PD-ABM-508

# A.I.D. EVALUATION SUMMARY – PART I

1. BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS.
2. USE LETTER QUALITY TYPE, NOT "DOT MATRIX" TYPE.

## IDENTIFICATION DATA

**A. Reporting A.I.D. Unit:**

Mission or AID/W Office ONRAD

(ES# _____)

**B. Was Evaluation Scheduled In Current FY Annual Evaluation Plan?**

Yes [X] Slipped [ ] Ad Hoc [ ]

Evaluation Plan Submission Date: FY 94 Q 4

**C. Evaluation Timing**

Interim [X] Final [ ] Ex Post [ ] Other [ ]

**D. Activity or Activities Evaluated** (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report.)

| Project No. | Project /Program Title | First PROAG or Equivalent (FY) | Most Recent PACD (Mo/Yr) | Planned LOP Cost (000) | Amount Obligated to Date (000) |
|---|---|---|---|---|---|
| 492-0465 | Industrial Environmental Management Project | 9/30/91 | 9/30/96 | $20,000 | $14,434 |

## ACTIONS

**E. Action Decisions Approved By Mission or AID/W Office Director**

| Action(s) Required | Name of Officer Responsible for Action | Date Action to be Completed |
|---|---|---|
| 1. Develop additional guidelines for assuring timely generation and use of baseline data for Pollution Management Appraisals (PMAs) | RSS/RVasquez | 1st/Q |
| 2. Modify existing procedures for conducting survey and assessment of PMAs to assure complete, verifiable information on the implementation of PMAs, particularly on impact | RSS/RVasquez | 1st/Q |
| 3. The DENR to start building up its in-house policy analysis capability on industrial environmental issues | U/S Bagadion | 3rd/Q |
| 4. Strengthen DENR's public advocacy and dissemination on policy, institutional and administrative reforms | U/S Bagadion | 3rd/Q |
| 5. Strengthen linkages of other government agencies (DTI, NEDA, etc.) with industry in project implementation | U/S Bagadion | 3rd/Q |
| 6. Improve training strategy and selection criteria for capability building participants | RSS/RVasquez | 2nd/Q |
| 7. Institutionalize training and capability building strategies and methodologies in the DENR and private sector | RSS/RVasquez | 4th/Q |
| 8. Develop accreditation guidelines for private guidelines for private sector analytical laboratories for use in environmental management | RSS/ USec Bagadion | 3rd/Q |
| 9. Strengthen linkages of IEMP with the natural and coastal resources management groups of DENR and private sector | RSS/ USec Bagadion | 3rd/Q |

(Attach extra sheet if necessary)

## APPROVALS

F. Date Of Mission Or AID/W Office Review Of Evaluation: (Month) (Day) (Year)

G. Approvals of Evaluation Summary And Action Decisions:

| | Project/Program Officer | Representative of Borrower/Grantee | Evaluation Officer | Mission or AID/W Office Director |
|---|---|---|---|---|
| Name (Typed) | R.S. Senykoff | USec B. Bagadion | S. Roco | G.H. West |
| Signature | [signature] | [signature] | [signature] | [signature] |
| Date | 11/15/95 | 11/29/94 | 1/25/95 | FEB 1 1995 |

## ABSTRACT

H. Evaluation Abstract (Do not exceed the space provided)


The overall purpose of this mid-term evaluationwas to assist the USAID Office of Natural Resources, Agriculture and Decentralization (ONRAD) in (1) assessing the Industrial Environmental Management Project's (IEMP) overall goals and objectives; (2) evaluating the performance of all components of IEMP to date; and (3) generating recommendations for future directions of the project, over the remaining two and a half years.

The mid-term evaluation effort was implemented by the Pragma Corporation from August 15-September 24, 1994. The evaluation covered the period since the date of the approval of the Project Paper, September 30, 1991, until the present time. In terms of technical scope, the evaluation looked at all components of the project, including aspects related to the management strategies and sustainability. The evaluation also reviewed the relationship of the project with the Environmental Management Bureau (EMB), the Department of Environment and Natural Resources (DENR), as well as local industry associations, NGOs and other related entities relative to the impact and sustainability of IEMP's objectives.

The major findings and conclusions are:

o In general, this project should attain most of its objectives and deliver all outputs by September 1996.
o The initial assumption that industries will work voluntarily and cooperatively with this project has been proven effective and true.
o The Pollution Reduction Initiatives methodologies need to be institutionalized
o The Polity Studies generated have generated strong private sector support to advocate policy reform in the environmental sector.
o The Capability Building efforts need to be institutionalized by the Government Counterparts and should involve more private sector industry participation.
o Recommend post project activities to continue focus on industrial environmental issues but broadened to bring in coastal resource dimensions


## COSTS

I. Evaluation Costs

| 1. Evaluation Team Name | Affiliation | Contract Number OR TDY Person Days | Contract Cost OR TDY Cost (U.S. $) | Source of Funds |
|---|---|---|---|---|
| Raghu Raghavan | Team Leader/Env. Specialist | 36 days | | |
| | Environmetrics Systems, Inc. | 36 days | | |
| James Dawson | Mgt. Specialists/Devt. Consultant | | | |
| Ponciano Intal | Policy Specialis/Phil. Institute of Devt. Studies | 30 days | | |
| Total | | | $73,642.08 | 492-0465 |

2. Mission/Office Professional Staff Person-Days (Estimate) 36 days

3. Borrower/Grantee Professional Staff Person-Days (Estimate) 45 days

# A.I.D. EVALUATION SUMMARY - PART II

SUMMARY

J. Summary of Evaluation Findings, Conclusions and Recommendations (Try not to exceed the three (3) pages provided)
Address the following items:

- Purpose of evaluation and methodology used
- Purpose of activity(ies) evaluated
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

| Mission or Office: | Date This Summary Prepared: | Title And Date Of Full Evaluation Report: |
|---|---|---|
| ONRAD/USAID/Phils. | Nov. 9, 1994 | IEMP Mid-Term Evaluation Sept. 24, 1994 |

1. Purpose of the Activity Evaluated: This project seeks to reduce the problem of industrial pollution in the Philippines, particularly in terms of increased productivity and reduced operating costs. The project promotes pollution management measures that advance sustained economic growth in the industrial sector by (a) preventing or reducing pollution at its source, (b) reclaiming industrial wastes and (c) encouraging cost-effective pollution abatement technologies. To achieve these objectives, the project provides US$20 million over five years to support (a) pollution reduction initiative ($13 million), (b) policy studies and public/private dialogues ($2.8 million), (c) capability building ($3.7 million), and (d) evaluation and auditing services ($500,000).

2. Purpose of the Evaluation and Methodology Used: This mid-project evaluation was undertaken to assist USAID/Philippines in (a) assessing the project's overall goals and objectives, (b) evaluating the performance of the project to date, and (c) generating recommendations for the future direction of the project during the remaining two years of the project. The evaluation was undertaken by a three person team composed of an industrial pollution specialist, a policy analyst and a project management specialist. The evaluation was conducted over a six-week period between August 15 and September 24, 1994. The primary source of information used consisted of (a) extensive interviews with individuals from the USAID Mission, the detailed project review on the field with both project implementors and project beneficiaries. On-site visits were made to 12 industrial firms (a 20 percent sample) that had participated in the project's Pollution Management Appraisal (PMA) process, which is the main activity for promoting the pollution reduction initiative. These industries were dispersed among five of the geographic planning regions in the Philippines (Regions III, IV, VII, X and XI). Also, during these visits discussions were held with environmental staff in five regional DENR offices to obtain information on program implementation issues and on the benefits of the training that they had receied under the IEMP.

3. Findings and Conclusions: In general, the project's contractors and grantees are carrying out the main activities in the project's components: Pollution Reduction Initiative (PRI), Policy Studies (PS), and Capability Building (CB) in accordance with the project's design and DENR-approved workplans.

The main findings and conclusions of the evaluation are:

a) There remains a high degree of tension, between industrial development and environment protection from the perspective of private business sector and even from a significant sector of the government bureaucracy. The basic issues are related to the transactions and opportunity costs of implementing environmental standards and processing of environmental compliance certificates. The ECC process may become an investment bottleneck. Heightening global competition in trade and investments, an increasingly open Philippine economy would need to modernize opportunities of the positive symbiosis between strengthening environmental margin and increased agro-industrial productivity. However, there are serious constraints at DENR to effect as well as implement environmental management and regulation. Private sector support and cooperation however is strong. The utility of this should be maximized by DENR.

b) There have been significant progress - impact and money saved - in implementing PMA waste minimization and pollution reduction initiatives. However, The PMA process requires further improvement specifically in generating baseline data information and monitoring the performance of on-site PMAs. Baseline information is necessary to allow better documentation of the amount of pollution reduced as well as money/resources saved. It was also observed that the participation of regional DENR staff in promoting and conducting PMA's needs to be increased, to enable early institutionalization of PMAs. LGUs and NGOs also need to be educated more in the process to complement DENR efforts. Sectorally, it was observed that there is a general lack of analytical laboratory facilities in the Philippines to adequately support an expanded pollution management program.

c) The policy studies component is well designed and addressed the critical issues of policy and administration of industrial environmental management in the Philippines. The studies contribute directly to three pillars of the emerging industrial environment management framework and strategy, i.e., strengthening and streamlining the EIS system; move towards market based instruments (MBI) to complement "command and control (CAC) interventions; and, increased reliance on LGU's and NGOs in environmental monitoring and management. The technical and policy studies in the Environment and Natural Resources Accounting Project (ENRAP) activity should be used more to complement the studies undertaken or proposed under IEMP. At this early stage, however, the policy studies of IEMP was observed to have significantly influenced the direction and articulation of the countries' industrial environmental management framework and strategy in both public and private sectors.

d) In general, the project's capability building component is being carried out in accordance with the original project design. However, it was observed that the project design and subsequent project implementation strategies lacked a clear training strategy, rationale or criteria that could improve the management and conduct of this component. A clear strategy and set of criteria could improve the selection of participants of the various training courses as well as improve the training contents to ensure utility by the participants. It was also observed that the current linkage between the project's capability building efforts and those of the DENR and other donor-assisted projects could be strengthened. Industry and NGO participation/involvement in the training workshops needs to be increased.

e) IEMP has been reasonably successful in creating an awareness of the project and its objectives. However, it was observed that the design requires improvement for an explicit strategy or mechanism for continuing project initiated activities beyond its life. On the government side, there has been virtually no increase in the GOP's capacity to sustain project activities with their own resources. Staff training within the DENR is a continuing need the likewise needs to be addressed.

4. Principal Recommendations:

a) DENR needs to articulate and disseminate the IEM framework and strategy to their regional offices and the rest of the government bureaucracy as well as to the private business sector to get their support for the concepts and objectives of IEMP.

b) New PMA guidelines should be developed within 1994 to ensure adequacy and accuracy of the process. The IEMP players need to involve more DENR regional personnel participation in the process. Concurrently, wide education and involvement of LGUs, NGOs and industry participants should be encouraged. The DENR on the other hand, needs to look more closely into promoting more private sector environmental laboratories to reduce the pressure on DENR's limited resources and more importantly, ensure the availability and accessibility of such services to the private business sector.

c) The DENR needs to immediately start building up its in-house analysis capability on brown issues. Public advocacy and dissemination of the policy, institutional and administrative reforms must be strengthened. Linkages with other government institutions and industry at a high-level interagency and multi-sectoral steering committee is recommended.

d) DENR and the project's contractors need to develop a detailed training strategy, selection criteria and priorities for training both public and private sector participants. Adjustments of training requirements will need to be done subsequent to this. There is also a need to increase EIA training courses to meet the demand from the LGUs and NGOs. The project also needs to accelerate inclusion of NGOs on IEMP training programs relevant to their needs. Finally, the project should involve the DENR HRD/training groups in the design, planning and organization, implementation and evaluation of the various training courses to ensure sustainability of the capability building efforts. The feasibility of transferring this responsibility to a qualified NGO should also be explored.

e) The IEMP implementors need to start focusing their activities toward sustainability of efforts within the GOP or private sector. Responsibility for post project training for GOP staff should be transferred to DENR/HRD. Responsibility for training private sector should be transferred to a private organization. The IEMP should also develop strategies to sustain PMA efforts within private sector associations.

f) The post-IEMP future may be guided by the following premises:
- marrying environmentalism and agro-industrial development remains a formidable challenge in the Philippines and should be consciously incorporated in the planning processes
- policy reform necessitates institutional change in order to be sustainable

5. Lessons Learned

a) Project design implications - The evaluation team's observation that the design contained no explicit strategy or mechanism for continuing project initiated activities beyond project life indicates that the team missed the main sustainability strategy of IEMP which is to promote concepts that provide immediate and direct benefits to beneficiaries. The fact that pollution reduction and waste minimization practices and concepts provide immediate and direct benefits to industries were enough for industry to sustain the activity themselves. The project took this and encouraged voluntary participation of industry, which has proven to be very effective.

The lesson to learn is that new concepts and designs should always focus and promote the direct and immediate benefits and impact on the beneficiaries. Design teams should avoid the usual rhetoric and generalities prevalent in environmental projects (i.e., saving the world for the next generation). To be effective and acceptable, the people affected and involved should see the direct and immediate benefits, not those coming 10-20 years from the present.

b) Broad Action Implications - Despite the relative success of this project with its private industry counterparts, much more needs to be done in institutionalizing concepts in the government. The evaluation team's observation that "reforms to be sustainable will necessitate institutional change" hits the mark. However, we would like to add attitudinal change as another necessity. Promotion of environmental protection and regulations should not be done using "CAC" alone. Future design projects should promote the "carrot" before wielding the "stick". However, this "carrot" should be carried and promoted by leaders in the regulatory community who understand the need to use a "carrot". Willingness to change attitudes and institute reform should be considered just as important and probably more important than providing additional monetary resources in supporting projects such as IEMP.

## ATTACHMENTS

K. Attachments (List attachments submitted with this Evaluation Summary; always attach copy of full evaluation report, even if one was submitted earlier; attach studies, surveys, etc., from "on-going" evaluation, if relevant to the evaluation report.)

Full copy of Final Evaluation report with all attachments

## COMMENTS

L. Comments By Mission, AID/W Office and Borrower/Grantee On Full Report

The evaluation report provides straightforward information on the findings and recommendations stated. The recommendations are realistic and implementable given the limited resources of USAID and the Government of the Philippines. The evaluation however did not fully discuss the strengths of the project which may be used as a model for subsequent related projects. These include: (a) promotion of voluntary participation and collaboration of private sector industries in a government sponsored project. This strategy has proven to be very effective, especially since the main strategy and benefits of waste minimization and pollution prevention were readily accepted, appreciated and used by private sector industries; and, (b) advocating policy reform through the private sector rather than primarily through the government. This strategy enabled industry and government to work more closely in advocating policy reform. It also helped promote understanding of environmental issues and the basis for regulation, which oftentimes lead to delays in implementing policy reforms.

The report was accepted in the context that it will be a working document for the project implementors to further imporve on what has been achieved. More importantly, these improvements shall help USAID, the Government of the Philippines and private sector industries prepare to sustain the activities and reforms initiated by the project.

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98360

**INDUSTRIAL ENVIRONMENTAL MANAGEMENT PROJECT**

**MID-TERM EVALUATION**

**USAID/Philippines Project No. 492-0465**

# FINAL REPORT

IQC No.: 492-0432-I-00-3039-00
Delivery Order No. 7
USAID/Philippines

The Pragma Corporation
Independence Square
116 East Broad Street
Falls Church, Virginia 220406
USA

September 24, 1994

*This evaluation was completed through the assistance of the United States Agency for International Development (USAID).*

*The views, findings, and statements contained in this document are those of the members of the Industrial Environmental Management Project (IEMP) evaluation team. They are not intended as statements of policy or fact of either AID or the Pragma Corporation.*

# INDUSTRIAL ENVIRONMENTAL MANAGEMENT PROJECT

## MID-TERM EVALUATION

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## ACKNOWLEDGEMENT

We would like to express our appreciation to the following organizations and individuals whose guidance and support were most valuable to the preparation of our final report on mid-term evaluation of the Industrial Environmental Management Project (IEMP):

**Industrial Environmental Management Project (IEMP)**

Mr. David Wadsworth, PRC-EMI/IEMP Chief of Party
Dr. Marian de los Angeles, IRG/ENRAP III
Ms. Grace Favila, PBE/IWEP
Mr. Roberto De Guzman, EPAI

**Department of Environment and Natural Resources (DENR)**

Dr. Benjamin Bagadion, Undersecretary, Office of Research and Environment
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Ms. Amelia Dulce Supetran, Assistant Director, EMB
Ms. Elisea Gozun, MEIP Coordinator
Ms. Angelita Brabante, Chief, Chemicals & Waste Management Section, EQD
Mr. Geri Sanez, IEMP Coordinator

**United States Agency for International Development (USAID)**

Dr. John A Grayzel, Chief, Office of Natural Resources, Agriculture and Decentralization (ONRAD)
Dr. Ronald S. Senykoff, Chief, Natural Resources Division, ONRAD
Mr. Jose Marcial K. Ochoa, Project Manager, ONRAD

We would also like to recognize the assistance provided by numerous individuals in these organizations and other members of GOP agencies, NGOs and industrial representatives who assisted us in compiling the information required to conduct this evaluation. Most of these individuals are identified in Appendix D of this report.

Raghu K. Raghavan
James W. Dawson
Ponciano S. Intal, Jr.

## LIST OF ACRONYMS

| | |
|---|---|
| ADB | Asian Development Bank |
| AFTA | ASEAN Free Trade Association |
| ASAP | Agribusiness System Assistance Program |
| ASEAN-EIP | Association of South East Asian Nations-Environmental Improvement Program |
| BOD | Biochemical oxygen demand |
| CA | Compliance Audit |
| CAC | Command and Control |
| CAR | Cordillera Autonomous Region |
| CAW | Compliance Audit Workshop |
| CB | Capability Building |
| CDO | Cease and Desist Order |
| CENRO | Community Environment and Natural Resources Office |
| CM | Compliance Monitoring |
| CMW | Compliance Monitoring Workshop |
| CRA | Comparative Risk Assessment |
| CY | Calendar Year |
| DAO | Department Administrative Order |
| DENR | Department of Environment and Natural Resources |
| DCSSAW | Data Collection, Sampling and Sample Analysis Workshop |
| DOST | Department of Science and Technology |
| DTI | Department of Trade and Industry |
| ECA | Environmentally critical area |
| ECC | Environmental Compliance Certification |
| ECP | Environmentally critical project |
| EIA | Environmental Impact Assessment |
| EIS | Environmental Impact Statements |
| EMB | Environmental Management Bureau |
| EOP | End of Project |
| EQC | Environmental Quality Council |
| EQD | Environmental Quality Division |
| ENRA | Environmental and Natural Resources Accounting |
| ENRAP | Environmental and Natural Resources Accounting Project |
| EPAI | Environmental Primovers of Asia, Inc. |
| ERA | Environmental Risk Assessment |
| ESA | Environment Satellite Account |
| ESCAP | Economic and Social Commission for Asia and the Pacific |
| GATT | General Agreement on Tariffs and Trade |
| GOP | Government of the Philippines |
| GTZ | German Agency for Technical Cooperation |
| HRD | Human Resource Development Division |
| HQ | Headquarters |

| | |
|---|---|
| IBRD | International Bank For Reconstruction and Development |
| IDRC | International Development Research Center |
| IEC | Information, Education, and Communication |
| IEM | Industrial Environmental Management |
| IEMP | Industrial Environmental Management Project |
| IPCC | Industrial Pollution Control Cebu |
| IRENE | Interregional Network of Environmental Laboratories |
| ISO | International Standard Organization |
| IWEP | Industrial Waste Exchange Project |
| LGUs | Local Government Units |
| LLDA | Laguna Lake Development Authority |
| MBI | Market-Based Instruments |
| MEIP | Metropolitan Environment Improvement Project |
| MOE | Maintenance and Operating Expenses |
| NCR | National Capital Region |
| NEDA | National Economic Development Authority |
| NGOs | Non-Government Organizations |
| NRIPS | National/Regional Industry Prioritization System |
| NSCB | National Statistical and Coordinating Board |
| ODA | Official Development Assistance |
| OECF | Overseas Economic Cooperation Fund |
| OIC | Officer in Charge |
| ONRAD | Office of Natural Resources, Agriculture and Decentralization |
| ORAD | Office of Rurala and Agricultural Development |
| PACD | Project Assistance Completion Date |
| PBE | Philippine Business for the Environment, Inc. |
| PCAPI | Pollution Control Association ~~of the~~ Philippines, Inc. |
| PCS | Pollution Control System |
| PENRO | Provincial Environment and Natural Resources Office |
| PSMA | Philippine Sugar Millers Association |
| PMA | Pollution Management Appraisal |
| PNOC | Philippine National Oil Company |
| PNRI | Philippine Nuclear Research Institute |
| PNSA | Philippine System of National Account |
| PPD | Public/Private Dialogues |
| PPTRC | Pollution Prevention Technology Resource Center |
| PRC-EMI | Planning Research Corporation-Environmental Management, Inc. |
| PRI | Pollution Reduction Initiative |
| PS | Policy Study |
| RA | Republic Act |
| RED | Regional Executive Director |
| REL | Regional Environmental Laboratories |
| RTD | Regional Technical Director |
| S&A | Survey and Assessment |
| SOW | Scope of Work |
| SUSTAIN | Sustainable Natural Resources Development |

| | |
|---|---|
| TA | Technical Assistance |
| UIEMCC | Urban and Industrial Environmental Management Coordinating Council |
| UNDP | United Nations Development Program |
| UNSNA | United Nations System of National Account |
| USAID | U.S. Agency for International Development |
| USAEP | United States-Asia Environmental Partnership Program |
| WTO | World Trade Organization |

## EXECUTIVE SUMMARY

1. Initiating Office and Title of the Evaluation Report: USAID/Philippines, A Mid-Term Evaluation of the Industrial Environmental Management Project, September 24, 1994.

2. Purpose of the Activity Evaluated: This project seeks to reduce the problem of industrial pollution in the Philippines, particularly in terms of increased productivity and reduced operating costs. The project promotes improved pollution management measures that advance sustained economic growth in the industrial sector by (a) preventing or reducing pollution at its source, (b) reclaiming industrial wastes and (c) encouraging cost-effective pollution abatement technologies. To achieve these objectives, the project provides US$20 million over five years to support (a) pollution reduction initiative ($13 million), (b) policy studies and public/private dialogues ($2.8 million), (c) capability building ($3.7 million), and (d) evaluation and auditing services ($500,000).

3. Purpose of the Evaluation and Methodology Used: This mid-term evaluation was undertaken to assist USAID/Philippines in (a) assessing the project's overall goals and objectives, (b) evaluating the performance of the project to date, and (c) generating recommendations for the future direction of the project during the remaining two years of the project. The evaluation was undertaken by a three person team composed of an industrial pollution specialist, a policy analyst and a project management specialist. The evaluation was conducted over a six-week period between August 15 and September 24, 1994. The primary source of information used consisted of (a) extensive interviews with individuals from the USAID Mission, the relevant GOP agencies, private industry, project consultants, LGUs and NGOs; and (b) a detailed project review on the field with both project implementors and project beneficiaries. On-site visits were made to 12 industrial firms (a 20 percent sample) that had participated in the project's Pollution Management Appraisal (PMA) process, which is the main activity for promoting the pollution reduction initiative. These industries were dispersed among five of the geographic planning regions in the Philippines (Regions III, IV, VII, X and XI). Also, during these visits discussions were held with environmental staff in five regional DENR offices to obtain information on program implementation issues and on the benefits of the training that they had received under the IEMP.

4. Findings and Conclusions:

In general, the prime contractor of IEMP, PRC-EMI, is carrying out the main activities in the project's components: Pollution Reduction Initiative (PRI), Policy Studies (PS), and Capability Building (CB) in accordance with the project's design and DENR-approved workplans. Our evaluation of the project also found that:

a. Pollution Reduction Initiative

(1) As baseline data were not obtained during the course of performing PMAs, it is difficult to (a) determine the impact of the project in reducing pollution or production costs, (b) identify pollution reduction actions that would be most beneficial, and (c) determine the total potential for reducing pollution and decreasing the production costs from the adoption of PMA recommendations.

(2) Preliminary findings indicate that participating firms are generally implementing the PMA low-cost options, but not implementing the high-cost options to any large degree. However, larger companies appear to be developing and implementing their own pollution control solutions. In these instances, there is evidence that the PMAs played an important role in convincing the firms to invest in pollution management.

(3) Some firms appear to be unable to implement the PMA recommendations without more technical assistance than is being provided by IEMP. This assistance is needed primarily to assist in the technical and economic evaluation of alternative solutions, assist in concept design of the solution adopted and assist to prepare the necessary financial analysis/package to obtain the credit needed to finance pollution reduction.

(4) The participation of the regional DENR staff in the PMA process has been minimal and PMAs tend to be viewed by the regional offices as programs of the central DENR and/or IEMP. Given this low level of ownership, there is also an equally low level of participation in the PMA process by LGUs and NGOs in the regions. We feel this lack of ownership and participation will have a negative impact upon institutionalizing the PMA process at the local level.

b. Policy Studies

(1) The policy studies component of the project is well designed. The studies are strategic and contribute directly to the policy framework for industrial environmental management (IEM); i.e. strengthening and streamlining the EIS system, greater reliance on market-based instruments (MBI) and an increased reliance on LGUs, NGOs and the private business sector in environmental monitoring and management.

(2) With one exception, all of the revised set of policy studies have been completed and have been approved by USAID and EMB or are under review by PRC-EMI. A technical assistance and policy study is being provided in the Special Activities sub-component of IEMP to address the importation of recyclable hazardous substances to the Philippines. Phase I has been completed and accepted; Phase II is in process. In general, the quality of the reports on policy studies range from satisfactory to excellent with Policy Study No. 8 on the EIS System being clearly the best. Conversely, the study on the use of market-based instruments is the least satisfactory given the research budget.

(3) We find that the policy studies component of IEMP has already significantly influenced the direction and strategy of the country's industrial environmental framework. This is largely because the topics are strategic and the project has provided IEMP the flexibility to be able to respond quickly to the concerns of the DENR. This has been particularly true with respect to assisting the DENR clarify and articulate their policies with respect to programmatic compliance, formulate interim guidelines in the importation of recyclable materials containing hazardous substances and to refine their standards for toxic and hazardous waste (R.A. 6969).

c. Capability Building

(1) The project's capability building component is also being carried out by PRC-EMI in accordance with the project design and their contract scope of work. Half-way through the project, this component has achieved approximately 45 percent of the targets for training the public and private sectors in IEM. To date, however, training has been skewed toward the public sector, with GOP personnel receiving approximately 70 percent of the training offered; private industry 23 percent; and NGOs/LGUs 7 percent.

(2) The project paper and other project documents do not provide a clear training strategy or rationale. As a result, it is extremely dificult to determine if the right persons are being trained; and who and how many more require training. Under this situation, there is a risk that the project will end before all persons requiring training have received it.

(3) IEMP has not developed an approach that has been able to elicit the degree of NGO training participation that is required. A special program may be needed for this sector, as stronger NGO participation in the program is desired.

d. Sustainability

(1) The project as designed contains no explicit strategy or mechanisms for continuing project initiated activities beyond the life of the existing project. Further, there has been virtually no increase in the GOP's capacity to sustain project activities with their own resources. As a result, the options for project sustainability are quite limited.

(2) We see a continuing need for a capacity within the DENR to train its own staff on environmental compliance and monitoring standards/regulations. A similar need exists to ensure the continuation of PMAs and other needed training for private industry. We see this latter capacity as being established in the NGO community, at least to begin with.

5. Recommendations:

a. Pollution Reduction Initiative

(1) Design and complete a feasibility study to address the establishment of baseline data on the level of pollution and waste management methods at industrial facilities participating in PMAs.

(2) Develop and implement an action plan to use the feasibility study to quantitatively measure the improvements in industrial management of pollution, and benefits achieved thereby, in the PMAs completed to date. Develop additional guidelines for assuring timely procurement and use of baseline data in future PMAs.

(3) Modify the existing procedures for conducting survey and assessment (S&A) of PMAs to assure that complete and verifiable information is obtained on the progress being made by the firms implementing PMA recommendations or other ideas for pollution management. Use the S&A also to identify opportunities for IEMP to provide additional technical assistance to the industry. The modified S&A procedure must include participation of regional DENR.

(4) Design and implement one or more special projects in which a comprehensive environmental and natural resources program based on improved IEMP methodologies for PMA and ERA is conducted in high priority areas of the Philippines, such as a coastal zone with high potential for industrial growth.

b. Policy Studies

(1) DENR must start building up its in-house policy analysis capability on brown issues. Create facility for a program of policy support and capability building for policy analysis on brown issues for DENR. Thus, for example, more analysis and advocacy on the specifics of the redesign of the EIS system is needed.

(2) DENR must strengthen public advocacy and dissemination on the policy, institutional and administrative reforms outlined in the policy studies, especially Policy Study No. 8 on the EIS system.

(3) Strengthen linkages between ENRAP Phase III and the Policy Studies component of IEMP in order to provide a macroeconomic perspective to IEM.

(4) Initiate eco-profiling and the examination of the inter-linkages between the coastal zones and industrial development in selected areas such as Cebu, General Santos-Sarangani, and Batangas or Lingayen Gulf.

c. Capability Building

(1) DENR/EMB and PRC-EMI should develop a detailed training strategy and selection criteria for the remaining public sector employees. On completion, IEMP should undertake a review and assessment to identify which government staff still require training. On completion of this review, the contract training targets should be revised accordingly.

(2) Initiate action to accelerate planned training for the private sector, particularly for the Compliance Audit Workshop.

(3) Delay the scheduling of any additional micro ERA training programs until USAID has reviewed and approved the framework for the application and utilization of micro ERAs. PRC-EMI should review the feasibility of combining EIA and micro ERA training.

d. Sustainability

(1) Responsibility for post-project IEMP training for government personnel should be transferred to DENR/HRD. This training should be presented by the relevant faculty on the campuses where DENR has located its regional training centers, and PRC-EMI should develop a training phaseover strategy to ensure that the appropriate faculty recieve needed training prior to the PACD.

(2) Responsibility for post-project IEMP training for private industry should be transferred to the private sector or an NGO; e.g. PBE or PCAPI. A similar training capability phaseover strategy to that above will need to be developed by PRC-EMI. It is assumed that the direct cost of training will be paid by private industry, but that an NGO may require several years of bridge-funding to cover indirect costs until such time as they can be passed on to the industry.

e. Directions for the Future

(1) We recommend that the post-IEMP project will continue focusing on industrial environmental issues, but broadened to bring in the coastal resource dimensions. At the same time, the post-IEMP will continue to support the institutionalization of the IEMP perspective and the strengthening of the institutional capability in industrial environmental management in the government, business sector, NGOs and the communities.

(2) Considering the linkages and interrelationships of interventions in industrial environmental management, coastal resources management and upland resources management, it is useful to create a very high level interagency and multisectoral coordinating or oversight committee, headed by the Secretary of Environment and Natural Resources, that will provide the strategic directions on policy, institutionalization and technical support of all the USAID (and probably all other donor-funded) projects concerned with brown, blue and green issues.

## BASIC PROJECT IDENTIFICATION DATA

1. Country: Philippines

2. Project Title: Industrial Environmental Management Project

3. Project Number: 492-0465

4. Project Dates:

   a. First Project Agreement: September 30, 1991
   b. Current PACD: September 30, 1996

5. Project Funding:

   a. AID Bilateral Funding (Grant) US $20,000,000
   b. Other Major Donors -0-
   c. Host Country Counterpart Funds -0-

6. Mode of Implementation: Direct Contract with Planning Research Corporation-Environmental Management, Inc. (PRC-EMI)

7. Project Designers: USAID/Philippines

8. Responsible Mission Officials:

   a. Project Manager: Mr. Jose Marcial K. Ochoa

   b. Office of Natural Resources, Agriculture and Decentralization (ONRAD): Dr. John A. Grayzel
      Dr. Ronald S. Senykoff

9. Previous Evaluations: None

# I. BACKGROUND

**A. Project Description:** The Industrial Environment Management Project (IEMP) was initiated in 1991, and provides USAID assistance of U.S. $20 million over a five year period to support the Government of the Philippine's (GOP) effort encourage sustained economic growth in the industrial sector, with corresponding improvements in health status. This objective is being pursued through a strategy that seeks to improve industrial management of pollution at its source through (1) the prevention and reduction of pollution, (2) the reclamation of industrial waste and (3) the promotion of cost-effective pollution control technologies.

The project has been designed to operate in areas outside of Metro Manila and works with the Philippine's Department of Environment and Natural Resources (DENR), with project management responsibilities assigned to DENR's Environmental Management Bureau (EMB). The project works jointly with individual private sector firms, industry groups, and non-governmental organizations (NGOs). Work is undertaken with the private sector and is being carried out on a voluntary basis and seeks to identify industry-wide and firm-specific solutions to environmental management problems.

The primary project components are:

1. A pollution reduction initiative that seeks to analyze current pollution management practices in Filipino industries and supports implementation of pollution reduction measures. This component plans to conduct 150 on-site assessments where firms will participate in a pollution management appraisal (PMA) process.

2. A capability building component that is designed to increase knowledge and skills of the following number of persons in different areas of pollution management:

| | |
|---|---|
| - Environmental Impact Assessment (EIA) | 700 |
| - Environmental Risk Assessment (ERA) | 60 |
| - Compliance Monitoring | 200 |
| - Compliance Auditing | 200 |
| - PMA Workshops | 200 |
| - Data Collection, Sampling and Sample Analysis | 300 |

3. A series of ten policy studies designed to rationalize policies on industrial pollution, and a related series of public/private dialogue activities to increase communication between the private and public sector and encourage private sector involvement in industrial pollution issues.

The DENR/EMB is being assisted in the implementation of the project by a U.S. contractor, PRC Environmental Management, Inc. (PRC-EMI) whose in-country technical assistance group became operational in mid-1992.

In addition to the core program activities described above, the project is currently providing financial support to a number of ancillary programs and activities that focus on the overall objectives of improved pollution management. They include:

a. Support to a local NGO to implement an industrial waste management program.

b. Support for the third phase of the Environmental and Natural Resources Accounting Project (ENRAP III).

c. Support for a study on the feasibility of establishing a private sector laboratory network to support environmental monitoring in major industrial areas. Support is also anticipated to implement the program that is subsequently developed.

d. Technical assistance for the implementation of the Programmatic Compliance Policy of the Philippines Environmental Impact Statements (EIS) system and for the chemical and waste management plan in support of the Toxic Substance, Hazardous and Nuclear Waste Management Act (R.A. 6969).

**B. Summary Project Status:**

As of June 30, 1994, approximately half-way through the project implementation period, the status of core project activities were as follows:

1. Pollution Reduction Initiative

   a. On-site PMAs completed: 59 out of 150, or 39.3 percent of the planned total.

   b. Confidential business reports released: 48 of 150, or 32 percent of the planned total.

   c. Survey and assessment conducted: 37 out of 225, or 16 percent of the planned total.

2. Capability Building

   a. PMA Workshop participants: 240 participants trained out of planned total of 200.

   b. Environmental Impact Assessment Workshop: 278 out of a planned total of 700 (40 percent complete).

   c. Environmental Risk Assessment Workshop: 69 out of a planned total of 60.

   d. Compliance Monitoring Workshop: 87 out of a planned total of 200 (44 percent complete).

   e. Compliance Auditing Workshop: 45 out of a planned total of 200 (22 percent complete).

   f. Data Collection, Sampling, and Sample Analysis Workshop: 96 out of a planned total of 300 (32 percent complete).

3. Policy Studies

Initially, there were plans for 10 separate policy studies. Subsequently, decisions were made to merge several topics together and the revised plans resulted in six studies and one additional public dialogue session. To date, five of the six studies have been completed and have been approved or on final review. The remaining study (Study No. 7) is currently in process. A technical assistance and policy study was added in the Special Activities sub-component of IEMP to address import of hazardous substances for recycling to the Philippines. The first phase of this activity is already completed and accepted; the remaining phase is currently in process.

A list of policy studies conducted to date is given below.

| | | |
|---|---|---|
| P.S. No. 1 | - | Financial Resources to Fund Environmental Investments |
| P.S. No. 2/10 | - | Analysis of Current Regulation Program |
| P.S. No. 3-5 | - | Market-Based Incentives (MBI) for Pollution Reduction |
| P.S. No. 7 | | Integration of Regulation/Enforcement (CAC) Activities and Volunteer Industry (MB) Efforts |
| P.S. No. 8 | - | Integration of Pollution Reduction Planning and Environmental Risk Assessment (ERA) in the Environmental Impact Assessment (EIA) Process |
| P.S. No.9 | - | Impact of Organization/Decentralization of Environmental Institution on Industrial Environmental Management |

The original five public/private dialogues have been increased to nine. Five have been undertaken so far.

Project financial commitments for the major program elements as of June 30, 1994 are as follows:

| | |
|---|---|
| Core Program: | |
| - Pollution Reduction Initiative | $ 4,900,670 |
| - Capability Building | 2,940,000 |
| - Policy Studies | 2,600,000 |
| - Evaluation and Audit | 76,751 |
| Total Core Program | $10,517,421 |
| Ancillary Program: | |
| - ENRAP III | $ 845,734 |
| - Waste Exchange | 141,945 |
| - Laboratory Study | 19,413 |
| Total Ancillary Programs | $1,007,092 1/ |
| Grand Total | $11,524,513 |

1/ Two actions for the procurement of technical services to assist in the implementation of the programmatic compliance EIS System and for the chemical and waste management plan as established under R.A. 6969 are currently in process. It is anticipated that these services will be initiated on/about January 1, 1995. The cost of these services is not included in the above figures.

## II. EVALUATION METHODOLOGY

This evaluation was conducted by a three-person team over a period of six weeks between August 15 and September 24, 1994. During this period the team conducted an extensive series of meetings and interviews in Manila and in five of the fourteen geographic planning regions of the Philippines. Travel was undertaken to Bulacan, Pampanga, Batangas and Quezon provinces in Regions III and IV by vehicle. Air travel was utilized to visit Misamis Oriental (Cagayan de Oro), Davao Del Sur (Davao), General Santos City and Cebu.

The evaluation was conducted in a collaborative manner with support and assistance from the USAID Mission, PRC-EMI, and the EMB. All of the staff of these organizations were extremely cooperative in providing needed information and in openly sharing their opinions with the team. The evaluation itself was divided into four separate periods of activity that fell into the following categories and time periods.

- An initial period of approximately ten days that were devoted primarily to developing a familiarization of the project through a series of meetings in Manila where the team was introduced to the many persons and organizations related to the project in one manner or another. This included, inter alia, the USAID, PRC-EMI and their subcontractors, and the staff of DENR's Environmental Management Bureau. During this period, the team visited the offices of EMB and PRC-EMI and collected and reviewed general project information. An inception report outlining in detail the evaluation team's understanding of the evaluation SOW was also prepared and submitted to USAID during this period.

- A second period of approximately ten days when the team travelled to the locations noted above for on-site visits and meetings with the project participants, both those that were assisting in its implementation and those who were benefitting by participation in project activities. The visits to twelve on-site PMA participants covered a wide and diverse range of enterprises including two piggery operations, three firms working with coconut-based products, two sugar mills, a pulp and paper mill, a banana chip operation, a pineapple canning operation, a fish canning operation, and a motorcycle assembly plant. This sample represented approximately 20 percent of the sites where PMAs had been conducted to date. During each of these visits with the PMA participants, the team conducted in-depth interviews to obtain their views of the usefulness of the project to their individual situations and to obtain data to verify the benefits cited. Meetings were also held with staff from five of the regional DENR offices, with a particular focus on obtaining information on (1) the range and scope of their pollution monitoring responsibilities, (2) their perceived benefits from project-provided training and (3) the type and level of resources available to implement the project in their respective areas. Other meetings were held with NGOs, LGU personnel, Chamber of Commerce officials,

University officials and other donors when the opportunity afforded itself. We estimated that we met with well over 83 persons during this phase of the evaluation.

- A third phase of approximately ten days that was devoted primarily to a second round of meetings in Manila to gather a much more specific level of data on IEMP and to widen our contacts within the planning and environmental areas. These meetings included those with donor agencies, and coordinators of other environmental management projects: MEIP; ASEAN-EIP, USAEP, and ADB. Meetings were also held with personnel in NEDA, DTI, and NSCB. During this period, as well as in the initial period, efforts were made by the evaluation team to meet with the undersecretaries of DENR in charge of offices for Natural Resources Management, Field Operations and Environment and Research. We were only able to meet with Dr. Benjamin C. Bagadion, Jr., Undersecretary, Office of Environment and Research. The Environmental Management Bureau (EMB), which manages IEMP, reports to the Office of Environment and Research, DENR.

- A fourth phase of approximately ten days devoted to report preparation, oral briefings and in reviewing the report findings and recommendations with USAID, the EMB. During this period, a meeting was also held after preparing the draft final report to present the findings and recommendations to the contractors of IEMP: Planning Research Corporation - Environmental Management, Inc. (PRC-EMI), the prime contractor of the project; Philippine Business for the Environment, Inc. (PBE), NGO in charge of the waste exchange program; International Resources Group, Ltd. (IRG), contractor for ENRAP III; and Environmental Primemovers of Asia, Inc. (EPAI), contractor of the Laboratory Support Study. This meeting was also attended by representatives of USAID and DENR/EMB, including representatives ot the Office of Environment Research.

In the course of the evaluation, we estimate that we contacted and met with over 130 persons, the vast majority of which are listed in Appendix D. A listing of documents reviewed is contained in Appendix C.

This evaluation, the scope of which is appended to this report as Appendix A, was specifically designed as a mid-project, process evaluation. As such, it focused on the examination of the workings of the project's institutions within the context of the original project design; as well as a review of the overall project objectives to determine its continued relevance and to present our views with respect to actions above and beyond current project design that are crucial to the attainment of the project goal. While it did attempt to examine the current impact of specific project interventions, it was not intended as an impact evaluation per se.

The evaluation team included specialists in industrial waste management, policy development and in project management as follows:

Mr. Raghu K. Raghavan was Team Leader and Industrial Waste Management Specialist, responsible for conducting the evaluation of Pollution Reduction Initiative (PRI) and Project Linkages of IEMP. He was responsible for coordinating the efforts of the evaluation team, as well as to ensure timely delivery of the evaluation reports. He has over twenty (20) years of experience in industrial manufacturing and environmental consulting. As a consultant, he has directed an integrated program for assisting clients in the government and industry in hazardous waste management facility planning and development. He has also completed several international assignments involving the assessment of environmental quality management projects in Asia, Africa and Eastern/Central Europe.

Mr. James W. Dawson, Assistant Team Leader and specialist in project management, was responsible for conducting the evaluation of the Capability Building component and addressed project sustainability issues. He also assisted the Team Leader in preparation of the evaluation report. Mr. Dawson retired from USAID in 1986 after twenty-two years of service devoted primarily to project planning and management in Asia and Africa. His last assignment with USAID was as the Chief of the Rural Development Division, ORAD, USAID/Philippines. Since his retirement, he has specialized in project evaluation and financial and administrative management. Prior evaluation assignments have included USAID projects in Yemen, Sri Lanka, Egypt, Philippines and the USAID/ASEAN program.

Dr. Ponciano S. Intal, Jr., Policy Economist of the evaluation team, was responsible for conducting the evaluation of Policy Studies component and drafting the policy/regulatory direction for the future. As every element in the proposed scope of work for mid-term evaluation of IEMP has policy implications, he was also responsible for commenting upon this aspect of the team's conclusions and recommendations. He has over twenty (20) years of experience in economic research and planning. His current position is the President of the Philippine Institute for Development Studies.

## III. EVALUATION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

### A. Industrial Environmental Management Framework and Strategy

1. Findings and Conclusions

**a. There remains a high degree of tension between industrial development and environment protection from the perspective of the private business sector and even of a significant segment of the government bureaucracy. The basic issues are related to the transactions and opportunity costs of implementing environmental standards and processing of requests for environmental compliance certificates (ECCs).**

Specifically, ambient and effluent/emission standards are deemed high by a large segment of the private business sector, given the capacity of Philippine industries. Significantly, a number of DENR's Regional Technical Directors for Environmental Management Services also consider a number of the ambient standards to be unrealistically high (see PS Nos. 2/10). More importantly, because they have difficulty meeting the emission/effluent standards, the standards have become a source of harassment of private business especially from local politicians.

The issue of high standards is also slowing down the implementation of at least one ODA-funded government investment project. Specifically, the Japanese Overseas Economic Cooperation Fund (OECF) is withholding the release of funds for the rehabilitation of the Tiwi and Mak-Ban power plants because the rehabilitated power plants will not meet the new more stringent air quality standards and hence would be under threat of closure by DENR because of violations of environmental standards. Given this, the current rehabilitation program is in principle not worth pursuing or the investment plan needs to be reviewed again.

The other source of conflict is with respect to the processing of requests for ECCs. There have been many instances of delays in the evaluation of EIAs especially for "environmentally critical projects". For a number of major public investment projects, the ECC had become a bottleneck so much so that a cabinet-level ECC committee for infrastructure projects had to be instituted to tackle issues like social acceptability and programmatic compliance. The private sector has also voiced dissatisfaction over the delays in the processing of requests for ECC for private sector investments. As the investment rate increases and the scale of private undertakings goes up in line with the process of agro-industrialization of the Philippines, it is likely that the ECC processing may become an investment bottleneck.

**b. Given the heightening global competition in trade and investments, an increasingly open Philippine economy would need to maximize opportunities for the positive symbiosis between strengthening environmental management and increased agro-industrial productivity.**

Competition in the global market can be expected to heighten as a result of the market-opening reforms in nearly every country arising from the Uruguay Round agreements under GATT/WTO. At the same time, the Philippine economy is reducing its tariff barriers further as part of the ASEAN Free Trade Association (AFTA). There is a danger that, in response to the increased competition both at home and abroad, Philippine industrial firms will take the environment further to the backseat in their concern for market survival.

Yet the potentials for improved symbiotic relationship between environmentalism and agro-industrial development are substantial. First, market survival is best obtained through improved productivity. In many Philippine industries, the key means of improved productivity is new investments with new machines and technology. New technologies tend to be more environment-friendly because they tend to use less resources per unit of output and are less pollutive. Thus, as the country's investment rate increases and the country's capital stock becomes newer, industrial pollution per unit of output may decline.

Second, there is a growing trend for the use of certification of ISO 9000 standards and other similar standards as a means of facilitating access to export markets. Certification of ISO 9000 by an accredited domestic certification body or agency makes product testing at the border in the export market unneccessary thereby reducing the transaction costs of exporting. ISO 9000 is essentially a Total Quality Management System. The International Standards Organization (ISO) is now developing ISO 14000 which is essentially an Environmental Management Standard. If this gets implemented internationally, the entry cost to the export markets would become higher for Philippine firms that are not undertaking waste minimization, pollution prevention and/or pollution control programs.

Third, the increased openness of the Philippine economy allows the country to hew its industrial production according to its evolving comparative advantages taking into consideration the costs of production and the cost of pollution abatement/prevention. Thus, it can import in the meantime products of relatively pollutive industries that the country cannot yet produce efficiently. And fourth, as the IEMP success stories indicate, the concern for waste minimization can reduce overall production costs and improve productivity of firms. Thus, the importance of popularization of waste minimization.

Nevertheless, while the pollution per capita may decline with newer machines, better industrial allocation of the country's scarce resources, and improved firm-level production processes, the absolute level of pollution may deteriorate still simply because of the heightened industrial production as the economy grows. This brings out the importance of improving the country's institutional capacity at industrial environmental management

**c. There are serious institutional constraints at DENR to effective industrial environmental management and regulation.**

DENR's budget allocation for brown issues is miniscule relative to green issues. As a result, in at least one region, the limited DENR staff cannot cope with the rising demand for ECCs. EMB is also seriously understaffed to effectively implement the EIA process for the more difficult and complex "environmentally critical projects" over which it has responsibility. In addition, monitoring of industrial pollution is currently determined largely by community (and NGO) complaints rather than being facilitative and strategic. Laboratory facilities outside Metro Manila are inadequate. DENR has to rely on project funded consultants to undertake policy analyses on brown issues for the Department because the Department's in-house policy analysis capability is focused on green issues.

Given limited funds (although this is augmented by ODA funds) and personnel working on industrial environment concerns, DENR's regulatory powers, especially its authority to issue CDOs, remains the most potent and commonly used measure of compelling industries to institute pollution control equipment and measures. As a result, DENR, especially EMB and the regional technical offices for environmental management, has a significant residual image as a regulator rather than a facilitator toward industrial pollution prevention and control.

**d. Cooperative and consensus-building mechanisms among concerned regional and local officials and the private and non-governmental sectors in industrial environmental management is starting to emerge outside of Metro Manila.**

For instance, Metro Cebu has a multi-sectoral Environment Quality Council that has started helping minimize conflicts in the implementation of environmental regulations in Cebu. Cebu Chamber of Commerce is also notable for having an EIA advisory service for its member firms.

**e. An innovative industrial environmental management framework and strategy is firming up, in part because of the growing pressures on the DENR to minimize conflicts between the drive for industrial development and the need for environmental protection.**

Strengthening industrial resource recovery, recycling and waste minimization is a part of the Philippine Strategy for Sustainable Development. The key features of the IEM policy framework and strategy toward achieving this goal include the following:

- Strengthened and streamlined Environmental Impact Statement (EIS) system

  - integration of ERA and PMA in EIS
  - programmatic compliance
  - propagation of PMAs in industry
  - streamlining procedures and clarifying planning and permitting roles within DENR

- Move towards MBI (market-based instruments) mode to complement CAC (command and control)

- Community-based/participative approach to monitoring (includes self-monitoring by firms and increased reliance on accredited private laboratories)

- Strengthen LGU/private sector capability in EIA, ERA and monitoring

- Expanded information dissemination to change producer and consumer behavior and/or perspectives.

**f. There is interest in, and support for, environmental and natural resource accounting in the Philippine government.**

The National Statistical and Coordinating Board (NSCB) Secretariat is interested in principle in institutionalizing environmental and natural resource accounting (ENRA), as a satellite account of the National Income Accounts.

NSCB will maximize opportunities ~~from~~ projects in developing its skills in ENRA and starting the data base for ENRA. These projects include an ADB project on environmental indicators, an ESCAP project on developing the implementation program for an Environment Satellite Account (ESA) of the PNSA and a probable UNDP project on a prototype ESA of the PNSA. The ENRAP under IEMP has also helped NSCB staff gain insights on ENRA.

The implementation strategy of NSCB Secretariat towards the creation of an ENRA will not flow directly from ENRAP. Rather, it will initially develop a basic environmental satellite account to the national income accounts. The basic ESA follows the methodology and framework of the UNSNA-ESA. Starting with the basic ESA is dictated by limited actual data and the need for the NSCB to have the skills and confidence in putting together an ESA. The framework under ENRAP of IEMP is essentially the extended ESA under the UNSNA. This will be undertaken by NSCB officially only as data availability warrants and methodological issues solved.

NSCB Secretariat has not presented to its policy making body, NSCB Board, the Secretariat's involvement in ENRA projects. As a result, there is yet no official government

policy on the institutionalization of ENRA. NSCB Secretariat plans to inform the Board of its involvement in ENRA activities soon as a preliminary step towards the eventual promulgation of an official policy toward the institutionalization of ENRA in the Philippines.

2. Recommendations

DENR/EMB should articulate and disseminate the IEM framework and strategy to their regional offices and the rest of the government bureaucracy as well as to the private business sector and communities, in order to get their support for the concepts and objectives of IEMP.

## B. Pollution Reduction Initiative

1. Findings and Conclusions

**a. In general, PRC-EMI has provided the level-of-effort as required by project design and DENR-approved workplans to conduct nearly 60 on-site PMAs over the last two years (June 1992 through May 1994).** As it is planned to conduct a total of 85 PMAs by the end of this year, it appears that this contractor will be able to meet the EOP goal of completing 150 PMAs by the end of September 1996. Profiles of the industrial facilities in the Philippines and the PMAs conducted in IEMP, by geographical region and industrial category, are given in Appendices E-1 and E-2.

These PMAs have been conducted in seven consecutive rounds, in each of which a priority region was selected to train industrial personnel in environmental management. The first round started in October 1992, with PMAs being conducted on a trial basis at four industrial firms located in Region IV of the Philippines. A new round of PMAs has then been conducted every quarter thereafter in which a new region was selected to target the industries, recruit industrial firms volunteering to participate in the PMAs, train key personnel of the recruited firms in PMA workshops and on-site, and thus commence the process of reducing pollution at these industrial sites. PMA Rounds #2 through #7 were conducted in Regions III, IV, VII, X and XI. A new round of PMAs was started during the current quarter in Region IX, while preparations are being made to conduct the final round of PMAs this year in Region VI. During our visit to 12 firms in five regions where on-site PMAs were conducted, technical personnel at all these firms were highly supportive of the PMA process for creating an increased awareness of pollution issues and for obtaining higher management support to pollution management activities.

**b. In an effort to promote PRI, IEMP has improvised the originally planned activities and provided more effort than originally required by project design.** In order to assist in the selection of regions, as well as to target the industries, IEMP developed and completed a macro ERA by November 1993 which has since then been one of the criteria being used to recruit firms for conducting on-site PMAs. Increased participation in the PMA

process by industrial firms with a high environmental risk (which can be identified by ERA) is expected to result in the maximum reduction of pollution and increase in social benefits. PRC-EMI is currently introducing the concept of micro ERA that can be used effectively within the existing EIS-System for issuing permits to newly proposed operations in Philippines. DENR has also endorsed voluntary participation of industries in the PMAs by issuing DAO 17 to give a one-year moratorium from enforcement of environmental regulatory standards to the participating firms. This order enabled DENR and industries to make voluntary agreements to participate in the PMA process. A Memorandum of Agreement (MOA) among the parties involved now requires the reporting of progress made in reducing pollution by industries to DENR. The project design also required the use of PMA workshops and on-site PMAs to disseminate knowledge about the economic benefits which can be achieved by the industries through pollution reduction. In addition to meeting with this requirement, PRC-EMI has substantially increased the circulation of IEC materials (newsletters and success stories) on the project. As additional promotion of the PRI, PRC-EMI also conducted this year a new type of PMA, known as Rapid PMAs, at two industrial sites in Cotobato, Region XI. Unlike previous PMAs in which industrial personnel were trained at their own sites, a group of industrial representatives of different firms in the same region participated in the Rapid PMAs at the selected sites. Another new version of the regular PMAs is also planned for the last quarter of this year when representatives of the same industrial category from different regions will participate in a PMA workshop.

**c. The PMAs which were reviewed have not consistently established a baseline of the current levels of pollution on-site. Nor have they quantitatively described the waste management efforts currently being undertaken at the location of participating firms. In the absence of these basic data, it is difficult to determine the impact of the project on pollution reduction or production costs.**

Several PMA reports which were reviewed indicated that the participating firms were unable to provide adequate data to characterize pollution at their industrial sites. It was also reported that the required information was not readily available in the files of Regional DENRs. While these reasons may reflect upon the current status of industrial environmental management in Philippines, it should be noted that the purpose of IEMP is to demonstrate that an improvement can be made in the industrial management of pollution by implementing the PMA process. The logical framework of the design of IEMP has suggested two indicators of the achievement of the project's purpose, which can be measured best at the firms participating in PMAs:

(1) 5 to 10 percent reduction in production costs, and

(2) 5 to 10 percent decrease in industrial pollution.

Therefore, the assessment phase of PMAs must be designed in a way to assure the availability of a data baseline to measure improvements in industrial pollution management.

**d. Due to the lack of baseline data, it has been difficult to focus on the most beneficial areas of pollution reduction while conducting most on-site PMAs.**

Out of the 12 PMAs that were reviewed (see Appendix E-3) during the evaluation, only four appear to have developed useful recommendations in the areas of greatest potential for reducing pollution and operating cost at the participating firms. In all these four PMAs, it appears that representatives of the participating firm were able to assist in focusing upon the areas of greatest benefit to their operations. Implementation of PMA recommendations at two of these firms resulted in success stories which were reported by IEMP, while the remaining two PMAs are expected to be developed as success stories in the near future. The areas focused upon by these PMAs were:

- Reduction of fiber loss at a pulp and paper mill
- Reduction of coconut juice loss at a dessicated coconut facility
- Reduction of painting sludge generated at vehicle assembly facility
- Reduction of feed wastage at a piggery

It is pertinent to note that focus areas will not be clearly visible in most PMAs without having baseline data on pollution. By assuring that focus areas are identified, it would have been possible to achieve additional pollution reduction and cost savings in other PMAs which were evaluated. By having baseline data, it may have also been possible to make better low cost recommendations even at the successful firms.

**e. Due to the lack of baseline data, it has also been difficult to estimate the total potential for reducing pollution, and for achieving financial benefits, by implementing PMA recommendations. As a result, a prioritized list of activities could not be developed to support PRI at the participating firms.**

Although numerous recommendations were made in the PMAs, an estimate of the benefit and cost of implementing them is often not provided in the PMA reports. In the absence of this information, it is difficult for the participating firms to assess the value of implementing PMA recommendations. It is also difficult for them to determine whether they must look for new ideas for pollution reduction or new technologies for pollution control on-site. Only four out of 12 firms reported that they have actually developed and implemented new ideas for pollution reduction at their source. In all these cases, it appears that some baseline data was developed after PMA was conducted.

**f. PRC-EMI has been making efforts to improve upon the collection of baseline data for use in current and future PMAs.**

On discussing the need for data collection prior to conducting PMAs, we were advised by PRC-EMI that this had been an area of prior concern and that new PMA guidelines are under preparation to address this in future. A new worksheet has also been developed to enable the participating firms to report baseline data. This worksheet also

requires information on the current waste minimization efforts at the facility. PRC-EMI treats the data baseline worksheet as confidential information, and has made an effort to obtain completed worksheets from participating firms prior to the PMA workshop. During the past, it was found that small to medium industries targeted by IEMP did not understand the importance of baseline data on pollution monitoring and control. As a result, PMAs were often conducted without having access to baseline data. However, an improvement in data collection was reported to have been achieved in the more recent PMAs that were conducted during the current quarter (Round #8 and #9). As these PMA reports were still under preparation, it was difficult for the evalation team to determine if the additional data was collected on time and in adequate detail to have a favorable impact on the quality of PMA recommendations in these rounds.

**g. Preliminary findings of past PMA survey and assessments (S&As) indicated that the participating firms are actively considering the low cost PMA recommendations for implementation.**

The IEMP reported in August 1994 that 496 low cost options had been recommended in 33 on-site PMAs that were conducted from March 1993 through March 1994 (see Appendix E-4), or an average of approximately 15 low cost recommendations per PMA. The same report also claimed that 338 of these recommendations had been implemented by the participating firms, or an average of approximately ten low cost recommendations per PMA. The overall rate of implementation was 68 percent. This is higher than the rate of 50 percent which was expected for "adoption of pollution prevention and reduction methods" in the project design. However, these are preliminary findings and need to be verified to confirm that these options actually resulted in an improvement of pollution management and that they were permanently implemented. Out of the PMAs conducted in Round #s 2 through 7, eight were reviewed in detail. The IEMP report had claimed that 83 out of 104 low cost options had been implemented. On examination, 37 of the implemented recommendations were found to represent pollution prevention or reduction at source (see Appendix E-5). Six options resulted in reclamation of industrial wastes. None of the options could be considered to involve pollution abatement technologies. Out of 43 implemented recommendations which qualified, 18 could have directly resulted in pollution reduction. As noted before, it is necessary to confirm that the pollution reduction achieved by implementing these PMA recommendations was permanent.

**h. Preliminary findings of the PMA survey and assessments (S&As) indicated that firms participating in PMA are not actively considering the implementation of high cost PMA recommendation.**

IEMP reported in August 1994 that 151 high cost options had been recommended in 33 on-site PMAs which were conducted from March 1993 through March 1994 (see Appendix E-4), or an average of approximately five high cost recommendations per PMA. Out of these recommendations, only 11 were reportedly implemented. This rate of implementation (seven percent) is significantly lower than the rate of implementation (50

percent) given in the project design. Based on our review of eight PMAs conducted during this period, only six out of 33 high cost options had been actually implemented. On examination, three of these options were found to represent pollution prevention or reduction at source (see Appendix E-5), while two options resulted in reclamation of waste, and one option could be considered to involve pollution abatement technologies. All the qualified options resulted in pollution reduction. Although a permanent reduction of pollution was achieved by implementing these PMA recommendations, it is necessary to quantify the pollution reduction that was actually achieved. Out of the 27 high cost recommendations which were not completed, 12 were pending due to incomplete feasibility analysis, and the remaining were not practical or were not expected to directly result in pollution reduction.

**i. Large companies are designing and investing in their own high cost options for pollution control.**

In addition to the PMA recommendations that have been implemented, six out of the 12 firms which were visited were found to have invested in fairly large projects for pollution management at their facilities. All these investments were motivated by the threat of CDOs and other regulatory enforcement. Although some high cost PMA recommendations were provided to address these pollution concerns, they did not provide adequate feasibility analysis to enable further consideration by the firms concerned. Delays in submitting PMA reports has also affected timely implementation of high cost recommendations by the participating firms. Three of the pollution control investments were in biological treatment of conventional pollutants. The fourth investment was in recovery of valuable raw materials while reducing suspended solids in the effluent from the plant. The fifth investment was in controlling the temperature of wastewater discharged by the plant. The sixth investment produced a by-product during wastewater treatment which has the potential to be reclaimed. In the absence of a baseline on pollution and operating costs, there is no mechanism available in IEMP to evaluate the cost-effectiveness of these technologies.

**j. Some of the participating firms do not appear to have made any significant effort to reduce pollution after the on-site PMAs.**

Out of the 12 firms which were visited, some were found not to have made any significant effort to reduce pollution after the on-site PMAs. One of these firms is small and appears to need additional technical assistance in implementing PMA recommendations or other ideas to reduce pollution. The S&A reports do not identify this need effectively. Other firms under threat of CDO do not appear to have achieved any significant reduction in pollution despite implementation of several low cost PMA recommendations. In some of these cases, the low cost recommendations do not address the main pollution concern. In other cases, the PMA recommendations do not address pollution directly. Our review of on-site PMAs also indicates that there is no mechanism available at present during S&A to facilitate IEMP working closely with the participating firms to implement PMA recommendation or develop new ideas where the original PMA failed to reduce pollution adequately.

**k. PRC-EMI is revising and updating the procedure being used for monitoring the performance of on-site PMAs.**

Due to the lack of baseline data on pollution, it has been difficult to monitor the actual progress being made by the participating firms towards pollution reduction during the S&A phase of the PMA process. While an effort is being made to improve this situation, the matrix which is being used for monitoring the performance of PMAs is also being redesigned to enable a more complete record on the status of PMA options, cost incurred to implement the options and annual gross savings achieved by pollution reduction. According to a revised version of this matrix which was prepared in September 1994, the annual gross savings achieved by implementing PMA recommendations from March 1993 through March 1994 is reported to be approximately Pesos 36,000,000, or $ 1.4 million. By accurately recording the polllution reduction and decrease in operating costs, this matrix can become an effective management tool in promoting the PRI. The questionnaire used during S&A is an important counterpart of the performance monitoring matrix and must be completed in adequate detail by trained personnel to achieve the best results. It is pertinent to note that the S&As probably represent the most critical activity for promoting PRI among the participating firms.

**l. The participation of Regional DENR staff in conducting on-site PMAs has been very limited. This has prevented an early institutionalization of PMAs.**

During the review of on-site PMAs, RTD and/or senior staff of EQD of DENR in five regions were contacted to determine their acceptance of PMAs. It was found that PMAs are looked upon by personnel in Regional DENRs to be mainly an activity of DENR HQ and IEMP. At the same time, these personnel were found to be very knowledgeable about the PMA process. They were also able to provide monitoring data on pollution and waste management at the firms participating in the PMAs. However, it was found that Regional DENR staff do not routinely receive the reports of S&A PMAs conducted by IEMP. It appears that IEMP has not fully used the capability of regional DENRs in conducting periodic assessment of the results of PMAs and provide independent verification of the S&As. The Regional DENRs can also assist in disseminating information on the benefits of PMAs to LGUs and NGOs.

**m. LGUs and NGOs in the regions do not appear to fully appreciate the role of PMAs as a management tool to complement CDOs for pollution management.**

During the review of on-site PMAs, representatives of LGUs and NGOs showing interest in IEMP were found only in some of the regions which were visited. However, these personnel were not found to be fully aware of the role of PMAs in improving the management of industrial pollution. Besides these meetings, the current role of LGUs and NGOs in industrial polllution management was discussed with representatives of regional DENRs. It was found that these groups are largely in favor of regulatory enforcement in cases of industrial pollution in the regions. It was also found that very few, if any, LGUs in

the region are being mailed IEMP publications. Out of 61 NGOs who are being routinely mailed these publications, 42 NGOs are located in NCR.

**n. There is inadequate evidence that the private sector is seeking the business opportunity of conducting PMAs.**

Based on the review of on-site PMAs, the participation of individual firms in on-site PMAs has been predominantly due to the threat of CDOs. While the moratorium from CDOs given under DAO 17 has been a useful driving force to motivate industries to reduce pollution, other firms were expected to volunteer for on-site PMAs after being contacted through industry seminars, trade presentations and IEMP publications. According to the project design, the ERA/NRIPS ranking was then going to be used to select the firms to participate in on-site PMAs. However, less than ten firms appear to have directly requested IEMP to participate in PMAs during 1994. In the absence of a substantial number of volunteers, firms appear to have been recruited to participate in PMAs in 1994 mainly as the result of trade seminars for prospective volunteers, with additional presentations to individual firms, which were conducted in the regions of interest. The most recent trade presentation was made to the Philippines Sugar Millers Assocaiation (PSMA) in Region VI, which resulted in 18 members showing interest in PMAs. However, it appears that this industry has been under adverse review as a polluter by DENR and local communities. At this time, the list of firms to participate in the PMA workshop next month has not yet been finalized by IEMP.

**o. The project design of IEMP requires internal performance monitoring and impact assessment which have not yet been implemented.**

PRC-EMI have not fully complied with the provisions of their contract scope of work that require annual internal project assessments during the month of July. The project design of IEMP requires internal performance monitoring that has not been fully implemented by PRC-EMI. The scope of work of the technical assistance contractor, PRC-EMI requires the project's implementation team to undertake annual internal assessments (Section F, Sub-Section 1-E). The first assessment was to be undertaken in July 1993, and annually in each succeeding year during the month of July. PRC-EMI reports that the assessment was done in July 1993, and resulted in a revised annual workplan that was reviewed and approved by the Project Steering Committee on July 16, 1993, and subsequently submitted to USAID under the Wadsworth/Queblatin letters of July 19 and 21, 1993. PRC-EMI states that no similar assessment was undertaken in 1994. In the interim, PRC-EMI prepared a study containing a conceptual model for undertaking future assessments. This document was subsequently reviewed by USAID and returned to PRC-EMI with suggested revisions, including a request to simplify the assessment process. We were advised that PRC has not yet resubmitted the revised document for review and approval.

We have reviewed the contractor's initial report of November 1993 and found that it contains useful concepts that will be extremely helpful at the time of end-of-project impact assessment. In addition, it proposes a framework and types of indicators to measure project impact at the purpose level, such as propensity for change, infusion of capital, and acquisition of technology. We feel that this approach towards project assessment is valid and appropriate for the purpose intended. We also feel that quarterly performance monitoring reports on at least the PRI component (based on suitable indicators of pollution reduction, cost savings and technology transfer) will be valuable "reality checks" of the annual contract workplans of IEMP.

**p. At the present time, there is a general lack of required analytical laboratory facilities in the Philippines to adequately support an expanded pollution control program. This is particularly true outside of the Metro Manila area. In our opinion, the ultimate success in reducing pollution is directly related to the ability to accurately measure the changes in types and levels of pollution. The recent study on laboratory equipment requirements does not provide sufficient information and data regarding existing commercial sector capabilities (or future demand for services) for us to make an informed decision with regard to the proposed private sector development strategy.**

In an effort to institutionalize the PRI, by encouraging the industries to develop and expand baseline data on the current levels of pollution, IEMP is planning to assist the regulatory, academic and commercial sectors in forming a sustainable Inter-Regional Network of Environmental Laboratories (IRENE) in the Philippines.

IEMP recently funded a study to assess the current requirements of monitoring and analytical equipment for obtaining improved baseline data on the environmental quality of air and water at the existing laboratories of DENR in the regions and selected laboratories in the private sector. This assessment was also used in the study to propose a sustainable plan for developing the IRENE which will include a cluster of small, medium and large-scale laboratories distributed over the regions.

The study was conducted by Environmental Primemover of Asia, Inc. (EPAI), a consulting/engineering firm located in the Philippines. EPAI has submitted a report on the study to DENR/EMB for review. The study found that the total estimated cost of laboratory equipment required is approximately equal to Pesos 26 million or $ 1 million. The study also proposed a network of regional environmental laboratories (REL) which included 15 laboratories of regional DENR and 11 private laboratories. The study also identified other policy-related and procedural requirements for institutionalizing the REL program.

We have reviewed the study report, which was submitted during the evaluation period. Although the study has compiled valuable information on the supply-side of developing a REL program in the Philippines, we believe the final success of the program, including the potential for achieving the program's objectives, can be determined only by

conducting additional market studies to look at the demand-side and future competition to IRENE in the private sector. In addition, the demand for a REL program depends on the actions which will be taken by DENR and other regulatory agencies in the Philippines on the enforcement of existing regulations and in actually implementing new regulations/standards (such as R.A. 6969 and ISO 14000). It is also essential to coordinate the REL program with other activities of PRI, in particular the conduct of on-site PMAs to determine the regional needs of strengthening the capability of analytical laboratories for developing the required baseline data.

2. Recommendation

a. IEMP should undertake a study in 1994 to determine the feasibility of establishing a data baseline of the level of pollution and waste management methods on-site by using complete data worksheets which were obtained during PMA Rounds #8 and #10. An attempt should also be made in this study to determine the feasibility of including production or pollution management costs in this data baseline.

b. An action plan should be developed in 1994 to obtain suitable data worksheets completed by the firms which participated in earlier rounds of PMA. Alternatively, other indicators should be used to measure the improvements in pollution management being made in these PMAs. These indicators must also be assessed to verify the achievement of the project's objectives.

c. New guidelines should be developed in 1994 for obtaining baseline data from the participating firms in new PMAs. It is suggested that these guidelines be made ready for use in the first round of PMAs in 1995. It is also suggested that only trained personnel are used to obtain baseline data from participating firms and analyze it, as necessary, to provide consultants with the required information at least two weeks prior to conducting on-site PMA.

d. New PMA guidelines should be developed in 1994 to assist consultants using this information to focus on selected areas of pollution management, as well as to develop prioritized lists of PMA recommendations.

e. The existing procedures for S&As should be modified in 1994 to assure that complete and verifiable information is obtained on the progress being made at the participating firms by implementing PMA recommendations and additional waste management methods initiated by the firm. S&As also should be designed to enable identification of the opportunities for IEMP working more closely with the participating firms to resolve technical or management problems in implementing PMA recommendations or other ideas for polllution management.

f. PRC-EMI should simplify the proposed performance monitoring and impact assessment plan as requested and submit it for USAID review and approval prior to the submission of the annual workplan for 1995. The workplan should also provide for the initiation of the annual assessment in July, 1995 and specify the indicators to be utilized in the assessment.

g. In order to improve upon the value of S&As, as well as to increase the involvement of Regional DENR staff, it is recommended that assistance of Regional DENR is taken for periodic evaluation of the performance of PMAs. It will also be necessary to assure that Regional DENR receive copies of the S&A reports for follow-up.

h. In order to increase the participation of LGUs, NGOs and industries in PRI, as well as to highlight upon the role of DENR in the PMA process, it is recommended that IEMP, design and implement one or more special projects in which a comprehensive environmental and natural resources management program based on ERAs and PMAs is conducted in high priority areas of Philippines, such as a coastal zone with high potential for industrial growth. In these projects, the PMA process can be applied simultaneously to benefit a wide range of economic sectors and the results used as a planning and pollution management tool in regional development. These projects will also enable final institutionalization of the PMA process by involving the local community and leaders of the industry and government.

i. Given the existing limitations in laboratory facilities in all sub-sectors (regulatory, academic, and commercial), care should be taken to ensure that any new approach to assist the overall sector does not result in the duplication of services. We would recommend that any further studies look into the feasibility of a three-tiered approach that divides the development of laboratories into three echelons of service. Under such approach, analytical services to support pollution reduction will be developed as follows:

(1) Basic laboratory analysis (for air and water as described in laboratory study report) would be undertaken by the DENR in regions with industrial activities/development.

(2) Ensure that the maximum required capability for laboratory analysis (e.g. atomic absorption spectrophotometer) is made available at one or two regional DENRs.

(3) Provide for ultimate growth of laboratory services in the academic and/or commercial sectors, based upon market demand.

IEMP should proceed with the implementation of its plan to support the REL program by taking a step-by-step approach which will take into consideration the impact of the program on pollution reduction.

## C. Policy Studies and Public/Private Dialogues

1. Findings and Conclusions

**a. The policy studies component is well designed and addressed critical issues of policy and administration of industrial environmental management in the Philippines. The studies contribute directly to three pillars of the emerging industrial environment management framework and strategy discussed in the previous section; i.e., strengthening and streamlining the EIS system; move towards MBI mode to complement CAC interventions, and increased reliance on LGUs and NGOs in environmental monitoring and management.**

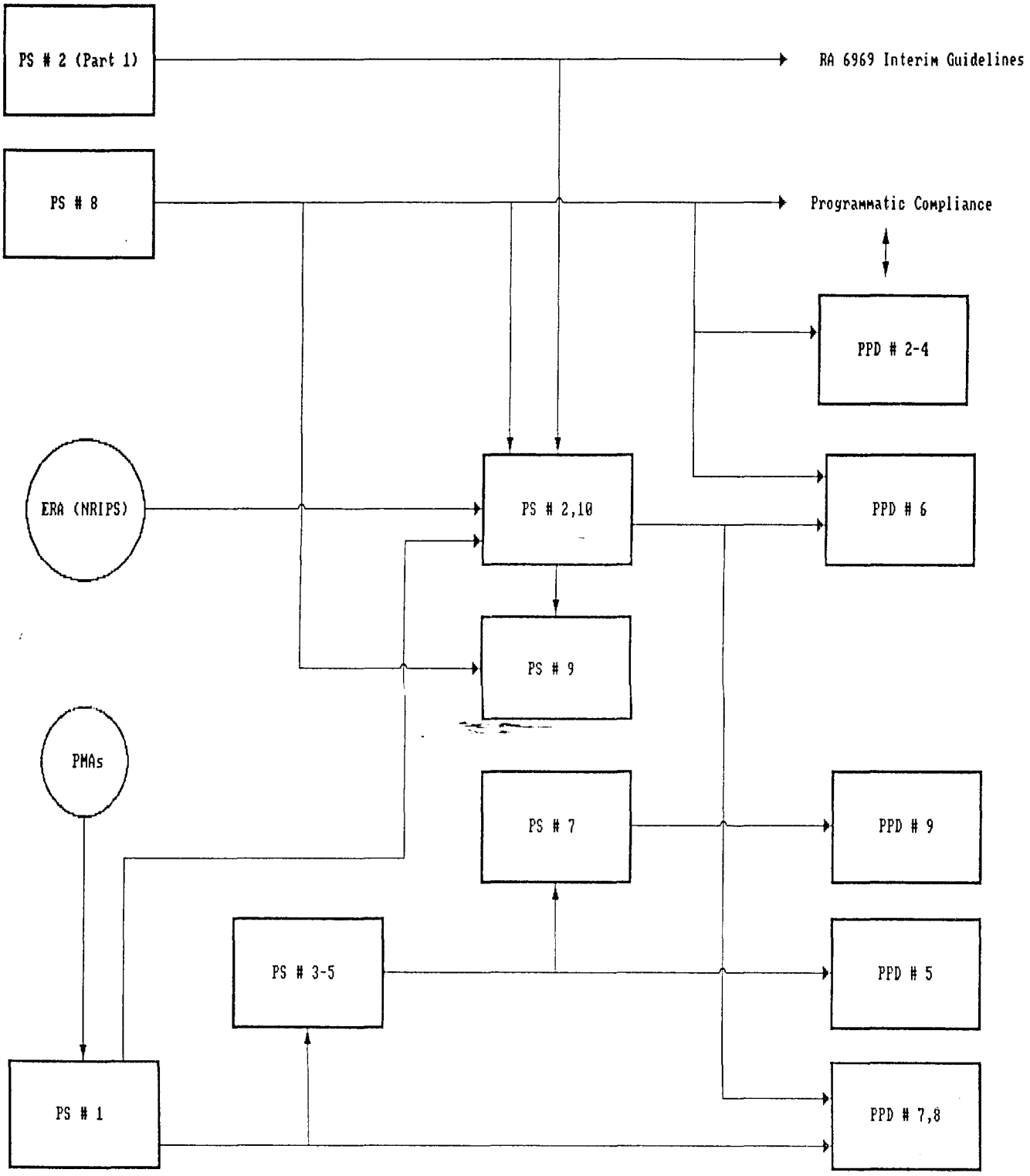
Specifically, policy studies focus on:

- the analysis and improvement of the administration of the EIS system (PS No. 8) and pollution management programs (PS Nos. 2 and 10; PS No. 2, Part I);
- evaluation of financing resources and options for environmental investments and financial responsibilities (PS No. 1; PS Nos. 2 and 10, Appendices C, D and E);
- identification of, and analysis of barriers to, market-based incentives for pollution reduction (PS Nos. 3-5); determination of the appropriate mix of CAC and MBI interventions (PS No. 7); and
- strengthening industrial environmental management at the local level (PS No. 9).

The studies are interrelated such that the findings of some of the earlier studies feed into or are amplified in the later studies. Moreover, because the policy studies include plans of actions for DENR/EMB, most of the studies are the bases for the public/private dialogues subcomponent. As programmed, the public/private dialogues revolve around the improvements in the EIS system, especially the programmatic compliance EIA (PPD Nos. 1-4; 6), financing for environmental projects (PPD Nos. 7 and 8) and market-based incentives vis-a-vis CAC (PPD Nos. 5 and 9). Figure 1 indicates the interrelationships among the policy studies and public/private dialogues.

Apart from the conduct of policy studies and public/private dialogues, the provision of policy advice and support to DENR/EMB where needed and appropriate was added in the work programs of the policy group.

# FIGURE 1. Interrelationships Among Policy Studies (PS) and Public/Private Dialogues (PPD)




Note : PS = Policy Study
PPD = Public/Priva

PRI (Pollution Reduction Initiative) Component

**b. The IEMP project paper calls for the completion of about 10 policy studies. While the project component experienced some delays, about 80 percent of the studies have been completed and accepted by USAID and/or EMB or under review by PRC-EMI. One study is in process. An additional study was included in the Special Activity sub-component of IEMP. Phase I is completed and accepted; Phase II is in process.**

In the implementation of the policy studies component, the list of 10 policy studies in the original project design changed with the merging of a number of the studies; also one study was changed into a public/private dialogue. As a result the modified list of policy studies consists of six studies (please see Appendix F).

There has been some delay in implementing the policy studies component. Given the sequential nature of the policy studies, the delay in the completion of Policy Study Nos. 3-5, for example, led to the delay in the start up of Policy Study No. 7. It appears that a major cause for the delay in the completion of the policy studies is the difficulty of generating written comments on the drafts from concerned government personnel on time.

**c. The quality of the completed policy studies ranges from satisfactory to excellent if the studies are evaluated in terms of their respective work plans.**

The following are the most salient comments on the completed policy studies. (Appendix F presents the more detailed notes on the work plans, study results, and major observations for each completed policy study.)

- Policy Study (PS) No. 8, on the integration of PMAs and ERA in the Environmental Impact Statement (EIS) system, is arguably the best and most significant among the IEMP policy studies. Apart from the Final Report, the study produced the draft publication Philippines EIS System Guide: Policies and Procedures and a consultant's report on programmatic compliance.

The Final Report cogently argues for a redesign of the current EIS system by returning its essentially planning role and ultimately unburdening it of regulatory permitting function. Further, it recommends integrating ERA and PMA as critical elements of the EIS process, and highlighting participative and regular monitoring, as well as the devolution of EIA reviews from EMB to the regions. The consultant's report on programmatic compliance, which is a deviation from the original work plan, is in response to an urgent request of DENR. The consultant's services and report have been useful to DENR in helping clarify and articulate DENR's policy idea of programmatic EIA and in helping formulate the draft DENR Administrative Order (DAO) on programmatic compliance.

- Policy Study Nos. 3-5, a merger of three policy studies in the initial IEMP project work plan, is focused on market-based incentives (MBI). This study has the largest budget among the policy studies, an indication that it was meant to be a central activity of the IEMP Policy Studies Component. Considering the budget and expectations on the study, the delivered Final Report is the least satisfactory of the policy studies. Nevertheless, the study is a good start at ranking market-based instruments for selected industries in the country. Thus, it can be the starting point for more in-depth and quantitative analysis of MBIs for the Philippines funded by other donor-funded projects (e.g., MEIP, UNDP country program).

The analysis of MBIs in the study is hampered by lack of quantification inasmuch as the ranking of the MBIs is based on averages of ordinal weights according to specified criteria. Thus, it is not possible to determine the impact of alternative values of alternative forms of MBIs on the various industries, consumers, and the whole economy.

An important component of the work plan for Policy Study Nos. 3-5 is the comparative analysis of the application of MBIs in other countries. The Final Report barely touches on this although the briefing report on the preliminary draft elaborates on this point considerably more. The preliminary draft can be attached to the Final Report as an Annex in order for the latter to be more informative.

One of the deliverables of the study is the Pollution Reduction Economics/Savings Handbook drawing from Philippine and U.S. cases. This activity was replaced by the Pollution Management Guidebooks. The study started this activity but it has been shifted to the Special Activities component of the IEMP.

Although the Final Report does not meet the targets indicated in the study work plan, the Report and a companion document, Synopsis on MBIs, are good and well written introductions to market-based incentives for the non-specialists, policy makers, and the general public.

- Policy Study No. 1, on financing environmental investments, include two very good, well-written and very useful companion documents apart from the Final Report. These are the (1) Handbook on Financing Environmental Investments and (2) Financial Evaluation of Waste Minimization Projects: A Quick Reference Guide.

The final report is well written and discusses clearly the sources of financing and the barriers to environmental investments. However, the report's estimates of investment and financing requirements are crude; they need refinements taking into consideration the results of the USAID-funded project Environmental and Natural Resources Accounting

Project (ENRAP) Phase II. Moreover, the report lacks the comparative perspective drawing from other countries. The comparative perspective could have strengthened the final report.

- Policy Study No. 9 (Phase I) is on case studies in decentralized environmental management. It describes the current institutional structure in environmental management from the EMB down to the DENR field offices in the regions, provinces and municipalities and finally to the local government units. It also presents two industrial pollution cases in Metro Cebu and Cagayan de Oro City which highlight the inadequacy of the DENR regional offices to proactively monitor and react expeditiously in industrial pollution cases. Perhaps more importantly, the two cases bring out the role of media in pushing the government and concerned private sector to act as well as the importance of multisectoral groups (e.g. Cebu's Environmental Quality Council) in helping resolve the cases.

Three key recommendations suggest themselves from the case studies; i.e., the need to realign resources within DENR to strengthen its industrial environmental management capabilities, the importance of strengthening the capabilities of the LGUs in monitoring and enforcing industrial pollution reduction intitiatives, and the recognition of the significant supportive role that multisectoral organizations can play in working out cooperative and acceptable solutions to industrial pollution problems.

Two case studies, while suggestive and persuasive, cannot make for a compelling basis for policy and program changes. Thus, either more cases are done or situate the two cases mentioned above within the context of an analytical framework (e.g. political economy of regulation) in order that robust policy recommendations are made. Considering the importance of local governance issues in environmental management, it is apparent that further policy studies work is needed beyond what is in Policy Study No. 9 (Phase I).

Policy Study No. 9 does not address so far the basic issues in national-local relationship in industrial environmental management; namely, what are the appropriate division of roles of the national agencies, local government units and private institutions that would encourage and/or implement industrial pollution reduction initiative in firms. What is the extent of bottlenecks the agencies, LGUs and the private sector organizations face in their pursuit of improving the country's industrial environmental management? How can cooperation and communication among the various concerned government bodies and private sector organizations be improved? These questions are similar to the questions in the IEMP project paper. They remain valid and unanswered.

- Policy Study Nos. 2 and 10 and Policy Study No. 2, Part I concerns gaps in current regulatory structure for pollution management. Policy Study No. 2, Part I has a much more specific coverage on standards for characterization and registration of hazardous wastes, and was undertaken in response to an urgent request of DENR. This activity has provided DENR, particularly EMB, clearer

standards for classifying hazardous wastes under R.A. 6969 and has helped EMB develop the forms and instructions needed to gather information given the new mandate to DENR on toxic and harzardous wastes management.

Policy Study Nos. 2 and 10 is comprehensive and detailed in the analysis of gaps and weaknesses, primarily from a legal-administrative perspective, in the air, water and wastes management programs. The analysis of fines and penalties is careful, thorough and is underpinned by the U.S. experience. The significant missing part of the analysis of fines and penalties is an evaluation of the appropriateness of the level of fines and penalties originally set in 1976 by law.

With respect to the analysis of financial innovations for financial responsibility, the discussion on the available commercial mechanisms is informative. The analysis on environment fund assessment and options is very preliminary and arbitrary, however, because of lack of data and choice criteria.

The study presents a comprehensive and detailed action plan for the near term, mid term and long term. However, the internal consistency of the recommendations contained in the action plan will need to be evaluated vis-a-vis those of the policy studies, especially on the market-based incentives. This is likely a key concern of the forthcoming policy study, Policy Study No. 7 on Integration of Regulation/Enforcement (CAC) Activities and Voluntary Industry (MBI) Efforts.

A policy study under the Special Activity component of IEMP is the analysis of the importation, processing, and disposal of recyclable materials containing hazardous substances which are recycled in the Philippines. The first phase of the study is finished; namely, the formulation of the interim guidelines on the hazardous wastes. The formulation of the interim guidelines was an urgent request of the DENR in response to the blockage in February 1994 by Greenpeace of shipments for recycling in the Philippines. The guidelines have been approved by the President of the Philippines.

The second phase of the study includes an analysis of the regulatory programs of the recycling industry in the country and the development of national recycling program. The work program has already been approved; the study is targeted to be completed by the end of the year.

**d. The technical and policy studies in ENRAP Phase III complement the studies undertaken under the Policy Studies component of IEMP.**

The analysis of CAC meassures vis-a-vis MBIs will improve on the results of Policy Study Nos. 3-5; it can also be an input to Policy Study No. 7. The simulations on the impact of trade policies, government expenditures and selective sectoral interventions will help provide macroeconomic perspective to IEMP. The ENRA estimates for 1988 and 1992 can be used to refine the results of Policy Study No. 1. The regional ENRA estimates can

be useful to Policy Study No. 9 Phase II if ever this gets implemented. All the ENRAP Phase III estimates and policy studies are useful in the conduct of IEMP's remaining public/private dialogues and research dissemination efforts.

**e. Even at this early stage, the policy studies component of IEMP has already significantly influenced the direction and articulation of the country's industrial environmental management framework and strategy. As the success stories in the Pollution Reduction Initiative of IEMP and the suggested redesign of the EIS system are better understood and known to all concerned, it is likely that the impact of IEMP will even be greater.**

One reason for the early success of IEMP's policy studies is that they are strategic and address critical issues of industrial environmental management in the country. Another reason is the flexibility in the implementation of the policy studies component that made it responsive to the policy concerns of DENR/EMB. Finally, the high collaborative manner in which the studies were carried out contributed greatly in the refinement of the analysis and in the action plans presented.

**f. One of the tasks of the Mid-term Evaluation Team in its evaluation of the Policy Component is to determine whether the policy studies "...clearly [identify] the costs/benefits and compensatory options for a particular policy reform to the industry and government sectors, as well as affected communities." The policy studies barely looked into this issue except for Policy Study Nos. 3-5 on market-based incentives which included equity as one of the criteria used in ranking MBIs by industry. This issue was barely tackled in the policy studies because it was not explicitly included in the terms of reference or the approved work plans of the policy studies.**

2. Recommendations

a. Complete Policy Study No. 7 (but modified to incorporate ENRAP Phase II results), Policy Study No. 9 Phase II and the Special Activity on the Recyclable Materials Phase II.

b. Strengthen public advocacy and dissemination on the policy, institutional and administrative reforms outlined in the policy studies, especially P.S. No. 8 on the EIS system.

c. DENR must start building up its in-house policy analysis capability on brown issues. Create facility for a program of policy support and capability building for policy analysis on brown issues for DENR. More analysis and advocacy on the specifics of the redesign of the EIS system is needed.

d. To complement the creation recently of the steering committee on IEMP within DENR headed by USEC for Environment and Research, upgrade and expand the current IEMP project steering committee into a high-level interagency and multisectoral steering committee headed by DENR USEC for Environment and Research. The interagency and multisectoral IEMP steering committee will help DENR in strengthening the institutional mechanism for advocacy and coordination on IEM within the bureaucracy and with the private sector. The following agencies and institutions are worth considering as members of the steering committee; namely, DTI, NEDA, DOST, PCCI, PCAPI, League of Provincial Governors and one or two NGO representatives.

e. Strengthen linkages between ENRAP Phase III and the Policy Studies Component of IEMP. The policy studies and simulations in ENRAP Phase III will deepen the country's emerging industrial environmental management framework and strategy by bringing out the macroeconomic perspective to IEM.

f. Coordinate with other donor-funded projects (especially MEIP and UNDP country programme) which have projects on MBIs in order that the insights from those studies can be integrated into the public advocacy and policy support activities of the IEMP.

g. In order to strengthen the PMA process, it is important to bring in the social benefits of pollution reduction through pollution prevention and the private benefit to the firms of improved community relations. Institutionalizing this in the PMA requires the estimation of the upstream, downstream and coastal interactions within a given ecosystem. Considering that much of Philippine industrial activities is along the coasts, it is better to undertake eco-profiling and examine inter-linkages in a coastal industrial zone. Two or three eco-profiles (including ERA) of coastal zones, e.g., Cebu, General Santos-Sarangani, and Batangas or Lingayen Gulf are recommended. Incorporation of the results of the ecoprofiling exercises in the PMA trainings will contribute to better community, firms and government appreciation of the PMA process.

## D. Capability Building

1. Findings and Conclusions

a. **In general, PRC-EMI is carrying out the project's capability building component in accordance with the original project design and contract scope of work.** As of August 1, 1994, half-way through the life of the contract, PRC-EMI had achieved approximately 45 percent of their training target of 1,660 persons. Of the approximately 800 persons trained, 70 percent were from the public sector, 23 percent from private industry and 7 percent from the NGO/LGU community. When viewed geographically, approximately 75 percent of the training has been for participants from outside Metro Manila, while approximately 25 percent were from the Metro Manila/National Capital Region area. A

detailed breakdown of the training provided to date is included by organization, location, and training program in Appendices G-1 and G-2.

We also find that the training framework being utilized by PRC-EMI is in general conformance with DENR's IEMP policies and programs, and that the PRC-EMI staff is doing an exceedingly fine job in coordinating and communicating with the DENR and other donor-assisted project staff. While this was not the case initially, several of the organizations we met with during the evaluation cited the marked improvement in this area brought about by the change in the PRC-EMI chief-of-party approximately one year ago.

b. **Other contract deliverables, such as training manuals and instructional materials, appear to be on schedule.** Also, the content of the training materials are being constantly reviewed and revised as needed to develop materials that are relevant in the Philippine context. Two of six training packages (PMA and ERA) have been finalized. Three of the remaining four manuals (CMW, CAW and DSSAW) are nearing finalization and should be completed and in use by the end of CY 1994. The remaining training manual for EIA training is still in draft and under review by the local consultants. These materials need to be finalized before the next EIA workshop, which is not scheduled until sometime in 1995.

c. **The Project Paper and subsequent project documents do not provide a clear training strategy or rationale. As a result, it is extremely difficult to determine if the right persons are being trained; and who and how many more require training.** This is particularly true with respect to the types and numbers of government personnel who require training before the end of the project. At the present time, it appears that the "supply side" factors have more impact on the direction of the training programs, than demand factors. In several cases, this has resulted in situations where the training program does not appear to be following any clear rationale or established criteria. Examples of the problem include:

(1) A situation where one person from a non-priority region has attended four separate training programs, while only one person from a priority region has received EIA training;

(2) Another situation where 19 training programs have been provided for EQD staff from a non-priority region, while only ten training programs have been provided to the EQD from a priority region.

Lacking clear training criteria, it is difficult for us to validate whether the correct number of persons are being trained in any specific program area. For example, why is it necessary to train 700 persons in EIA methodology? Why not 500, or 900? There needs to be some underlying rationale for the type and numbers of persons being trained.

d. **While the project's overall training target is being achieved, training for private industry and other private sector participants is running significantly behind that of the training being provided to the public sector.** For example, there has only been one workshop to date for private sector participants in compliance auditing and a second training session originally planned for the second quarter of 1994 was rescheduled to the 4th quarter to accommodate an ERA seminar for government staff. As a result, the compliance auditing program has only trained 22 percent of the 300 private sector participants targeted for training.

Another example would be the training being provided to both the public and private sector in environmental impact assessment (EIA). To date, this program has only trained 30 percent of the planned participants and no additional programs are planned for CY 1994. Also, of the 118 persons trained in EIA programs, 75 percent were from the government sector.

e. **We also note that the project continues its training in Environmental Risk Assessment (ERA) even though the original training target of 60 persons has already been attained.** This training is exclusively for public sector participants and its continuation has been explained as the result of the development of a new micro-ERA concept that was not included in the original project design or contract scope of work. Our concern is that there does not appear to be any clear plan for the application of this training once it has been attained. The 1994 PRC-EMI workplan indicated that the training for micro-level ERAs would not be undertaken until such time as there was a clear framework for its utilization. We were assured that such a framework had been developed, but our subsequent review of the evidence presented in this regard indicated that the framework was neither clear nor was it being utilized. In view of the above situation, we question the wisdom of continuing ERA training; particularly if it competes with EIA ~~training~~ in terms of resources. We also conclude that there is a high risk that the project will not achieve its private sector capability building goals unless specific actions are taken in the near future to correct the existing public sector training bias.

f. **In one instance, training is being provided on the use of equipment that is not currently available to the trainees under their normal working conditions.** In our discussion with a sample of the participants from the Data Collection Sampling and Sample Analysis Workshop, we were advised that a significant amount of time was spent in this workshop on training for the use of collection and monitoring equipment that is not available to the regional monitoring staff. Specific examples included training in air quality and aquatic monitoring for which there is virtually no monitoring equipment in the field; and in certain areas of water testing where the training provided was for the use of more sophisticated equipment than is available in the field. We question whether this practice should be continued.

g. **We noted that the 1994 PRC-EMI workplan for Capability Building included a number of non-training objectives such as (1) the reduction in workshop costs, (2) strengthening training skills at DENR/EMB, and (3) improving the sustainability of training workshops. Due to the lack of specific plans to achieve these objectives, we found it difficult to assess the progress being made in these areas.** However, in discussing progress on these objectives with the project staff, it is our opinion that there is a lack of priority being assigned to these objectives.

h. **Given the limitations noted above, we still feel that on balance the project's training component has been effective in targeting the bulk of their training programs on the right targets, particularly in the public sector.** The data presented in Appendix G-2 clearly indicate the high degree to which the training has been focused on the DENR's regional EQDs; i.e. the regional organization that bears the burden of DENR's enforcement of environmental standards and regulations. A good beginning has been made in this area, but as noted in Section c. above, there is a need for more detailed training criteria and the establishment of priorities to ensure that all staff that requires training receives it before the end of the project. In developing this criteria, the DENR should also define its policies and priorities for training for PENRO/CENRO staff and LGU staff.

i. **If there has been a weakness in the area of program focus, it has been in the development of an effective approach to generate the degree of NGO involvement that the project design implies.** There does not appear to be any clear strategy on either the part of DENR or IEMP on how to bring about greater NGO involvement, nor have the NGOs been particularly responsive to the training that has been provided to date. Our inquiries have indicated that when NGOs have participated in project training activities, there has been a high degree of drop outs after the first day when the programs start becoming more technical. Also, we question to some degree whether the project has staff with the necessary skills and/or perspectives to effectively develop a workable NGO strategy. We feel that it may be necessary to go out into the NGO community and locate someone with these skills and bring them in as a short-term consultant to develop a better strategy than now exists.

j. **There does not appear to be high degree of linkage between the project's capability building activities and those of other donor-assisted programs and/or the DENR's own training activities.** The primary reason for this is the basic lack of other training activities within the "brown" environmental sector. The IBRD-assisted project for Metro Manila has a small training component related to its own PMA activities and the GTZ-assisted program in Cebu has a small training component related to electroplating. The only other relevant DENR training program relates to EIA training. We see the potential for the project's own EIA training activity to develop closer links with the DENR's EIA program in the future. This issue will be discussed in more depth in the following section on Sustainability.

k. **The receptivity of the IEMP's training programs by the public sector has been quite high, as indicated earlier by discussions on the program's public sector bias.** While specific examples were lacking, the 20 plus participants that we were able to interview during our visits with regional DENR staff indicated that the training received was relevant and being routinely applied on the job. The only noticeable exception in this regard was equipment issue regarding the DCSSA Workshop previously discussed. Time and scheduling restrictions did not permit us to evaluate the relevance of the Compliance Auditing Workshop for the private sector participants, but discussions with 12 PMA training participants indicated that there was a high degree of understanding and appreciation for the concept of waste minimization that was the focal point of the PMA training.

At the present time, the IEMP post-training evaluations are highly qualitative and do not employ pre-testing and post-testing for those programs where knowledge and skills are being imparted. We feel that a more quantitative evaluation approach should be employed in such instances.

l. **We were not able to identify the need for additional types of training programs at this time, but do feel that there is a need for IEMP to explore ways in which it can do a better job of engaging the NGO sector in a meaningful dialogue and partnership with respect to the project objectives.** Such an exploration may result in the need for a specialized training program that is much less technical in nature than the current programs. Such a program might also be useful as an introductory approach with the various LGUs who now have various environmental responsibilities under the new Local Government Code. Those LGUs with whom we met were quick to acknowledge these new responsibilities, but were equally quick in indicating their need for additional training. We feel that PRC-EMI has the capability to provide this training if needed, providing that (1) they have some outside, local assistance in the design of a new program, and (2) PRC-EMI begins the process of transferring responsibility for other programs as discussed in the following section on "Sustainability".

m. **PRC-EMI has only recently undertaken action to expand the base of trainers and PMA consultants to address what they view as an expanding demand for these services.** The 1994 contract workplan (pages 58-59) proposed a new special project to undertake a two-week training program to increase the number of Filipino sub-contractors qualified to provide on-site PMA services. As a non-core activity, this program was not undertaken as initially proposed, but has been recast as a part of a broader capacity-building effort within the IEMP project. This effort consists of a series of smaller, discreet activities that are in various stages of implementation. They include:

(1) A two-day training program being undertaken by the sub-contractors to qualify more consultants to undertake PMA assessments. This training is currently in process. All training participants are also required to participate as an observer in at least one PMA survey and assessment before being allowed to participate as a paid consultant.

Participants are also required to pay all of their own costs to participate as observers to a PMA on-site survey and assessment.

(2) PRC-EMI is proposing two short special training of trainer programs in December. Both are focused on the improvement of training and presentational skills and will be led by PRC-EMI training specialists from the U.S. One session will be focused on project-related staff; e.g. PRC-EMI staff, their subcontract consultants, DENR (EMB and HRD) staff, etc. The other session will be with outside organizations who routinely provide training in pollution management; e.g. PCAPI, etc.

(3) PRC-EMI is also in the process of formulating a special training program for DENR regional staff on the PMA process as a first step in attempting to elicit greater participation of the RTD and the regional EQM staff into the PMA process.

2. Recommendations

a. DENR/EMB and PRC-EMI need to develop a detailed training strategy, selection criteria and priorities for training the remaining public sector employees requiring training under IEMP. The criteria should specify the organizations for which training is required and the types of training needed for each position within the organization.

b. Once the training strategy, criteria and priorities have been established, PRC-EMI should undertake a review and assessment to determine which government staff still require training and in what subject areas.

c. On the completion of the training review and assessment, the project and contract training requirements should be adjusted accordingly. This may involve both upward and downward adjustments, depending on the result of the training assessment.

d. Initiate action to accelerate planned training for the private sector, particularly for the Compliance Audit Workshop.

e. Increase the number of EIA workshops in both 1995 and 1996 in order to complete the planned level of training in EIAs before the end of the project.

f. Delay the scheduling of any additional micro ERA training until a clear framework is developed for its utilization and subsequently approved by USAID. Since this training was not anticipated under the original project design, USAID will need to determine if additional financial resources are required and availabe. It is also recommended that PRC-EMI examine the possibility for combining ERA training with the EIA training.

g. PRC-EMI should conduct an assessment of the pollution monitoring equipment available for use by the regional EQD staffs to determine the types and levels of equipment

needed to bring that level up to what is being used for instructional purposes in the DCSSA Workshop. PRC-EMI should initiate procurement of those items subsequently approved by USAID.

h. The annual PRC-EMI workplan should include specific actions to be undertaken to achieve the non-training objectives for Capability Building.

i. PRC-EMI should consider engaging a short-term, local consultant to assist them in developing a strategy for accelerating the inclusion of NGOs in IEMP training programs and/or developing new training programs that are more relevant to NGO needs/concerns.

j. PRC-EMI should involve DENR/HRD training groups in the design, planning, organization and evaluation of EIA, ERA and CM workshops.

## E. Sustainability Concerns

1. Findings and Conclusions

a. **The project as designed contains no explicit strategy or mechanism for continuing project initiated activities beyond the life of the existing project.** Such traditional sustainability measures as requiring a certain level of host-country financing of recurrent costs or commitment of additional permanent staff were not made a part of the project design. Given this situation, it would be naive to assume that there will be high degree of growth or replication of project initiated programs beyond the current PACD.

b. **In the three-year period since the project was designed, there has been virtually no increase in the GOP's capacity to sustain project activities with their own resources.** DENR resources devoted to the "brown" sector of the environment remain at less than 3 percent of the total DENR budget; and in real terms, there has been virtually no increase in budgetary or personnel resources. In the three-year period between 1991 and 1993, the current operating budget for EMB remained basically flat and averaged only Pesos 21 million (see Appendix H-1). The 1994 budget increased by Peso 4 million to Pesos 25,749,000, but most of this increase was for personnel benefits for existing staff and for rental costs. Most significant, however, was an 8 percent reduction in EMB's MOE budget in the four-year period between 1991 and 1994. It is this portion of the budget that provides for non-personnel costs, such as travel and purchase of supplies and materials.

For comparison purpose, it is interesting to note that the annual operating budget for IEMP is approximately 300 percent larger than the annual operating budget of the EMB. It should also be noted that the EMB receives an assortment of assistance from other donors. However, this assistance is usually very project specific and is generally not provided in a manner that strengthens EMB's institutional capability to sustain project activities after donor support is terminated. Like USAID, the other donor support is generally in the form of non-

recurrent cost items; and often the other donors and USAID find themselves competing for the same scarce GOP budget resources to deal with recurrent cost needs. Given this situation, we are not overly optimistic in our expectations for the EMB to be able to continue to support the recurrent costs of continuing IEMP project activities after the current PACD, unless the DENR allocates more funds to brown issues.

c. **The GOP capacity to expand its environmental monitoring in the field is also quite limited at the present time.** The current regional EQD staff who are responsible for the vast majority of monitoring duties is low. The average number per region is between six and eight persons, and further growth is constrained by the lack of budget and the current government-wide ban on automatically filling vacant positions. The EQD staff's monitoring capability is also extremely limited by low MOE budgets that range between Pesos 100,000 and 200,000 annually. Since many regions are required to monitor as many as 1,000 firms annually, the current levels of MOE budget allow an average of Pesos 150 per monitoring action. This amount must cover the travel expenses of the inspector, plus support of the laboratory costs involved in each inspection.

d. **In assessing the need for continuing current program activities, we see a continuing need for a GOP capacity to train its own staff on environmental compliance and monitoring standards and regulations.** While we have not found the level of private industry voluntarism as high as initially anticipated, we have found the need for industry compliance to existing standards to avoid closure to be very high. Also, the higher standards being required under ISO 9000 and ISO 14000 will keep compliance issues high on the "brown" agenda for the forseeable future. It appears to us that an appropriate GOP strategy under these conditions would be a "carrot and stick" approach; with the "carrot" being the relief afforded to industry under DAO 17, and the "stick" being an increased GOP capacity in monitoring environmental compliance. The implications of this strategy on the need for sustaining current project activities are the development of a post-project capacity to (1) maintain and expand the professional competence of DENR field staff to properly apply regulations and standards, and (2) provide training to private industry on the PMA process and for training in auditing.

e. **We have reviewed possible options for implementing a sustainability strategy that will achieve the two objectives noted above and find that options are limited due to (1) the lack of necessary institutional capacity at EMB, and (2) the lack of resources and time to develop these capacities elsewhere before the end of the project.** Given these constraints, we have concluded that the following approaches provide the greatest hope for success:

(1) Initiate a process that will gradually transfer the responsibility for training for in-house compliance monitoring programs from IEMP to the Human Resource Development Division (HRD) of DENR. Specifically, this would include current capability training programs on Compliance Monitoring; Data Collection, Sampling and Sample Analysis; Environmental Impact Assessment; and Environmental Risk Analysis. This

organization currently conducts up to 30 separate training programs annually at one of the four regional training centers that it maintains at local universities, including its own training program on EIAs. If this approach were adopted, we would see it as altering PRC-EMI's capability building focus from that of an implementer of training to one that would focus on transferring PRC-EMI's skills and training materials to DENR/HRD's instructional staff. To effectively implement this strategy, PRC-EMI would need to (1) place priority on HRD staff development/familiarization in CY 1995 and (2) transfer responsibility for IEMP training to HRD in 1996, while maintaining a monitoring role in the process.

(2) Initiate a process to transfer responsibility for industry-based training (PMAs and Compliance Auditing) from IEMP to an NGO or trade association such as the Philippine Business for the Environment, Inc. (PBE) or the Pollution Control Association of the Philippines, Inc. (PCAPI), who would perform the role of a training coordinator. In this capacity, they would (1) maintain contacts with industry to determine their training requirements, (2) work with the IEMP trained local consultants to develop a training schedule and select an appropriate training venue, and (3) be responsible for the administration of the actual training activities. Under this scenario, the actual training would be undertaken by local consultants and the direct training costs would be borne by industry.

In the course of our discussions with PBE regarding sustainability issues, they acknowledged that their organization has a role to provide training to the private sector and volunteered in principle to assume responsibility for this function. They did, however, caveat their agreement on this matter by indicating that they would need the cooperation of and training by PRC-EMI to be able to assume this responsibility by the IEMP PACD. They also indicated that they would need some level of funding support, presumably from USAID, to cover the indirect costs for administering the training programs until such time as these costs could be fully phased over to the private sector. A phaseover time table, similar to that proposed for DENR/HRD, should be utilized to effect a smooth transition of responsibility from PRC-EMI to the new training coordinator.

f. **An important element in sustaining training for private industry will be the costs of training and the PMA on-site asessments.** Frankly, we are concerned about the current cost of PMA on-site assessments. While a portion of this cost will be eliminated with the phase-out of PRC-EMI, we find that the most significant cost factor of the PMA on-site assessment is the amount of time provided for the local contractor to prepare reports after the completion of the actual on-site assessment. As currently budgeted, 62 percent of the total cost of the on-site assessment is for report preparation, and the budget provides 5.66 days for report preparation for each day alloted to the on-site assessment. We feel that the amount of time allocated for report preparation is excessive and needs to be reduced if we are to expect the private sector to assume responsibility for the funding of their own on-site assessments in the future.

g. **The project has been reasonably successful in creating an awareness of the project and its objectives.** The term "IEMP" appears to be well understood within the

"environmental community" and is generally associated with the concept of waste minimization. In general, there is a higher degree of understanding regarding project objectives within the public sector than there is with the private sector. In several instances, firms that participated in the on-site Pollution Management Appraisal process appeared to have expectations that the project would also provide direct assistance in the technical design of recommended solutions. In these instances, corrective actions were being held in abeyance on the expectation that further technical assistance would be forthcoming under the project.

**h. The DENR, as represented by the EMB, appears on the surface to have minimal involvement in day-to-day project operations; these functions being vested primarily in the prime contractor (PRC-EMI).** However, there does appear to be a high level of communication and coordination between the EMB and the contractor. DENR coordination of the project is accomplished through a project steering committee that appears to meet on an infrequent basis. A review of USAID files indicates that there has been one meeting of the steering committee in 1994.

**i. There is an increasing level of information being disseminated on project activities; including project success stories, training information and manuals, and policy papers.** PRC-EMI has only recently developed a comprehensive system for the effective distribution of project-developed documents and training materials. The system provides detailed guidance on the routine distribution of all informational materials developed by IEMP. The key components of the system, which is explained in detail in Appendix H-2, consists of a master document recipient list maintained by the data processing unit and a document specific distribution list maintained by the program component manager. Our review of the system indicates that it is a good first effort, but will be effective only to the degree that it receives close monitoring by PRC-EMI management to assure that the system is up-dated on a routine basis.

**j. Project efforts to develop working relationships with industry, NGOs, etc. does not appear to approach the levels anticipated in the original project design.** However, there are recent examples of where the contractor is accelerating its efforts in this direction. Failure to move more quickly in this area may be attributed to (1) early contractor efforts to focus on the major planned contract outputs, and (2) early contract managerial problems that resulted in a change in the contract chief-of-party in 1993.

**k. The lack of credit was not found to be a major constraint to the adoption of improved technology.** Our finding is supported by a similar finding in Policy Study No. 1 that concluded that there were sufficient funds available from existing credit facilities and retained earnings to finance needed environmental investments. However, there was an identified need for tehnical assistance for industrial firms in (1) evaluating and designing improved technological changes recommended by the PMA process, and (2) the preparation of the necessary financial analysis to assist in both the evaluation of the alternative technologies and in preparing a sound and complete application for credit, if credit is needed.

Assistance in the evaluation and design effort can most likely be provided by the new Pollution Prevention Technology Resource Center (PPTRC) being established by PBE with the assistance of IDRC and ADB. Their assistance will provide six chemical engineers for a two-year period to assist private sector address their need for outside technical assistance. Hoever, this activity does not address the need for technical assistance in financial analysis. One possible low-cost approach to address this problem would be for USAID to consider support for up to two local financial analysts at the PPTRC to augment the technical assistance being provided by other donors.

2. Recommendations

a. That responsibility for post-project IEMP training for government staff be transferred from PRC-EMI to DENR/HRD, utilizing the existing DENR regional training facilities located at universities in the three major regions of the Philippines. Arrangements for the transfer should include a one-year period in which HRD and relevant university faculty are trained by PRC-EMI to assume this responsibility; and a period of approximately nine months where HRD will have primary training responsibility, but be assisted by PRC-EMI during the process.

b. That responsibility for post-project IEMP training for the private sector be assumed by a private industry organization like PCAPI or an NGO such as PBE. This transfer of responsibility should follow a similar phaseover period as described in a. (above) for the DENR/HRD; i.e. one-year of familiarization and training for the organization selected and a nine-month period where they would be assisted by PRC-EMI. Direct training costs are to be borne by the participating industries, but there will be a need for several years of bridge-funding to assist the new training organization with indirect training costs.

c. That PRC-EMI be requested to review on-site PMA costs to attempt to identify alternative approaches that will lower the costs of report preparation. This review should include, inter alia, the development of a set of standardized recommendations by industry group that can be applied uniformly when there is a commonality of problems within a specific industry group. A report on the findings should be presented to USAID by June 30, 1995.

d. IEMP should limit its provision of technical assistance to PMA on-site participants to that related directly to the PMA process. When additional TA is required by the participant to evaluate or design recommended options, PRC-EMI should limit its assistance to facilitating the location of an outside local consultant to perform these duties. One possible source in the future would be the new Pollution Prevention Technology Resource Center (PPTRC) being established at PBE with ADB and IDRC assistance.

e. That USAID consider funding up to two local financial analysts at the above PPTRC to assist in the development of bankable proposals that are both technically and financially sound.

f. PRC-EMI should move forward in its implementation of the new systems for document distribution, making necessary revisions if problem areas are subsequently identified.

## F. Project Linkages

1. Findings and Conclusions

**a. As the coordinator of GOP's urban and industrial environmental management projects, DENR can contribute towards the institutionalization of project activities initiated by IEMP.**

DENR has recently formed a group comprising of DENR staff and selected NGOs, known as the Urban and Industrial Environmental Management Coordinating Council (UIEMCC) which met first in June 1994. This group includes staff of DENR and NGOs, and the first meeting was also attended by managers/coordinators of the projects that are being funded by donor-agencies. Besides IEMP, the different projects/programs which are being coordinated include: Metropolitan Environmental Improvement Program (MEIP), funded by the World Bank; ASEAN Environmental Improvement Program (ASEAN-EIP), funded by the USAID; Industrial Pollution Control Cebu (IPCC), funded by the GTZ, a German agency for international development assistance; Industrial Restructuring Program (Environmental Management Program), funded by World Bank; and other UNDP funded projects, such as Integrated Environmental Management for Sustained Development and the Marine Pollution Prevention and Management Program. Other projects addressing industrial environment are also being funded by GOP.

During their first meeting, DENR has compared the major components and activities in the different projects to assure that they complement each other. The UIEMCC has noted that the following project activities exist in more than one project being conducted in the Philippines: (1) development of market-based instruments/economic incentives; (2) encouraging private sector investment in environmental projects; (3) policy review and development; (4) capability building; (5) integration of environmental considerations in decision-making; (6) air quality management; (7) water quality management; (8) developing environmental profiles by industrial sector; (9) management of toxic and hazardous waste; (10) data bases and information management systems; (11) EIA/ERA; (12) compliance monitoring and enforcement; (13) setting environmental standards; (14) solid waste management; (15) IEC-information, education and communication materials; (16) financing mechanisms for reducing industrial pollution; (17) technology transfer; (18) establishment of

treatment plant/facilities; (19) development/promotion of clean technology; and (20) waste minimization, recovery and exchange.

As a wide range of IEM activities are being conducted in different projects, it seems that DENR is in an excellent position to optimize the benefits from these projects by improving upon their coordination efforts. Moreover, it appears that DENR will continue to be actively involved in environmental studies with the continued impact in the future made by internationally promulgated IEM regulations and standards.

Therefore, DENR will be able to assure that key elements of IEMP are incorporated in future projects as well as through regulatory enforcement in the Philippines.

**b. IEMP has already started benefitting by making linkages with the other DENR projects on industrial environmental management.**

These project linkages appear to have been made in two ways: (1) by sharing technical information or by conducting activities jointly; and (2) by funding other project activities in IEMP. For example, IEMP and ASEAN-EIP will be jointly conducting a PMA workshop for the cement industry later this year; USAEP and IEMP have also worked together to make technical expertise available for the latter project; and DENR has reportedly coordinated the SOW of contracts in IEMP and MEIP for developing regional plans to manage toxic and hazardous waste. Besides funding DENR projects on hazardous waste management plan and waste exchange, IEMP has funded additional work on DENR's Environmental and Natural Resources Management Project (ENRAP III) and the development of a Programmatic Compliance EIA Policy. It appears that the new projects funded by IEMP will help towards creating the regulatory and planning framework to assist in industrial environmental management.

**c. Additional opportunities exist for IEMP to make project linkages within DENR and GOP.**

MEIP is conducting its own PMAs for selected industrial sectors in Metro Manila. It is expected that this project will generate valuable technical information on waste minimization and clean technology after completing these PMAs and a final workshop to discuss the findings of PMA with industrial representatives.

IPCC is in the second phase of their project for technology transfer to the electroplating and metal finishing industry in the City of Cebu. At present, low-waste technology has been demonstrated at a model factory. An Environmental Quality Council is also functional in Metro Cebu to institutionalize IEMP practices in the city. A central treatment facility is also being developed under this project.

USAID's Environmental Pollution Prevention Project (EP3) is developing a clearinghouse on waste minimization which can be valuable for IEMP to provide technology transfer.

UNDP country program is funding preparation of environmental profiles in Batangas Bay. Under the same program, GOP has developed an action plan to demonstrate compliance with the 1996 global ban on ocean disposal of industrial waste in the Philippines.

2. Recommendations

a. IEMP should investigate the opportunities available to make new project linkages in order to increase the application of PMAs and broaden the impact of the PRI. As in the past, these linkages will require modifying the original scope of work for the project and involve additional funding by USAID.

## G. Directions for the Future

1. Premises:

**a. Mapping out the directions for the post-IEMP future is guided by the following premises:**

- **Marrying environmentalism and agro-industrial development remains a formidable challenge for the Philippines;**
- **Policy reform necessitates institutional change in order to be sustainable;**
- **The post-IEMP project can be a demonstration project and a facilitator for policy reform;**
- **Maximum benefits derive from maximizing synergy between the post-IEMP project and the other projects of USAID, other foreign donors and GOP.**

**b. Much remains to be done before the policy reforms outlined in IEMP become the operative framework and mechanism for the country's industrial environmental management.**

More than ever, harmonizing the twin needs of environmental protection and agro-industrial development becomes more difficult because of increased global competition and the greater openness of the Philippine economy. Yet the government's institutional capability

to deal with brown issues is seriously deficient. The government budget for brown issues is negligible and the manpower resources severely limited. Although the budget is currently augmented with official development assistance, the GOP cannot rely on official development assistance for long. In addition, ODA usually does not finance the hiring of regular government personnel although ODA can be tapped to finance retraining of DENR personnel in blue issues to allow a reshuffling of personnel from forestry toward industrial environment management.

The redesigned EIS system in accordance to the recommendations of Policy Study No. 8 will take a lot of training, community organizing, information dissemination, and public advocacy before it gets institutionalized. Similarly, more analyses and consultations would need to be undertaken before MBIs will get institutionalized also.

**c. The post-IEMP project will have much more impact if it is both a demonstration project at the same time that it supports the policy reform process. In addition, the post-IEMP project needs to maximize its linkages and complementarities with other donor-funded projects and those of GOP, if any.**

The experience of IEMP shows that the demonstration components of the project (PMAs/ERA) can feed into the policy reform process. In addition, the IEMP experience indicates that direct policy studies and policy support activities can be strategic and can help shape the reform agenda.

The post-IEMP project can also take the IEMP tack. Much remains to be done on the policy front on brown issues. Similarly, further refinements of PMAs and ERAs as well as situating industrial environmental management within the context of a given ecosystem/ecozone are possible areas for futher demonstration to the private sector in order to influence their perspective.

Finally, in view of limited ODA funds, maximizing complementarities with other ODA-funded projects is warranted. Among the ODA-funded projects, the following on-going or possible future projects are worth mentioning: USAID's SUSTAIN will focus on coastal resources, the on-going MEIP focuses on Metro Manila and the new UNDP country programme has a significant amount alloted for environment-related projects.

2. Recommendations

a. In view of the considerations mentioned above, we recommend that the post-IEMP project will continue focusing on industrial environmental issues, but broadened to bring in the coastal resource dimensions. At the same time, the post-IEMP project will continue to support the institutionalization of the IEMP perspective and the strengthening of the institutional capability in industrial environmental management in the government, business sector, NGOs, and the communities.

One alternative option of simply replicating IEMP has the merit of propagating further the culture of waste minimization and pollution prevention and the use of PMAs especially in the private sector. However, this approach does not ensure further refinement of ERA and PMAs without situating the industrial pollution reduction program within a given ecozone, primarily coastal.

The other alternative option is to subsume industrial environment within a coastal resources framework. This alternative has merit in strengthening the PMA and ERA process and in providing fresher and possibly doubly compelling perspective to industrial environmental management. The downside of this option is that it will neglect non-coastal industrial projects; hence, the popularization of waste minimization and pollution prevention in the country is unnecessarily constrained.

The third option, the one we recommend, accommodates the concerns of the two alternative options. Specifically, the proposed post-IEMP project has the following components:

- Policy Support and Advocacy Component
- Institutionalization and Capability Building Component
- Coastal IEM Component
- Pollution Reduction Initiative Component

The similarities of the project components above with those of IEMP are intended. In effect, the post-IEMP project is essentially an expanded and institutionalization-focused IEMP. The post-IEMP project may be called IEMP Phase II.

b. Coastal IEM. The expansion and deepening of IEMP to include IEM in Coastal Zone is warranted because the Philippines is a coastal country. The country's major urban and industrial areas are along the coasts. At the same time, the country relies heavily on the coastal resources for its fish requirements. In addition, the country's tourism potentials are strongly linked to coastal areas. Indeed, the major potential losers from pollution and soil erosion are fisheries and tourism, as the results of ENRAP Phase II show.

Incorporating IEM in a coastal resources framewok will further allow for further refinements of PMAs and ERAs because they can bring out better the externality costs of industrial pollution during the PMA and ERA trainings and public advocacy on IEM. This component also allows for the greater use of PMA/ERA as an information and negotiating device among the concerned government regulatory officials, private sector and the affected communities in or near the pilot coastal areas.

In order to maximize complementarities with other projects, the post-IEMP project may consider Metro Cebu, General Santos-Sarangani area, and possibly Batangas (Balayan) Bay or Lingayen Gulf as the pilot IEM coastal pilot areas. Metro Cebu has a growing environmentally conscious chamber of commerce and industry; it is also a major industrial,

shipping, and tourism center. The GTZ-funded IPCC will complement the post-IEMP project in Metro Cebu. General Santos-Sarangani area relies on agro-based and fishery-based industries; at the same time, Sarangani bay is a spawning ground for tuna. The area has already an ecoprofile and the activities under the Mindanao Growth Plan may complement the post-IEMP project. Batangas (Balayan) Bay is an emerging industrial area; similarly with Lingayen Gulf if the industrial plans in Pangasinan push through. Both Batangas and Lingayen Gulf are study areas on coastal management by projects funded by UNDP and USAID.

c. Policy Support and Advocacy Component. Much remains to be done before the redesigned EIS system becomes operative. Similarly, with respect to the use of MBIs. Perhaps most importantly, much remains to be done to put brown issues high up in the agenda and focus of the national government and the bureaucracy. Along the approach utilized by ASAP and IEMP, public advocacy from the private sector and the NGO community may be able to influence further the government in this area. This calls for an expanded program of information dissemination and educational campaign.

d. Institutionalization and Capability Building Component. The main objective is to initially support the creation of self-sustaining and competent environment impact assessment (EIA) advisory service units in selected chambers of commerce and industry in the Philippines. This follows the example of the EIA unit of Metro Cebu Chamber of Commerce which was initially funded by the Industrial Pollution Control in Cebu (IPCC) project.

e. Pollution Reduction Initiative. This is similar to the IEMP and shall be implemented outside the pilot coastal areas under the Coastal IEM component. Further innovations in the conduct of PMAs can be instituted; e.g., PRI rounds by industry rather than by region; joint "ownership" of PRI rounds by DENR/EMB, LGUs and local chambers of commerce and industry; partial cost-sharing of participating firms.

f. Considering the linkages and interrelationships of interventions in industrial environmental management, coastal resources management and upland resources management, it is useful to create a very high level interagency and multisectoral coordinating or oversight committee, headed by the Secretary of Environment and Natural Resources, that will provide the strategic directions on policy, institutionalization and technical support interventions of all the ODA/USAID projects concerned with brown, blue and green issues.

# APPENDIX A

# EVALUATION SCOPE OF WORK

# EVALUATION SCOPE OF WORK

## Background

The Industrial Environmental Management Project (IEMP) was agreed upon by the USAID and the Government of the Philippines on September 30, 1991.

As originally designed, IEMP is a $20 million grant financed project. This five year project (September 30, 1991 to September 30, 1996) was designed to support the industrial sector which can serve as an effective engine of economic growth and can contribute to the Government of the Philippines (GOP) goal of dispersing economic growth to areas outside Metro Manila, while maintaining a conscious effort to protect and preserve the environment. A contract was awarded to the PRC Environmental Management, Inc. on July 9, 1992, to provide direct technical assistance services to accomplish the necessary outputs to meet prject's objectives. In addition, a grant was awarded to the Philippine Business for Environment on December 16, 1992, for the conduct of two Corporate Environmental Policy workshops, under the Policy Studies/Dialogue Component of the project. The unearmarked funds of the project shall be allocated to various other activities to further support the attainment of the project objectives.

The IEMP goal is to encourage sustained economic growth in the industrial sector, with corresponding improvements in health status. The project purpose is to improve industrial management of pollution through a three part strategy that: prevents or reduces pollution at its sources; reclaims industrial wastes when such reclamation is technically and financially feasible; and encourages cost-effective pollution abatement technologies, for pollutants that are neither avoided nor reclaimed.

The project was designed to focus on areas outside of Metro Manila. The project's approach is to work with the Government of the Philippines (GOP), non-governmental organizations (NGOs), and individual firms and industry groups, such as industry associations; on a voluntary basis, to identify industry-wide and firm specific problem areas and solutions. Because there are strong economic incentives to individual firms in the form of increased revenues as a result of improving or upgrading their technologies, it is expected that firms will voluntarily participate in project activities.

The project has four major elements namely: Pollution Reduction Initiatives; Policy Studies and Dialogues; Capability Building and Evaluation Monitoring.

**Objective**

The overall purpose of this mid-term evaluation is to assist the USAID Office of Natural Resources, Agriculture and Decentralization (ONRAD) in 1) assessing the project's overall goals and objectives; 2) evaluating the performance of all components of IEMP to date; and, 3) generating recommendations for future directions of the project, over the remaining two and a half years

**Scope**

The evaluation effort will cover the period since the date of the approval of the Project Paper, September 30, 1991, until the present time. In terms of technical scope, the evaluation will include all components of the project, including aspects related to the management strategies and sustainability. The evaluation will also include the relationship of the project with the Environmental Management Bureau (EMB), the Department of Environment and Natural Resources (DENR), as well as local industry associations, NGOs, and other related entities relative to the impact and sustainability of IEM's objectives.

**Tasks**

**Project Component Review and Analyses**

1. **Project Goal, Objectives and EOPS**

   a. Review the objectives and EOPS indicators of IEMP from the perspective of how critical these objectives are to achieving the overall goal of the project. How relevant are these objectives and indicators to the Philippines' current indusrial environmental development situation? Which objectives and EOPS, if any, should be changed, reduced and/or increased?

   b. Are these objectives consistent with the DENR's policy thrusts relative to industrial environmental management? The team is also required to assess the DENR leadership role and support to the project.

   c. How is IEMP related to other major industrial environmental projects planned or currently implemented by the DENR (e.g., MEIP)? Is there congruence between environmental management thrusts?

2. **Policy Component**

   a. Are the policy studies: a) targeting the critical policy constraints and producing the necessary policy decision information for the relevant interest

groups to conduct effective advocacy campaigns; b) clearly identifying the costs/benefits and compensatory options for a particular policy reform to the industry and government sectors, as well as affected communities; c) presenting analytical results in a format/context that is appropriate for use by policy advocacy groups; and, d) being taken into serious consideration by the DENR policy makers?

b. What is the overall framework of the policy studies/advocacy component of the IEMP for ensuring consistency in policy reform objectives in all studies? Is this framework congruent with the other components of the project?

c. Assess the DENR/EMB and private sector (including industries and NGOs) acceptance or support for the IEMP's policy reforms studies and advocacy efforts. Is there adequate consultation in the process? Is support being generated within the DENR and private sector to help policy makers make the necessary reforms? Does the DENR take "ownership" of the policy studies (are the DENR policy teams/groups involved in the process)?

d. Assess the conduct and effectiveness of the policy studies analysis, dialogue, and advocacy activities, and provide recommendations, if any, on how the processes can be improved. What has been the project's performance, and the GOP response in implementing each study in terms of quality of analysis, focus of the analytical results on critical environmental interest groups, orientation to support policy advocacy objectives,and timeliness of the results?

**3. Capability Building Component**

a. Is the Capability Building component targeting the relevant interest groups and demonstrating critical environmental management opportunities/methods? Is the framework used by this component consistent with the policy studies and those demanded by the interested industry sectors/NGOs? Is this framework congruent with the DENR's industrial environmental management policies, programs, and activities? Is there consistency and/or collaboration with the activities being implemented by DENR under other donor assisted or locally funded projects?

b. Assess the effectivity of the Capability Building component. Does the Capability Building/Training component have a comprehensive training and communications strategy or framework? Are the training support services targeting the most promising clients? How relevant/effective are the training courses to the two other components of the project?

c. What is the response of the DENR, industry association and NGOs to the training programs? Are trainers from these groups being involved on the various training courses to ensure sustainability of the project? Is there adequate involvement of the DENR, as well as the local consultants in the planning and design of these training courses? Are the training courses designed for Filipinos and responsive to the Philippine situation?

d. Estimate the impact of IEMP's capability training program with regard to IEMP's target participants to be trained under various courses and the estimated number of people that need to be trained. Does IEMP need to expand its training program?

**4. Pollution Reduction Initiative Component**

a. Assess the Pollution Reductive Initiative component. Does this component access industry association, NGOs, LGUs, Regional DENR, as well as the local consultants in the network for PRI activities? How are these groups responding to the initiatives of the project? Are these groups not participating? Who should/could? Assess the acceptance of private sector as well as the GOP counterpart of the activities under this component.

b. Are the inputs from the other components of the project contributing to, or are being used for the PRI activities (e.g., financial resources study, training sessions, etc.)? On the other hand, are the PRI activities contributing to activities in strengthening the policy advocacy activities involving private sector industry and interest groups?

c. Assess the effectivity of the Pollution Management Appraisal (PMA) reports process in generating a "bankable" document which volunteer firms can use as a preliminary document for use in financing purposes. This is critical in determining the efficacy of the PMA process in enabling volunteer facilities to implement PMA waste minimization or control recommendations requiring financing.

d. Are the PMA on-site activities responsive to the needs of the facilities? Are the recommendations being adopted by the volunteer firms? Is there a mechanism for feedback and support to respond to volunteer firms seeking additional technical information and/or support? Is there a mechanism to sustain the concept and practice of PMAs in these facilities?

e. Assess the reception of the DENR/EMB as well as private sector to the Environmental Risk Assessment process introduced and implemented by the

project. Are steps being taken within the project and DENR to institutionalize and sustain this system in the DENR?

f. Assess the reception of the DENR/EMB as well as the private sector to the other systems and process being intrduced and developed by the project (i.e. waste minimization, environmental risk assessments, compliance monitoring and audit systems, etc) Provide recommendations on how to improve the sustainability of these systems and processes within the Philippine industrial environmental sector.

5. Sustainability Concerns

a. Assess the project management's and the EMB's progress in developing awareness of the project and its objectives within the DENR, the local consulting/academic/NGO community, and private industry. Is there a need to further focus by industry and/or geograhical area to maximize the impact of IEMP activities. If so, what industry groups and geographical areas?

b. Assess the DENR's (thru EMB) management efforts to sustain the objectives of the project. Are the DENR's policies, plans and programs taking into consideration outputs generated by the project? Are the DENR-EMB budgetary resources being increased or programmed to respond to the needs of industry identified by the project (e.g. more training and policy analysis)

c. Assess the DENR and the project's leadership role and effectivity in collaborating and coordinating with its GOP, industry counterparts (including NGOs) and various donor agencies, as the first major (and currently the largest) national industrial environmental management project in the Philippines. Is there adequate consultation and collaboration in planning and designing on-going and future activities? Are the consultation activities being coordinated enough to maximize resource efficiency (or reduce duplication of efforts) as well as adequately respond to Philippine responsiveness by the project to private sector concerns?

d. Are the project outputs (e.g. success stories, manuals reports, policy papers, reference materials, training materials, etc.) being documented and widely disseminated to the DENR's regional/provincial offices, concerned GOP agencies, industry associations, NGOs, the academe, and other relevant groups? Are these information materials being used by these groups for their own benefits? What are some of these groups' reactions to these information materials? Is the DENR allocating budgetary and human

resources to sustain the dissemination of information generated by the project? Generate recommendations on how to improve the distribution, effectiveness and usefulness of project outputs.

e. Review the project's performance in identifying opportunities in working with NGOs, industry associations, regional DENR offices, local government units in promoting the objectives of the project. Has the project identified itself with private sector interest groups with the greatest potential for success in advocating industrial environmental management policy advocacy issues? Are there other groups it should be trying to incorporate into the activity? Has the project become identified with the subject of pollution reduction initiatives? Generate recommendations to improve the complementarity of project activities with NGOs, industry associations, regional DENR offices (as well as other GOP line agency regional offices, e.g. DOH, DOST, DTI), and local government units.

f. What other activities are being implemented to ensure sustainability of the project's objectives? Generate recommendations for this purpose.

g. Generate recommendations for restructuring, if necessary,, the various components in view of its past performance, lessons learned, and future prospects for achieving its EOPS indicators? What are the most promising areas for future progress in industrial environmental management policy reform and voluntary pollution reduction initiatives in the private sector, to ensure sustainability of IEMP's objectives? What other activities should the project support using the unearmarked portion of the project? Generate recommendations.

**Data Sources**

The mid-term evaluation effort will rely on a combination of primary and secondary data sources as well as the IEMP's implementation monitoring data, as well as various project documents and interviews with key officials and staff knowledgeable about the project. The team will visit representatives of the contractors (in-country) and all sub-contractors, representatives of volunteer firms, previous participants in training workshops/courses, relevant GOP agencies, industry associations, NGOs and other related USG and donor sponsored or assisted projects to assess the importance and efficacy of the three components implemented by IEMP. The team is expected to travel outside of Manila to visit locations where IEMP has been active to develop field aspects of the evaluation. Through these meetings and interviews, the evaluation will also determine the ability, willingness and plans of the Project Management Offices to coordinate and collaborate implementation activities with such entities.

**Team Composition**

The evaluation team will be composed of three members (expatriate or local), namely: Environmental Specialist (Team Leader), Management Specialist (Asst. Team Leader), and Policy Specialist.

The management specialist should have at least 10 years of experience in the design, implementation and evaluation of developpment projects, with specific expertise in program and project management, policy analysis/advocacy, enterprise development and/or training. This person should likewise have experience in Human Resource Development (HRD) and/or training programs. This person will be the team leader and will be responsible for seeing that all deliverables are submitted to USAID as described herein.

The environmental specialists should have at least 10 years of experience in the design, implementation, and evaluation of industrial environment or environment related projects, with specific expertise in pollution reduction/abatement initiatives and waste minimization.

The policy specialist should have at least 10 years of experience in the evaluation, analysis and advocacy of regulatory and incentive mechanisms with specific industrial environment expertise.

**Level of Effort**

| | |
|---|---|
| Public Administration Specialist (Environmental Specialist) | 36 |
| Public Administration Specialist (Management Specialist) | 36 |
| Macro Economist (Policy Specialist) | 30 |
| Total | 102 |

Reports and Deliverables

A. Inception Report

Within the first three working days in Manila, the team will prepare a brief inception report for USAID that may include a revised statement of the evaluation, objectives, tasks, a preliminary work plan (to be revised in consultation with USAID

as needed), and an outline for the final report. The work plan will indicate the team's schedule for data collection, analysis, report writing, and periodic interim briefings for USAID and EMB/DENR. The outline of the final report shall be approved by USAID.

B. Interim Briefings

The team will arrange with USAID and EMB/DENR to provide periodic interim briefings and feedback on the team's findings, conclusions, and recommendations.

C. Draft Report

A draft report, following the format described in the next subsection, will be submitted to USAID not later than the end of the sixteenth work day in Manila.

D. Final Report

The final draft report will be submitted to USAID by the end of the twenty-second work day in Manila. The organization of the report will be approved by USAID in the inception report, but the draft should include an executive summary, a brief background summary of IEMP, a summary of the evaluation methodology, issues, team findings, conclusions and recommendations, and a list of persons contacted during the data collection phase.

The report will focus on addressing each of the preceding topics and questions described in section C above. For each topic in turn, the evaluation report will present the major <u>findings</u> of the team, noting where information on the topic is adequate or lacking; the <u>conclusions</u> of the team concerning what the findings mean or indicate about the topic being addressed; and <u>recommendations</u> for action, based on the team's conclusions. The conclusions should be substantiated by the findings and professional judgement of the team, and recommendations should follow logically from the conclusions.

E. Exit Debriefing

Immediately prior to submission of the final, and after submission of the draft report, the team will conduct a joint exit debriefing for USAID and EMB/DENR. The debriefing will reflect the content of the final report and focus on the key issues that may be clarified by direct discussion with the team members.

**Technical Direction**

The evaluation team will report to Dr. Ronald Senykoff, Chief of USAID/ONRAD's Natural Resources Division and/or his designee(s), on all matters related to the scope and issues/objectives of the evaluation.

The team will be responsible for preparing interim reports and briefings for USAID and EMB/DENR as indicated in the inception report or as required during the course of the assessment effort. The contractor will be responsible for providing its own logistical support.

# APPENDIX B

# PROJECT LOGICAL FRAMEWORK

## PROJECT DESIGN SUMMARY

Project Title and Number: Industrial Environmental Management (492–0465)

LIFE OF PROJECT:
From FY 1991 to FY 1996
Total U.S. Funding: $20,000,000
Date Prepared: September 11, 1991

| NARRATIVE SUMMARY | OBJECTIVELY VERIFIABLE INDICATORS | MEANS OF VERIFICATION | IMPORTANT ASSUMPTIONS |
|---|---|---|---|
| **(A–1) Program or Sector Goal: The broader objective to which this project contributes:**<br>To encourage sustained economic growth in the industrial sector, with corresponding improvements in health status | **(A–2) Measures of Goal Achievement:**<br>– Est. 2 to 5 percent increase in regional output per capita in geographic areas where pollution management appraisals (PMAs) are performed.<br>– Est. 2 to 5 percent decrease in industrial pollution–related absenteeism among employees in geographic areas where PMAs are performed. | **(A–3)**<br>– DTI statistics, reports.<br>– Board of Investments data.<br>– DHO statistics, reports.<br>– PMA follow–up surveys. | **(A–4) Assumptions for achieving goal targets:**<br>– GOP policies encouraging an active private sector role in economic growth will continue.<br>– GOP policies endorsing voluntary industry actions to reduce pollution will continue.<br>–Political environment, law and order conditions remain stable.<br>– Improved pollution management will lead to economic growth.<br>– Reduction in industrial pollution will lead to improved health status. |
| **(B–1) Project Purpose:**<br>To improve industrial management of pollution through: (a) preventing or reducing pollution at its sources; (b) reclaiming industrial wastes; and (c) encouraging cost–effective pollution abatement technologies. | **(B–2) Conditions that will indicate purpose has been achieved: End–of–Project Status:**<br>– Adoption of pollution prevention and reduction equipment/methods by approx. 50 percent of the firms that received PMAs.<br>– Approx. 5 to 10 percent reduction in production costs at firms participating in PMAs.<br>– Est. 5 to 10 percent decrease in industrial pollution at firms participating in PMAs. | **(B–3)**<br>– PMA follow–up surveys.<br>– DENR, independent pollution monitoring<br>– DTI, Chamber of Commerce reports.<br>– DENR, LGU performance reports and independent verification. | **(B–4) Assumptions for achieving purpose:**<br>– GOP will act on recommended industrial environmental policy and regulatory changes.<br>– Training will lead to improved public and private sector performance in envir. monitoring and planning.<br>– Private sector will seize new business opportunities in industrial environmental management.<br>– Funding is available for industries to replace/upgrade equipment and install new processes. |
| **(C–1) Project Outputs:**<br>1. Environmental risk assessment (ERA) to identify high–risk industrial sectors.<br>2. Facility–specific pollution management appraisals (PMAs)<br>3. Policy studies on constraints to improved industrial pollution management and on voluntary industry action.<br>4. Improved public/private dialogue on environmental management issues.<br>5. Training in PMAs, ERAs, env. impact assessments, compliance audits, compliance monitoring, data collection/sampling. | **(C–2) Magnitude of outputs:**<br>1. ERA completed and 5 high–risk industry sectors identified.<br>2. Completion of up to 150 PMAs.<br>3. Approx. ten policy studies completed.<br>4. Five public/private fora held on ind. env. mgmt. issues.<br>5. Approx. numbers of participants: PMA (200); ERA (60); EIA (700); compl. audit (200); compl. mon. (200); data collection/analysis (300). | **(C–3)**<br>– Project records and quarterly/annual reports.<br>– Completed ERA, PMAs and policy studies.<br>– Contractor records and reports.<br>– GOP reports<br>– Forum proceedings and recommendations<br>– Post–training evaluation forms | **(C–4) Assumptions for achieving outputs:**<br>– Industrial firms are willing to participate in PMAs.<br>– Appropriate training opportunities can be identified.<br>– Private sector firms willing to participate in cost–sharing.<br>– Interest, demand for voluntary pollution control measures can be tapped. |
| **(D–1) AID Project Inputs:**<br>1. Pollution reduction initiatives<br>2. Policy studies and public/private dialogue activities<br>3. Capability building<br>4. Evaluation and audit<br>AID TOTAL | **(D–2) Implementation Target (Type and Quantity):**<br>($000)<br>13,000<br>2,800<br>3,700<br>500<br>20,000 | **(D–3)**<br>– USAID financial records.<br>– Reports from contractors.<br>– Independent audits. | **(D–4) Assumptions for providing inputs:**<br>– Availability of AID funds over the life of the project. |

# APPENDIX C

# LIST OF DOCUMENTS REVIEWED

# REFERENCE MATERIALS

Metropolitan Environmental Improvement Program (MEIP) Program Report. 1993.

TR & D, Inc. Sustainable Urban and Industrial Environmental Management Review: Final Report and Annexes. May 21, 1991.

NSCB/ENRAP. Towards the Institutionalization of Environmental and National Resource Accounting, Five Year Period Project Proposal. December 10, 1992.

The Philippine Environmental and Natural Resources Accounting Project (ENRAP). Phase III Project Briefing.

The World Bank. Philippines: Environmental Sector Study. Towards Improved Management of Environmental Impacts. May 10, 1993.

The World Bank and UNDP. Environmental Management Strategy: Final Report. August 1992.

The World Bank. Industrial Efficiency and Pollution Control Program and Environmental Management Strategy: Final Report and Appendices. August 1992.

EMB. The Philippine Environment in the Eighties. November 1990.

DENR. A Report on Philippine Environment and Development: Issues and Strategies. 1992.

USAID/Manila. USAID/Philippines Development Program 1993 to 1998.

<u>IEMP Documents</u>

PS #9 (Phase I). Case Studies in Decentralized Environmental Management. Draft. July 13 , 1994.

PS #2 & 13. Analysis of Current Regulatory Programs for Pollution Management.

Volume I - Draft Final Report
Volume II - Appendices to Draft Final Report
Appendix A: Evaluation of Air Quality, Water Quality, and Waste Management Regulation in the Philippines
Appendix B: Analysis of Fines and Penalties

Appendix C: Summary of the Availability of Commercial Mechanisms for Financial Responsibility
Appendix D: Analysis of the Feasibility of Creating a Pooled Insurance Fund
Appendix E: Environmental Fund Assessment and Option.

PS #2. Proposed Standards for Characterization and Registration of Hazardous Wastes under Republic Act 6969.
March 1993.

PS#8. Environmental Risk Assessment and Pollution Reduction Planning in the Philippine Environmental Impact Statement (EIS) System: Final Report. October 1993.

EMB. Philippine EIS System Guide: Policies and Procedures. July 1994.

PS #3,4. Market-Based Instruments to Promote Pollution Reduction in the Philippines: Draft Final Report.

A Synopsis of Market-Based Instruments for Promoting Pollution Reduction in the Philippines.

Pollution Management Guidebook No. 1. Pig Farming Industry.

PS #1. Financial Resources to Fund Environmental Investments. December 1993.

Handbook on Financing Environmental Investments.

Financial Evaluation of Wast Minimization Projects: A Quick Reference Guide.

IEMP. Environmental Risk Assessment Implementation. Draft Final Report Vol. 1, November 1993.

NRIPS Trip Report, Trip Set 1
NRIPS Trip Report, Trip Set 2
NRIPS Trip Report, Trip Set 3

(Special Activity). Analysis of the Importation, Processing and Disposal of Recyclable Materials Containing Hazardous Substances which are Recycled in the Philippines, Proposed Work Plan. July 7, 1994.

Analysis of Current Regulatory Program for Pollution Management (PS #2 and 10). Approved Work Plan.

Public/Private Dialogue #5. On Implementation of Market-Based Instruments. Approved Work Plan.

Final Work Plans for Policy Study 1, 3, 4, 5 and 8.

Jack Schramm. IEMP Short-Term Expatriate Consultant's Report. July 1993.

IEMP Progress Reports 1 to 8.

Success Stories (folio).

Industry Environews, Vol. 3, No. 1.

DENR DAO 17.

Draft MOA Between DENR and PMA Volunteer Firms.

Draft DAO Interim Guidelines for the Importation of Recyclable Materials Containing Hazardous Substances.

Draft DAO National/Regional Industry Prioritization Strategy.

"Development of Regional Environmental Laboratory Equipment Requirements and Design of Sustainable Service Delivery Systems", Final Report, Submitted by Environmental Primemovers of Asia, Inc. (EPAI).

# APPENDIX D

# LIST OF PERSONS INTERVIEWED

## List of Persons Met/Interviewed

**U.S. Agency for International Development**
Thomas W. Stukel, Director
Gordon West, Deputy Director
John Aron Grayzel, Chief, ONRAD
Ronald S. Senykoff, ONRAD
Jose Marcial K. Ochoa, ONRAD

**Department of Environment & Natural Resources (DENR)**
Benjamin Bagadion, Undersecretary
Elisea Gozun, MEIP
Rachel Vasquez, EMB
Amelia Dulce Supetran, EMB
Angelita Brabante, EMB
Geri Sanez, EMB
Ray P. Alcances, EIA
Carmelo Segui, Legal
Edwin Navaluna
Esterlito M. Pinlac, EQD
Ella Deocadiz, LAB
Pete Pangilinan, HRD

**DENR, Region III**
Marte P. Ballesteros
Vicente dela Cruz, Jr.
Miller Q. Limjoco
Dennis Celestial
Noel G. Guevarra
Raldy R. Pagador
Bonifacio Sanchez
Jorge M. Conti

**Department of Trade & Industry/ Board of Investments**
Joseph Francia
Gloria Santos

**National Statistical & Coordinating Board**
Romulo Virola

**DENR, Region IV-A**
Sixto Tolentino
Luciano Hornilla
Jun Magno

**DENR, Region VII**
Alan C. Arranguez
Jun Villafane
Edwin Kuderepe
Marcelino Tabudo
Anecita Dinoy
Erlinda Vicente

**DENR, Region X**
Joel Salcedo
Jovencio Verdejo
Jun Dominguez

**DENR, Region XI**
Bienvenido Lipayon
Ronie Salmon
Edgar Rubi
Florencia Bongalo
Ricardo Biong
Edgardo Castillo
Jerome Feraris
Metodio Turbella
Nestor Patnugot
Rufino Bandialan
Gregorio Andrada

**National Economic and Development Authority**
Chit Sobrepena
Dante Canlas

**PRC-Environmental Management, Inc.**
David L. Wadsworth
Firouz Rooyani
Marissa David
Cynthia Roxas
Edgardo Cuadro
Carlito Rufo, Jr.
Aristeo A. Nacion II
Emily M. Mateo
Marine Cepede
Ella Melendez
Dionisio Araza
Amira Goki
L. De Jesus
E. De Jesus
Imelda Valle

**SCHEMA Konsult, Inc.**

Oscar M. Jusi
Juliana Y. Urquia
Eduardo C. Abores

**Del Monte Philippines, Inc.**

Edgar M. Villegas
Jesus M. Cabatino
Baldwin S. Bacus
Godofredo D. Arinzol
Cleofe B. Abejuela

**Pilipinas Kao, Inc.**

Salvador S. Montano

**Louis Berger International, Inc.**

Richard Hirsch
Charles E. Feibel

**Environmental Primemovers of Asia, Inc.**
Roberto E. De Guzman
Daisy J. Serrano
Marlito Cardenas
Marivic Guina

**International Resources Group, Inc. (ENRAP III)**

Marian Delos Angeles
Eugenia Bennagen

**Philippine Business for the Environment, Inc.**

Grace Favila
Antonio B. Madrid, Jr.

**Susana Farms**

Alvin T. Teves
Ederlito Responso
Jesse Q. Tan

**International Pharmaceutical Inc.**

Roque Ruel Osorio
Mabel C. Cana
Adolfo Macasocal
Dennis Cuenco
Mario Saycon

**NTC**

Maria Joy Q. Bacalso
Alberto Palacio
Epifanio Ybanez

**Peter Paul Philippines Corp.**

Frank V. Klar
Ma. Ida I. Febbrero

**Central Azucarera Don Pedro**

Edgardo R. Montales
Jeffrey G. Mijares
Nicasio C.R. Mendoza
Rolando Pena
Ramon M. Bacit
Dante Araos
Simon P. Turno
Gaudencio V. Andino
Demetrio B. Antig
Reynaldo S. Juarez
Florencio J. Bituin
Cipriano Barcelon
Rodrigo Ermita
Samuel Genita
Eric M. Delos Reyes
Isagani Apacible
Aida Irisari
Placido Magsino

**ASEAN Environmental Improvement Project**

Richard S. Stevenson

**United States-Asia Environmental Partnership Program**

Rene Saludes

**Philippine Chamber & Commerce Industry**

Herman Montenegro
Emmanuel Velasco

**WB Pollution Management**

William R. Matuguina, Jr.

**Filinvest Land, Inc.**

Efren E. Mariano

**PASUDECO**

Marilou P. Avenido

**United Pulp & Paper Corp.**

Exuperio L. Lipayon

**El Coco Manufacturing & Trading Corp.**

Leopoldo Estrellado

**Center for Research & Communication**

Rafael Emmanuel Macatangay

**Celebes Canning Corp.**

Rogelio Espina

**Phil-German Project Industrial Pollution-Cebu**

Berthold Pilz

**Cebu Chamber of Commerce & Industry**
Hernando Streegan
Michael Chua
**Engr. Antonio**
**Asian Development Bank**

Bindu Lohani

**SGV Consulting Co.**

Rizalito D. Fadera

**Green Forum**
Maximo Kalaw

**Saup Lugud Foundation**

Catalina Saplala

**Metropolitan Cebu Water District**

Alex Tolentino

# APPENDIX E

# POLLUTION REDUCTION INITIATIVE

Table 1. Profile of Industrial Facilities in the Philippines (By Region and By Industrial Category).

| INDUSTRY CATEGORY | REGION | | | | | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | |
| Livestock & Livestock Producs (121) | 65 | 6 | 672 | 73 | 39 | 78 | 16 | 6 | 5 | 10 | 51 | 10 | 1,031 |
| Poultry & Poultry Products (122) | 6 | | 29 | 10 | 5 | 46 | 54 | 14 | | 14 | 17 | | 195 |
| Metallic Ore Mining (21) | 5 | | 3 | 3 | 5 | 1 | 3 | 5 | 8 | 6 | 164 | | 203 |
| Food Manufacturing (311) | 294 | 350 | 936 | 429 | 676 | 336 | 371 | 466 | 171 | 80 | 559 | 248 | 4,916 |
| Beverage Manufacturing (313) | 11 | 1 | 9 | 4 | 2 | 11 | 5 | 3 | 2 | 4 | 4 | | 56 |
| Manufacture of Leather & Products of Leather (323) | | | 30 | | | | | | | | | | 30 |
| Manufacture of Wood & Wood Cork Products (331) | 21 | 576 | 51 | 47 | 116 | 36 | 36 | 58 | 49 | 136 | 103 | 7 | 1,236 |
| Manufacture of Paper & Paper Products (341) | | | 6 | | 2 | | 3 | | | 3 | 5 | 1 | 20 |
| Manufacture of Industrial Chemical (351) | 3 | | 6 | 18 | | | 19 | 1 | 3 | 5 | 8 | 3 | 66 |
| Manufacture of Other Chemical Products (352) | | | 4 | 3 | 1 | | 7 | | | 1 | | | 16 |
| Manufacture of Chemicals & Chemical Petroleum (35) | | | 2 | 6 | | | | | 1 | 2 | | 1 | 12 |
| Manufacture of Non-Metallic Mineral Products (36) | 2 | | 3 | 5 | | | 8 | | | 3 | 1 | 2 | 24 |
| Iron & Steel Basic Industries (371) | 3 | | 12 | 1 | | | 16 | | 1 | 6 | 2 | 1 | 42 |
| Non-Ferrous Metal Basic Industries (372) | | | 8 | 2 | 2 | 3 | 7 | 2 | 1 | 4 | 29 | | 58 |
| Manufacture of Machinery, Except Electrical (382) | 1 | | | | | | | | | | | | 1 |
| Manufacture of Transport Equipment (384) | | | 2 | 1 | | | 5 | | 1 | | | | 9 |
| Others | 36 | 48 | 83 | 136 | 45 | 44 | 276 | 38 | 36 | 32 | 62 | 42 | 878 |
| TOTAL | 447 | 981 | 1,856 | 738 | 893 | 555 | 826 | 593 | 278 | 306 | 1,005 | 315 | 8,793 |

Source: IEMP

Table 2. Profile of On-site PMAs Conducted, By Region and Industrial Category, as of June 1994.

| INDUSTRY CATEGORY 1/ | REGION | | | | | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | |
| Livestock & Livestock Products (121) | | | 5 | 3 | | | 1 | | | | 2 | | 11 |
| Poultry & Poultry Products (122) | | | 2 | | | | | | | | | | 2 |
| Metallic Ore Mining (21) | | | 1 | | | | | | | | | | 1 |
| Food Manufacturing (311) | | | 2 | 4 | | | 7 | | | 5 | 9 | | 27 |
| Beverage Manufacturing (313) | | | | | | | | | | | | | |
| Manufacture of Leather & Products of Leather (323) | | | 2 | | | | | | | | | | 2 |
| Manufacture of Wood & Wood Cork Products (331) | | | | | | | | | | | | | |
| Manufacture of Paper & Paper Products (341) | | | 3 | | | | | | | 1 | | | 4 |
| Manufacture of Industrial Chemicals (351) | | | 2 | | | | | | | 1 | | | 3 |
| Manufacture of Other Chemicals (352) | | | 1 | | | | | | | 1 | | | 2 |
| Manufacture of Chemicals & Chemical Petroleum (35) | | | | | | | | | | | | | |
| Manufacture of Non-metallic Mineral Products (36) | | | 1 | | | | | | | | | | 1 |
| Iron & Steel Basic Industries (371) | | | 1 | | | | | | | | | | 1 |
| Non-ferrous Metal Basic Industries (372) | | | | | | | | | | | 1 | | 1 |
| Manufacture of Machinery, Except Electrical (382) | | | | | | | | | | | | | |
| Manufacture of Transport Equipment (384) | | | | | | | 1 | | | | | | 1 |
| Other Manufacturing Industries | | | 2 | | | | 1 | | | | | | 3 |
| **TOTAL** | | | **22** | **7** | | | **10** | | | **8** | **12** | | **59** |

1/ According to NEDA classification.

Table 3. Profile of On–site PMAs Reviewed by the Mid–Term Evaluation Team, By Region and Industrial Category.

| INDUSTRY CATEGORY 1/ | REGION | | | | | TOTAL |
|---|---|---|---|---|---|---|
| | III | IV | VII | X | XI | |
| Livestock & Livestock Products (121) | | | | | 2 | 2 |
| Poultry & Poultry Products (122) | | | | | | |
| Metallic Ore Mining (21) | | | | | | |
| Food Manufacturing (311) | 1 | 2 | 1 | 1 | 2 | 7 |
| Manufacture of Leather & Products of Leather (323) | | | | | | |
| Manufacture of Paper & Paper Products (341) | 1 | | | | | 1 |
| Manufacture of Industrial Chemicals (351) | | | | | | |
| Manufacture of Other Chemicals (352) | | | | 1 | | 1 |
| Manufacture of Non–metallic Mineral Products (36) | | | | | | |
| Iron & Steel Basic Industries (371) | | | | | | |
| Non–ferrous Metal Basic Industries (372) | | | | | | |
| Manufacture of Transport Equipment (384) | | | 1 | | | 1 |
| Other Manufacturing Industries | | | | | | |
| TOTAL | 2 | 2 | 2 | 2 | 4 | 12 |

1/ According to NEDA classification.

Table 4. Summary Performance Matrix for On–site PMAs Conducted (from March 1993 through June 1994).

| ROUND NO. | NO. OF FIRMS | LOW COST | | | HIGH COST | | |
|---|---|---|---|---|---|---|---|
| | | Number Recommended | Number Implemented | Percent Implemented | Number Recommended | Number Implemented | Percent Implemented |
| 2 | 10 | 175 | 119 | 68 | 61 | 0 | 0 |
| 3 | 10 | 141 | 96 | 68 | 32 | 2 | 6 |
| 4 | 6 | 79 | 49 | 62 | 30 | 5 | 17 |
| 5 | 7 | 101 | 74 | 73 | 28 | 4 | 14 |
| TOTAL | 33 | 496 | 338 | 68 | 151 | 11 | 7 |

Source: IEMP, August 1994

Table 5. Profile of On–site Recommendations Reviewed by Team.

| FIRM ID | LOW COST | | | | HIGH COST | | | |
|---|---|---|---|---|---|---|---|---|
| | # Recommended | # Implemented | # Waste Minimized | # Reduced Pollution | # Recommended | # Implemented | # With Incomplete Feas. Anal. | # Without Pollution Reduction or Not Practical |
| A | 17 | 16 | 9 | 7 | 5 | 0 | 2 | 3 |
| B | 24 | 18 | 11 | 6 | 2 | 1 | 0 | 1 |
| C | 9 | 4 | 1 | 1 | 4 | 1 | 1 | 2 |
| D | 12 | 11 | 4 | 0 | 3 | 0 | 0 | 3 |
| E | 18 | 16 | 11 | 3 | 4 | 0 | 3 | 1 |
| F | 11 | 6 | 1 | 0 | 5 | 1 | 3 | 1 |
| G | 9 | 8 | 4 | 0 | 6 | 1 | 3 | 2 |
| H | 4 | 4 | 2 | 1 | 4 | 2 | 0 | 2 |
| TOTAL | 104 > | 83 > | 43 > | 18 | 33 = | 6 + | 12 + | 15 |

# APPENDIX F

# POLICY STUDIES AND PUBLIC/PRIVATE DIALOGUES

CHANGES IN POLICY COMPONENT ELEMENTS

| Policy Component Elements* | Policy Component Elements** |
|---|---|
| **POLICY STUDIES** | |
| #1 – Financial Resources to Fund Environmental Investments | #1 – Financial Resources to Fund Environmental Investments |
| #2 – Gaps in Current Regulatory Structure for Pollution Management | #2/10 – Analysis of Current Regulatory Programs |
| #3 – Identification of Market Based Instruments for the Philippines | #3–5 – Market Based Incentives for Pollution Reduction |
| #4 – Incentive/Impediments to Voluntary Pollution Reduction | #4 – [Incorporated in Policy Study #3–5] |
| #5 – Pollution Reduction Economics/Savings | #5 – [Incorporated in Policy Study #3–5] |
| #6 – Industry Differentiation for CAC and MB Dialogue | #6 – [Moved to public/private dialogue |
| #7 – Integration of Regulation/Enforcement (CAC) Activities and Voluntary Industry (MB) Efforts | #7 – Integration of Regulation/Enforcement (CAC) Activities and Voluntary Industry (MB) Efforts |
| #8 – Integration of Pollution Reduction Planning and Environmental Risk Assessment in the Environmental Impact Assessment (EIA) Process | #8 – Integration of Pollution Reduction Planning and Environmental Risk Assessment in the Environmental Impact Assessment (EIA) Process |
| #9 – Impact of the Organization/ Decentralization of Governmental Institutions on Pollution Prevention | #9 – Impact of the Organization/ Decentralization of Governmental Institutions on Industrial Environmental Management |
| #10 – Impact of Fines and Penalties on Non–Compliance | ~~#10~~ – [Incorporated in Policy Study #2/10] |
| **PUBLIC/PRIVATE DIALOGUES** | |
| PPD#1 – To be identified | PPD#1 – Intergovernmental Dialogue |
| PPD#2 – To be identified | PPD#2–4 – Programmatic Compliance |
| PPD#3 – To be identified | PPD#5 – Market Based Incentives Dialogue |
| PPD#4 – To be identified | PPD#6 – Social Acceptability Dialogues |
| PPD#5 – To be identified | PPD#7 – Facilitating Environmental Investments |
| | PPD#8 – Bankable PMAs |
| | PPD#9 – Industry Differentiation for CAC and MB |

*–From Year 1 Work Plan; **–Revised based on first year's experience.

# POLICY STUDY NO. 1: FINANCIAL RESOURCES TO FUND ENVIRONMENTAL INVESTMENTS

## I. OBJECTIVES

The study will:

- assess the financial needs of Philippine industry for environmental investments;
- identify sources of financing;
- discuss financial constraints and barriers;
- recommend ways to address constraints and barriers; and
- also provide policy support to the DENR/EMB in implementing the program thrust.

The research includes looking into:

- financial resources that may be available from U.S. sources for the Philippines;
- approaches used in the U.S. to finance environmental improvements (municipal bonds, user fees, venture capital funds);
- World Bank experience with environmental lending facilities; and
- comparative research on how environmental improvements are being financed in other developing and newly-industrialized nations, especially Taiwan, Singapore and other countries in Asia.

In identifying and describing sources of financing, the research team will also conduct an analysis of several innovative methods of financing for some of the more capital-intensive investments (e.g. BOT facilities, debt equity swaps and special purpose investment funds for environmental investments.

In drafting the prioritized recommendations for DENR/EMB and other GOP institutions regarding how to facilitate industrial investments in environmental improvements, the research team will identify the specific steps to be taken, such as outreach, additional fiscal incentives, technical assistance to financial institutions in the review of loan applications, and additional financial packaging needs for small and medium-scale enterprises. The research team will also give estimates as to the level of capitalization needed for the creation of new financing programs.

| Deliverables: | Deadline: |
|---|---|
| • Synthesis of priority recommendations and proposed implementation | 15 August 1993 |
| • Camera-ready copy of Financial Resources Handbook | 30 August 1993 |

II. RESULTS (taken from the Executive Summary of PS No. 1)

Findings:

- There is a vast range in the size of the environmental investments that need to be made as well as of the types of companies that need to make such investments.

- It is recommended that industries be encouraged to invest in pollution prevention projects and new environmental businesses in the future rather than in the treatment of industrial waste water and air pollution control;

- There is generally a low level of environmental investment taking place in the Philippines due to the lack of incentives to make these investments and a shortage of capital for some companies.

- Several opportunities for environmental investments exist: large companies with major expansions or new projects that have needed to obtain Environmental Compliance Certificates (ECCs); a handful of large, environmentally aware and socially progressive companies; large companies which have already acknowledged the potential for positive economic returns from waste minimization investments; and companies that see quality improvements as a way to become more competitive.

- There are enough funds from the financial community and internally generated funds from companies, to finance environmental investments but the issue is not the availability of bank financing but the decision to invest in the first place.

- Problems

  - The easier ones include ensuring that environmental investments explicitly qualify for bank lending programs, that loan programs can be adapted for smaller loan sizes, and that there can be some flexibility in minimum IRR requirements for certain environmental investments.

  - The more difficult ones include how to finance the environmental requirements of many small companies that may never be creditworthy, but are contributing to a significant amount of industrial pollution.

- Recommendations

  - A package of investment incentives and limited direct subsidies should be considered.

  - EMB must develop an on-going cooperative relationship and dialogue with the financial community to advocate changes in lending policies and in the attitudes of bank loan officials toward the environment.

- The establishment of a special-purpose fund that could access penalties and fines, as well as donor grants and corporate contributions should be considered.

- Technical assistance on project development and financial packaging be provided.

## III. EVALUATION

Policy Study No. 1 consists of (1) Fiscal Report, (2) Handbook on Financing Environmental Investments and (3) Financial Evaluation of Waste Minimization Projects: A Quick Reference Guide. The Reference Guide is an additional output that is user friendly and can be an important reference material for, among others, the volunteer firms in the Pollution Management Appraisals activity of IEMP.

Policy Study No. 1 is well-written and clearly sets out the range of environment investments; estimates the investment and financing requirements; presents various sources of financing available or feasible; discusses the various barriers to environmental investments; and makes recommendations, primarily policy initiatives, that can improve and facilitate private investments in industrial pollution prevention and/or reduction.

The estimates of investment and financing requirements in Policy Study No. 1 are clearly and admittedly rough because the methodology used is crude. Ideally,the estimates of investment requirements per industry need to be linked with targeted reductions in pollution loadings from each industry. The investment estimates in the USAID-funded project Environmental and Natural Resources Accounting Project (ENRAP) Phase II takes this tack. ENRAP Phase II initial results were available in January 1994 while the revised estimates were finished in May 1994 only. Clearly, Policy Study No. 1 could not benefit from the ENRAP Phase II results because the policy study was finished in December 1993. Nevertheless it is very important to refine the investments estimates in Policy Study No. 1 drawing form the results of ENRAP II before a concerted policy advocacy activity in this area is undertaken by DENR/EMB and the Philippine government.

The final report of Policy Study No. 1 does not show that the following activities included in the work program have been undertaken; namely, (1) comparative research on how environmental improvements are being financed in other developing and newly-industrialized nations, especially Taiwan, Singapore and other countries in Asia, (2) World Bank experience in environmental lending facilities and (3) approaches used in the U. S. to finance environmental improvements (e.g., municipal bonds, user fees, venture capital funds). The lack of comparative perspectives on how other countries dealt with the barriers to environmental investments --- which the above mentioned activities can be expected to shed some light on --- significantly weakened the depth and impact of the Policy Study. As planned, the above mentioned activities are meant to be undertaken as secondary research in the United States to be undertaken by the expatriates in the Study Team.

The target completion date of Policy Study No. 1 was August 15, 1993. The final report of the study was finished in December 1993.

# POLICY STUDIES NOS. 2 AND 10: ANALYSIS OF CURRENT REGULATORY PROGRAMS FOR POLLUTION MANAGEMENT

## I. OBJECTIVES

### Policy Study No. 2, Phase I

The objectives of the policy and technical assistance are to proposes standards that clarify and improve the current listing of hazardous waste and to help draft the registration forms for the registration of hazardous waste as required by R.A. 6969.

### Policy Study Nos. 2 and 10

The study assesses the strengths and weaknesses of the air, water, and waste management programs and arraying a range of command and central policy options to address the environmental programmatic deficiencies identified. Enforcement and the adequacy of the current firms and penalty structure are important parts of the analysis. Recommendations from this study will highlight the areas that need the greatest attention, identify the specific policy options, and suggest an implementation plan for improving the overall effectiveness of pollution management programs.

The study will:

- identify the gaps and weaknesses in the air, water, and waste programs;
- identify weaknesses in jurisdictional arrangements (between DENR and LLDA and between DENR and LGUs);
- analyze financial responsibility options. This analysis includes analysis of industrial categories that pose relative potential environmental risks for which financial responsibility may be appropriate, assessment of the availability in the Philippines by commercial mechanisms for financial responsibility (including commercial insurance, surety bonds, trust funds, letters of credit, and self-insurance), and analyze the feasibility of creating a pooled insurance fund;
- analyze fines and penalties in the light of experience with fines and penalties in the U.S. and other countries and in terms of the role of fines and penalties in environmental management and investment decision-making;
- perform sensitivity analysis for creating an environmental fund, geared especially for Philippine firms using toxic bulk chemicals in their industrial processes. The development of options for the use of the fund will draw from a survey and interviews of about 50 from government, industry, NGOs, and foreign donors; and

- synthesize recommendations for DENR/EMB on how to upgrade the legal/programmatic capability of environmental management and improve administration of fines and penalties.

| Deliverables: | Deadline: |
|---|---|
| • Final recommendations and proposed plan of action | 25 March 1994 |

II. RESULTS (taken from the Executive Summaries of PS No. 2 and PS Nos. 2/10)

Policy Study No. 2, Phase I

The major findings and recommendations are as follows:

- standards for classifying hazardous wastes were developed by applying some of the standards in the hazardous wastes regulations of the U.S because:
  - DENR does not have sufficient resources or staff to test wastes from each industry;
  - these are based on the goal of protecting human health and the environment; and
  - waste classification alone does not present the regulated community with significant compliance costs;
- the standards for transporters and for the design and operation of treatment, storage, and disposal facilities should be provided in two stages
- the EMB and IEMP staff should immediately develop the methods for review and prioritization of the hazardous waste registration forms, develop a database for compiling hazardous waste registration forms data, develop comprehensive regulations for facilities that treat, store, dispose, or transport hazardous wastes, develop a comprehensive enforcement policy including penalty and fine schedules, and develop a facility inspection process that would build upon the IEMP training workshops for compliance monitoring.

Policy Study Nos. 2 and 10

The major findings and recommendations are as follows:

- the study recommends increased sanctions and stricter enforcement of laws on pollution, strengthening environmental programs according to objectives, reaffirming DENR primacy in pollution management, and broadening application

but limiting coverage for financial responsibility and environmental fund contributions;

- DENR/EMB should:

  - amend P.D. 1586 to require PMAs and institutionalize Environmental Monitoring Fund

  - work with Congress on the proposed Clean Air Act

  - develop regulation under P.D. 984 that link industrial effluents to ambient water quality standards; classify rivers and other major water bodies; and undertake policy analysis to assess salinity intrusion into ground water

  - undertake policy analysis of hospital waste program

  - institute policy dialogues on its proposed power-sharing with LGUs in response to devolution

  - increase fines, scale penalties according to previous violations, establish procedures for collecting fines, and produce "Annual Accomplishment Reports" to track enforcement activities;

  - conduct policy dialogues on a national financial responsibility program to replace Environmental Guarantee Fund that focus on the definition of the industrial community to be regulated, which contingent liabilities are to be covered, levels of coverage, and the availability of commercial mechanisms (e.g. pooled insurance fund).

  - conduct policy dialogues on environmental fund purposes, fund size, criteria for participation, the question of mandatory participation, progressivity of fund assessments, and fund disbursement methodology.

## III. EVALUATION

*Policy Study No. 2, Phase I*

Policy Study No. 2 and 10 is a combination of Policy Study No. 2 (Gaps in Current Regulatory Structure for Pollution Management) and Policy Study No. 10 (Impact of Fines and Penalties on Non-compliance). Related to Policy No.2 and 10 is Phase I of Policy Study No. 2 (Proposed Standards for characterization and Registration of Hazardous Wastes under RA 6969).

Policy Study No. 2 Phase I was undertaken in response to an urgent request of DENR. The study provides clearer standards for classifying hazardous wastes, lists down the likely universe of potentially regulated wastes under RA 6969, and helps EMB develop forms and

instructions needed to gather information from respondents in EMB's current registration activities. This study is a joint undertaking with EMB; not surprisingly it is already being used by EMB.

Policy Study No. 2 and 10 is exhaustive and detailed in the analysis of gaps and weaknesses in the air, water and wastes management laws, rules and programs as well as in the jurisdictional arrangements especially between DENR and Laguna Lake Development Authority. The line of inquiry is primarily legal analysis.

With respect to the analysis of fines and penalties, both macrolevel analysis and evaluation of sample cases with the Pollution Adjudication Board and the EIA Unit. Overall, the analysis is careful and thorough taking into consideration the U.S. experience. The only significant missing part of the analysis is an evaluation of the appropriateness of the level of fines and penalties originally set in 1976 through PD 984, in order for the macroanalysis to be more compelling.

Policy Study No. 2 and 10 also covers an analysis of commercial mechanisms for financial responsibility. The summary of available commercial mechanisms for financial responsibility is extensive and informative. The upshot is that it is better to rely on the expertise of the insurance industry with the support of the government rather than for firms to band themselves into a "pooled insurance fund" against environmental contingent liabilities.

The analysis on environmental fund assessment is very preliminary and rather arbitrary because of lack of criteria to determine the affordability and optimality of the rate of assessment and because of lack of information on the severity of pollution produced by the selected firms.

The synthesis report presents a detailed action for the near term, midterm and long term. Overall, the Policy Study is good and useful. Nevertheless, it is important to determine the internal consistency among all the recommendations in Policy Study No.2 and 10 with those of the other policy studies especially with respect to the use of market-based instruments. This can be expected to be one of the key concerns of the forthcoming policy study, Policy Study No. 7 on Integration of Regulation/Enforcement (CAC) Activities and Voluntary Industry (MB) Efforts.

The target completion date for Policy Study No. 2 and 10 was March 1994. The draft Final Report was completed in July 1994. It is still under review.

# POLICY STUDIES NOS. 3, 4, AND 5: MARKET-BASED INSTRUMENTS TO PROMOTE POLLUTION REDUCTION IN THE PHILIPPINES

## I. OBJECTIVES

Recommend specific market-based instruments (MBIs) that will encourage Philippine industry to voluntarily reduce its impact on the environment

To do so, the study will:

- document economic savings resulting from pollution reduction;
- understand industry decision making relative to voluntary pollution reduction;
- research market based instruments that have proved effective in other industrialized and industrializing countries; and
- prepare workbooks of industry-specific case studies to document the savings from voluntary pollution reduction (15 Philippine case studies); and also U.S. cases.

Secondary research in the U.S. will look into the experience in the U.S. and other countries in the application of market-based instruments. This comparative review may include the review of the resulting industry investments and the marginal administrative cost and complexity of implementing the market-based policies.

The team will also provide analytical support for proposed legislative actions to institute economic initiatives to regulate pollution in the Philippines.

| Deliverables: | Deadline: |
|---|---|
| • Pollution Reduction Economics/ Savings Handbook | 15 August 1993 |
| • Final report analyzing market-based instruments | 30 November 1993 |

## II. RESULTS (taken from the Executive Summary of PS Nos. 3-5)

The major findings and recommendations are as follows:

- each market-based instrument was evaluated according to market penetration, equity and fairness, economic efficiency, political feasibility, administrative feasibility, and effectiveness in achieving environmental objectives;

- the ranking of the MBIs, from highest to lowest general applicability are: financial incentives/subsidies, creating markets for wastes, user fees on raw materials or water, pollution/effluent charges, risk and liability systems, and refund-deposit systems;

- DENR/EMB should view most MBIs as new and relatively untested in the Philippines, and it should participate in international information exchanges regarding what has worked and not worked in other countries;

- the role of DENR/EMB should be more one of policy, planning and direction, than implementation and administration;

- DENR/EMB should pursue MBIs to induce one or more industry decisions on plant siting or relocation, investment in pollution prevention and control, compliance with effluent and emission standards, monitoring of discharges to the environment, and efficient use of natural resource and raw materials; and

- specific actions recommended for MBIs are of three types:

  - national policy instruments intended to affect a broad range of industries and geographic areas, and require changes to national environmental laws or regulations,

  - LGU policy instruments intended to respond to local conditions (e.g. industry concentration, pollution loading, natural resource constraints), and

  - industry assistance programs that provide firms with technical assistance without fear of regulatory oversight.

## III. EVALUATION

Policy Study No. 3-5 is a combination of Policy Study No. 3 (Identification of Market Based Instruments for the Philippines), Policy Study No. 4 (Incentive/Impediments to Voluntary Pollution Reduction) and Policy Study No. 5 (Pollution Reduction Economics/Savings). It has the largest budget among the policy studies, an indication that it was meant to be a central activity of the IEMP Policy Studies Component. Considering the budget and expectations on the study, the delivered output is the least satisfactory of the policy studies. Nevertheless, the study is a good start at ranking market-based instruments for selected industries in the country. Thus, it can be the starting point for more in-depth and quantitative analysis of market-based instruments for the Philippines that can be undertaken by other donor-funded projects e.g., MEIP, UNDP.

One of the deliverables of the study is the Pollution Reduction Economics/Savings Handbook drawing from 15 Philippine case studies and also U.S. cases. This did not push

through; instead, this was replaced by the Pollution Management Guidebooks (PMG). The project started the preparation of the PMGs, finishing the drafts of about four industry PMGs. So far, only one PMG has been finalized (PMG piggery). This activity has been shifted out of the Policy Study Component. This is now undertaken under the Special Activity component of IEMP.

An important activity of Policy Study No. 3-5 is the comparative study of the application of MBIs in other countries. The Final Report has only two pages on this. The Preliminary Draft elaborates on the experiences of other countries much more considerably than the Final Report, drawing primarily from a 1991 UNDP paper. The preliminary draft can be attached to the Final report as an Annex in order for the Final Report to be more informative.

The analysis of MBIs in the study is hampered by lack of quantification. The ranking is essentially a sophisticated form of experts' opinion/"Delphi technique". Thus it is not possible to determine the appropriate level of affluent tax rate for sugar milling. for example, without information on abatement costs and negative effects of pollution from sugar milling. As a result it is not possible to analyze the possible behavior of the sugar milling industry in response to an effluent tax. In this regard, the initial estimates of pollution abatement costs by industry in ENRAP Phase II can be useful in the further articulation of effluent charges in future studies.

The Final Report was targeted to be completed in November 1993. The draft Final Report was finished in February 1994. The Report has been accepted only recently.

# POLICY STUDY NO. 8: INTEGRATION OF POLLUTION REDUCTION PLANNING AND ENVIRONMENTAL RISK ASSESSMENT IN THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESS

## I. OBJECTIVES:

The study will:

- analyze existing Philippine EIA laws and procedures (includes other current projects for EIAs);
- evaluate PMA and ERA experience here and in the U.S.;
- recommend ways to integrate pollution reduction and ERA in the EIA process; and
- provide policy support to the DENR/EMB in implementing the program thrust.

The research includes collecting documents in the U.S. describing how ERA techniques have been used to supplement quantitative and qualitative analysis of the impact of a proposed project.

The analysis of the Philippine EIA system will cover the qualifications of firms conducting EIAs, the current laws and guidelines for the preparation of EIAs, types and sizes of facilities granted exemptions, the completeness and uniformity of EIAs, the procedure used to evaluate EIAs and grant ECCs, the qualifications of persons reviewing EIAs, the mean, minimum, and maximum time to process EIAs, the involvement of NGOs and affected community in the process, the typical grounds for rejecting EIAs, and the extent to which environmental management, and ERAs are included in the EIAs.

| Deliverables: | Deadline: |
|---|---|
| • Manual for EIA Preparation | 30 June 1993 |
| • Manual for EIA Evaluation | 30 June 1993 |
| • Synthesis of priority recommendations and proposed implementation strategy | 25 May 1993 |

## II. RESULTS (taken from the Executive Summary of PS No. 8)

Findings:

- The EIS system has evolved from a project planning tool to the country's pre-eminent environmental management tool, with the DENR expanding the use of the ECC beyond its planning functions to include traditional regulatory functions such as permitting, and compliance monitoring.

- The effective devolution of programs to the DENR regional offices has been hampered by limited staff and resources, and insufficient guidance from the EMB.

- Because of the country's rapid industrialization, the scope of the EIS should be expanded to include large-scale programmatic development within the 18 RICs.

- The focus of the EIS system must be shifted to planning with the incorporation of ERA and PMA.

Recommendations:

- The focus of the EIS system can be shifted to planning by employing the ERA in the risk identification and assessment process at the conceptualization and feasibility stages of a project, and by developing guidelines for risk identification, clean technologies, waste minimization practices, and public participation. This can also be done by employing the PMA in pollution prevention planning and by supporting it with widespread training, an information database, and Pollution Management Guides.

- DENR must also unburden the EIS system by shifting the system's regulatory functions to other environmental management programs which need to be reviewed and strengthened to ensure that they are legally endowed with sufficient authority to provide comprehensive environmental protection. Community-based monitoring for ECC compliance should remain part of the EIS while monitoring for permit compliance should be performed by the DENR regional offices.

- DENR AO No. 21 (1992) lays the groundwork for the eventual decentralization of the EIS system from the EMB to the DENR regional offices.

## III. EVALUATION

Policy Study No. 8 is arguably the best and most significant among the IEMP policy studies. The study produced three outputs; namely, Final Report, Philippines EIS System Guide: Policies and Procedures, and Consultant's Report on Programmatic Compliance including the formulation of the draft DENR Administrative Order (DAO) on programmatic compliance. The guide on the EIS system is the replacement of the planned manuals for EIA preparation and

evaluation which are two of the deliverables stated in the workplan. The consultant's report on the programmatic compliance represents a deviation from the original work plan; nevertheless, the consultant's services and report were very useful in clarifying, articulating and formulating DENR's policy idea of programmatic EIA.

The study calls for a redesign of the current EIS system by reemphasizing its planning rather than regulatory role, integrating ERA and PMS or critical elements of the EIA process, highlighting participative and regular monitoring, and devolving EIS reviews and monitoring to the regions. The study includes an action plan for the near term, medium term and long term (several years), which if pursued, would substantially modify and strengthen the country's EIS system.

In view of the growing concern on the EIS system within the government and by the private business sector, the pollution of the Philippine EIS System Guide will be useful. It will also be useful to disseminate to a wide audience outside EMB and DENR the Fiscal Report of Policy Study No. 8 in order to engage the various segments of the government, private business sectors, NGOs and the community in an informed and continuous discussion on the reform and the strengthening of the country's EIS system.

# APPENDIX G

# CAPABILITY BUILDING

**Summary of IEMP Training**
**DENR and National Capital Region**

| | PMA Workshop | Compliance Monitoring Workshop | Compliance Audit Workshop | Data Collection & Sampling Workshop | EIA | ERA | ERA w/ NRIPS Seminar | Total |
|---|---|---|---|---|---|---|---|---|
| DENR | | | | | | | | |
| EMB | 5 | 7 | | 5 | 3 | 5 | 3 | **28** |
| Other Central Office | | 3 | 1 | | 5 | 2 | 2 | **13** |
| NCR | 4 | 11 | | 8 | 2 | 7 | 4 | **36** |
| CENRO | | 4 | | 4 | | | | **8** |
| Other Gov't | 4 | 4 | 3 | 5 | 1 | 6 | 1 | **24** |
| LGU | | | | | 2 | | | **2** |
| **Sub – Total Gov't** | **13** | **29** | **4** | **22** | **13** | **20** | **10** | **111** |
| Industry | 21 | | 28 | | 7 | 1 | | **57** |
| NGO | | | | | 2 | 1 | | **3** |
| Others 1/ | 6 | 1 | 1 | 4 | 1 | | | **13** |
| Academe | 12 | | | | | 1 | | **13** |
| **Sub – Total Private Sector** | **39** | **1** | **29** | **4** | **10** | **3** | **0** | **86** |
| **Total** | **52** | **30** | **33** | **26** | **23** | **23** | **10** | **197** |

1/ Does not include PRC, EPAI, USAID, or SKI

## SUMMARY OF IEMP TRAINING BY REGION

| Region/Organization | PMA Workshop | Compliance Monitoring Workshop | Compliance Audit Workshop | Data Col Sampling Workshop | EIA | ERA | ERA w/NRIPs Seminar | Total |
|---|---|---|---|---|---|---|---|---|
| **Cordillera Autonomous Region (CAR)** | | | | | | | | |
| EQD Staff | | 6 | | 8 | 1 | 3 | 2 | 20 |
| LGUs | | 1 | | | | | | 1 |
| **Total CAR** | | 7 | | 8 | 1 | 3 | 2 | 21 |
| **Region I** | | | | | | | | |
| EQD Staff | | 6 | | 6 | 2 | 4 | 2 | 20 |
| Industry | 1 | | | | | | | 1 |
| **Total Region I** | 1 | 6 | | 6 | 2 | 4 | 2 | 21 |
| **Region II** | | | | | | | | |
| EQD Staff | | 4 | | 5 | 1 | 2 | 2 | 14 |
| **Total Region II** | | 4 | | 5 | 1 | 2 | 2 | 14 |
| **Region III** | | | | | | | | |
| EQD Staff | 7 | 5 | 2 | 5 | 12 | 3 | 2 | 36 |
| PENRO & CENRO | | 1 | | | 9 | | | 10 |
| LGU | | 1 | | | 8 | | | 9 |
| Other Govt | | | | 1 | 8 | | | 9 |
| **Sub–Total Gov't.** | 7 | 7 | 2 | 6 | 37 | 3 | 2 | 64 |
| Industry | 17 | 1 | 4 | 1 | 7 | | | 30 |
| NGO | | | | | 2 | | | 2 |
| Academe | 1 | | | | 2 | | | 3 |
| **Sub–Total Private Sector** | 18 | 1 | 4 | 1 | 11 | | | 35 |
| **Total Region III** | 25 | 8 | 6 | 7 | 48 | 3 | 2 | 99 |

## SUMMARY OF IEMP TRAINING BY REGION

| Region/Organization | PMA Workshop | Compliance Monitoring Workshop | Compliance Audit Workshop | Data Col Sampling Workshop | EIA | ERA | ERA w/NRIPs Seminar | Total |
|---|---|---|---|---|---|---|---|---|
| **Region IV** | | | | | | | | |
| EQD Staff | 1 | 1 | | | 4 | 4 | | 10 |
| PENRO & CENRO | 1 | 2 | | | 23 | 4 | | 30 |
| Other Govt | | | 1 | | | | | 1 |
| LGU | | | | | 6 | | | 6 |
| **Sub–Total Gov't.** | 2 | 3 | 1 | | 33 | 8 | | 47 |
| Industry | 7 | | 3 | | | | | 10 |
| NGO | | | | | | | | |
| Academe | 1 | | | | | | | 1 |
| **Sub–Total Private Sector** | 8 | | 3 | | | | | 11 |
| **Total Region IV** | 10 | 3 | 4 | | 33 | 8 | | 58 |
| **Region IVA** | | | | | | | | |
| EQD Staff | | 1 | | 3 | 8 | | 1 | 13 |
| PENRO & CENRO | | | | | 10 | | | 10 |
| Other Govt | | | | | 5 | | | 5 |
| LGU | | | | | 9 | | | 9 |
| **Total Region IVA** | | 1 | | 3 | 32 | | 1 | 37 |
| **Region V** | | | | | | | | |
| EQD Staff | | 4 | | 4 | 1 | 2 | 1 | 12 |
| PENRO & CENRO | | 2 | | 1 | | 1 | | 4 |
| **Total Region V** | | 6 | | 5 | 1 | 3 | 1 | 16 |
| **Region VI** | | | | | | | | |
| EQD Staff | | 4 | | 4 | 1 | 3 | 2 | 14 |
| **Total Region VI** | | 4 | | 4 | 1 | 3 | 2 | 14 |

## SUMMARY OF IEMP TRAINING BY REGION

| Region/Organization | PMA Workshop | Compliance Monitoring Workshop | Compliance Audit Workshop | Data Col Sampling Workshop | EIA | ERA | ERA w/NRIPs Seminar | Total |
|---|---|---|---|---|---|---|---|---|
| **Region VII** | | | | | | | | |
| EQD Staff | 1 | 4 | | 4 | 7 | 3 | | 19 |
| PENRO & CENRO | | | | | | | | |
| LGU | | | | | | | | |
| Other Govt | 3 | | | | 12 | | | 15 |
| **Sub–Total Gov't.** | 4 | 4 | | 4 | 19 | 3 | | 34 |
| Industry | 31 | | | | 21 | | | 52 |
| NGO | | | | | 10 | | | 10 |
| Academe | 2 | | | | 3 | | | 5 |
| **Sub–Total Private Sector** | 33 | | | | 34 | | | 67 |
| **Total Region VII** | 37 | 4 | | 4 | 53 | 3 | | 101 |
| **Region VIII** | | | | | | | | |
| EQD Staff | | 3 | | 3 | 1 | 3 | 3 | 13 |
| PENRO & CENRO | | | | 1 | | | | 1 |
| **Total Region VIII** | | 3 | | 4 | 1 | 3 | 3 | 14 |
| **Region IX** | | | | | | | | |
| EQD Staff | 3 | 2 | | 4 | 2 | 2 | 3 | 16 |
| PENRO & CENRO | | | | | | | | |
| LGU | | | | | | | | |
| Other Govt | | | | | | | | |
| **Sub–Total Gov't.** | 3 | 2 | | 4 | 2 | 2 | 3 | 16 |
| Industry | 31 | | | | | | | 16 |
| **Sub–Total Private Sector** | 31 | | | | | | | 16 |
| **Total Region IX** | 34 | 2 | | 4 | 2 | 2 | 3 | 32 |

## SUMMARY OF IEMP TRAINING BY REGION

| Region/Organization | PMA Workshop | Compliance Monitoring Workshop | Compliance Audit Workshop | Data Col Sampling Workshop | EIA | ERA | ERA w/NRIPs Seminar | Total |
|---|---|---|---|---|---|---|---|---|
| **Region X** | | | | | | | | |
| EQD Staff | 1 | 4 | | 4 | 6 | 2 | | 17 |
| PENRO & CENRO | | | | | 14 | | | 14 |
| LGU | | | | | 8 | | | 8 |
| Other Govt | | | | | 7 | 1 | 1 | 9 |
| **Sub–Total Gov't.** | 1 | 4 | | 4 | 35 | 3 | 1 | 48 |
| Industry | 23 | | | 18 | | | | 41 |
| NGO | | | | 6 | | | | 6 |
| Academe | | | | 5 | | | | 5 |
| **Sub–Total Private Sector** | 23 | | | 29 | | | | 52 |
| **Total Region X** | 24 | 4 | | 33 | 35 | 3 | 1 | 100 |
| **Region XI** | | | | | | | | |
| EQD | 6 | 2 | | 4 | 1 | 2 | 2 | 17 |
| Other Govt & DENR | 10 | | | | | | | 10 |
| PENRO & CENRO | | | | | | 1 | | 1 |
| LGU | 1 | | | | | | | 1 |
| **Sub–Total Gov't.** | 17 | 2 | | 4 | 1 | 3 | 2 | 29 |
| Industry | 50 | | | | | | | 50 |
| Consultant | 2 | | | | | | | 2 |
| **Sub–Total Private Sector** | 52 | | | | | | | 52 |
| **Total Region XI** | 86 | 4 | | 8 | 2 | 6 | 4 | 110 |
| **Region XII** | | | | | | | | |
| EQD Staff | | 1 | | | 2 | | 1 | 4 |
| PENRO & CENRO | | | | | | 1 | | 1 |
| LGU | | | | | | 1 | | 1 |
| Industry | 2 | | | | | 3 | | 5 |
| **Total Region XII** | 2 | 1 | | | 2 | 5 | 1 | 11 |
| **ARMM** | | | | | | | | |
| EQD | | 2 | | 4 | | 3 | 3 | 12 |
| **Total ARMM** | | 2 | | 4 | | 3 | 3 | 12 |
| **GRAND TOTAL** | 219 | 59 | 10 | 95 | 214 | 51 | 27 | 660 |

# APPENDIX H

# SUSTAINABILITY CONCERNS

**Annual Operating Budget**
**Environment Management Bureau**
**(Pesos 000)**

| Particulars | 1991 | 1992 | 1993 |
|---|---|---|---|
| Personal Services | | | |
| Salaries, Permanent | 6,251 | 10,000 | 10,478 |
| Salaries/Wages, Contractual/Emergency | 293 | 402 | 402 |
| Lump-Sum of the Tax Computerization Project | | | |
| Total Salaries and Wages | 6,544 | 10,402 | 10,880 |
| Step Increments | | | |
| Honoraria and Commutable Allowance | 720 | 720 | 720 |
| Compensation Insurance Premiums | | | |
| Pag-I.B.I.G. Contributions | | | |
| Medicare Premiums | | | |
| Bonus and Cash Gifts | | | |
| Terminal Leave Benefits | | | |
| Cola/AC | 1,552 | | |
| Personnel Economic Relief Allowance | | | |
| Others: Fixed Expenditures | | | |
| RATA | 192 | 175 | 175 |
| Shoes and Uniform Allowance | | 7 | 7 |
| Total Other Compensation | 2,464 | 902 | 902 |
| Total Personal Services | 9,008 | 11,304 | 11,782 |
| Maintenance and Other Operating Expenses (MOOE) | | | |
| 02 Travelling Expenses | 989 | 930 | 1,029 |
| 03 Communication Services | 336 | 248 | 248 |
| 04 Repair and Maintenance of Government Facilities | | | |
| 05 Repair and Maintenance of Government Vehicles | 756 | 650 | 750 |
| 06 Transportation Services | | | |
| 07 Supplies and Materials | 5,569 | 3,728 | 3,012 |
| 08 Rents | 830 | 1,083 | 984 |
| 09 Interest | | | |
| 10 Grants, Subsidies and Contributions | 500 | 427 | 427 |
| 11 Awards and Indemnities | | | |
| 12 Loan Repayments and Sinking Funds Contributions | | | |
| 13 Losses/Depreciation/Depletion | | | |
| 14 Water, Illumination and Power | 700 | 885 | 785 |
| 15 Social Security Benefits, Rewards and Other Claims | | | |
| 16 Auditing Services | | | |
| 17 Training and Seminar Expenses | | | |
| 18 Extraordinary and Miscellaneous Expenses | | 16 | 16 |
| 19 Confidential and Intelligence Expenses | | | |
| 20 Anti-Insurgency/Contingency/Emergency Expenses | | | |
| 21 Taxes, Duties and Fees | | | |
| 22 Trading/Production | | | |
| 23 Advertising and Publication Expenses | | | |
| 24 Fidelity Bonds and Insurance Premium | | | |
| 25 Loss on Foreign Exchange | | | |
| 26 Commitment Fees and Other Charges | | | |
| 29 Other Services | 1,562 | 2,362 | 2,045 |
| Total MOOE | 11,242 | 10,329 | 9,296 |
| Total Current Operating Expenditures | 20,250 | 21,633 | 21,078 |

environmental management, PRC Inc.

# Manila Office Memo

**Date:** September 7, 1994

**To:** Marissa David, Dondon Nacion, Cynthia Roxas, Marivie Cepeda, Bing Rufo, Emily Mateo

**From:** David Wadsworth David.

**Subject:** Distribution of IEMP Documents

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We are not doing a good job of keeping a record of what, when and to whom we distribute IEMP documents. I know some of you keep individual, or component, records of distribution. But we need to elevate document recipient and distribution lists to a project level rather than an individual or component level.

There will be two lists. The first is the **master document recipient list**, which will be maintained by data processing (Volt). The second is the **document specific distribution list(s)**, which will be maintained by each component coordinator. The attached forms suggest some formats for the **documents specific distribution lists**. Coordinators can development similar forms for the other classes of documents, as needed.

The **master document recipient list** and the **document specific distribution lists** must be kept current. Each component coordinator should be responsible for (1) document distribution for documents generated by the component; (2) maintenance of their **document specific distribution lists**, and (3) providing data processing information for updating the master document recipient list. The **document specific distribution lists** may be manually maintained by each component but these lists should be provided to data processing for periodic updating.

In order that the **master document recipient list** may be created and then brought up to date, I suggest first matching documents to general categories of recipients. Then, each coordinator will be responsible for completing their **document specific distribution lists** with recipient names and the date each document was provided. Use the following order when making your lists: organization name (DENR) - location (Region VII) - person name (if appropriate). Data processing will check data bases to see if the institution/location/name is on file with the full address. If not, the component coordinator must supply data processing with missing information.

The following is a suggested list of recipients categories coded by number. The numbers are then used to match documents to suggested recipients categories.

# PUBLICATIONS LIST

1. **WORKSHOP MANUALS:** ERA, EIA, DCSSA, CA, CM, PMA

   Participants' Manual (1), (3), (5), (10)
   Trainers' Manual (1), (3), (10)
   References (1), (3), (10)

2. **POLICY STUDIES**

   #1, #2, #2/10, #3-4-5, #8, #9 and later #7 (1), (2), (4), (5), (7), (10), (11)
   Synopsis of MBIs (same as above)
   Handbook for Financial Investments (1), (2), (10), (11),
   Quick Reference Guide (1), (2), (9), (10)
   EIA Systems Guide (1), (2), (3), (4), (5), (6), (7), (8), (10). Note: EMB will sell to (9) and (11)
   EIA Primer (general distribution)

3. **PMA REPORTS**

   Confidential Business Report (9)
   Public Version Report (1), (3), (4), (5), (6), (10)-

4. **POLLUTION MANAGEMENT GUIDELINES**

   Eventually there will be 10 of these (1), (3), (4), (5), (6), (7), (8), (9), (10)

5. **DATA BASES**

   Alumni List (consolidated) (1)
   Alumni List (regional) (3), (8)

6. **OTHERS**

   ERA Report (1), (5)
   ERA Report (regional) (3), (8)
   ERA Handbook (1), (3), (4), (6), (7), (8)

   PMA Primer (general distribution)

7. **SUCCESS STORIES**

   10 Success Stories to date (general distribution) + PRC US offices

8. **NEWSLETTER**

   This data base already exists.

## SUGGESTED RECIPIENT CATEGORIES

(1) USAID and EMB
(2) DENR Central
(3) DENR Regional
(4) Other Govt Agencies
(5) Academe (libraries)
(6) Other institutions, local and international
(7) International donors
(8) LGUs, NGOs
(9) Industries
(10) Sub (SKI, EPAI, UP, CRC, SGV, HBI)
(11) Local and international banks
(12) Misc.(individuals)

Please review the following list of publications and coded recipients and make corrections and additions as required. The list does not include routine reports or workplans or similar documents, which have limited distribution.

Please plan to attend a special management committee meeting early next week (Sept 12 or 13). Bring your comments and suggestions to the meeting.

I am anxious to completed this exercise before September 19 so please start filling-in the forms so data processing can begin. If you need help, please let me or Marissa know.

# DISTRIBUTION RECORD

WORKSHOP MANUAL:_____

| RECIPIENT | 1ST ISSUE | | | REVISION OR SUPPLEMENT | | | REVISION OR SUPPLEMENT | | |
|---|---|---|---|---|---|---|---|---|---|
| | PAX | T | REF | PAX | T | REF | PAX | T | REF |
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PAX = Participants' Manual T = Trainers' Manual REF = References

## DISTRIBUTION RECORD
## POLICY STUDIES

| RECIPIENT | EIA PRM | PS #1 | PS #2 | PS #3-5 | PS #8 | PS #9 | PS# 2/10 | PS #7 | SYN MBI | HAND BOOK | QRG |
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## DISTRIBUTION RECORD
## SUCCESS STORIES

| RECIPIENT | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ | SS ___ |
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**DISTRIBUTION RECORD**
**POLLUTION MANAGEMENT GUIDEBOOKS**

| RECIPIENT | PMG ___ | PMG ___ | PMG ___ | PMG ___ | PMG ___ | PMG ___ | PMG ___ | PMG ___ | PMG ___ | PMG ___ |
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## DISTRIBUTION RECORD
## PMA PUBLIC VERSION REPORTS

| RECIPIENT | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ | PMA ___ |
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**DISTRIBUTION RECORD**
**ENVIRONMENTAL RISK ASSESSMENT IMPLEMENTATION REPORT**

| RECIPIENT | ERA REPORT | ERA REGIONAL REPORT | ERA HAND-BOOK |
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**DISTRIBUTION RECORD**
**ALUMNI LIST**

| RECIPIENT | CONSOLIDATED LIST | REGIONAL LIST | |
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**EMB PROFESSIONAL STAFF LEVEL**
**November 1993**

| Division or Unit | Staff | Mandate and Functions |
|---|---|---|
| Legal | 2 Attorneys<br>3 Legal aides<br>3 Stenographers | 1. Advises EMB on all legal matters and serves as legal liaison between EMB and regional offices<br>2. Provides assistance in drafting legislative and administrative orders<br>3. Serves as secretariat to PAB |
| Environmental Quality | 2 Mech/Indus. Engineers<br>10 Chemestry /Chem. Engineers<br>5 Civil/San. Engineers<br>3 Eco/Comm/MBA<br>1 Social Scientist<br>2 Political/Pub. Administrators<br>3 Biologists<br>3 Statisticians | 1. Formulates environmental requirements (air and water quality and hazardous waste and solid waste standards)<br>2. Provides technical assistance to regional offices in inspection and monitoring |
| Environmental Impact Assessment (Unit) | 2 Chemical Enginers<br>2 Civil/San. Engineers (contractors)<br>3 Biologists<br>1 Envir. Planner | 1. Ensures environmental factors and considerations are incorporated in the development planning process<br>2. Reviews the EISs submitted to DENR by project proponents |
| Environmental Education | 2 Biologists<br>3 Chemistry/Chem. Engineers<br>5 Behavioral/Political Scientists<br>2 Economists<br>1 Industrial Engineer<br>1 Architect<br>1 Advertising/Fine Art Specialist | 1. Undertakes an aggresive environmental information and education campaign for public at large<br>2. Provides environmental education links with school systems<br>3. Produces and disseminates information and educational materials on environmental issues through flyers, posters, and media<br>4. Develops institutional coordination and links with domestic and foreign institutions, including NGO networks |
| Research and Development | 9 Chemists/Chem. Engineers<br>2 Env. Scientists<br>2 Commerce<br>4 Med and Food Technicians<br>3 Biologists<br>2 Archit, Civil Engineers<br>2 Natural Sci. Specialists<br>2 Ed. Psychologists<br>1 Mining Specialists<br>1 Electrical Engineer | 1. Assists EMB in policy formulations concerning generation of information required for development of environmental quality standards<br>2. Assists the regional offices in technical and laboratory services (sample analysis)<br>3. Condusts adaptaive research on new and innovative technologies<br>4. Provides laboratory services to DENR and industries |
| Management Information System (Unit) | 3 Programmers<br>4 Statisticians | Manages the following databases:<br>1. Document tracking system (for EIA)<br>2. Chemical and chemical substances database (for EQD)<br>3. Monitoring database (compiling monitoring reprts from regions) |

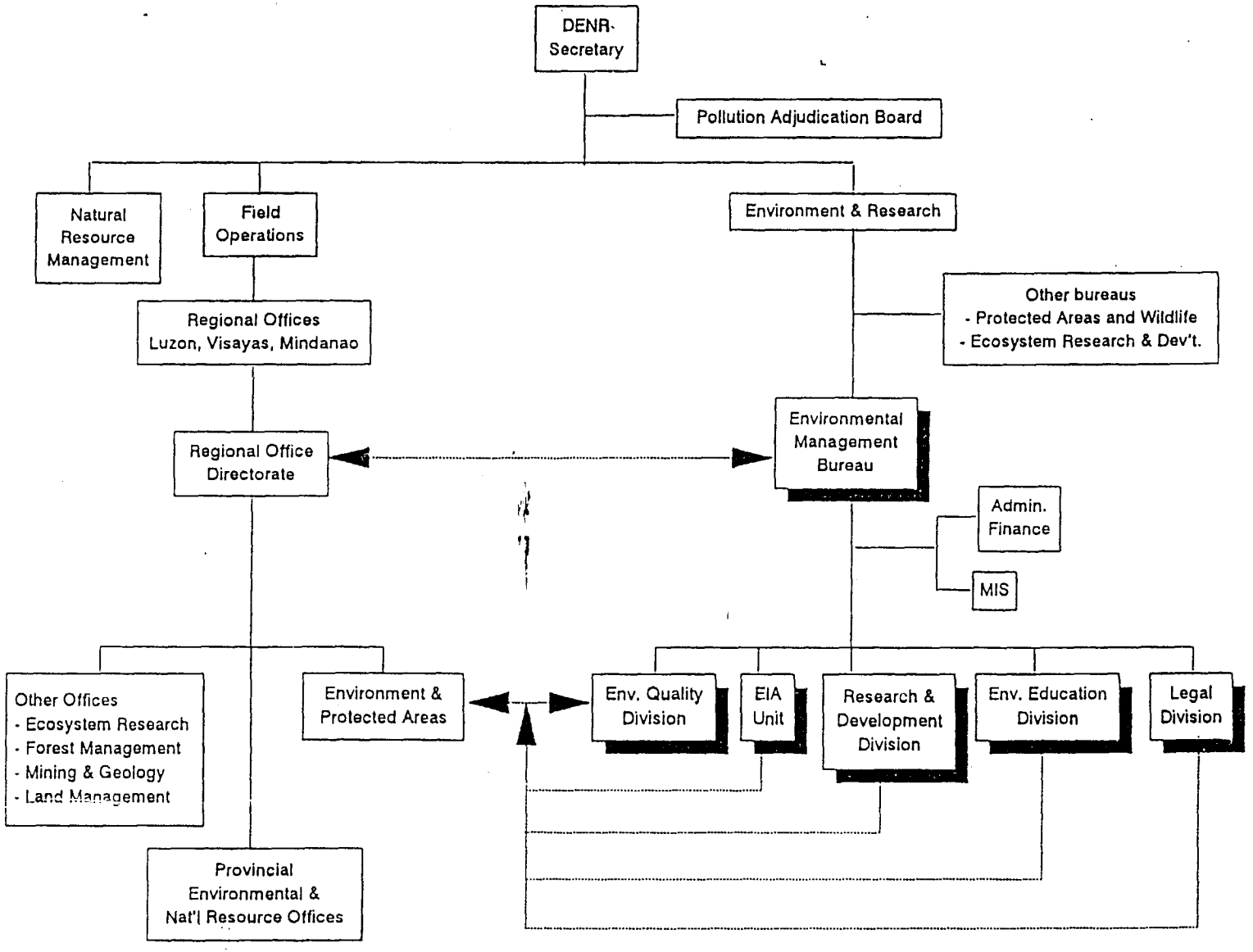


Chart 5. Organization of EMB with DENR