support achievement of CRMP's minimum level of resource management targets which were established to reach long-term sustainability. The integration of land based industrial pollution management into the CRMP means an application of a unified or "ecosystems approach" and will result in a higher probability of achieving a healthier environment, including biodiversity conservation in the

Philippines coastal areas. The ultimate result is increased economic gain through cost savings to the companies and higher economic returns to the communities through increased fisheries harvests.

In addition to reduction or prevention of industrial pollution, the natural resource management capability of national and local institutions will be enhanced. Targeted local communities and local officials will systematically manage their coastal resources. Business and organizations (i. e., local chambers of commerce, Pollution Control Association of the Philippines, Inc., Technology Livelihood Resource Center, Small and Medium Enterprise Institute) will train on Environmental Management System/Pollution Prevention/Cleaner Production (EMS/P2/CP) to become the agents in promoting the strategy. Likewise, government agencies such as the Department of Environment and Natural Resources (DENR), the Department of Trade and Industry (DTI), and the Department of Transportation and Communication/Philippine Coast Guard will become effective promoters of EMS/P2/CP. At the end of the activity, it is anticipated that these business and trade organizations as well as DTI and PCG will integrate EMS/P2/CP in their promotion of business investments and enforcement of environmental regulations.

### 3.2 Relationship to GOP Objectives

The Philippine Agenda 21 is the country's framework to attain national progress through sustainable social development. It includes policy statements and implementation strategies on industrial pollution and coastal resources management. The local version of Philippine Agenda 21 is Local Agenda 21 which integrates sustainable development into local development plans. IISE addresses the issues of pollution from industrial effluents, lack of coordination among government agencies, and in some ways the degradation of coastal and marine ecosystems.

The DENR and DTI are the lead agencies involved in environmental management and industrial investments. The IISE design responds to DENR's expressed needs for the following assistance to:

- Promote pollution prevention plans for businesses through business associations
- Help new businesses incorporate EMS/P2/CP into their operations at the earliest possible stage
- Implement policy studies recommendations on market-based instruments, programmatic compliance to environmental impact statement requirements, and toxic and hazardous waste management
- Localize the Philippine Agenda 21 with strong involvement of business
- Assist the local DENR staff in promoting EMS/P2/CP and incorporating it into their activities
- Coordinate donor assistance which is critical to fill funding and technical gaps and preventing activity overlaps

The IISE contractor will address DTI's need to promote environmentally sustainable growth in the Regional Growth Areas. DTI's Board of Investments has an environmental unit which reviews proposed new investments, incentives for purchase of pollution control or cleaner production technology, and collaboration with DENR in investment review. In June 1997, DTI and DENR signed a Memorandum of Agreement that allows BOI to process Environmental Compliance Certificates for proposed new investments with the oversight of DENR. BOI's involvement will reduce DENR's processing of all ECCs and fast-track important new investment projects in the Philippines.

### 3.3 Relationship to other USAID Projects, Strategic Objectives and Intermediate Results

#### Industrial Environmental Management Project

IISE expands on the completed Industrial Environmental Management Project (IEMP). IISE should, therefore, learn from the lessons left behind by IEMP specifically on the institutionalization, sustainability, replication and measuring results. These lessons are summarized below:

**Institutionalization.** The Pollution Management Appraisals (PMAs) promoted by IEMP among its pilot firms may have succeeded in helping a firm save money, increase revenues, and reduce pollution but the process is weak in institutionalization measures. Had the firms incorporated the systems approach, such measures could have provided continuity to the project thrusts once the project was ended.

**Sustainability.** While PMAs demonstrated to firms the benefits of waste minimization, small and medium enterprises (SMEs) did not sustain PMA techniques. Among the major reasons observed are (1) failure of the firm's management to realize the financial benefits of PMAs and the lack of management systems that encouraged continual improvement and held management responsible for corporate-wide environmental performance; (2) DENR's shutdown orders to participating firms for violation of environmental standards, caused mainly by the lapse of regulatory moratorium DENR provided to firms when the project was ended; (3) lack of appropriate follow-up or recognition by the GOP and/or other concerned groups, diminishing the significance of the PMA program to society and participating industries, (4) lack of approach as well as wide-ranging familiarity with P2/CP, and (5) absence of IEC programs in government and other institutions to sustain the promotion of P2/CP among industries and other concerned organizations.

**Replication.** The information and technology promoted by IEMP generally did not spread to many companies within the same industry. As a result, pollution reducing practices reached relatively few firms compared with the thousands of firms operating throughout the country. This is attributed, among other factors, to the unwillingness of firms competing to win market share and increase profits to voluntarily share information with their competitors about ways to minimize costs. Replication may come about if work is done in

tandem with and industrial trade association (the wholesale approach) rather than with individual firms (the retail approach) or through active promotion of the government. IISE's support for the development of sector specific templates (including sectors such as LGUs, ports and harbors and industrial parks) will be key components aimed at accelerating familiarization with and adoption of EMS.

Measurement of results and sub-results. The indicators should be appropriate to project objectives. Collecting data for inappropriate indicators will yield irrelevant results. In IEMP, for example, the goal was to improve health by reducing pollution, but the pollutant measured, Biological Oxygen Demand (or BOD) does not directly affect health. BOD deprives the water of dissolved oxygen, which in turn kills fish or reduces aquatic life and hampers fish production. It also affects the color and taste of water. Pollutants such as heavy metals, inorganic chemicals, hazardous bacteria and toxic waste directly affect human health. IISE shall take a risk-based approach that emphasizes reduction of pollutants within exposure highways or the elimination of those pathways altogether. This means that monitoring or measurement of risk reduction and environmental performance baseline will be undertaken both within the industries and in ambient conditions.

#### Coastal Resources Management Project

Consistent with the Mission's strategy of an integrated approach of achieving SO4 objectives, industrial pollution has to be accounted for in planning for a sustainable management of coastal resources. IISE will primarily complement the Coastal Resource Management Project (CRMP). The proposed areas of IISE will be selected regional growth centers and industrial areas in CRM expansion sites.

## **II. Implementation Achievements**

This chapter covers specific project accomplishments during the implementation phase. It also discusses the problems encountered by the IISE Project Management Office during project implementation.

### 1. Performance Targets

With respect to the number of organizations implementing EMS, the project's actual accomplishments relative to planned targets are shown in Table 1 below. This table shows that 297 organizations were implementing an EMS through the efforts of the project. This number represents more than half of the current total EMS implementations in progress in the Philippines. Of the 297 organizations, 25 have achieved ISO14001 certifications of their EMS. This represents more than one fourth of total EMS certifications in the Philippines.

Table 1. Number of firms/organizations implementing EMS and certified to ISO14001

Organization by Groupings	EMS Implementation (Non-Certified + Certified)		EMS Certifications	
	Target	Achieved	Target	Achieved
Demonstration Projects for Industry	10	10	10	7
Joint Implementation Program	150	130	30	3
Demonstration Projects for LGUs	2	2	2	1
Joint Implementation Program for LGUs	18	40	10	0
PEPP Partner Institutions	5	4	3	1
IISE-Certified Consultants	50	46	20	13
USAEP	65	65	0	0
<b>Total</b>	<b>300</b>	<b>297</b>	<b>75</b>	<b>25</b>

## 2. Sustainability

The three subresults or components of the project are anticipated to contribute to the sustainability of the project objective of promoting wider adoption of EMS and Pollution Prevention/Cleaner Production by industry and other organizations. These subresults are Information, Education and Communication (IEC) Program, Policy interventions and Institutional Capacity Building in both the private and public sectors. Table 2 shows the planned targets and accomplishments vis-à-vis these three subresults.

Table 2. Targets and Accomplishments under IISE Sub results/Components

Subresult/Component	Target	Accomplishment
Subresult 1. Enhanced community awareness of EMS/P2/CP through IEC <b>Unit of Measure:</b> Percent increase in community EMS/CP awareness	By the end of the project, at least <b>800</b> stakeholders are trained on EMS/P2/CP	Conducted 13 EMS/P2 orientation seminars with a cumulative participation of <b>875</b> professionals from the government and private sectors as of May 15, 2001
Subresult 2. Policy incentives favoring adoption of EMS/P2/CP established <b>Unit of Measure:</b> No. of policy measures supporting EMS/CP enacted	By the end of the project, <b>4</b> policy papers/ recommendations are formulated	<ul style="list-style-type: none"> <li>◆ DAO Providing a Program of Support to Industry (PEPP DAO)</li> <li>◆ EIA DAO with EMS provisions</li> <li>◆ Clean Air Act with EMS/P2 provisions</li> <li>◆ Study on Fiscal Incentives</li> <li>◆ Study on Financial Incentives</li> <li>◆ Proposed Clean Water Act with EMS provisions</li> </ul>
<b>Subresult 3.</b> Institutional capacity to support adoption of EMS/CP	<b>1. Private Sector</b> By the end of the project, EMSAP institutions are	49 environmental consultants from 14 consulting firms were trained on EMS and P2. These

<p>installed <b>Unit of Measure:</b> A national EMS/ISO 14000 accreditation program established</p>	<p>established</p> <p><b>2. Government Sector</b> By the end of the project, at least 2 national government agencies and 1 LGU are implementing EMS/P2</p> <p>By the end of the project, at least DENR and DTI are promoting EMS/P2</p> <p>By the end of the project, at least 1 facility inspection and monitoring protocol is prepared. Pre-determined facilities to be targeted for EMS/P2 as a result of monitoring.</p> <p><b>3.Regional Laboratories</b> Upgraded in support of Regulatory Enforcement</p>	<p>Consultants formed two EMS professional groups. IISE also provided inputs in the establishment of the EMS Auditors Registration Body, the EMS Accreditation Board. It also assisted the PhilExport Board with a Feasibility Study to establish a local EMS Certifying Body.</p> <p>EMB, BOI and Bohol Provincial Government are at various stages of EMS implementation</p> <p>DENR/EMB and DTI have conducted trainings on EMS and P2</p> <p>1 Facility Inspection and Monitoring Protocol completed with 1652 firms (R7=450, R10=700, R11=502) surveyed. This monitoring work to be strengthened with Industrial Environ. Mgt GIS.</p> <p>Upgraded laboratories of EMB in Regions 7, 10 and 11</p>
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### 3. Tools Developed

Table 3. Tools and Approaches to Promote EMS Implementation

<b>Tool</b>	<b>Significance</b>
◆ Joint EMS Implementation Program	◆ Significantly reduces the cost of EMS training and implementation and promotes

<ul style="list-style-type: none"> <li>◆ Custom-tailored standard operating procedures for EMS implementation</li> <li>◆ Quality Assurance/Quality Control (QA/QC) processes</li> <li>◆ Confidentiality and contracting agreements</li> <li>◆ Specialized understanding of environmental permitting process and regulatory standards for operation</li> <li>◆ Detailed knowledge of fiscal and financial programs/ incentives available to support EMS</li> <li>◆ Custom-tailored MOUs/MOAs with national and local government agencies</li> <li>◆ Teaming arrangements with Chambers of Commerce and professional organizations</li> </ul>	<ul style="list-style-type: none"> <li>◆ sharing of lessons learned</li> <li>◆ Ensures efficient and full implementation of EMS components</li> <li>◆ Ensures that the EMS and document deliverables will meet certification standards</li> <li>◆ Promotes trust and protects individual interests among cooperating groups (e.g., consultants, firms donors, regulators)</li> <li>◆ Reduces time and costs associated with obtaining environmental operating permits and establishing systems that meet regulatory standards</li> <li>◆ Increases access of firms to fiscal and financial support for their EMS</li> <li>◆ Streamlines inter-agency cooperation and action</li> <li>◆ Enlists participation by networking and facilitates the sharing of EMS implementation experiences and best practices among industries</li> </ul>
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Table 4. EMS Information, Education and Communication Tools

<b>Tool</b>	<b>Significance</b>
<ul style="list-style-type: none"> <li>◆ Publication of Newsletter</li> <li>◆ Publication of Fact Sheets</li> <li>◆ Publication of website</li> <li>◆ Conduct of Green Gauge Survey</li> <li>◆ Survey of ISO14001 certified industries</li> <li>◆ Guidebook on EMS, Pollution Prevention and Environmental Cost Accounting</li> <li>◆ Communicators Manual on EMS and Pollution Prevention (P2)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Keeps subscribers abreast of most recent developments in methods, findings, recommendations</li> <li>◆ Provides accurate and succinct summaries of key components of EMS, P2/CP, etc.</li> <li>◆ Provides worldwide access to progress, methods, and findings related to EMS, P2/CP</li> <li>◆ Measures current environmental awareness, priorities and IEC needs among a wide range of influential political, industry and social leaders</li> <li>◆ Identifies drivers, hurdles and solutions and best practices among early EMS implementers</li> <li>◆ Summarizes and provides an experience-based template for others to follow, capitalizing on best practices and reducing time and costs</li> <li>◆ Identifies guidelines and procedures for proper communication of EMS and P2</li> </ul>

◆ Video-documentary of EMS and Pollution Prevention Success Stories	◆ Highlights the success of selected organizations in EMS and P2 implementation and explains the process so others may emulate
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Table 5. EMS Policy-Support Tools

<b>Tool</b>	<b>Significance</b>
<ul style="list-style-type: none"> <li>◆ Establishment of policy-development support groups in Manila, Cebu and Davao</li> <li>◆ Guidance in establishing the Philippine Environmental Partnership Program (PEPP)</li> <li>◆ Assistance to DENR in modifying or developing DAOs to encourage EMS adoption by industry</li> <li>◆ Production of "Policy Synopses" describing subjects such as EMS and the Clean Air Act</li> <li>◆ Technical report and DENR position paper on fiscal incentives to promote EMS</li> <li>◆ Technical report and resolution for the National Credit Council on financial incentives to promote EMS</li> </ul>	<ul style="list-style-type: none"> <li>◆ Focuses expertise and a wide base of support on policy issues and initiatives to promote EMS/P2/CP</li> <li>◆ Created a base of support for EMS/P2/CP among 8 key government, financial, academic and advocacy organizations</li> <li>◆ Provide the actual policy instruments to enable the DENR to promote EMS/P2/CP</li> <li>◆ Provided accurate and succinct summaries of how EMS and policies inter-related, and publicized these programs</li> <li>◆ Supported DENR's efforts to develop fiscal incentives to encourage EMS/P2/CP</li> <li>◆ Supported DENR's efforts to develop financial incentives among financial institutions to encourage EMS/P2/CP</li> </ul>

Table 6. EMS Institutional Capacity-Building Tools

<b>Tool</b>	<b>Significance</b>
<ul style="list-style-type: none"> <li>◆ Support to the formation of the Philippine Environmental Partnership Program (PEPP)</li> <li>◆ Assistance to the design and development of components of a national EMS Accreditation Program (EMSAP)</li> </ul>	<ul style="list-style-type: none"> <li>◆ The PEPP is a collation of 8 member organizations from government, financial, political and training sectors that is focused on developing approaches to supporting EMS/P2/CP</li> <li>◆ A national EMSAP will greatly reduce the cost of EMS certification and periodic surveillance and re-certification costs, thereby encouraging the spread of certified EMS</li> </ul>

<ul style="list-style-type: none"> <li>◆ Design and administration of an EMS Auditor Training and supervised live-audit program</li> <li>◆ Assistance to the production of a Communicators Manual on EMS and Pollution Prevention</li> <li>◆ Development of EMS Training Programs</li> <li>◆ Assistance to the development of GIS in environmental planning</li> </ul>	<ul style="list-style-type: none"> <li>◆ A cadre of certified Filipino EMS auditors and EMS lead auditors will also reduce the cost of EMS certification/re-certification and promote EMS</li> <li>◆ This manual will be an effective means of training EMS advocates based on hands-on experience with EMS in the Philippines</li> <li>◆ These programs were developed, tested and refined under IISE and can serve as templates for increasing the number of qualified consultants, as well as general understanding of EMS/P2/CP</li> <li>◆ GIS was found useful to facilitate DENR/EMB's collaboration or partnership with PG ENROs in environmental planning. Using Sanitary Landfill Sites (SLS) Suitability Assessment and GIS capabilities to show results in maps, decision was found to improve especially on the part of the LGUs in SLS site selection and generally environmental management.</li> </ul>
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Table 7. IISE Implementation Problems and Actions Taken

<b>Implementation Problems Encountered</b>	<b>Actions Taken</b>
<p><b>1. The Situation:</b> Cut in USAID Grant for IISE This unilateral USAID action resulted to the premature termination of the contractor who could have provided the EMS and Pollution Prevention consultants needed by the GOP for firms and other organizations already encouraged by EMB &amp; its partners.</p> <p>Time was also found lacking to fully test the capabilities of IEM GIS in determining non-complying or critical industrial facilities as basis for targeting potential clients of the Project.</p>	<p><b>Actions:</b></p> <p>1) Reduction in performance targets of contractor from 400 to 300 firms implementing EMS and 200 firms certified to ISO14001 to 75.</p> <p>2) GOP/EMB's activities limited to training potential communicators of EMS and Pollution Prevention at EMB, in the academe and other institutional partners.</p>
<p><b>2. The Situation:</b> Disagreement between Contractor and GOP (EMB/BOI) on the nature and scope of IISE as a project.</p> <p>The contractor interpreted IISE as a private-sector initiative while the GOP (EMB and BOI) insisted that IISE is a government project designed originally</p>	<p><b>Actions:</b></p> <p>1) Preparation and approval of <b>Joint Implementation Letter (JIL)</b> signed by USAID, EMB/DENR, BOI/DTI and the Project Contractor. The JIL was initiated by EMB/DENR upon the advice of the National Economic Development Authority (NEDA), the government agency that signed the</p>

<p>with the government in the forefront assisting industry improve its environmental performance through EMS and Pollution Prevention.</p> <p>The above interpretation by the contractor has resulted to the complete shutting out of the GOP in the contractor's activities particularly in the conduct of its EMS Awareness Seminars and Trainings for industry and other private groups.</p> <p>Moreover, the focus of the contractor became the attainment of the numerical performance targets mainly through the grant of subsidies to participating organizations. This focus is also reflected in its hiring. Most of its technical personnel and consultants were hired to get the performance targets via its own recruitment.</p> <p>3. <b>The Situation:</b> Fielding by Contractor of key personnel not suited to their jobs and responsibilities (see Contractor's Completion Report)</p> <p>4. <b>The Situation:</b> Changes in DENR administration. The sudden change in the DENR leadership due to the change in national leadership in January 2002 resulted to delays in the</p>	<p>Program Grant Agreement between the Republic of the Philippines and the United States of America for the Natural Resources Management Program.</p> <p>2) Expulsion of the Technical Director of the contractor who stood firmly on the position that IISE is a private-sector initiative where the government is irrelevant.</p> <p><b>Actions:</b></p> <p>1) Whenever necessary, the IISE PMO requested the Contractor to provide the experts whom the GOP needs as it took the lead in institutionalization activities.</p> <p>2) The IISE PMO also influenced the hiring of a local EMS expert to design the Joint Implementation Program (or clustering of companies to lower cost). This was prompted by lack of results vis-à-vis the performance targets during the first year of the project).</p> <p>As a background, performance-based Contracting between USAID and the Contractor as they interpreted it made personnel hiring a sole prerogative of the contractor. GOP can only comment on the Scope of Work (SOW) of the Consultant but not the consultant to be hired by the Contractor.</p> <p><b>Action:</b></p> <p>1) Partnership with industry and the private sector to push the DAO's approval by appointed DENR Secretaries</p>
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approval of the PEPP DAO	The PEPP DAO was brought to the attention of the new Secretary Elisea G. Gozun. The proposed PEPP DAO was finally signed in June 2003 after being reviewed and evaluated by the DENR Policy Working Group
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### 3. Phase-in Plan

The IISE Project Management Office, as part of its institutionalization activity, phased into EMB, its selected components as follows:

- 1) Information, Education and Communication (IEC) Program and
- 2) Industrial Environmental Management Geographic Information System (IEM GIS)

#### Information, Education and Communication Program

The IISE PMO included in its trainings and seminars on EMS and Pollution Prevention the staff of Environmental Education and Information Division (EEID) of EMB as a strategy to institutionalize IISE's IEC Program. IISE phased in the following to EEID:

- a) Budget
- b) Staff: Ms. Richi Ann Guzman
- c) Computers and Printer

EEID closely collaborated with the IISE Project Management Office (PMO) in the publication of the *Guidebook on EMS, Pollution Prevention and Environmental Cost Accounting* and the *Communicators Manual on EMS and Pollution Prevention*. Aside from these publications, EEID also worked with the Public Information Authority (PIA) in the video-documentary of *Success Stories on EMS and Pollution Prevention*.

The EEID staff alone or in coordination with the Environmental Quality Division (EQD) has already organized and conducted EMS awareness seminars and trainings on EMS and Pollution Prevention for the following groups:

- a) EMB central and regional staff
- b) The member-colleges and universities of the Philippine Association of Tertiary Level Educational Institutions on Environmental Planning and Management (PATLEPAM)
- c) Industry groups in Region 3 and the Cordillera Administrative Region (CAR).

Industrial Environmental Management Geographic Information System (IEM GIS).

The institutionalization of IEM GIS at EMB was originally designed for the Management Information Systems (MIS) Unit of the Bureau. As part of this institutionalization strategy, IISE attempted to phase into this Unit the following:

- a) budget
- b) Computer staff (2)
- c) GIS Hardware and Software

Unfortunately, this Phase-in Plan failed miserably. The EMB MIS Unit failed to attend to the GIS applications being piloted with IISE. For more than half a year, this Unit failed to utilize its phased-in resources including the allotted budget of PhP 911,000.00. Worst, EMB MIS Unit's inaction stalled the complete development and piloting of IEM GIS. This was due, among others, to its other demanding tasks as follows:

- a) Development and maintenance of textual databases for records tracking
- b) EMB website development and maintenance
- c) Electronic Daily Time Record (DTR) development and management
- d) Establishment and maintenance of Local Area Network (LAN) in both the EMB Central and Regional Offices
- e) Maintenance of all EMB computer hardware or equipment, and
- f) Assistance in the preparation of Powerpoint presentations for EMB officials.

The IISE PMO, thus, took over the continued operation of its GIS facility. Two major applications were developed. The first application covers all the business operations of EMB related to permitting and regulatory enforcement. In this application, industrial facilities are mapped on pilot basis and characterized with their respective attribute permitting and technical data in a harmonized approach. It was called Industrial Environmental Management GIS. Though IISE was able to complete IEM GIS, it was not piloted due to lack of time. *IEM GIS, however, was provided in DAO 2003-14 as decision support system for PEPP strategic planning, program monitoring, review and evaluation.*

The second one involves GIS-based environmental planning applications which EMB identified in collaboration with the Batangas Provincial Government Environment and Natural Resources Office (PG ENRO).

The environmental planning priorities of EMB and PG ENRO in Batangas are the following:

- a) Assessment of Suitable Sites for Sanitary Landfill in Batangas Province
- b) Monitoring and Assessment of Air Quality in Batangas Province
- c) Monitoring and Assessment of Water Quality in Batangas Province
- d) Monitoring and Assessment of Areas for Mining and Sand/Gravel Quarrying
- e) Monitoring and Assessment of Batangas Provincial Forests

As of this writing, the IISE PMO has completed the assessment of suitable sites for sanitary landfill in Batangas using a GIS-based methodology that considered the criteria set in DAO 98-50. The findings of the study were presented to the Batangas PG ENRO in a workshop last December 3-5, 2002. As a result of the workshop, the PG ENRO decided to reconsider its proposed landfill sites in several barangays.

Cognizant of the nature, scope and longer development period of GIS applications, a GIS Unit or Geo-Information Laboratory separate from the MIS Unit should be created at EMB preferably under the closed supervision of the EMB Planning and Policy Chief or the Chief of the Pollution Research Section of the Research and Development Division (RDD). The planning significance and the research orientation of GIS applications make either of the two EMB units as the appropriate office to manage the GIS facility established by IISE. However, this recommendation should be taken as part of a broader GIS Strategy at EMB.

#### Pilot Testing of the PEPP DAO as Program of Support to Industry

Due to delays in the approval of the PEPP DAO and the termination of IISE by the end of 2002, pilot testing of the PEPP has to be undertaken using other fund sources. External donor institutions may be tapped to implement the PEPP DAO on a pilot-basis in consideration of the PEPP DAO's attempt to likewise pursue such new state policies as environmental self-regulation and GOP-industry collaboration in industrial environmental management.

### **III. Implementation Performance**

This Chapter describes and assesses the basic features of implementation including significant deviations made by the project. It also discussed in detail the factors that affected the project performance.

#### 1. Design

The scope of IISE is briefly summarized in its Results Framework. This framework indicates the sub-results that should be put in place to achieve the performance targets.

#### Evolution of the Results Framework

From its original version in the Technical Proposal of the Contractor, the Results Framework of IISE evolved into four versions. The first version still shows the clear contributions of the DENR and the DTI in the project in the form of sub results. The next versions, however, deleted the DENR and DTI sub results and were simplified into three sub results consisting of IEC, Policy Support and Institutional Capacity Building. The last version of the Results Framework shows four sub results wherein the additional sub result is the performance targets themselves implying the contractor's adoption of another strategy to achieve the performance targets other than the three sub results of IEC, Policy and Institutional Capacity Building. This strategy turned out to be the use of cash subsidies paid to EMS Consultants who were hired to assist interested firms or organizations in establishing the latter's EMS Program. Because of the evolving versions of the Results Framework which were done without DENR inputs, the role of the DENR and its partners became vague to the point that the Technical Director of the Contractor argued that the government has no role in the project and even lobbied at USAID to delete the DENR from IISE.

The evolution of the Results Framework seem to be an indication of the utmost importance being given by the contractor on its ability to deliver the numerical performance targets especially the 300 firms implementing EMS and the 75 to be certified to ISO14001 (or another international standard in the contractor's later versions). The contractor's failure to deliver the first 50 firms it committed in 1999 and its apparent fear of penalty for failure to deliver the 300 firms at the end of the project seem to be the force that compels it to draw several versions of the results framework. This preoccupation seems to drive the contractor in spending its resources in the trainings of local environmental consultants on EMS and Pollution Prevention. Their clients were counted into the project's performance targets under the category IISE-trained consultants (without direct IISE assistance). These IISE-trained local consultants who were granted IISE accreditation were also tapped to assist organizations which were encouraged by the project to implement EMS with direct IISE support

## 2. Development of the Operational Framework

The IISE Project Management Office resolved this impasse (or debate about the government's role in IISE) by preparing an Operational Framework that clearly shows the relationship of the sub-results vis-à-vis the roles of the government and the private sector. In this Operational Framework, the government and its partners assume the role of catalysts to create demand for EMS and Pollution Prevention through *Policy Support* (Sub-result 2), *IEC* (Sub-result 1) and *Institutional Capacity Building* (Sub-result 3). The private sector will assume the role of service provider (EMS, Pollution Prevention consulting, auditing, certification, accreditation) when demand for EMS and Pollution Prevention is created.

With EMS/P2 demand management to be led by the government and EMS/P2 Consulting and related services to be provided by the private sector, IISE is in effect pump priming the EMS/P2/CP market.

## 3. Measurement of the Performance Targets

A basic flaw in the project design is probably the delivery or counting time for the numerical EMS implementation target. Debate occurred during project implementation on what stage of EMS implementation will the project count its accomplishments with regards to the 300 firms/organizations implementing EMS. This is due to the fact that it may take a year or more before an EMS can be fully established by an organization with documentation and implementation requirements in place as required in ISO14001. A possibility exists that an organization may at any stage or for any reason cease to continue implementing its EMS.

Mainly because of the contractor's annual EMS implementation commitment, the Executive Committee acquiesced to the use of letters of interest by participating firms/organizations as indicator of their EMS implementation. There is thus a need to validate the progress of EMS implementation of

organizations reported by the contractor especially those who have not yet been certified to ISO14001.

Relative to the problem of counting the EMS implementation target is the problem of measuring pollution reduction of at least 20% in each facility. Pollution reduction is associated with the implementation of a Pollution Prevention Program as an EMS program of the participating organization. Actual measurements can thus be made after a year of implementing such Pollution Prevention Program relative to established baseline data. The contractor attempted to resolve the dilemma of delayed measurement and reporting of pollution reduction in its participating firms by hiring experts who can perform pollution prevention opportunity assessment and risk reduction measurement method (R2M2) based on planned or proposed interventions. This strategy of reporting computed estimates made by experts instead of actual pollution reduction measurements can be costly. Budget for the hiring of these P2 experts was reduced to support institutional capability building or sub result 3. This is the main reason why such pollution reduction measurement was not completed except for four ISO14001 certified organizations.

It should be emphasized that the achievement of ISO14001 certification by a participating firm is a better indicator of EMS implementation and pollution reduction in a process of continual improvement. EMS Certification assures that an organization's EMS has been properly and completely documented and appropriate EMS programs have been determined and are being implemented by the concerned organization.

#### 4. Organization and Management

IISE was implemented based on the organizational structure below. The NRMP Steering Committee and the Executive Management Team cover the three components of NRMP, namely Forest Resource Management, Coastal Resource Management and IISE. The Intermediate Results Team and the Executive Committee cover IISE only.

Officially, the NRMP Steering Committee and the NRMP Executive Management Team are concerned with policy and approval of SO4 and SO6 proposals. During the project's lifespan, the NRMP Steering Committee, however, met only once while the NRMP Executive Management Team, none at all.

The first year of IISE was a period of confusion and disagreements between the GOP and the Contractor particularly with regards to roles, contributions and complementation. These were corrected with the preparation and approval of the Joint Implementation Letter (JIL) by all the key players of the project- DENR/EMB, DTI/BOI, USAID and Chemonics, the project contractor.

Monthly meetings were held by the IISE Executive Committee comprising of the four key players abovementioned. The Philippine Coast Guard (PCG) which attended the first meetings of the Executive Committee was excluded in 2001 when assistance to PCG was terminated with the cutting of the USAID

Grant. The Executive Committee was responsible for progress review and in resolving the various concerns and issues of the project.

Quarterly meetings of the Intermediate Results Team, on the other hand, were conducted. Active members of the IRT are the four regular members of the Executive Committee and representatives from the academe, NGO/PVO and industry. The IRT assisted the project in terms of setting and/or reviewing the project's technical directions and work plans.

In consideration of the contractor's stand to attain its performance targets on the basis of its own recruitment and training activities, the IISE Project Management Office directed its resources and attention towards institutionalization activities that will contribute to sustainable EMS/P2 demand management. The contractor played a supporting role by providing the expertise needed by the IISE PMO.

Thus, while the contractor is focused on training the private sector such as local environmental consultants on EMS and Pollution Prevention as well as conducting its own EMS awareness seminars, the IISE Project Management Office focused itself on the conduct of EMS and P2/CP awareness seminars and trainings for EMB central and regional staff and the Bureau's potential partners from the academe, NGOs/PVOs and industry groups. It also initiated the preparation of various IEC tools such as a Training Manual for Communicators on EMS and Pollution Prevention (P2), a Guidebook on EMS, P2 and Environmental Cost Accounting and a video-documentary of success stories on EMS and Pollution Prevention.

Moreover, following the concept of "stick" and "carrots" to encourage industry adopt an EMS and P2/CP, the IISE PMO also led in the development of innovations that will strengthen the environmental regulatory enforcement capability of EMB. It also spearheaded the review of policies to promote or enhance policy-based incentives to industry. It also rallied other institutions to work in coordination with the DENR/EMB in providing various forms of assistance to industry. This resulted to the formation of the Philippine Environment Partnership Program (PEPP) which was launched by DENR Secretary A. Cerilles on June 5, 2000 and signed by Secretary E. Gozun on June 2, 2003.

The major innovation of IISE to strengthen EMB's regulatory enforcement capability is the development of the Industrial Environmental Management Geographic Information System (IEM GIS). This innovation is a computer-based information system package that required the procurement of state-of-the-art GIS hardware and software as well as the development of a customized application that will enable EMB to monitor the level of regulatory compliance and ecological risk of industries. IEM GIS also demonstrated that EMB can initiate spatial-based environmental planning in partnership with the Provincial Government. Specifically, EMB worked with the Batangas PG ENRO in determining suitable sites for sanitary landfill in the Province of Batangas, solid waste management being the Province topmost concern and priority. The province was selected to save on the costs and time of travel.

Other priorities of the PG ENRO which are common concern with EMB are water quality management, air quality management, sand and gravel/mining areas management and management of projects with or applying for Environmental Compliance Certificates (ECCs). These are potential areas for continuing GIS activity between EMB/DENR and the PG-ENRO.

The IISE PMO also followed up on the Laboratory Benchmarking Study conducted by the IISE contractor by providing financial support to upgrade the laboratories of EMB in Regions 7, 10 and 11, the three primary pilot areas of the project.

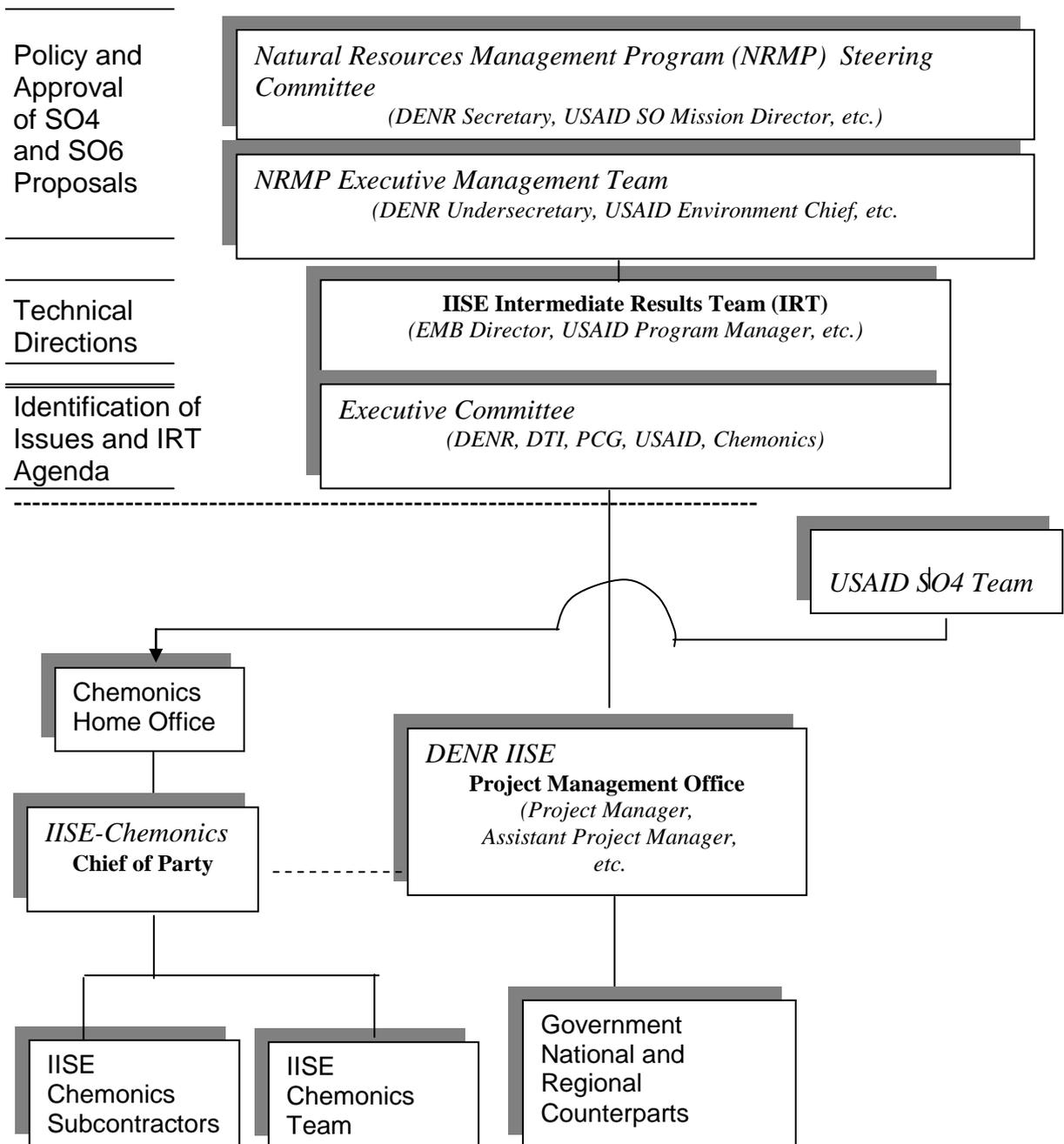
Figure 1 shows the Organizational Chart of NRMP and IISE.

#### Complementation with the Coastal Resources Management Project

IISE was designed to complement with CRMP. This complementation was brought up in an IRT meeting but was limited to IISE's advocacy of EMS in an LGU in a CRMP area. This complementation was attained in the island province of Bohol when the Bohol Provincial Government implemented an Environmental Management System (EMS) through IISE assistance. The EMS of the Bohol Provincial Government is now certified to ISO14001.

EMS advocacy among industrial establishments in coastal areas of CRMP like beach resorts was also undertaken by IISE in the province of Bohol and its nearby tourism area of Panglao Island. These facilities were among those who participated in the Joint EMS Implementation Program of the contractor.

**Figure 1. IISE ORGANIZATIONAL CHART**



## IV. Project Results

This Chapter discusses the results and successes of the Project in terms of addressing the environmental impacts of industrialization as well as in ensuring the institutionalization, sustainability and replication of project components.

### 1. Pollution Reduction

#### 1.1 Demonstration Business Firms

IISE demonstrated that implementation of an EMS may result to reduction in a facility's level of pollution. The initial assessment of pollution prevention opportunities in 10 demonstration industries of IISE produced a total of more than 60 waste streams and options for pollution reduction. These included heavy metals, used oils, acids, caustic substances, cyanide, hexavalent chromium, mercury, dissolved and suspended solids, volatile organic compounds, solids and plating wastes.

Initial pollution reduction rates attained by three of the 10 firms for waste streams targeted for reduction ranged from 7% to 82%.

The three firms are Janice Minor, a furniture manufacturing company in Cebu, Davao Union Cement, a cement company in Davao and Toledo Power, a power generating company in Cebu.

The furniture manufacturer achieved a 37% reduction in paint overspray. This resulted in both material cost savings and lowered negative impacts on the environment and health of workers and neighboring residents.

The cement company reduced dust emission by 22%. This resulted in significant progress toward compliance with environmental standards as well as reduction in environmental and health impacts.

The power company reduced its wastewater discharge by 85%, its consumption of sulfuric acid by 68-72%, its coal consumption by 4% and its stack emissions of carbon monoxide, sulfur oxide and nitrogen oxide below the national standard limit of 500 mgm. The success of this company has also encouraged other power utilities to explore EMS implementation.

#### 1.2 Pollution Reduction of Establishments in Joint Implementation Program

130 firms which participated in the IISE Joint Implementation Program have identified waste streams and percentage reductions targeted for achievement within specified periods of time.

Unfortunately, the project contractor's work concluded before the EMS implementation and associated pollution reduction actions of these firms could be sufficiently documented through on-site data collection. Quantification of the impacts of said pollution reduction actions can be

done through continued follow-up in the years after project conclusion. But as the demonstration industries have shown, proper EMS implementation can be effective in promoting pollution reduction.

### 1.3 Resource Conservation Benefits of EMS in a Local Government Unit

The Province of Bohol reduced its energy and water consumption by 10% and 7% respectively. In doing so, Bohol is setting an example and generating momentum among other LGUs to achieve similar environmental management successes.

## 2. Institutionalization and Sustainability

### 2.1 State policies are now in place in the Clean Air Act encouraging EMS implementation by industry.

In the Clean Air Act, proofs of EMS implementation can be used by sources of air pollution to gain reduced fines and penalties for infraction against air pollution laws and regulations.

### 2.2 EMB staff and officials know and understand EMS and Pollution Prevention/Cleaner Production

EMB staff and officials are now fully trained on the concept, principles, operation and benefits of EMS and Pollution Prevention/Cleaner Production. This new knowledge gained by EMB has been useful in environmental policy fora and debate, industry awareness seminars and the like which are conducted or participated by EMB. The Implementing Rules and Regulations (IRR) of the Clean Air Act and the proposed revised EIA Implementing Rules and Regulations are examples of environmental policies which were enhanced with EMS and Pollution Prevention provisions through inputs made by trained EMB staff and consultants.

### 2.3. EMS-Based Partnerships in Industrial Environmental Management

Cooperation or collaboration in industrial environmental management has become state policies as first enunciated in the Clean Air Act or RA 8740. This is viewed as a win-win solution to the "cat and mouse" or "hide and seek" culture between the regulator and the regulated. IISE conceptualized how cooperation can be attained between these two traditional adversaries that have only led to environmental quality deterioration and contributed to graft and corruption in the government. This cooperation can be attained in two levels using EMS as a tool.

The first level of cooperation is between the government and industry. The second, is between and among various government agencies and other concerned institutions. Their common objective is helping industry protect the environment by improving its environmental performance and

system of managing the environment in a process that will make them gain business advantages.

The first level of cooperation involves the provision of various forms of incentives and assistance to industry to encourage, equip or empower them in managing their environmental aspects and impact through proactive tools like EMS and Pollution Prevention or Cleaner Production. Through the Plan-Do-Check-Act (PDCA) elements and continual improvement principle of an EMS, a company can be equipped with the capability for environmental self-regulation. ISO14001, for example, requires that a company complies with all relevant environmental laws and regulations while improving its environmental performance through appropriate EMS programs in pursuit of its environmental policy. Self-regulation will not be made a substitute for government regulatory enforcement but the former will enable a company to fulfill its environmental responsibility to its host community voluntarily, with minimal police action by the government while generating financial gains.

The second level of cooperation involves a well-coordinated program of support to industry from various institutions in the government and the private sector. An example of this cooperation is the Memorandum of Agreement (MOA) signed between the DENR and the Department of Science and Technology (DOST) regarding areas of cooperation that will promote pollution prevention or cleaner production among industry through trainings, plant assessment and the like.

These institutions should address the needs raised by industry to encourage their voluntary implementation of EMS and Pollution Prevention. Those cited by industry in IISE's policy dialogues are recognition, regulatory assistance from the DENR, fiscal incentives from the DTI-BOI, technical and technology information assistance from the DOST, financial assistance from the Development Bank of the Philippines and Land Bank and education and trainings.

As of this writing, the DOST has set up its Integrated Program on Cleaner Production Technologies, the BOI has been offering fiscal incentives for EMS implementation by industry and the DBP has been offering soft loans to industry for EMS implementation. The DENR, on the other hand, has been conducting trainings on EMS implementation and Pollution Prevention and has prepared a DAO that will provide regulatory assistance to industry as its program of support to industry's implementation of EMS and Pollution Prevention.

Aside from the DOST, DTI and DBP, the other institutions that have declared their support to the DENR in its Philippine Environment Partnership Program (PEPP) are the Land Bank, Asian Institute of Management and the Union of Local Authorities of the Philippines.

## 2.4. EMB-PG ENRO Partnership in Environmental Planning and Management

IISE's support to EMB's collaboration with the Batangas Provincial Government Environment and Natural Resources Office (PG ENRO) in environmental planning underscores a feasible entry point by EMB/DENR in the Local Government Unit with regards to environmental management.

Said collaboration between EMB and PG ENRO was illustrated in a study that demonstrate the feasibility of using Geographic Information System in a scientific assessment of suitable sites for sanitary landfill in Batangas. The cooperation of the two agencies involved the prioritization of environmental planning applications in the province of Batangas as well as in the actual conduct of planning studies which included sharing of data, expertise and equipment. Looking for a suitable site for sanitary landfill has been a significant concern of the Batangas Provincial Government due to public opposition to their previous proposed sites. The growing population and industrialization in the Province has made solid waste management a topmost concern and priority of the PG ENRO and EMB in Batangas. EMB's successful GIS work may also be viewed as a timely technical assistance of EMB to the Provincial Government.

Other common areas of concern which are of importance to the Provincial Government are Water Quality Management, Air Quality Management, Management of Mining and Sand and Gravel Quarrying Areas and Management of EIA projects..

Due to lack of time, IISE failed to pursue the second and third priorities of the two agencies which are of more relevance to IISE's objective of targeting industrial facilities in ecologically critical areas. These applications involve assessment of air quality and surface water quality in the province.

The Provincial Government through its PG ENRO or similar office likewise appears to be a good entry point for EMS advocacy among LGUs. This was shown in the adoption of an EMS by the Provincial Government of Bohol through the Bohol Environmental Management Office (BEMO).

## 3. Replication

### 3.1 Lowering the Cost of EMS Implementation

EMS implementation in the country is beset by the high cost of EMS consulting, ISO14001 certification and accreditation. For leveling purposes, certification is a process taken to verify the conformance of an organization to a standard like ISO14001 while accreditation is a process of evaluating the competence of an organization to conduct certification.

In the Philippines, EMS consulting used to be performed by a very limited number of local consultants. The need by industry for expatriates in EMS consulting work, usually paid in dollars or dollar equivalent, is one of the

reasons for the high cost of EMS consulting in the country. In order to expand the pool of local environmental consultants who can perform EMS consulting work to local firms, Chemonics gave about 49 local environmental consultants free trainings on EMS and Pollution Prevention. With such expansion of the supply of EMS consulting, Chemonics believed that the cost of EMS consulting can be more competitive and affordable even to SMEs.

### 3.2 Joint EMS Implementation Program

Clustering several companies into one big group under one EMS Consultant can significantly lower the cost of EMS consulting. A PhP 300,000 consulting fee can be shared by 10 firms thus lowering the cost of EMS consulting by PhP 30,000.00. IISE has designed the Joint EMS Implementation Program based in this clustering concept. This Program comprises of several modules.

### 3.3 EMS Accreditation Program

For the purpose of lowering the cost of EMS certification and accreditation, Chemonics also attempted to catalyze various bodies that are needed to implement the Philippine EMS Accreditation Program (EMSAP). With EMSAP, ISO1401 certifying bodies need only to register locally particularly with the Philippine EMS Accreditation Board instead of in accreditation bodies based in Germany, the United Kingdom and other foreign countries. Moreover, EMS Auditors have to register only to a local EMS Auditors Registration Body instead of overseas. Lastly, catalyzing an ISO14001 Certifying Body through the Philippine Export Confederation will lower the cost of ISO14001 certification in the country which presently averages PhP 300,000.00, a significant amount for local SMEs. Fortunately, other foreign-assisted projects such as USAEP and PRIME have been doing similar and complementary work to put up the EMSAP institutions.

### 3.4 EMS provides the tool by which EMB and the DENR can show that they can be models in environmental management to their stakeholders by practicing what they preach

Owing to IISE's experience and advocacy on the merits of an EMS, EMB is now implementing its own EMS. It is now working towards its certification to the ISO14001 standard. Among its objectives is the Bureau's desire to serve as a paragon to its stakeholders practicing what it preaches in terms of, among others, compliance to environmental quality standards and being proactive in managing its environmental aspects and impacts.

## **V. Key Issues for the Future**

There are ten (10) key issues that EMB has to evaluate and address to take advantage of the gains of IISE. These are as follows:

- 1) Readiness of the DENR/EMB for the implementation of meaningful environmental cooperation and partnership programs with industry through the Philippine Environment Partnership Program. A related issue is how to balance the environmental police functions of EMB with new state policies enunciating cooperation with industry and promoting the latter's environmental self-regulation. In the Department of Environmental Quality (DEQ) in Michigan, United States, this dilemma was resolved with the creation of a non-regulatory business assistance office in the Department which coordinates with its regulatory offices vis-à-vis the provision of regulatory incentives to a company. And in Sacramento, California, coordination of various assistance needed by an establishment from different agencies and organizations is undertaken by the Business Environment Resource Center (BERC). BERC, a body created by the concerned agencies, has a Steering Committee comprising of the said agencies which, among others, review and approve BERC's Work and Budget Plan.
- 2) Level of appreciation and sophistication or background of the EMB top management to implement the Industrial Environmental Management Geographic Information System (IEM GIS) as decision support tool for environmental regulatory enforcement and strategic targeting of industrial facilities for EMS/P2 advocacy as well as in environmental planning (i.e. water quality management, ambient air quality management, mapping of existing and potential environmental or pollution hotspots, sanitary landfill sites assessment, etc.). The development of a GIS Strategy at EMB can be useful for the said purpose.
- 3) The monitoring component of IEM GIS may have to start from scratch. EMB regional data on the profile of companies including their permit and technical data is a lot to be desired. Among others, existing regional data in EMB Regions 7, 10 and 11 are found wanting in terms of completeness and relevance to environmental planning applications. Moreover, most are not updated and are usually stored in paper files or in several electronic databases in different software and data formats. How to harmonize and generate data including spatial-based information to strengthen the proactive decision-making of EMB depends on the level of awareness and resolve of the EMB top management to establish a working GIS facility that utilize standard software and data formats.
- 4) A related issue to GIS as well as EMS is the entry point of EMB in the Local Government Unit. IISE's experience with the Bohol Provincial Government indicate that the Provincial Government is a good entry point for EMS advocacy. In Bohol, the ISO14001 Certification of the Provincial Government has become a part of its tourism marketing strategy. Similarly, the Joint EMB and Provincial Government Environment and Natural Resources Office (PG ENRO) effort to use GIS in environmental planning in Batangas Province indicate that such entry point can be the PG ENRO of the Province. The PG ENRO can easily mobilize its cities and municipalities for data gathering and monitoring activities.

- 5) DENR has to decide how EMS should be pursued as state policy- as a "must" for water and air polluters. If EMS is made a "want", its implementation can always be put on hold or stopped by an organization for different reasons unless its cash flow benefits are fully understood and appreciated by business executives or an external pressure exists.
- 6) Implementation in the private sector of various bodies comprising the Philippine EMS Accreditation Program. These bodies are voluntary on the part of the private sector and can only be encouraged by the government.
- 7) Lowering the cost of EMS consulting and ISO14001 certification and raising the level of understanding of industry especially SMEs about the cash flow benefits of EMS and Pollution Prevention. IISE has included Environmental Cost Accounting (ECA) in its Guidebook on EMS and Pollution Prevention to be published by EMB with the Technology and livelihood Resource Center (TLRC) but falls short of training industry on ECA.
- 9) There is a need to identify the approach and agree on the end goals of the PEPP. The PEPP is intended to be a Program of Assistance for industry which may help in industry self-regulation. Such self-regulation should be a means to enable industry attain excellence in both environmental management and performance with agreed upon indicators. A good model of such self-regulation is the Clark Field Economic Zone which was deputized by EMB Region 3 to pursue environmental regulatory functions among industry locators of the economic zone subject to DENR's reporting requirements and oversight. How this self-regulation will be attained in an establishment which is not part of a contiguous economic zone or a member of an industry association will require creativity akin to those of the Michigan DEQ which created a coordinative non-regulatory business office within DEQ or the agencies in Sacramento, California which created BEREC.
- 10) Lastly, DAO 2003-14 has to be pursued cautiously because PEPP is an innovative program that may be misinterpreted or implemented incorrectly by industry and EMB.

DAO 2003-14 should be implemented in three phases, namely the Preparatory Phase, the Piloting Phase and the Post-Piloting Review and Assessment Phase. Thereafter, the PEPP can be implemented as a regular program of the Bureau made mature and stronger by the piloting phase.

The Preparatory Phase should include the following: the preparation of the PEPP Procedural Manual to provide the implementation details of Track 1 and Track 2; and, the creation and preparation of Self-Regulation Management and Coordinating Units (SRMCU) including the orientation of concerned EMB personnel. These activities may take a maximum of six (6) months to finish.

The Piloting Phase should be given a period of at least three (3) years, enough to complete the installation of an EMS and the monitoring of

pollutants reduction in participating establishments for Track 2. This is premised that participation in Track 2 will be based on priority industry sectors determined during the Preparatory Phase.

The Review and Assessment Phase should be done after the Piloting Phase. This third phase shall review the implementation of the PEPP as a Program to implement such state policies as self-regulation, government-industry cooperation, EMS implementation and emphasis on pollution prevention. These policies should be evaluated in terms of promoting improved environmental regulatory compliance of industries and in minimizing the generation and/or use of toxic chemicals and hazardous wastes by industry on voluntary basis.

## VI. Lessons Learned

### 1. DENR Perspective

Area of Concern	Description of Lesson Learned	Recommendation
Regulatory agencies can play an active role in promoting EMS/P2/CP in all organizations	DENR and its partner institutions can support EMS/P2 implementation by industry	<ol style="list-style-type: none"> <li>1) EMS should be used to reduce/prevent pollution and help conserve resources at the industry or organizational level</li> <li>2) EMS should be applied to all types of organizations both the private and government sectors</li> <li>3) EMS adoption should be driven by cost savings and other internal benefits and as such can be used as a tool for industry self-regulation</li> </ol>
Regulatory agencies can play an active role in promoting EMS/P2/CP in all organizations	DENR can promote EMS/P2 through a variety of mechanisms	<ol style="list-style-type: none"> <li>1) Implement appropriate policy support               <ol style="list-style-type: none"> <li>a) Implementation of the EMS requirement in the Clean Air Act</li> <li>b) Provision of recognition and other incentives to EMS/P2/CP</li> <li>c) Provision of assistance to business especially SMEs such as information, education and training, technical and technology information</li> <li>d) Stricter enforcement of environmental regulations. Because of the cost of environmental litigation, clean up or shutdown, this action serves as disincentive to polluters and a driver to industry to look for and implement cost-effective environmental management solutions</li> </ol> </li> <li>2) Continue, strengthen and expand the network IISE has established. This network at present consists of the following: the DOST, BPS and BOI of DTI, AIM, ULAP, DBP, Land Bank and the Philippine Association of Tertiary Level Educational Institutions on Environmental Planning and Management</li> <li>3) Link other key support institutions to this network including the Philippine Institute of Certified Public Accountants (PICPA) and Business AGENDA 21. PICPA has developed core competency in environmental cost accounting and can assist in providing training on environmental cost accounting to businesses. BA 21 is comprised of more than 70 member-industry associations which have made commitment to improve on their environmental performance. These associations can influence their members to implement EMS/P2 through seminars and trainings.</li> </ol>
Management of a multi-partner, multi-stakeholder project like IISE	Project implementation can be improved through clarification of roles and responsibility at the onset of the project	<ol style="list-style-type: none"> <li>1) Preparation of the Project Operational Framework in addition to the Results Framework to show the strategic directions that the government and the private sector should play in assisting attainment of performance objectives, and to provide the Directors of implementing agencies and other project stakeholders a view of their complementary roles and contributions to the project objectives</li> <li>2) Preparation of a Joint Implementation Letter at the outset of the project. This document should clearly delineate commitments, respective roles and responsibilities, along with shared and complementary activities that will contribute to project objectives.</li> </ol>

## 2. USAID Perspective

Area of Concern	Description of Lesson Learned	Recommendation
EMS/P2/CP Promotion	EMS/P2 can be most effectively promoted through a combination of actions	<ol style="list-style-type: none"> <li>1) Promote regulatory policy incentives to encourage industries to implement cleaner production and meet environmental operating standards</li> <li>2) Increase regulatory enforcement to motivate companies to take action</li> <li>3) Enlist community participation in monitoring and pressuring industries and other organizations to meet environmental standards;</li> <li>4) Identify dynamic senior management leaders who recognize the advantages of EMS including cost savings, competitive advantage, improved public image and reduced liability and who will champion this in his/her organization</li> <li>5) Reduce the cost of EMS implementation and certification through a combination of training, increased local supply and competition among environmental consultants/firms, and install a national EMS Accreditation Program</li> <li>6) Promote partnerships with industry, local government units, NGOs/PVOs and academe, to expand perspectives, experience and build cooperative momentum</li> </ol>
EMS/P2/CP Promotion	A combination of incentives and disincentives will help to promote the adoption of EMS/P2	<ol style="list-style-type: none"> <li>1) Pass the DAO on regulatory policy/incentives for EMS adoption</li> <li>2) Continue partnerships with DTI, industries, LGUs and NGOs to promote EMS</li> <li>3) Encourage DENR staff to promote EMS</li> <li>4) Encourage DTI to continue work towards establishing a national EMS Accreditation Program</li> <li>5) Continue support to the DENR Industrial Environmental Management Geographic Information System to help the EMB target industries strategically</li> <li>6) Strengthen enforcement of regulations so that companies are working within environmental standards</li> </ol>

### 3. Contractor's Perspective

Area of Concern	Description of Lesson Learned	Recommendation
	<p>Cost is the primary barrier to EMS implementation for virtually all organizations particularly SMEs</p>	<ol style="list-style-type: none"> <li>1) Promote Joint EMS Training and Implementation Programs. Haring of consultant costs as well as sharing EMS implementation experiences reduces the cost of EMS implementation</li> <li>2) Support the formation and operation of a national EMS Accreditation Program. Nationalizing the EMSAP will reduce the dependence of Philippine industries and organizations on foreign-based certification bodies and EMS auditors, and pass on cost-savings for certification/re-certification.</li> </ol>
	<p>Currently, it is difficult to quantify the benefits or savings that can be achieved from a fully implemented and properly maintained EMS</p>	<ol style="list-style-type: none"> <li>1) Develop an EMSAP or some other mechanisms to help quantify (a priori) the cost and the potential savings that will accrue from a firm implementing EMS</li> <li>2) Document and distribute the experiences of firms that have realized savings from their EMS</li> </ol>
	<p>The primary reason for implementing EMS cited by industries participating in IISE was that their senior executives were concerned about the adverse environmental impacts of their company's operations and pollution and they wanted to reduce this impact. They also wanted to be seen by others as taking proactive measures and exercising leadership in pollution reduction and environmentally friendly operations.</p>	<ol style="list-style-type: none"> <li>1) Identify CEOs and other industry leaders who have implemented and support EMS to act as "EMS Champions"</li> <li>2) Develop means to draw attention to the efforts and success of firms that have implemented EMS, particularly those which are ISO14001 certified. This can be done via media, awards and other forms of recognition</li> </ol>
	<p>Very few industries are currently influenced by corporate environmental mandates (e.g., greening the supply chain", ISO14001 EMS Certification). The impact of this mandate is limited to only a few multinational firms and their first-tier suppliers, and with the current global economic downturn, the timeline for implementation of many of these mandates is flexible.</p>	<ol style="list-style-type: none"> <li>1) Limit resources expended on this approach to multilateral and large industries that have received a fixed corporate mandate, and on their most immediately affected (e.g., first tier) suppliers</li> </ol>

Increasing access to EMS/P2/CP information	Most companies are aware of EMS but have little understanding of how the system works and its relationship to ISO14001 certification	<ol style="list-style-type: none"> <li>1) Continue/expand NGO and other EMS awareness efforts with a focus on developing simple explanations of EMS, ISO14001 and the benefits of these systems;</li> <li>2) Develop EMS outreach methods and materials that are directed to organizations that promote the interests of industry (chambers of commerce, professional/industry organizations, export zones, industrial estates). Use these organizations as entry points to industry sectors or other groupings</li> <li>3) Complete, publish and revise as needed the IISE Communicators Training Manual, In conjunction with this, participants at workshops for regional IEC Units of the PEPP Partners should receive an introduction to these systems and instruction in the use of the manual.</li> </ol>
Increasing access to information	Most companies listed insufficient information on pollution management technology as a major barrier to assessing options and taking action to reduce their environmental impacts	<ol style="list-style-type: none"> <li>1) Support the expansion, promotion and availability of the DOST environmental technology information center</li> <li>2) Awareness programs should compile and have available for distribution, information on environmental and pollution management technology</li> </ol>
Strengthening Relationships with the Regulator	Regulatory enforcement is not currently a strong driver for pollution reduction, environmental management or EMS implementation by industry. For most firms, the current mode of operation is simply to hope that their compliance with regulatory standards will not be assessed or monitored.	<ol style="list-style-type: none"> <li>a) DENR should strengthen its regulatory enforcement capabilities, particularly in the areas of monitoring/surveillance, sampling programs and laboratory analysis/standardization</li> <li>b) DENR should support the development of EMB new industrial environmental management GIS to provide stakeholders with improved scope and access to information on pollution generation and promote more information-based decision-making and environmental management</li> </ol>
Strengthening Relationships with the Regulator	Most companies are not fully aware of environmental regulations that apply to them and in particular changes in environmental standards	Awareness programs should have contact information on specialists who understand these regulations and their applicability to industry, Again this could be a particular focus of the IEC units of the regional PEPP Partners.
Strengthening Relationships with the Regulator	Most companies view the DENR with suspicion and fear regarding the possibility of unexpected visits, penalties and cease and desist orders, etc. They do not see the DENR as source of support of positive partnership.	<ol style="list-style-type: none"> <li>1) DENR should authorize the draft DAO promoting regulatory assistance in conjunction with EMS implementation.</li> <li>2) When the above DAO is approved, the selected regional DENR offices should undertake joint EMS training programs similar to the pilot program that was conducted in Bicol.</li> </ol>

## VII. Conclusions

In conclusion, IISE has contributed significantly on the number of EMS implementation and ISO14001 certification by local industry. It encouraged 297 firms/organizations to implement an EMS with 25 already certified to ISO14001. However, it has a number of unfinished businesses that should be pursued. For one, there is a need to follow up on the progress or status of EMS implementation reported as numerical performance target and more importantly the individual level of success of each facility in reducing pollution.

Secondly, the initiatives of the project to attain sustainability, institutionalization and replication have long term results and gestation period. Their effectiveness should be evaluated as a policy concern.

In terms of institutionalization, IISE successfully phased in its IEC Program to the Environmental Education and Information Division (EEID) of EMB. It has also given awareness and more detailed trainings on the implementation of EMS and Pollution Prevention not only to EMB but also other stakeholders including the academe, media, NGOs and industry groups - **as communicators** to reach out to local companies and other organizations. It has also forged partnerships between and among government agencies and other institutions to provide various forms of assistance and incentives to industry. IISE consultants and trained EMB/DENR personnel have also been instrumental in adding EMS-related provisions in the Clean Air Act and the proposed Clean Water Act. IISE also drafted A DENR Administrative Order (DAO) which created the Philippine Environment Partnership Program (PEPP) to support industry self-regulation through EMS and Pollution Prevention.

Environmental regulatory enforcement which due to its weakness in the Philippines is not a factor in industry's adoption of an EMS or Pollution Prevention (based on IISE's Knowledge, Attitude and Perception Survey (KAPS)) has to be strengthened. Along this line, IISE developed a GIS-based decision support system with a complete GIS Facility that DENR/EMB can use to support its monitoring and environmental planning functions. IISE has also supported the upgrading of laboratories of EMB in regions 7, 10 and 11.

To promote replication, IISE devised tools and approaches to lower the costs of EMS implementation. Notable of these innovations are the Joint EMS Implementation Program and the EMS Accreditation Program. It also assisted EMB in EMS implementation and the University of Southeastern Philippines (USP) in developing a graduate curriculum in environmental management that includes EMS.

From its limited validation of IISE companies, IISE concludes that an environmental management system undertaken by a business organization to address its environmental aspects and impacts including pollution in a process of continual improvement in pursuit of its environmental policy may lead to its improved environmental management and performance, pollution reduction, resource conservation, voluntary self-reporting and self-regulation. There is a need, however, to institutionalize and use professional

environmental auditing to check EMS performance and conformance to an EMS standard like ISO14001 and thus ensure the credibility of an organization's EMS.

To end, the following actions are needed to sustain the gains of IISE:

- 1) Pilot Implementation of the Philippine Environment Partnership Program including the DENR/PEPP EMS version (*or ISO14001 minus*) for SMEs;
- 2) Implementation of the Industrial Environmental Management GIS as decision support to PEPP;
- 3) Development of a GIS Strategy at EMB to maximize the utilization of the GIS Facility built by IISE for environmental research, planning and policy-making purposes; and
- 4) Support to the Philippine EMS Accreditation Program comprising of the EMS Accreditation Board at the Bureau of Product Standards and the EMS Auditors Registration Body. The Philippine Exporters Confederation also has to be supported to set up and implement a local EMS Certifying Body that may greatly lower the cost of EMS Certification for the benefit of local SMEs.