

Strengthening Environmental Enforcement and
Compliance Capacity Technical Assistance
(SEECCTA) Project

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**Strategic Plan for the Environmental Management Bureau
(Component 1)**

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FIGURE

Figure Alternative Organizational Structure for Environmental Management

ACRONYMS

AC	-	Authority to Construct
ACMC	-	Atlas Consolidated Mining Corporation
ADB	-	Asian Development Bank
ADG	-	Assistant Director General
ADEL	-	Assistant Director for External Linkages Services
ADMAS	-	Assistant Director for Management and Administration Services
ADTEL	-	Assistant Director for Technical Services
APCF	-	Air Pollution Control Facility
AQAP	-	Air Quality Action Plan
AQMF	-	Air Quality Management Fund
AQMS-EQD	-	Air Quality Management Section-Environmental Quality Division
ARCDP	-	Agrarian Reform Communities Development Program
ASEAN	-	Association of Southeast Asian Nations
AV	-	Audio-Visual
BFAR	-	Bureau of Fisheries and Aquatic Resources
BIMP-EAGA	-	Brunei-Indonesia-Malaysia-Philippines East Asia Growth Area
BOI	-	Board of Investments
BPS	-	Bureau of Product Standards
CAA	-	Clean Air Act
CAR	-	Cordillera Administrative Region
CAS	-	Chemical Abstract Services
CC	-	Climate Change
CCO	-	Chemical Control Order
CDO	-	Cease and Desist Order
CEMS	-	Continuous Emission Monitoring System
CENRO	-	Community Environment and Natural Resources Office
CFC	-	Chlorofluorocarbons
CHWM	-	Chemical and Hazardous Waste Management
CLRF	-	Contingent Liability and Rehabilitation Fund
CNC	-	Certificate of Non-Coverage
CO	-	EMB Central Office
COA	-	Commission on Audit
COC	-	Certificate of Conformity
COP	-	Conference of Parties
CP	-	Cleaner Production
CP/CT	-	Cleaner Production/ Cleaner Technology
CRC	-	Chemical Review Committee
CRJ	-	Cash Receipts Journal
DA	-	Department of Agriculture
DAO	-	DENR Administrative Order
DAR	-	Department of Agrarian Reform
DDG	-	Deputy Director General
DECS	-	Department of Education, Culture and Sports
DENR	-	Department of Environment and Natural Resources

DG	-	Director General
DILG	-	Department of Interior and Local Government
DIPPS	-	Database on Industrial Pollution for Point Sources
DOE	-	Department of Energy
DOF	-	Department of Finance
DOH	-	Department of Health
DOLE	-	Department of Labor and Employment
DOST	-	Department of Science and Technology
DOTC	-	Department of Transportation and Communication
DPWH	-	Department of Public Works and Highways
DSWD	-	Department of Social Welfare and Development
DTI	-	Department of Trade and Industry
EA	-	Emission Averaging
EAC	-	Environmental Adjudication Commission
EANET	-	Acid Deposition Monitoring Network in East Asia
ECA	-	Environmentally Critical Area
ECC	-	Environmental Compliance Certificate
ECIP	-	Employee Compensation Insurance Premiums
ECP	-	Environmentally-Critical Project
EE	-	Environmental Education
EE&I	-	Environmental Education and Information
EGF	-	Environmental Guarantee Fund
EIA	-	Environmental Impact Assessment
EIARC	-	Environmental Impact Assessment Review Committee
EIRAM	-	Environmental Impact, Risk Assessment and Management
EIS	-	Environmental Impact Statement
ELR	-	Environmental Laboratory Recognition
EMB	-	Environmental Management Bureau
EMB-EEID	-	Environmental Management Bureau-Environmental Education and Information Division
EMF	-	Environmental Monitoring Fund
EMP	-	Environmental Management Plan
EM/PC	-	Environmental Management and Pollution Control
EMS	-	Environmental Management System
ENR	-	Environment and Natural Resources
ENRA	-	Environment and Natural Resources Accounting
ENRAP	-	Environmental and Natural Resources Accounting Project
EO	-	Executive Order
EPIC	-	Environmental Management Programme for Industry Competitiveness
EPO	-	Environmental Protection Officer
EQA	-	Environmental Quality Assessment
EQD	-	Environmental Quality Division
ERDB	-	Ecosystems Research and Development Bureau
ERF	-	Environmental Revolving Fund
ESM	-	Environmentally Sound Management
ET	-	Emission Trading
FLO	-	Formal Lifting Order

FMB	-	Forest Management Bureau
FPA	-	Fertilizer Pesticide Authority
GB	-	Governing Board
GCCDC	-	Golf Course Construction and Development Committee
GEF	-	Global Environmental Facility
GEOHAT	-	Geologic/Hydrogeologic Assessment
GHG	-	Greenhouse Gas
GIS	-	Geographic Information System
GOCC	-	Government Owned and Controlled Corporation
GSIS	-	Government Services Insurance System
HAZMAT	-	Hazardous Materials
HB	-	House Bill
HLURB	-	Housing and Land Use Regulatory Board
HRMS	-	Human Resources Management Services
HW	-	Hazardous Waste
HWG	-	Hazardous Waste Generators
HWMC	-	Hazardous Wastes Management Committee
IAC	-	Inter-Agency Committee
IACC	-	Inter-Agency Coordinating Committee
IAC/Ps	-	Inter-Agency Committee/Projects
IACEH	-	Inter-Agency Committee on Environmental Health
IATAC	-	Inter-Agency Technical Advisory Council
ICC	-	Investment Coordinating Council
ICETT	-	International Center for Environmental Technology Transfer
ICT	-	Information and Communication Technology
IE	-	Interlaboratory Exercise
IEC	-	Information, Education and Communication
IEE	-	Initial Environmental Examination
IEMP	-	Industrial Environmental Management Project
IIAC	-	International and Inter-Agency Commitments
IISE	-	Industrial Initiatives for Sustainable Environment
IRR	-	Implementing Rules and Regulations
ISP	-	Internet Service Provider
JBIC	-	Japan Bank for International Cooperation
JICA	-	Japan International Cooperation Agency
LAER	-	Lowest Achievable Emission Rate
LAN	-	Local Area Network
LGC	-	Local Government Code
LGUs	-	Local Government Units
LLDA	-	Laguna Lake Development Authority
LMB	-	Lands Management Bureau
LOGOFIND	-	Local Government Finance And Development
LTO	-	Land Transportation Office
MARPOL	-	Marine Pollution
MBEMP	-	Manila Bay Environmental Management Project
MBI	-	Market Based Instruments
MBPCC	-	Manila Bay Project Coordinating Committee
MC	-	Memorandum Circular

MGB	-	Mines And Geo-Sciences Bureau
MIS	-	Management Information System
MMAQISDP	-	Metro Manila Area Quality Improvement Sector Development
MMDA	-	Metro Manila Development Authority
MMT	-	Multipartite Monitoring Team
MOA	-	Memorandum of Agreement
MP	-	Montreal Protocol
MRF	-	Materials Recovery Facility
MVIS	-	Motor Vehicle Inspection System
MVTAS	-	Motor Vehicle
NAAQ	-	National Ambient Air Quality
NACOMEAT	-	National Committee on Meat, Amenities and Technology
NALECC	-	National Law Enforcement Coordinating Committee
NAMRIA	-	National Mapping and Resource Information Authority
NCC	-	National Coordinating Committee
NCR	-	National Capital Region
NEA	-	National Electrification Administration
NEC	-	National Ecology Center
NEDA	-	National Economic Development Authority
NEMA	-	National Environmental Management Authority
NESSAP	-	National Emission Standards for Source Specific Air Pollutants
NEPC	-	National Environmental Protection Council
NGAS	-	New Government Accounting System
NGO	-	Non-Government Organization
NMIC	-	National Meat Inspection Commission
NOV	-	Notice of Violation
NPCC	-	National Pollution Control Commission
NRDC	-	National Resources Development Corporation
NSCB	-	National Statistics Coordination Board
NSWM	-	National Solid Waste Management
NSWMC	-	National Solid Waste Management Commission
NWAPCC	-	National Water and Air Pollution Control Commission
NWRB	-	National Water Resources Board
ODS	-	Ozone Depleting Substances
OP	-	Office of the President
PA21	-	Philippine Agenda 21
PAB	-	Pollution Adjudication Board
PAGASA	-	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PATLEPAM	-	Philippine Association of Tertiary Level Educational Institutions in Environmental Protection and Management
PAWB	-	Protected Areas and Wildlife Bureau
PCARRD	-	Philippine Council for Agriculture and Resource Research and Development
PCB	-	Polychlorinated Biphenyls
PCCI	-	Philippine Chamber of Commerce and Industry
PCIERD	-	Philippine Council for Industry and Energy Research and Development

PCG	-	Philippine Coast Guard
PCL	-	Priority Chemical List
PCO	-	Pollution Control Officer
PCSD	-	Philippine Council for Sustainable Development
PD	-	Presidential Decree
PEMSEA	-	Partnership for Environmental Protection and Management for the Seas of East Asia
PENRO	-	Provincial Environment and Natural Resources Office
PEPA	-	Philippine Environmental Protection Authority
PEQ	-	Philippine Environmental Quality Report
PERA	-	Personnel Economic Relief Allowance
PETC	-	Private Emission Testing Center
PEZA	-	Philippine Export Zone Authority
PIA	-	Philippine Information Agency
PIC	-	Prior Informed Consent
PICCS	-	Philippine Inventory of Chemicals and Chemical Substances
PM	-	Particulate Matter
PMO	-	Project Management Office under the PTFWM
PMPIN	-	Pre-Manufacturing and Pre-Importation Notification
PMS	-	Planning and Management Staff
PNP	-	Philippine National Police
PNRI	-	Philippine Nuclear Research Institute
PNS	-	Philippine National Standards
PO	-	People's Organization
PTO	-	Permit to Operate
POP	-	Persistent Organic Pollutants
PRRC	-	Pasig River Rehabilitation Commission
PTFWM-PMO	-	Presidential Task Force on Waste Management Project Management Office
PTF-WRDM	-	Presidential Task Force on Water Resources Development and Management
PTO	-	Permit to Operate
PUV	-	Public Utility Vehicles
RA	-	Republic Act
RATA	-	Representation and Transportation Allowance
RD	-	Regional Director
RDD	-	Research and Development Laboratory Division
RED	-	Regional Executive Director
R&D	-	Research and Development
RO	-	EMB Regional Office
RP	-	Republic of the Philippines
RPAO	-	Regional Public Affairs Office of the DENR
SAP	-	Strategic Action Programme
SEECCTA	-	Strengthening Environmental Enforcement Compliance Capacity Technical Assistance
SIDA	-	Swedish International Development Cooperation Agency
SLF	-	Sanitary Landfill
SMI	-	Strategic Management Initiative

SOP	-	Standard Operating Procedure
SS&PS	-	Standard Setting and Policy Studies
STP	-	Sewage Treatment Plant
SWM	-	Solid Waste Management
TA	-	Technical Assistance
TAC	-	Technical Advisory Council
TAG	-	Technical Assistance Group
TDA	-	Transboundary Diagnostic Analysis
TESDA	-	Technical Education and Services Development Authority
TI	-	Texas Instruments
TLO	-	Temporary Lifting Order
TNA	-	Training Needs Assessment
TPO	-	Temporary Permit to Operate
TSD	-	Treatment Storage Disposal
TSP	-	Total Suspended Particulate
TWG	-	Technical Working Group
TWSIP	-	Tiwi Solid Wastes Injection Project
UNDP	-	United Nations Development Programme
UNEP	-	United Nations Environment Programme
UNFCCC	-	United Nations Framework Convention on Climate Change
UNIDO	-	United Nations Industrial Development Organization
UP	-	University of the Philippines
USAID	-	United States Agency for International Development
USEPA	-	United States Environmental Protection Agency
VTASTC	-	Vehicle Type Approval System Testing Centers
WAN	-	Wide Area Network
WB	-	World Bank
W/F/P	-	Work and Financial Plans
WHO	-	World Health Organization
WTA	-	Willingness -to-Accept
WWPS	-	Waste Water Permitting System
WWTF	-	Waste Water Treatment Facility

STRATEGIC PLAN FOR ENVIRONMENTAL MANAGEMENT BUREAU

1. EMB IN PERSPECTIVE

1.1 Brief Historical Background of the EMB

The mandates and general functions of Environment Management Bureau have evolved from the time it was established in 1987 as one of the six bureaus under the office of the Secretary. From its inception up to the passage of the Clean Air Act in 1999, the EMB was conceived to play an assisting or advisory role to the DENR, providing technical assistance and advice to the Office of the Secretary and the Regional Directors. Research in the Bureau has been formally confined to the substantive areas of effective means of pollution control and abatement. Moreover, its research involvement seems to have been limited to meagerly funded field data gathering activities and laboratory testing of water quality samples from the regional offices.

Under EO 192, the role of the Bureau in policy formulation seems to have focused only on the development of effluent, stream, ambient and emission standards, promulgation of rules and regulations, procedures and other pertinent policies. Its education function also seems to have been confined in the provision of information and the dissemination of annual or periodic environmental reports. As an advisory staff with limited research and policy formulation functions, the Bureau has understandably had a limited enforcement role. In time, the regional offices eventually undertook the operations and programs of the Department.

RA 6969 of 1990 expanded the environmental responsibilities and tasks of the DENR and with it, the EMB. The Act made it imperative for the agency to explicitly undertake more information generation and research activities for the purpose of policy formulation and the conduct of education awareness campaigns. The Clean Air Act of 1999 (RA8749) further expanded the Bureau's mandate. It mandated the application and strengthening of traditional approaches in air quality management. More importantly, it introduced new approaches, such as air shed management, emission charges, trading of emission rights, and public disclosure. The implementation of a much broader mandate, however, requires the reorganization of EMB as a line bureau with a larger budget and personnel staff. The transition toward this end has yet to be completed.

In strengthening the role of the DENR and giving it greater responsibilities, RA 8749 added more tasks to EMB. Apart from the traditional standard setting, ambient monitoring, minimum fuel quality assurance, source specific permitting and enforcement, the Act mandates the development of an Integrated Air Quality Improvement Framework and an Air Quality Control Action Plan. Furthermore, the Act places additional responsibilities on the DOTC, MMDA and LGUs. This means that the EMB is compelled not only to perform entirely new functions but also to guide and coordinate with other agencies, adding to the burden of the Bureau's relatively weak air quality monitoring system.

RA 9003 further expands the Department's environmental responsibilities by mandating it to oversee the implementation of a national integrated solid waste management program as head of the newly created national Solid Waste Management Commission. The law also assigns the Director of the EMB as head of the national Ecology Center, a unit tasked with providing consulting, information, training and networking services on solid waste management. Moreover, the responsibility of giving technical assistance to local government units (LGUs) in terms of the three R's of solid waste management, i.e., reduce, re-use and recycle now falls on the DENR.

The coordination function of EMB in EO 192 was articulated in terms of its power to "consult, participate, cooperate and enter into agreement with other government agencies, and with affected political groups, political subdivisions, and enterprises in the furtherance of the purpose of the decree." Since EO 192, EMB's coordinative function has been further extended in the various environmental laws after 1987. For instance, the concern expressed in RA 6969 for the toxicity of chemical substances and the unreasonable risk and injury they present to human health and the environment, suggests collaboration with health authorities and scientific research organizations.

Apart from its usual policy formulation and enforcement functions, EMB is envisioned in the new mandates to network, collaborate, build alliances, and work with other agencies and groups in the management of air quality, toxic and solid waste, or the environment in general. Through these inter-agency relations, the Bureau is able to expand the coverage and breadth of its monitoring, policy formulation, and regulatory environmental management functions.

The EMB is one of the components under the Staff Sectoral Bureaus of the DENR. It seems from the department's perspective that the "environment" is akin to a "sector" over which the EMB has sectoral jurisdiction. For this sector, EMB's vision is to have

"a country that enjoys a clean healthy, sustainable development that enhances the quality of life for current and future generations, and protects our diverse natural resources."

Its mission is defined accordingly:

"to restore, protect and enhance the environment; and to ensure public health, environmental quality and economic vitality."

In implementing its environmental protection mandate, the EMB has mainly relied upon its historically given environmental management approach. In the command and control mode, EMB has monitored the compliance of the industry and other pollution sources to the set environmental standards for air and water quality, with violation of such standards resulting in a pollution adjudication process that would entail the payment of fines or closure orders until the implementation of a remediation plan. Over time, the growing problem of environmental pollution has strained EMB's enforcement capacity and the pollution adjudication process as reflected in the cumulative increase in number of cases docketed at the PAB.

If carried out mainly in the traditional mode, the new mandates given to EMB would entail more inspection-monitoring activities covering air quality sampling stations in attainment and non-attainment areas, landfills, and hazardous waste generators of treatment-storage-disposal (TSD) facilities. The already overloaded monitoring and pollution adjudication system of the Bureau would thus be subjected to an even heavier workload. If greater enforcement capacity and new environmental management approaches were not available, the existing resources, organizational and regulatory structure, and pollution adjudication process both at the central office and regional level would not be able to meet EMB's expanded responsibilities.

1.2 Strengths and Weaknesses of EMB

In order to establish a comprehensive perspective of the EMB and determine its immediate needs for enhancement, a number of assessments have been undertaken. Focusing on the various aspects that typify the Bureau's institutional identity and characteristics, i.e. legal basis, structure of the organization, quantity of implemented activities, and quality of implementation of activities, the assessments conducted unveiled the EMB's strengths and weaknesses.

The identification of strengths and weaknesses provides an opportunity to substantiate our understanding of the actual scenario that the EMB faces. This assessment provides an appropriate background to determine the potential options that can strengthen and establish the EMB as the leading authority in environmental management. Below is a brief discussion of the EMB's strengths and weaknesses based on the various assessments conducted.

1.2.1 Strengths

The EMB exhibits a number of strengths that makes it a vital player in the fight against environmental degradation. Perhaps, it is the presence of these strengths that make the EMB an indispensable institution in the arena of environmental management.

The Legal Basis of EMB and its Relevance in Determining Environmental Conditions

A number of legislation forms the legal basis of the EMB. Aside from Executive Order No. 192, which formalized the inception of the Bureau as an attached agency to the DENR, other legislation that provided its powers and functions include Executive Order No. 292 otherwise known as the Revised Administrative Code of 1987 and Presidential Decree 984 or the Pollution Control Law of 1976.

Section 7 of EO 292 has the same provisions as that of EO 192's Section 16. Both of these laws provide the basis for the EMB's powers and functions. PD 984, on the other hand, abolished the NWAPCC under RA 3931 of 1964 and created the NPCC, whose powers and functions were later integrated with those of the EMB under EO 192.

Just like the NPCC, the NEPC, which was created under PD 1121 of 1977, was also abolished with the passage of EO 192. Its powers and functions that were mainly

focused on the unification and integration of planning, management, and implementation of the government's environment program were also integrated into the EMB.

Other laws that serve as the legal basis of the EMB include PD 1151 (the Philippine Environmental Policy), PD 1152 (Philippine Environmental Code), and PD 1586 (Environmental Impact Statement System). Although these laws do not expressly provide the legal basis for EMB as an institution, these decrees are relied upon as basis for the performance of its mandates under the foregoing laws.

Under EO 192, the EMB was mandated to play an assisting or advisory role to the DENR. In order to provide technical assistance and advice to the Office of the Secretary and the Regional Directors, the EMB was tasked to determine of environmental conditions and set environmental standards. EMB was also obliged to play a vital role in the implementation of recently passed laws such as Republic Act 9003, otherwise known as the Ecological Solid Waste Management Act (2000), and Republic Act 8749 or the Clean Air Act of 1999.

Hence, one of the most notable strengths of the EMB as an institution is its lead agency role in environmental management and protection. The need for a strong and capable institution that could stimulate further initiatives and spur the emergence of environmental laws provides an adequate justification to the role of EMB as a significant actor in the government's pursuit to subdue the continuous degradation of the country's natural environment. Moreover, through the efforts it has exerted despite the absence of adequate resources, the Bureau has proven itself as an indispensable entity in the arena of environmental management.

A Pool of Technical Experts in Environmental Management

The integration of technical experts coming from the defunct NPCC and NEPC from its inception and the continuous acquisition of recognized and esteemed resource persons has made the EMB a rich pool of technical expertise in environmental management.

Providing adequate guidance and leading the EMB to the best path that will ensure improvement of environmental conditions, environmental experts housed within the Bureau have provided valuable inputs and insights in its trek towards achieving an improved natural environment. Moreover, through active participation in inter-agency committees, the presence of these able and committed technical persons has redefined environmental management as a multi-faceted approach.

1.2.2 Weaknesses of EMB and the Need for Reorganization

EMB is currently confronted by a multitude of problems and issues that translate as its weaknesses. The degree to which these weaknesses affect the Bureau vary from minimal to substantial impacts that to a certain extent tend to beleaguer the conduct of some of its activities. The EMB must hence act swiftly and appropriately in order to address such inconsistencies and inadequacies.

Inability to Undertake Particular Mandated Activities

One notable weakness of the EMB lies in its inability to provide the requirements essential to operationalization of its mandated activities. This inability has led to a lag in the implementation of some of its activities.

An assessment of the mandated activities of the EMB bares that there are still 50 activities out of the total 239¹ that have not yet been operationalized. Accounting for about 21 percent of the mandate directives, these gaps may possibly reflect EMB's institutional age on one hand, and the Bureau's inability to provide the essential requirements for implementation of these activities, on the other.

Based on consultations with key EMB personnel, there are at least five main reasons accounting for the inability of the Bureau to implement activities with respect to mandate directives. These are the lack of coordinative mechanisms, lack of guidelines and standard operating procedures, the lack of capability, and the lack of resources.

Persistent Problems in its Operations

Having implemented 79 percent of its mandated activities may seem to be a favorable performance for a Bureau that has continuously received additional mandates with the emergence of new laws without the accompanying financial and organizational support. However, as the EMB strives to implement more tasks and activities, it must be more concerned with the quality and efficiency of its operations.

Based on a qualitative evaluation of EMB's operations, the Bureau faces a number of challenges in performing its functions. **Table 1** presents the general areas of concern and issues to be addressed by the EMB. Although these issues may seem inevitable, the EMB must develop certain mechanisms that would be able to minimize, if not totally eliminate, the effects of such problems.

¹ The 239 activities are across the five environmental laws (PD 984, PD 1586, RA 9003, RA 6969, and RA 8749) conceived to be as the mandates of the EMB.

Table 1
Areas of Concern for EMB²

Function	Area of Concern/Issue to be Addressed
Enforcement	Classification of Water Bodies Inspection Activity Detection of Violation Adjudication Process
Policy Formulation and Planning	Provision of Outdated Policies Absence of Clear Guidelines and SOPs Absence of an EMB Policy Division Inappropriate In-House Policies and Guidelines
Education	Developing In-House Capabilities Limited IEC Campaign
Research	Improving Research Capabilities Refocusing Research Initiatives Enhancing Laboratory Facilities
Fund Generation	Managing Special funds Managing the ERF Administrative Procedures in Fund Management Accounting of Funds

Limited Capabilities in Research and Policy Formulation

Based on an earlier discussion, the research and policy formulation functions of the EMB are integral in operationalizing its other functions and activities³. Research activities serve as catalysts of the other EMB functions by contributing significant inputs in fund

² Detailed discussions of these items are provided in the Organizational Assessment of the Environmental Management Bureau

³ See Figure 2. Ideal Relationship of Functions. Taken from Assessment of the Legal Framework, Organizational Structure, and Environmental Management Function of the Environmental Management Bureau. Volume 1. Report No. 1A.

generation, education and enforcement functions of the Bureau. Policy formulation, on the other hand, enables the Bureau to provide itself with the necessary guidelines and procedures essential in implementing its activities. Moreover, the policy formulation function of the EMB provides it with the essential leverage it requires in undertaking its enforcement functions.

Bounded by its role to provide assistance or advice to the DENR, the EMB's capabilities in research and policy formulation seems to have been confined to merely the development of effluent, stream, ambient and emission standards, promulgation of rules and regulations, procedures and other pertinent policies. In addition, the absence of clear, formally established and adequately funded research agenda has led the Bureau to situation where it can hardly contribute substantively to policy formulation.

The EMB's limited capabilities in research and policy formulation have had substantial impacts on its other functions. The lack of innovative initiatives in research has crippled the Bureau's opportunities of obtaining funds for potential projects. Also, the limited capacity of the EMB to substantively contribute to environmental policy making has made it difficult for the Bureau to encourage environmental compliance. Most importantly, inadequacies in research and policy formulation have notably limited and reduced the Bureau's role in enforcement.

Reliance in Command-and-Control Approach

The EMB currently employs the command-and-control (CAC) approach. The CAC approach entails at least four government tasks. These are:

- a. the formulation of standards, rules and regulations;
- b. the issuance of the rules and regulations, including permits;
- c. the monitoring of compliance with such standards, rules and regulations; and,
- d. the imposition of sanctions for non-compliance, or the application of other modes of enforcement.

However, the current environmental management approach of the EMB has proven to be insufficient in achieving its goal of curbing the incidence of pollution and its impacts. Over time, flaws in the implementation of the CAC approach seem to have been unveiled and used by the regulated community to maneuver and free itself from regulatory requirements. Coupled by the presence of outdated policies and legislation, the CAC approach has become vulnerable to manipulation.

The absence of alternative or complementary tools and approaches in the EMB's arsenal for encouraging environmental compliance has also resulted to compliance rates that are below expectations. There are a number of approaches, however, still available for the EMB. The challenge for the Bureau is identifying and implementing the appropriate mix of instruments that will complement its current CAC approach.

Incomplete Transformation into an Effective Line Bureau

The inception of the EMB by virtue of EO 192 signaled an intensification of the government's efforts in addressing environmental problems and has triggered high expectations for an improved environment. However, the EMB was established only as a staff bureau under the DENR, thereby limiting its functions and powers. With its role confined to assisting and advisory role to the DENR by providing technical assistance and advice to the Office of the Secretary and the Regional Directors, the EMB was constrained to further develop its capabilities in the lines of enforcement, research and policy formulation.

In 1999, with the passage of RA 8749 or the Clean Air Act, the formal organizational status of EMB has formally been upgraded. Signifying the important role of EMB in improving the country's air quality, the Clean Air Act initiated the conversion of the Bureau into a line bureau. The whole point of such transformation was to empower the EMB and make it a major actor in pursuing the government's goal of providing ambient air quality.

At this point, however, there are still no clear indications that the organizational transformation been completed. Although a Department Administrative Order pertaining to the conversion of the EMB into a line bureau was signed in 2002, the staffing pattern and the organization of the Bureau still remains the same. Further, even if the conversion took place in terms of giving EMB additional functions and powers, the Bureau's resources and abilities at this moment are not capable of supporting the many operations of a functional and effective line bureau.

Less Equal than Other Bureaus

As reflected in the establishment of its six sectoral bureaus, the DENR was conceived as an agency established along an area dominated by resource utilization. The Mines and Geoscience Bureau is the lone line bureau by virtue of the New Mining Act in 1995. With this structure, the EMB has had difficulty competing for appropriations in terms of personnel and budget with the other bureaus of the DENR.

Table 2
EMB Budget Share Based on GAA Data⁴

FY	DENR Budget ('000)	% Increase	EMB Budget ('000)	% Increase	% of EMB Budget from DENR Budget
1992	4,631,481		21,633		0.47
1993	3,562,754	(23.08)	21,078	(2.57)	0.59
1994	4,370,104	22.66	46,349	119.89	1.06
1995	3,231,900	(26.05)	68,736	48.30	2.13
1996	4,326,644	33.87	55,008	(19.97)	1.27
1997	4,761,084	10.04	90,649	64.79	1.90
1998	4,707,834	(1.12)	110,356	21.74	2.34
1999	4,956,778	5.29	68,145	(38.25)	1.37
2000	4,857,980	(1.99)	261,953	284.41	5.39
2001	5,433,225	11.84	362,627	38.43	6.67
2002	6,530,852	20.20	332,627	(8.27)	5.09

Table 3
Appropriations by Office Based on GAA⁵

Bureau	FY 2000 ('000)	Percentage from DENR Budget	FY 2002 ('000)	Percentage from DENR Budget
EMB	261,953	5.39	335,627	5.00
MGB	303,795	6.00	409,487	6.00
FMB	3,069,472	63.00	1,595,637	24.00
LMB	742,694	15.00	728,624	11.00
PAWB	231,926	5.00	246,430	4.00
ERDB	303,795	5.00	229,865	4.00

⁴ Taken from the Legal Framework and Organizational Structure for Environmental Management of the Philippines of the SEECCTA 2nd Progress Report

⁵ Ibid.

Table 2 shows how much of the DENR's budget is appropriated to the EMB while **Table 3** depicts a comparative view of budget appropriations of the six bureaus of the DENR.

As a staff bureau, EMB has historically obtained a budget ranging from 0.5 percent to about 6.6 percent of the DENR budget based on data from GAA. Though the appropriated budget grew over time, it declined after every two years, and followed the decrease in the DENR budget after a year's lag. EMB's share of the budget is in turn dependent on the share of the other bureaus. In FY 2000, for instance, the Forest Management and the Land Management Bureaus received the bulk (78 percent) of the DENR budget (partly because of ODA counterpart requirements) while EMB, PAWB, ERDB, and MGB each obtained 5 to 6 percent of the budget.

EMB also receives a relatively small personnel allocation compared to other bureaus. **Table 4** shows that EMB received a small amount like ERDB and PAWB in 2002. MGB, however, had a personnel size that was 3 times greater while LMB and FMB respectively had a complement five and nine times larger. Moreover, it must be noted that while LMB and FMB as staff bureaus allocated to the regions most of its personal services appropriations, respectively 88.6 percent and 95 percent in 2000, EMB and PAWB could only provide about 60 percent to the regions (**Table 5**).

Table 4
Personnel Appropriation by Office and by Region (FY 2002)⁶

Bureau	Central Office (in million pesos)	National Capital Region (in million pesos)	Regional Appropriation (in million pesos)	Total Personnel Appropriation (in million pesos)	Total Bureau Appropriation (in million pesos)	% of Personnel Appropriation from DENR Budget
EMB	43.507	19,984	58.972	122.463	332.627	2
FMB	56.844	23.782	1,179.743	1,260.369	1,595.637	19
LMB	46.921	25.329	574.096	646.346	728.624	10
PAWB	43.807	2.272	86.963	133.042	246.430	2
ERDB	34.645	9.620	98.472	142.737	229.865	2
MGB	93.667		309.337	403.004	409.487	6

⁶ Ibid.

Table 5
Personnel Appropriation by Office and by Region (FY 2000)⁷

Bureau	Central Office (in million pesos)	National Capital Region (in million pesos)	Regional Appropriation (in million pesos)	Total Personnel Appropriation (in million pesos)
EMB	34.153 (26%)	19.105 (15%)	78.144 (60%)	131.402
FMB	46.213 (4%)	10.045 (1%)	1,119.248 (95%)	1,175.506
LMB	44.192 (8%)	23.920 (4%)	531.664 (89%)	599.776
PAWB	41.228 (38%)	1.498 (1%)	66.147 (61%)	108.873
ERDB	45.764 (33%)	82.159 (60%)	9.406 (7%)	137.329
MGB	62.383 (27%)		173.107 (74%)	235.490

Despite the brunt of environmental enforcement and continuous accumulation of responsibility from new legislation it bears, the EMB is constrained by a lack of personnel and funding. Without adequate provision of such resources, the EMB, which is supposed to be the lead institution in environmental management and protection, will encounter difficulties in pursuing its goals.

There are quite a number of problems that beleaguer the EMB. Although there are absolute benefits that may be derived from the identified strengths of the EMB, the problems and issues brought about by the Bureau's weaknesses overshadow these. This analysis of the weaknesses and strengths of the Bureau provides an adequate justification for devising urgent and sound alternatives to address the issues that adversely affect the operations of the Bureau. More importantly, these findings highlight the need for the urgent reorganization of the EMB, which is deemed an essential requisite in its pursuit of providing effective and efficient environmental management and protection services. The proceeding chapters of this report provide strategic options that could eliminate or minimize the impacts of persistent problems that besiege the EMB.

1.3 Models from Other Countries for Institutional Strengthening

Decades of engaging in an enthusiastic drive towards development in Asia have rendered adverse consequences to the region's natural environment. A number of Asian countries have given extensive emphasis on economic development that is accompanied by environmental degradation. However, the consciousness for environmental conservation has become a popular concern in the recent years. As the

⁷ Ibid.

conflict of prioritizing between developmental and environmental preservation goals come into fore, a number of Asian countries have devised and crafted solutions that may essentially pave the way for the pursuance of such objectives in a harmonic fashion. Of particular concern are the means as to how Asian nations address environmental management issues as a number of models and success stories can be drawn from various experiences. The following discussion features the unique schemes and policies from our neighboring countries, specifically in the Southeast Asian region.

Thailand

For years, environmental legislation in Thailand has evolved in order to effect improvement and efficiency in its enforcement operations. One outcome of this evolution has been The Enhancement and Conservation of National Environment Quality Act, B.E. 2535 (A.D. 1992).

Since the enactment of the country's first environmental law, legislation pertaining to the enhancement and conservation of its environment was enforced in a decentralized mode. Enforcement relied heavily upon the participation of various organizations in the official and private sector. According to the latest environmental legislation of Thailand, the Enhancement and Conservation of National Environment Quality Act, B.E. 2535 (A.D. 1992), the enforcement structure consists of three administrative levels—the central, regional, and the local administration levels.

The Central Administration Level is composed of a number of organizations whose functions complement each other very well. At the forefront of environmental enforcement is a multi-sectoral board, known as the National Environment Board (NEB). The NEB is the main organization responsible for the enforcement of the Enhancement and Conservation of National Environment Quality Act, B.E. 2535 (A.D. 1992). It is tasked (1) provide advice, opinions, and recommendations to the Cabinet and the Prime Minister; (2) to give control and direction through the approval of action plans pertaining to the prevention and remedy of dangers brought about by pollutants and give approval to the setting of emission standards for effluents; and, (3) to supervise and expedite the enactment of laws, by-laws and orders consistent with the objectives that pertain to the enhancement and conservation of environmental quality.

Joining the NEB at the central level of enforcement are the Office of Environmental Policy and Planning (OEPP), the Department of Environmental Quality Promotion (DEQP), and Department of Pollution Control (DPC). The OEPP is tasked to formulate environmental policy and plans, oversee and carry out analysis of environmental impacts of projects or activities of the government, state enterprises, or the private sectors. Furthermore, it is responsible for the preparation of policy proposals and the coordination of regional environmental matters. The DEQP is a unit responsible for implementing information, education and communication campaigns. It has the main responsibility for the dissemination and execution of public relation campaigns, and the compilation, preparation and distribution of environmental information. Finally, the DPC that is under the Pollution Control Commission, is charged with the following responsibilities: (1) to propose action plans for the prevention and remedy of dangers caused by pollution; (2) to propose the amendment of laws, by-laws and orders which are

necessary to ensure the systematic operation of laws relating to the enhancement of the environmental quality; and, (3) promote measures involving taxation, investment and fees to the National Environmental Board.

Provincial governors play a crucial role in the enforcement of the Act at the Regional Administration Level. They are mainly responsible for the formulation of action plans that pertain to sound environmental quality management strategies at the provincial level. In addition, they are charged tasked to supervise and oversee the actions of local officials in preparing action plans for the mitigation and elimination of pollution and incorporate such plans into the Provincial Action Plan for environmental quality management. They are empowered to take action against violations by imposing fines, suspensions or closures of operation, or by revoking licenses.

Enforcement in the Local Administration Level is assigned to local officials⁸. With the supervision of provincial governors, local officials are mainly tasked to prepare an action plan for the reduction and eradication of pollution. They are specifically mandated (1) to license persons who are employed as Monitor Control Operators or as Service Contractors for wastewater treatment or its disposal; (2) monitor owners of facilities that have their own facility equipment or instruments for the treatment and control of pollution; (3) lay down rules, regulations, methods and conditions regarding the sending of wastewater or waste from point sources for treatment or disposal; and, (4) to collect service fees for the treatment of wastewater and disposal of waste.

Malaysia

In earlier years, environmental enforcement in Malaysia is a mere by-product of legislation aimed at promoting sound housekeeping practices in specific sectors. From 1921 to 1974, legislation was largely sectoral, and it addresses only a particular activity with no regard to the protection and preservation of the environment in mind. In fact, these were very local and specific in nature.

However, with the rapid degradation of its natural environment, Malaysia needed a more comprehensive legislation to standardize and create uniformity in environmental management. This urgent need for a stronger environmental legislation paved the way for the passage of the Environmental Quality Act in 1974. The Act was enacted in order to streamline the efforts towards environmental management and to enable the Department of Environment (DOE) to focus its attention on concerns pertaining to the overall improvement of the environment.

⁸ Local Officials are defined by the Act as follows:

- 1) The President of the Municipal Council within a municipality;
- 2) The President of the Sanitary District Board within a sanitary district;
- 3) The Changwat Governor within a local administration organization;
- 4) The Governor of the Bangkok Metropolitan Administration within the Bangkok metropolis;
- 5) The Permanent Secretary of the Pattaya City Administration within the City of Pattaya; and,
- 6) Heads of local administration organizations other than (1) to (5) above, established by specific law governing thereof, within such local administration organizations.

The DOE was a federal agency in the Ministry of Science, Technology and the Environment charged with the responsibility of monitoring environmental quality, regulating pollution control, reporting on the state of the environment, undertaking planning through evaluation of Environmental Impact Assessment reports, and increasing public awareness. It has 13 regional offices throughout the country⁹. Other agencies were set up in order to cope with the acute shortage of manpower and take on the responsibility of carrying out checks for breach of regulations and regulating pollution control.

The passage of the Environmental Quality Act also paved the way for the inclusion and adoption of new tools in Malaysia's repertoire of environmental management instruments. For instance, the country has an extensive environmental awareness and education program. In 1995 alone, the DOE organized 101 activities including workshops, seminars, exhibitions and competition to enhance the level of environmental awareness among the general public. Aside from the DOE, the Ministry of Education, together with the media and national newspapers, had initiated efforts in advancing a deeper appreciation for the environment among the general public.

The DOE has also made significant enhancements in implementing its Environmental Impact Assessment process. Its guidelines state that public participation is an integral part in the EIA process. Public participation is a means to assist project developers to monitor community needs and ensure that the direction of projects is agreeable to the community. There are three forms of public participation prescribed by the DOE. These are: 1) public opinion sampling; 2) public meetings or workshops; and/or, 3) conducting regular meetings with a Citizens Committee. The aim of public participation in the EIA process is to provide the general public with all the details of the project, which will enable them and the developer to assess the impact of the project in certain areas. The DOE also published twelve sets of specific guidelines to assist in the EIA process¹⁰. The guidelines are designed to provide project implementors a better understanding of the basic requirements, alternatives, and mitigating measures. In addition to all of these, DOE officers in charge of EIA are subject to training and capacity building through their participation in short courses, seminars, workshops and study visits.

Perhaps, one of the most interesting features of Malaysia's environmental management approach is their adoption of an effluent charging system. Palm oil and rubber factories in Malaysia are levied a variable fee for BOD discharge. The charged fee for land discharges is purely volumetric while fees for water discharges are based on the quantity of BOD discharged. The discharge fees for water may vary accordingly with BOD concentrations.

A minimum fee of RM 150 is charged for dischargers. For discharges into land, a fee amounting to RM 0.05 per ton of wastewater is levied. On the other hand, a higher fee

⁹ There are eleven regional DOE offices in the Peninsular and one each in Sabah and Sarawak.

¹⁰ These guidelines were for groundwater and surface water supply, power generation and transmission lines, drainage and irrigation, fishing harbor and land-based aquaculture, dam and reservoir, mines and quarries, hill station resorts, tourist facilities in national parks, tourist facilities on island in surrounding waters gazette as marine parks, industries, municipal waste treatment and disposal, and toxic and hazardous waste treatment and disposal.

of RM 10 per ton of BOD up to the standards is charged to sources discharging in waters. For those discharging above the standard, a fee of RM 100 per ton of BOD is levied. The standard has eventually become mandatory. Mills that violate the standard face a real threat of being shut down. As a result of the regulations, BOD emissions have dropped dramatically. After the first year, there was a 66 percentage reduction in BOD emissions. On the seventh year of implementation, BOD emissions were reduced up to 99%.

However, the success of the regulation cannot be purely attributed to the effluent fees imposed. It was the threat of shutdown that appears to have changed the behavior of the regulated community. There are several problems with the use of BOD charges as an incentive to reduce emissions (Anderson, 2002). Due to the minimum charge, mills have no incentive to reduce water discharges below 15 tons. And as the standard became mandatory, the main instrument was no longer the charge. Instead, the standard and the threat of shutdown spurred changes in effluent discharge patterns. Finally, charge levels were not linked to any estimate of marginal benefits and marginal costs of pollution abatement. The charges were based on agency estimates of the level that would reduce discharges without imposing a major burden in the industry.

Singapore

Singapore is perhaps one of the most successful countries in terms of combining its economic growth with the preservation of its environment. Its success in managing the environment is due partly to effective environmental laws and their enforcement. This in turn is due to an efficient and effective legal, institutional and administrative framework, as well as a well-planned and effective infrastructure to facilitate the efficient handling of wastes and other pollutants. In addition to these, the country employs a comprehensive planning policy that directs the siting of polluting industries far away from residential and commercial areas.

There are various government entities that are responsible for matters relating to the environment. Leading this assembly is the Ministry of Environment, which provides the infrastructure for waste management, as well as enforces and administers the laws that relate to pollution control and health. Although the Ministry of Environment acts as the leading authority in environmental management, other government agencies provide it with substantial support in terms of enforcement, policy-making and planning functions. This effective interaction and coordination among government agencies has been Singapore's main recipe for attaining success in managing its resources and the natural environment.

The creation and enforcement of laws in the country is strongly correlated with identified health issues. This is one feature of the country's environmental management approach that seems to single it out from other countries. As can be seen in the Ministry of Environment's organizational structure, one main unit that significantly influences the overall policy and planning function is the Environmental Public Health Division.

The enforcement of pollution laws in the country depends on command-and-control measures such as the issuance of permits and licenses. Permits and licenses are often

required at the outset before a factory or a facility is allowed to operate. Record keeping also plays an integral part in enforcement as this provides a way to ensure that there is proper control over potential pollutants. Inspections are conducted in order to keep a close watch on industrial activities. The frequency of inspections depends on the pollution potential of factories. Thus, factories that are suspected of discharging effluents beyond acceptable levels can be inspected as often as twice a week. Monitoring such facilities is quite an easy and cost-effective task for the DOE since industries are situated closely to each other.

The expertise available in the various Ministries enables the effective monitoring of Singapore's environment using the latest technology. The information obtained enables the authorities to detect emerging environmental problems and pre-empt them before becoming a reality by finding solutions at an early stage. The Ministry of Environment also places great emphasis on its human resource development. This is one of the main reasons why the Ministry has been able to function so effectively. Apart from training its own personnel, the Ministry also runs courses to assist the personnel of other companies and organizations in complying with the various laws and regulations.

There are no laws requiring an Environmental Impact Assessment for development of projects that may have an impact on the environment. This, perhaps, is one of the inadequacies of the country's environmental legislation. The government only requires an EIA on projects that are potentially very pollutive. The requirement for an EIA is not prescribed by law but the result of an administrative decision.

Indonesia

Indonesia's environmental laws evolved through a mother legislation known as the Environment Act of 1982 (EMA 1982). EMA 1982 served as the basis for the evaluation and adjustment of all past legislations of the country. It is an important breakthrough in the overall management of the environment as it strongly advocates a development that is based upon environmental considerations as a means of achieving continuity and the well-being of present and future generations.

Environmental management in Indonesia is divided into two levels of administration—the National and Regional level. Administration of environmental management functions in the national level governed by the Environmental Impact Agency, which is headed by the Minister of Environment. In the period 1988-1993, the Minister also heads the BAPEDAL or Environmental Impact Agency, which is directly under the President. The BAPEDAL has authority to implement the necessary measures to control pollution, while the Minister of the Environment is responsible for policy development at the national level. At the regional level, the regional government is responsible for the management of the living environment in relation to the integrated implementation of the national policy.

Indonesia has also adopted a broad-based participatory approach to environmental management. The universities, non-government organizations, the private sector, and the media provide substantial assistance and support to the government in endeavors relating to the enhancement of the country's natural environment. The universities are also heavily engaged in the development of human resources for environmental

management and play an important role in the development of environmental awareness and public participation. Self-reliant community institutions, like NGOs play an important part in mobilizing the general public and encouraging their participation in efforts to improve the quality of the environment.

2. PROPOSED STRATEGIC OBJECTIVES AND VISION STATEMENT

2.1 General Thrust

The proposed strategic objectives of the EMB are the following:

- EMB must move away from a structure organized along historically given laws with its traditional programmatic approach focusing on air and water pollution, and move towards a more environmental management function-based organization.
- enhance the agency's capacity to address the priority environmental problems of the country and establish an internal policy and research development process and capacity;
- strengthen the Bureau's enforcement capacity by improving the process of inspection, monitoring, detection of violation, and the adjudication process, on the one hand, and complementing these with market-based policy instruments, external linkages and people's participation, and compliance promotion through education
- Institute an environmental user fee system for both air, water and land discharges, and establish an environmental fund for pollution abatement and environmental restoration and damage compensation.
- Promote strategic alliances by encouraging the pluralization of the enforcement function and broad-based participation in environmental management
- Link information and education to enforcement, and promote compliance through building awareness of the regulated

These strategic objectives state in broad terms the direction and actions the Bureau must take as an organization. These strategic objectives address the absolute and relative gaps by functions identified in the assessment report. Apart from the general direction, the discussion of each particular objective – also specifies the particular tasks to be undertaken with regards to a particular function.

2.1.1 Move Towards a More Environmental Management Function-Based Organization

Given the present urban environmental conditions and pollution problems of the country and the absolute and relative gaps EMB has encountered in the performance of its functions, as an organization, the Bureau would need a comprehensive environmental framework that will define its objectives and guide its actions, on the one hand, and serves as a vehicle or organizational model that will enable it to chart and implement its envisioned goals and preferred strategic options, on the other.

A comprehensive environmental framework is crucial to the policy direction and organizational thrust of an environmental agency, as well as to the establishment of a

structure organized along functional lines. Without such a framework, the agency might not be able to internalize a clear vision, appreciate the relationship and relative importance of various environmental laws, and fill in the gaps of particular laws and policies.

Guided by this framework, the present organization of EMB must move away from a structure organized along historically given laws with its traditional programmatic approach focusing on air and water pollution, and move towards a more environmental management function-based organization. At present, the EMB is organized along mandate-based divisions where each has its own permitting, inspection, monitoring, and standard setting unit. The movement to a function-oriented structure, for instance, would entail bringing all these activities under one enforcement division regardless of the law.

2.1.2 Build an Internal Research and Policy Development Capacity

Among the various environmental management functions, the strategic function to develop and enhance is the agency's capacity to address the priority environmental problems of the country. In order to realize this goal, an internal policy and research development process and capacity must be established. As one component, environmental policy development is a dynamic, iterative process consisting of problem analysis, assessment of options, target setting and policy formulation, followed by implementation, monitoring, review, evaluation, regular reassessment and adjustment. Research is inherent in this process.

EMB must broaden its research function beyond the current activities of the Research and Development Division. It should undertake scientific researches, as well as policy and socio-economic researches, evaluative or assessment studies of programs and mandates, and other relevant topics to improve EMB's operations.

One general area for research development is the empirical documentation of baseline environmental quality conditions and changes, together with an analytical study of the underlying factors (i.e. economic, demographic, poverty conditions, urbanization processes), and an assessment of the consequences or impacts of environmental quality change on health, mortality risks, and public welfare, among others. Such empirical and analytical studies would provide direction to epidemiological studies and laboratory research while their findings may suggest policies to revise existing quality/ambient and emission/effluent standards, if not formulate new country or local-specific standards.¹¹

While studies on the effects of pollution are essential in the formulation of a rational program of control, there is also a need to study the methods for controlling particular

¹¹ Quality or ambient standards are combined goals and criteria in specific numerical levels of quality to be applied to different media (air, water, land) in the community. For example, "no more than X parts of suspended solids in River Y", or "no more than X parts per million of sulfur dioxide for any 8-hour period in City Y". Emission or effluent standards, on the other hand, prescribe how much of what kind of pollution is to be allowed from any given source. For example, "no industrial plant can discharge effluent containing more than X parts of suspended solids into River Y", or "no power plant can use fuel containing more than X per cent of sulfur in City Y".

kinds or sources of pollutants. The implicit motivation for such studies is to find the more cost-effective methods of pollution control. Pollution control policies should thus reflect these cost considerations.

Research results should be translated into policy papers, technical articles, popular articles and other forms of media in order that these become useful for policy, enforcement and education purposes. For example, the 1999 EMB research on leachate characterization in the San Mateo sanitary landfill would be a good springboard for research to develop standards for leachate under RA 9003.

There is a major advantage in the development of an in-house research capacity. It provides agency officials a high degree of supervision and the assurance that their research is relevant to the environmental problems the agency wants to address. While the cost of competent personnel and laboratory equipment may be a constraint to the development of an in-house capacity, there are innovative ways to achieve the objective. Apart from the recruitment of young honor graduates, productive relations with research and academic institutions can be initiated. For instance, experts from local research institutes can provide training, mentorship, and research guidance to the staff, as well as undertake collaborative research projects. Academic institutions with programs in chemistry, biology, environmental science, management and planning, public health and public administration, urban and regional planning, economic development and sociology can have a research internship with the Bureau where some of their top graduating or graduate students can pursue their thesis or dissertation research on a topic that connects to EMB's research agenda.

A more immediate way of effecting training in policy development and research is to organize policy fora where existing laws and proposed legislations may be discussed. The forum can focus, for instance, on the lessons that can be learned from the EMB's involvement as technical experts in the drafting of the law, the limitations and divergence of the law from earlier proposals, and their effects on EMB's structure and resources. Similarly, discussions on the limitations and implications of proposed legislations for EMB's various functions and resources can also be organized. It is in EMB's interest to understand, discuss, and take an active part in the shaping of new bills, such as the Clean Water Act, Toxic and Hazardous Act, the NEMA and PEPA because they will directly affect EMB and its future integrity.

The building of EMB's capability in technical research and policy development is essential and will result in beneficial effects. Technical capability and proficiency in policy formulation and analysis enhances and establishes the agency's organizational value. As it improves its technical, policy expertise and knowledge stock, it acquires the power to influence legislation, raise public awareness, and propose policy changes. Furthermore, as it strengthens policy development and research capacity and expands the research function to cover broader, more relevant areas, the EMB provides a strong foundation for enforcement and environmental protection. These capacities would also put the Bureau in a better position to relate with other agencies and become a more independent body.

The Research Gaps by Mandate and their Implications for Policy and Other Environmental Management Function

As part of EMB's efforts to build its research capacities, the Bureau must address two immediate concerns: 1) the research related gaps in the implementation of existing laws, and 2) the status of laboratory research.

The Research-related Gaps by Mandate

Some of the gaps in the implementation of existing laws that were identified in the assessment report are research-related activities. This section specifies the various research activities that have yet to be implemented. It also shows that some of the following research activities bear implication for information management, policy and program development, enforcement, training, or the other environmental management functions. Because these research outputs are inputs for policy formulation in particular or for implementation in general, they are priority activities. Hence, they must be undertaken in the short term.

PD 984 – Water Quality Management

River/Water Body Classification and Water Quality Monitoring

- Review waterbodies that have been classified five years ago or more. Then, determine and prioritize what waterbodies need to be re-classified.
- Each region is to prioritize its activities, i.e., whether a regional office is to continue classification of waterbodies or focus on re-classification of waterbodies.

RA 8749 – Clean Air Act

Management of Non-Attainment Areas

- In order to expedite the delineation and designation of airsheds, attainment and non-attainment areas, monitoring of ambient air quality, data gathering and interpretation and preparation of a DENR Administrative Order must be undertaken. (If EMB does not yet have the research staff, it may contract out this activity to a competent professional group or firm.)

Use of the Lowest Achievable Emission Rate (LAER) Control Technologies

Prior to the formulation of guidelines on the use of LAER control technologies, EMB needs to conduct the following research-related activities:

- make an inventory of air pollution control technologies available in the country and abroad; and
- determine the lowest achievable emission rates of these technologies.

This inventory will be the basis for formulating policies, guidelines and procedures for the review of proposed LAER air pollution control technologies by firms. A more definite policy must be formulated since approval of LAER control technologies on a case-to-case basis would provide greater discretion on the part of EMB and might be questioned by NGOs, other firms and other stakeholders. The approval of the use of LAER control technologies is built-in prior to the issuance of the permit to operate to firms in non-attainment areas.

Harmonization with International Standards for Stationary Sources

- assess the impacts of the emission standards for stationary sources on the regulated community. The EMB also needs to obtain feedback from regulated communities, the academe, the NGO, media and the public on the implementation of these standards and gauge the need on whether or not the standards need revision.
- the developments in emission standards in other countries, especially in the ASEAN must be appraised. This would enable the EMB to benchmark its practices in setting emission standards with other countries and hence, enable it to harmonize its standards with them.

Air Quality Control Techniques

- conduct research (or contract this out) in order to generate information on air pollution control techniques. This would initially entail an extensive review of the literature on such technologies in the country and abroad. This would also mean that the EMB would have to meet with manufacturers, suppliers and dealers of these technologies and fuels as well as with the regulated communities who are users or potential users of such technologies and fuels.
- create a database (even while RA 8749 sets the establishment of an air quality control techniques database as optional). A database would be useful for enforcement, policy planning, research and education purposes. Such database would show the EMB as an authority and leader on air quality control techniques.

National Programs on Reduction and Elimination of POPs

- conduct (or contract out the conduct) an inventory list of all POPs in the country. This would have to be done with the EMB ROs, the LGUs and other concerned agencies like the DOST. The timeframe for this inventory is within one year from the effectivity of the IRR of the CAA. Should the EMB decide to do the inventory, it would need to formulate guidelines for the ROs to follow.
- design and implement within one year after the establishment of the inventory of POPs, a national program to reduce and eliminate POPs. This would entail the formulation of policies, phase-out schedules, and target-settings on the quantities of POPs to be reduced.

Linkage with Coordinative Multi-Sectoral Body

- contract out a policy and organizational study on the creation of such a Commission. The study needs to carefully weigh the costs and benefits of establishing it. Creating separate commissions for each environmental media (air, water, solid waste) is again a sectoral approach to environmental management. This would have adverse implications on environmental management.
- Since the study on the creation of a Commission is not explicit in RA 8749, the EMB may decide to recommend to the DENR Secretary, the amendment or deletion of this provision (Rule XLVI, Section 2) in the IRR.

RA 9003 – Solid Waste Management Act

- Provided the NEC has been established, conduct an inventory of cleaner production/cleaner technologies on SWM. EMB would have to first, prepare guidelines defining what cleaner production/ cleaner technology (CP/CT) for SWM are, how, when and who will conduct the inventory, as well as EMB's role as a clearinghouse for CP/CT on SWM and on public access to these information. This could be contracted out or done by the regional offices.
- Before EMB (as DENR's representative) could publish an inventory of solid waste disposal facilities or sites, there must be an inventory of existing disposal facilities. This would entail resources for the conduct of these activities. Some EMB ROs are currently conducting the inventory.
- A research survey of recycling markets must be undertaken in order to enable EMB to establish a national recycling network. The EMB may contract out this type of research. In the establishment of the recycling network, inputs from the EMB regional offices and other agencies like the DTI would be needed. While the EMB would take the lead in the establishment of such network, it would have to turn over the management of this network to an appropriate organization like a recycler's national association, foundation or NGO federation.

On the Status and Strategic Options for Laboratory Research

In order to undertake laboratory research, EMB has three options. One, it may develop the EMB Central Office laboratory as a reference environmental laboratory. Two, it may simply maintain the existing laboratory facilities in the central and regional offices. Three, it may accelerate the Environmental Laboratory Recognition (ELR) scheme and employ private laboratory facilities.

As a Reference Environmental Laboratory

With regards to the first option, EMB must review and improve its laboratory analytical procedures and policies, and upgrade and strengthen its laboratories. The JICA proposal (August 2001) recommended the conduct of research on the applicability of specific analytical methods to specific environmental media. Such study would guide the

DENR in revising its policies on analytical methods. This is one research area wherein collaborative work on sharing and development of new laboratory techniques and methods among the EMB, other DENR laboratories, the private sector and the academe can be strengthened.

With regards to Central Office, its laboratory needs to be upgraded so that it can serve as a reference laboratory. The EMB RDD needs to set definite time schedules and commitments in obtaining an ISO 17025 certification. EMB regional laboratories also need upgrading in terms of staff, equipment and resources. An average of three chemists are needed per region. This number does not include the number of laboratory aides needed per region. The DENR, EMB JICA Proposal for the Construction of the "National Environmental Management Center and Regional Environmental Laboratories" (August 2001) has specified equipment requirements for pilot regions, IV, VII, X and XI.

Maintain the Existing Laboratory Facilities

On the second option to maintain existing facilities, the EMB, in coordination with equipment manufacturers and suppliers, needs to formulate and implement a preventive maintenance program for its laboratory facilities and equipment at the central and more importantly, at the regional offices. This would entail training regional staff in the proper use, maintenance and basic repair of these equipment and facilities. After-service arrangements with equipment manufacturers also need to be made.

Accelerate the ELR Scheme

On the third option, parallel to strengthening its own laboratory capabilities, the EMB also needs to accelerate the implementation of the ELR scheme. More EMB-recognized environmental laboratories are expected to result in the reduction of samples for routine laboratory analysis. This will give more time for the EMB RDD and laboratory staff to conduct more in-depth researches. Such researches would be needed for the developing environmental standards, for reviewing and improving laboratory analytical procedures and policies and other relevant researches.

The Policy-related Gaps and their Requirements

Apart from the tasks to undertake a number of research activities, there are also a number of gaps in policy formulation that EMB must address under each law. Below are the following policy gaps that bear implications for training/ education, fund generation, organizational development and interagency relations.

PD 984 – Air and Water Quality Management

The PAB shall serve as arbitrator for the determination of reparations, or restitution of the damages and losses resulting from pollution.

- Dedicate and train PAB staff in environment and natural resources accounting and risk assessment methods. These trained staff shall be responsible for the conduct of studies and cost estimates on the reparations, or restitution of the damages and

losses resulting from pollution. Should these studies and cost estimation be contracted out to experts/consultants, the trained PAB staff would use their knowledge to evaluate the work of experts/consultants.

- Contract out to experts or consultants, the conduct of these studies and cost estimates. They could develop a general framework with general cost estimates that would guide the PAB in formulating more specific estimates or they could be hired on a per PAB case basis.
- Determine the requirements for instituting damage valuation in the setting of the amount of fines.
- Obtain resources for studies and cost estimates on the reparations, or restitution of the damages and losses resulting from pollution may be taken from the following:
 - EIA revolving fund
 - Environmental Guarantee Fund
 - Contributions from the private sector, e.g., industry association
 - Contingent Liability and Rehabilitation Fund (CLRF) in the case of mining companies and mine-related firms covered by the New Mining Act
 - Research grants and special projects

Processing of Sewage Permits

- There is a need to review the policies on sewage and address the overlapping responsibilities among the different agencies (DENR, MWSS, DOH, LWUA and Water Districts). The mandate on permits for sewage works has to be clarified specifically with the MWSS for Metro Manila, and with the DPWH or other agencies like the HLURB for other parts of the country.

RA 6969 – Toxic and Hazardous Waste Act

- Since the guidelines for the utilization of the fund had been drafted, expedite the approval of the draft guidelines as a DENR Administrative Order. Since some permitting functions were decentralized to the EMB ROs, the EMB C.O. has also to provide the R.O. with guidelines on the utilization of the RA 6969 special fund.

RA 8749 – Clean Air Act

Pollution Control for In-Use Motor Vehicles

- Develop the policy, regulations, guidelines and SOPs for supervision of emission tests. The EMB could create an inter-agency committee to formulate these or have this task contracted out.
- Examine whether the EMB will take care directly of supervision or contract this out to a competent third party. Supervision by the EMB would entail further personnel,

resources and capability building activities. It will also subject the involved EMB staff to emissions-related health hazards and risks.

Visitorial Powers

- Clarify the extent of the EMB's visitorial powers over LTO MVIS and vehicle type approval system testing centers (VASTC). It will have to determine whether or not to include inspection of the MVIS and VASTC a regular activity of the C.O. or R.O. or whether this shall only be done when the need arises. The EMB also has to recognize that it will also take time for the DOTC/LTO to develop capacity for the conduct of the emission test for type approval and the inspection of the MVTAS test.

Proof of an Environmental Management System

The EMB and PAB needs to formulate guidelines on the following:

- Review/ approval of the compliance plan of sources (firms) that are not in compliance.
- Obtain a consent agreement with violators on the following: format, content, requirements for environmental performance, timetables and reporting of performance and commitments and procedures adopted in the environmental management plan.
- Review of environmental management system (EMS) audit report.

Air Quality Control Action Plan Multi-Sectoral Monitoring Team

- Examine whether the multi-sectoral monitoring team would only conduct inspections of air pollution sources or would also monitor other environmental concerns, e.g., water pollution and toxic and hazardous wastes. It would be better to have an integrated environmental monitoring team that would cover all environmental media instead of separate teams, councils or boards. The accountability of the team members – also needs to be defined.

Emission Charges and Emission Trading

- There is a need to clarify whether the present law has a preference for emission trading over an emission charge system. If not, policies in support for the establishment of an emission charge system can be immediately enunciated even before the operationalization of a trading system.

Emission Offsets and Quotas

- Operationalize the directives on emissions trading, conduct scientific and policy research activities. The EMB would have to contract out these activities to qualified firms with the technical expertise and experience on emissions trading.

- Build the Bureau's capacity to implement the emissions trading system once it is designed by working with and learning from consultants the design and implementation of the emissions trading system. Pilot the implementation nationwide.

Design of Emission Averaging and Emission Trading (Rule XXI and XXII of CAA-IRR)

- The emission averaging and trading system must be carefully designed. It is better that this be contracted out to competent firms with experience in emission averaging and trading systems. The EMB would then have to formulate the policies and guidelines to operationalize the system. It is suggested that the system be pilot-tested first to iron out the kinks before this is implemented nationwide.

On the Use of the Air Quality Management Fund

- Policies and more detailed guidelines on the use of the Air Quality Management Fund must be formulated, as well as the design of the emissions trading system and the financial stability and guarantee mechanisms.

RA 9003

- As NSWMC Secretariat, the EMB must formulate the guidelines and procedures for the management of the fund. These include criteria for the availment of the fund, eligibility requirements and other SOPs.

The strategic options for the policy functional gaps of the NSWMC are:

1. Together with the National Ecology Center, the DTI and the Department of Finance, the EMB must establish procedures, standards and strategies to market recyclable materials and develop the local market for recycled goods (Sec. 31, RA 9003)
- Composed of the DENR-EMB, the DTI, the DOF, representatives from large buyers of recyclable materials, LGUs and other members, an inter-agency committee or technical working group must be established in order to develop procedures, standards and strategies to market recyclable materials and develop the local market for recycled goods. These policies include the creation of incentives, the sourcing of loans and grants for the establishment of facilities to manufacture finished products from recyclables, the extension of guarantees by the national government and LGUs to purchase a percentage of the output of the facility, and the maintenance of a list of prospective buyers and other data on marketability of the recycled products.
 - The policy guidelines for the development of the recycling market must be developed. The NSWMC would later give a free hand to the LGUs, the private sector and the market for recyclables a free hand. The role of the NSWMC is to merely initiate and facilitate the market for recyclables. It must not impose regulatory controls over the recycling market in its initial stage of growth.

2. Develop safety nets and alternative livelihood programs for small recyclers and other sectors that will be affected as a result of the construction and/or operation of a solid waste management recycling plant or facility.
 - prepare policy guidelines on the development of safety nets and alternative livelihood programs for small recyclers and sectors affected by the construction or operation of a SWM facility. These guidelines aim to assist the proponent of a SWM facility in his formulation of a social development program in its EIS. This is needed in his application for an environmental compliance certificate (ECC) under PD 1586. These guidelines would also assist the EIA Review Committee and staff in their evaluation of the social development program component of the EIS of proposed SWM facilities.
 - decide whether or not it will also be the implementor of the alternative livelihood programs for the small recyclers and other affected sectors. It might be better for the NSWMC to have the proponent and operator of the SWM facility, an NGO or an appropriate government agency like the TESDA, DSWD or DOLE implement these programs.

For the unfulfilled directive of the DENR Secretary on the recommendation of policies to eliminate barriers to waste reduction programs, the strategic options are:

- identify the barriers to waste reduction first before it could recommend policies to eliminate these.
 - clarify the extent of its policy-making function with regards to Sections (f) and (i).
3. Formulate a set of standards for innovativeness, proactivity, exemplary and outstanding SWM endeavors (criteria for incentives and rewards)
 - create an inter-agency rewards and incentives committee to formulate policy guidelines and criteria. The NSWMC could adopt the criteria used in the Galing Pook Clean and Green and other similar awards. However, to distinguish the awards given by the NSWMC and other organizations, more innovative criteria or guidelines will have to be formulated.

Policy-related Issues

Given the many policy guidelines, regulations, and procedures to formulate and subsequently implement, there is a need to prioritize the formulation of formal guidelines or standard operating procedures, and address the presence of outdated, irrelevant and constraining policies.

On the Absence of Many Formal Guidelines

With regards to the absence of formal guidelines and standard operating procedures, EMB would need to prioritize the development of formal guidelines and SOPs that govern the implementation of various activities or directives. It must assess within each mandate and across mandates what are the particular provisions that require immediate attention and require the crafting of clear and concise policies and guidelines.

The EMB may choose to do this on its own by forming a committee that would look at options and the implications of these in the implementation process. The committee will also be responsible for drafting the appropriate policies and guidelines for the activities. One committee for this sole purpose may be formed for each division. However, there must be a coordinating group that must assess the policy requirements across the different mandates.

The lack of EMB personnel for the critical function of policy analysis and formulation indicates the great need to employ potential policy analysts and practitioners. It is expected to be less costly in the medium and long term to employ in-house experts than contract consultants.

On the Treatment of Irrelevant, Constraining Policies

With regards to outdated, irrelevant and constraining policies, there are three options or courses of action.

OPTION 1: The EMB can push for the amendment of these outdated laws and policies.

The most probable option for the EMB is to push for the amendment of the outdated laws. The first step for the Bureau is to internally review and assess the different environmental laws and explicitly identify the provisions that are no longer appropriate and those that constrain their environmental management efforts. The EMB should then articulate and present their limitations and constraining effect on its functions.

The identified legal provisions, together with their assessments and justifications, should be forwarded to the EMB's legal division for further review.

OPTION 2: Conduct a multi-stakeholder consultation regarding the effectiveness of environmental laws and policies.

In order to resolve policy or legal issues, the EMB must solicit feedback from other stakeholders regarding the effectiveness and appropriateness of certain policies enforced by the bureau. Upon gathering essential feedback from various sectors, the EMB can determine which policies need to be prioritized, reviewed and enhanced.

OPTION 3: Adopt a preventive approach or mechanism that would be able to block the passage of laws and policies that could work against the Bureau.

The best option for EMB is to adopt a preventive approach that can block the enactment of laws and policies that can work against it. One crucial step is to closely monitor the discussions and formulation of proposed legislations and executive orders, and influence the process through their sound objective policy contribution.

Another related effort is to consciously develop its staff for policy analysis, formulation, review and revision. It must be critical in the selection of competent and eligible staff.

The bureau must take into consideration the hiring of well-trained and experienced personnel that would be qualified in handling the tedious task of making, reviewing, revising and recommending policies.

2.1.3 Strengthen Environmental Enforcement

The objective of strengthening environmental enforcement requires various conditions. The improvement of enforcement activities, i.e. inspection, monitoring, detection of violation, adjudication, and promotion of compliance entail many requirements. Specifically, there must be a good management information system, a useful reporting instrument and inspection manual, an efficient, effective system of multi-media inspection, an articulation of priority norms for inspection (e.g. health risk and compliance record), an incentive structure for compliant units, and devolution to local agencies or authorities who are provided with adequate technical training. The following options below discuss the particular measures to improve the various enforcement activities.

These measures may also be complemented by the adoption of new potent environmental management instruments and programs to enhance the capability of the regulated community to meet the environmental standards. Market-based instruments and public disclosure programs are new concrete ways to induce compliance while the establishment of an environmental fund from environmental user fees or pollution charges provides the resources for pollution abatement technologies and environmental rehabilitation projects.

Classification of Bodies of Water

OPTION: Devolve functions to or coordinate with other national government agencies and local government units in conducting water body classifications

Based on the estimated pace and capability of the EMB in conducting water body classifications, it cannot deliver urgently desired outputs. Because the information to be generated by this activity is urgently needed in standard setting, the EMB cannot afford to have delays in the completion of such task.

A probable option for the EMB that is worth examining is devolving or coordinating with other government entities. Certain government agencies and units have immediate access and readily available information regarding certain water bodies. The EMB can devolve some tasks such as the conduct of investigations and research thereby aiding the Bureau in the generation of relevant information for water body classification. National government agencies, such as the National Power Corporation and the National Irrigation Administration, can largely contribute in the classification of large water bodies while the classification of smaller rivers and waters can be conducted in coordination with local government units.

The LGUs may not have the technical capability to immediately and actually generate desired water body classifications. They may, however, provide personnel assistance in

water sampling activities, and sufficient information regarding the number and characteristics of industries and dwellers situated along certain water bodies. This collaboration with other government agencies and units will thus make up for the EMB's current limitations that pertain to time and costs.

Inspection Activity

(1) The proportion of the regulated community under the inspection-monitoring system is small. The universe of regulated establishments has not been established. And there is no prioritization of facilities to be inspected.

OPTION 1: Decentralize and devolve certain types of inspection to other DENR and local government units.

The DENR CENROs and Local Government Units are natural partners in conducting inspection since they have jurisdiction and presence over smaller territories in contrast to the regional-level management of EMB. Inspections to be conducted by CENROs and LGUs are not of the sampling inspection type since these require a fair level of technical competence that are still not available to these actors. More precisely, these actors will conduct surveys to check permits, presence of pollution control equipment, observe work practices and housekeeping, and perusal with records. Their involvement results in at least two accomplishments: 1) it establishes an enforcement presence (deterrence), and 2) it serves as a screening of facilities to identify those that require a more detailed inspection by the EMB.

OPTION 2: Deputize the environmental units of the Philippine Ecozone Authority (PEZA).

To compensate for the limited personnel of the EMB, the Bureau could mobilize the resources of the Philippine Economic Zone Authority (PEZA). The PEZA shares the responsibility with DENR on enforcement of regulations within industrial estates as Part X of RA 7916. The PEZA environmental units are located and integrated within the industrial estates hence have better access and are able to deal with environmental non-compliance more effectively. A Memorandum of Agreement between PEZA and EMB has been drafted and will be signed soon.

OPTION 3: Institute multimedia inspectors in enforcement activities.

At this stage, EMB inspectors are only capable of inspecting one media per visit in a facility. With the limited number of personnel dedicated for inspection and monitoring activities, the EMB cannot afford to go on with this exercise. For one, inspections done in this fashion are not time and cost-effective. Going back to the same facility just to inspect another type of media incurs a lot of resources.

The cadre of inspectors within the EMB and its regional offices should be trained to be able to visit one firm and perform various inspection tasks all at once. This is not only cost- and time-effective but this will also require less of the factory's precious time to attend to several visits from the regulatory agency. With proper training and planning,

the multimedia inspector can generate more information about the company's environmental performance and can better assess their compliance with regulations.

OPTION 4: EMB must strike a balance between enforcement response and compliance promotion strategies.

The limited manpower of the EMB, nonetheless, incapacitates the Bureau to conduct monitoring and inspection activities. To cope with such handicap, the EMB must strike a balance between enforcement response and compliance promotion strategies. Enforcement responses that are usually expensive, must be used judiciously to a targeted set of the regulated community and those not included in that subset must be dealt through the use of compliance promotion activities. The EMB must be more discriminating on what violations should it respond, on the basis, among others, to its ability to resolve the violation given the nature of the violation and its ability to respond to violation given the other violations on its hands. With very limited resources on inspection, the EMB needs to identify which facilities should be inspected, and how frequent and comprehensive these inspections should be. In short, it needs to prioritize which facilities it should focus most of its enforcement resources. This will help the EMB to focus its resources to the non-compliant sources or facilities. Firms or facilities not included in the EMB's priority list will now be the focus of the Bureau's compliance promotion activities.

OPTION 5: Introduce a risk-based program in selecting facilities to be inspected.

It is recommended that the EMB focus on maximizing the environmental benefits from its inspection program. This is not new or even difficult to implement. More than a decade ago, EMB regional offices (then EMPAS) have their own dirty dozen and subsequently filthy fifteen lists consist of the most egregious environmental violators based on past compliance records.

The Environmental and Natural Resources Accounting Project (ENRAP) provides the most comprehensive assessment on all sectors in the country in terms of emissions to the environment. While the Industrial Environmental Management Project's National/Regional Industry Prioritization System ranked specific firms based on risk of pollution, following the stressor-pathway-control-receptor procedure, for each region. These prioritization systems should be integrated to the planning and budgeting process of EMB and expand the scope of inspection beyond numerical data to include identification of actual firms to be targeted. What is simply needed to set the EMB's regulated community is to review these experiences and assess which or what combination of prioritization will yield the following objectives:

- protecting and restoring environmental quality and public health
- preserving the integrity of program
- preserving the integrity of enforcement
- dictated by resource limitations, focusing on a smaller subset of facilities where changes can have the greatest impact in improving environmental quality and creating deterrence

(2) Selection of facilities for inspection is not informed by available information, such as the self-monitoring reports. This information source is not taken seriously by both EMB inspectors and pollution control officers. It has not been improved to provide guidance in the inspection process.

OPTION: Make the self-monitoring report the backbone of EMB's monitoring program by making it one of EMB's measurable final outputs. Revise PCO report to include description of equipment and methods used.

The first step to transform the self-monitoring reports to EMBs monitoring program backbone is to make its submission one of the agency's measurable final outputs. The PCO report should be revised to include equipment and methods description. The frequency of submission and detail required must be calibrated according to the environmental risks with the firm's operations.

The self-monitoring reports can be the most comprehensive set of information to gauge the firm's compliance performance. Required to be submitted on a quarterly basis, the reports when properly accomplished provide both process and emission quality information that allow cross-checking. This report may also be certified by management, in order to promote environmental management as its responsibility and liability in case of non-compliance. Management certification maybe a potent tool to improve company performance.

On the Detection of Violation

Various factors have contributed to delay of the enforcement process. These factors include the uneven implementation of inspection, the involvement of regional enforcers in other tasks, the ambiguous guidelines on duration of the permit to operate (PTO), the practice of unannounced visits, and the resistance of firms to inspection and other regulatory processes.

OPTION 1: To avoid circumstances of delay in the enforcement process, a memorandum circular must be issued to officially recognize air and water quality monitoring manuals as part of the inspection protocol. It must also be recognized that the observance of this protocol will be part of measurable final outputs.

In addition, inspection manuals for each type of industry must be prepared. Like the practice of health or sanitary inspectors of the Department of Health, the EMB can likewise develop specific inspection manual for each type of industry. This will help standardize the inspection/monitoring protocol. For example, the typical ones can be:

- a) Semiconductor industry
- b) Electronic parts and products industry
- c) Electrical machinery
- d) Chemical industry
- e) Basic metal products
- f) Transport and car parts

- g) Pulp and paper industry
- h) Mining industry
- i) Precision and optical products
- j) Food processing and manufacturing industry
- k) Manufacturing industry
- l) Rubber and plastic products
- m) Garments and textiles
- n) Leather products

For each type of manual, industry associations should be consulted on the content, as they are more familiar with the process and corresponding waste emissions. Cleaner production technologies and waste minimization should be encouraged.

It is inevitable that the inspectors will have a specialization of industries present in their respective regions. The training on the use of these Inspection Manuals should recognize the type of industries located in each region.

OPTION 2: Conduct further analysis on maximizing the use of the internet in permitting and the review of self-monitoring reports

Mundane activities, though important and intrinsic to enforcement, can be automated particularly through the use of the internet, which the EMB has already started. The EMB maintains one of the most visited government homepages in the country, getting as much as 2,000 hits a month. Noteworthy is the environmental impact statement program that has made tremendous use of the internet by providing scoping guidelines, initial environmental checklists, forms and frequently asked questions. This has undoubtedly eased the administrative load of the EIA Division in providing guidance to the regulated community and increased their ability to focus on other tasks, like inspections.

However, EMB still has to tap the internet to receive permit applications, industry self-monitoring reports, track status of permit or clearance application, and even receive complaints. Basic permitting and information and downloadable permit applications can be filed electronically and submitted by the applicant.

Personal digital assistants can be used for cost-effective record keeping of the inspectors. These handy equipment can store inspection monitoring forms, allow easy filling of these forms by the inspectors in the field, and uploaded either through the internet or cable connected to desk top. This would minimize, if not totally avoid, the time consuming pen-and-paper-to-computer approach of record keeping and report writing by the inspectors.

Perhaps the most potent use of the internet is to allow the submission and confirmation of receipt, detect non-compliance, and generate compliance reports from submitted industry-self monitoring reports. This will enable the EMB to transform self-monitoring reports as a backbone of its monitoring system.

OPTION 3: Adopt synchronization approach of LLDA in issuance of PTO.
Extend permit life issued to low-risk firms to as long as five years.

Permit life can be spatially synchronized so that co-located permit holders will have similar deadlines and will require inspectors to stay in one area to do successive inspections to reduce travel time and costs. The Laguna Lake Development Authority (LLDA) has successfully used this synchronization. Permit anniversaries are similar for clusters of municipalities, thereby increasing the amount of inspections by reducing travel time.

OPTION 4: Limit unannounced inspections on reasons of violations, misrepresentation of data, or the likelihood of firm destroying evidence.

The EMB should limit the conduct of unannounced inspections. Instead of targeting all sources or facilities, inspections may be done on the basis of violations, misrepresentation of data, or the likelihood of a firm destroying evidence.

OPTION 5: EMB must push for amendment of the Administrative Penalty.

In order to avoid instances of refusal of entry or obstruction of visitorial powers of the EMB, it must push for the amendment of the administrative penalty. In addition, the PAB must act swiftly on recommendations of criminal sanctions by the regional enforcers. Criminal violations of environmental laws may also be made public. This will induce public pressure against identified violators.

On the Adjudication Process - Assessment of PAB

Improvements in the Adjudication Process and Compliance

One organizational measure to address the long compliance period and the resulting cumulative increase in backlog PAB cases is to regionalize the adjudication process. One regional PAB center may be established in Luzon, Visayas, and Mindanao. Section 19 of EO 192 states that the “powers and functions (of the Board) may be delegated to the regional officers of the Department in accordance of the rules and regulations to be formulated by the Board.” Because the Visayas and Mindanao regions respectively account for 23 and 15 percent of PAB cases, regionalization may be a way of decongesting the Manila traffic of pollution cases, and thereby improve regional environmental governance.

There are other approaches and conditions to improve the adjudication process and promote environmental compliance.

One, the CDO must be used more as a deterrent tool of last resort in order not only to increase its deterrence value but also to avoid the greater economic costs of closure. This principle would partly imply that the enforcement of fines and penalties must be prioritized. To be effectively implemented, mechanisms for proper assessment and collection should first be improved. If used as a tool of last resort, the CDO must also be accompanied or preceded by other procedural enforcement methods, environmental management approaches, and consultative processes with establishments. For instance, with regards to procedural enforcement methods, **Appendix A** shows the

different graduated administrative responses to various forms and degree of noncompliance, like failure to submit a particular requirement, missed interim dates or final deadline, and the exceeding of interim or final limits.

Two, the Bureau must use other management tools, like market-based instruments (environmental user fee or pollution charges), and environmental and civil liabilities or compensation for environmental damages, health damages, and productivity losses. The introduction of these new approaches requires IEC efforts to promote the understanding and appreciation of the general public, industry, judiciary, local government, law enforcers, and civil society with regards not only to the meaning of these policy tools but more importantly the direct relationship between environmental quality and human health and well-being. The increasing presence of toxic chemicals and hazardous waste and the serious harm they pose to human life and the environment is the underlying principle in support of the new approaches.

Three, consultative processes must further be developed. One such process in place is the technical conference. Because of its positive contribution, there is a gain in improving its efficacy. This would entail increasing the number of competent hearing officers and improving their ability to mediate conflict. There is also a need to determine ways to rationalize the adjudication process, reduce delays in proposing and implementing, thereby hastening and improving the process of compliance.

Four, the availability of information and subsidies on alternative technologies or production processes can promote greater compliance. While investment in pollution abatement technologies may be induced by the proper rate of pollution charges, its adoption and use would be facilitated by subsidized credit from development banks or access to clean development mechanism (CDM) grants, if not from an environmental fund.

2.1.4 Promote Market-Based Instruments and Establish an Environmental Fund

Market-based instruments (MBIs) consist of policy tools in the form of pollution charges or taxes, input or user fees, tradable or marketable permits, and subsidies for environmentally friendly activities (see **Appendix B1**). (Anderson 2002, and Speck et al 2001). The use of these instruments does not entail dismantling the command-and-control (CAC) structure. In many cases, MBIs use the standards set by traditional CAC regulations as a basic building block. Emission charges or resource user fees, for instance, are simply built on an already-existing system of permits, emission and discharge standards, and reporting and monitoring practices. Instead of merely imposing a fixed standard fee for each regulatory breach, pollution charges are set at a rate that varies with the amount of the pollutant's concentration. (**Appendix B2**) Greater pollution thus results in larger fee payments.

Because pollution is a negative externality of economic activity, MBIs are justified as instruments to capture the unaccounted cost. In so doing, not only does the policy instrument establish a revenue source. There is also the possibility that the MBI will effect a desired change in the behavior of polluters. In principle, a base fee or charge is

set for each pollutant. A particular rate, for instance, may be set for BOD, and another for heavy metal¹². The fee then increases depending on the amount by which a polluter exceeds the standard for a particular pollutant. The fee structure set reflects the government's policy target. If BOD is the government's primary concern, then neighborhood or household sources are the primary policy targets. Economic instruments may also be directed at other types of pollution that comes from the industrial sector.

While the amount set for pollution charges or user fees may not cover the negative externality, they provide revenue for state treasury to cover the costs of government permitting, compliance monitoring and enforcement programs, if not capitalize an environmental fund. The charge may then consist of a fixed amount that goes toward administrative costs, plus variable fees that go into dedicated environmental funds. Varying across states, the structure of wastewater fees, for instance, may be levied only on the volume. Other structures may consider toxicity or a set of other factors, such as the purpose for which the water was used, characteristics of the receiving water, heat load, potential health threat to the receiving community, and type and size of user.

Apart from the revenue objective, economic instruments may also be used as policy tools or to change the behavior of industrial, agricultural, and residential polluters (Anderson 2002, Bluffstone 1997, OECD 1994). As financial incentives, these instruments provide financial rewards for polluting less while imposing costs for polluting more (Anderson 2002).

In order to bring about behavioral changes, an optimum rate level of user fees must be set. In practice, state environmental agencies would estimate the optimum charge with the use of abatement cost surveys because of the expectation that polluters will put in place abatement programs and technologies if it will be less costly than paying the government fees. Information on emissions/effluent levels and the costs to abate pollution are hence crucial in formulating a pollution charge policy¹³.

The success of MBIs depends on whether collected fees will stay in the environmental sector or not. Klarer (1999) argues that "environmental funds, as long as their revenue base is income from environmental charges, taxes and fines, recycle revenues from polluters in general to the polluters responsible for activities requiring remedial action on a priority basis. In this way, in fact, the combined charges/ subsidies system may retain the efficient property of an economic instrument."

With revenues from pollution charges, the environmental fund can therefore be used efficiently if they are earmarked for priority remedial environmental actions or to

¹² The environmental user fee in Malaysia, for instance, focuses on one pollutant in one industry only—BOD standards among crude palm oil producers (Vincent 2000). In Eastern Europe, effluent charges take into account anywhere from five pollutants in the Czech Republic to 51 pollutants in Lithuania at any one time (Klarer 1999). Some air emission charges in Europe cover as many as 150 pollutants (Speck 2001).

¹³ As Klarer had noted, because of the high levels of effluent charges in the Czech Republic, " (it) is considered an effective instrument, stimulating environmental improvement, because rates are [actually] set close to the level of marginal abatement costs."

subsidize environmental infrastructure¹⁴. Earmarked funds not only help to improve the environment by subsidizing new environmental infrastructure, but can also improve collection rates, because the regulated community knows officials will plow these funds back into the same sector (Speck 2001).

The earmarking of environmental charges and fees for an environmental fund provides benefits that cannot be immediately drawn from another policy instrument, like tradeable permits. Moreover, the use of this particular MBI entail the following logistical and technical requirements:

- A legal and regulatory framework, including the delineation of the roles and responsibilities of regulators, emission sources, and others parties;
- An overall cap on emissions and a decision of which sources to include;
- The determination of emission quotas;
- Timing and spatial decisions, such as how long the program will run, whether credits can be saved in one period and used in subsequent periods, and whether there will be adjustments to account for differences in the environmental impact of emissions from different locations;
- The mechanism for measuring emissions; and
- Tracking and enforcement requirements.

Not only is greater precision of measurement desired (since sources will be buying and selling these quantities), but determining initial allocations, tracking needs, and whether to allow banking creates additional regulatory burdens.

Because the sheer logistics and technical capacity required to administer a tradable permit system are prohibitive in many countries like the Philippines, and because these requirements are considerably more challenging than the requirements for emission fees, the country should pursue an emission charge regime than a tradeable permit system.

Gaps and Strategic Options in Fund Generation and Management

(1) For Special Funds (RA 6969, RA 8749 and RA 9003), Absence of clear procedures on the operationalization and utilization of the special funds

- OPTION 1: Conduct an inquiry on the procedures for the use of the special funds.
- OPTION 2: Conduct constant follow-up of the request for the special account with National Treasury and DBM.
- OPTION 3: Initiate an accounting of all income collected under the various funds (particularly RA 6969 and AQMF) by all the regional offices.

¹⁴ Environmental funds may be disbursed in five ways, specifically as grants, "soft" loans, interest rate subsidies, loan guarantees, or equity investments. Of these five mechanisms, grants and soft loans are by far the most common forms of disbursement.

An inquiry on the procedures for the use the special funds should be made from the Secretary of Finance, the Chairman of the frequently referred to Permanent Committee. At the same time, the request for the special account with National Treasury and DBM must be constantly followed up. For the preparation of the special budget request, an accounting of all the income collected under the various funds (particularly RA 6969 and AQMF) by all the regional offices must be initiated.

(2) For the Environmental Revolving Fund, the operationalization of the ERF did not fully comply with the requirements of PD 1586. Charges against the funds have been allowed in audit by COA representatives and the reports submitted to the DBM did not elicit any official action against its utilization. With the current trend of legislative creation of funds as a special account in the National Treasury, the possibility of the continued operation of the ERF may eventually be limited.

OPTION 1: Ensure that all expenses charged by concerned officials against the funds are allowable and within the bounds of the applicable laws and budgeting, accounting and auditing rules and regulations.

EMB can choose to continue utilizing the fund up to the time an official action is taken by the appropriate agency or committee. But it is important for the concerned officials to take the necessary care of ensuring that all expenses charged against the funds are allowable and within bounds of the applicable laws and budgeting, accounting and auditing rules and regulations.

(3) For Administration of Funds, Low collection rates of assessed fees, fines and penalties.

OPTION 1: Monitor regularly outstanding or unpaid assessments and provide list of outstanding assessments to issuing officer for further action.

OPTION 2: Adopt collection rate as a performance indicator of the enforcement/technical units.

OPTION 3: Black list violators for future applications.

OPTION 4: Adopt standardized format of the "Order of Payment" by all EMB Regional Offices (see attached format).

Standardized format of the "Order of Payment" that will be used by all EMB Regional Offices (See **Appendix C** for the sample). The form will have the following features:

- Pre numbered (one series (for all the funds) per office, CO and Regional office)
- Specify a due date for payment;
- Include information on the consequence of non payment of the assessment by due date;
- Aside from the original, the form will have three copies.

- Treated like other accountable forms such as the Official Receipt (although it may not be included among the forms audited by COA)

(4) For Accounting of Funds, there are no comprehensive and central records on the collection of fines. It will be hard for the Regional or Central Office accounting units to generate a comprehensive report of fees, fines and penalties collected for the various funds.

OPTION 1: Maintain separate and centralized accounts for each fund by EMB CO in the meantime the fully computerized-New Government Accounting System is not yet in place.

OPTION 2: Issue a Memorandum for the purpose unifying or standardizing income accounts across regions to help facilitate easy consolidation.

OPTION 3: EMB CO accounting must prescribe the income accounts as well as the entries to record the income.

A fully computerized accounting system is considered for the design of the New Government Accounting System. Responsibility Accounting is one of the features of NGAS that is envisioned to be implemented in a fully computerized system. Responsibility Accounting is part of the coding system of NGAS which can be used to account for each fund without maintaining separate books of accounts. Since EMB's NGAS is not yet computerized, EMB accounting will have no choice but to keep separate books for each of the funds even if no fund number has been assigned yet. The maintenance of separate books will ensure separate accounting of the funds and facilitate a quick reporting of the revenues and expenditures.

For easy consolidation of the Regional reports, it is important that the same income accounts are used by all the EMB Regional accounting units. A Memorandum must be issued for this purpose. EMB CO accounting must prescribe the income accounts as well the entries to record the income. Per NGAS, the following are the accounting entries to record income for which the agency has authority to use. These must be recorded in the Regular Agency books (separate books for each fund):

- | | | |
|-----|--------------------------------------------------|-----|
| (1) | Receipt of Cash or collection | |
| | Cash - Collecting Officers (106) | xxx |
| | Fine and Penalties - Other specific Income (799) | xxx |
| (2) | Deposit of Collection with Agency bank | |
| | Cash in Bank - LCCA (110) | xxx |
| | Cash - Collecting Officer (106) | xxx |
| (3) | Use of Income for supplies | |
| | Office Supplies Expenses (849) | xxx |
| | Cash in Bank - LCCA (110) | xxx |

(5) For Fund/Revenue Generation and Resource Mobilization, sources of revenue for AQMF and SWMF include donations, grants, or endowments from governments of other countries as well as international organizations.

OPTION:

For AQMF and SWMF, sources of revenue include the proceeds from licenses and permits issued, emission fees, as well as donations, endowments and grants. Of these sources, donations, grants, or endowments will require more planning and preparation from the officers and staff of EMB. Being a government agency, EMB has access to assistance from governments of other countries as well as international organizations. It would benefit EMB if it is always ready with project proposals or a portfolio of proposals from which donors can choose a project to support. It is important to note that these funds were created to fund specific purposes or activities. These allowable applications of funds or projects must match those that donors can fund. Before EMB seeks donors for the funds, it must first evaluate the advantage these Special Funds would offer, especially with regard to procedures requiring a request for a special budget for their utilization. Without the special funds, EMB can receive grants. It may be different for donations and endowments. Still the difference will depend on procedures for utilizing the income of the funds.

Aside from the revenues for the special funds, EMB may request for the use of income from activities that are really business-type. Such activities include: laboratory analysis, conduct of seminars and training and laboratory accreditation. Income from these activities can be directly associated with the expenses incurred to undertake them. Hence, the use of income can be easily justified. Fees may be set at rates allowed by existing government rules and regulations and/or as may be accepted by the market or end-user. For instance, laboratory fees may be set to be at par or a little lower than the fees charged by the private/commercial firm. All analysis done for a private entity will be charged a fee whether it is done on their request or in relation with EMB's monitoring and inspection activities. The results should, of course, always be given the private entity to justify the payment of fees.

Another option for the laboratory fees is to include it in the computation of penalties. With this option, the total amount of the penalty with assigned laboratory fee must not exceed the maximum amount set by the law. Thus, the laboratory fees will be limited by the allowable maximum amount of penalty. Also with this option, the proceeds will go to recipient fund and not flowed back to sustain the operation of the laboratory. Authority for the use of income will likewise have to be requested from the DBM. However, it has the advantage of having a more direct relationship between the source and use of income and "business-type" activity. To justify the scheme, a plan can be presented to show that eventually the operations will be self-sustaining and may even generate excess income.

Perhaps an alternative to revenue generation for the special funds or use of income that should be looked into is mobilization of other resources to support and/or accomplish the objectives and mandates of EMB. This will entail the identification of stakeholders or entities (individuals or institutions) that have similar or complementary goals and

activities with the EMB and, forming linkages or arrangements for the undertaking of activities that will result in the accomplishment of each other's goals and objectives. An example is the linkage with the Department of Education to include water quality testing in the high school science curricula. Each school can be assigned a river or portion of a river for water quality testing at a particular time of the year or season. With each school covering an identified portion of the river and with the number of high schools in the country, it may be possible to cover all if not most of the river systems. Results will be transmitted via internet to EMB for its database on water quality. Over the years, such database will provide valuable information. The benefits to both the students and EMB are obvious.

This requires that EMB set clear goals and objectives, a long-term plan that allows participation of other stakeholders, and defined activities with understandable objectives and measurable results. With this EMB can share with others its plans and programs and let them share in its undertaking, whether they are other government agencies, private entities, academe, or civil society.

2.1.5 Improve the Climate for Compliance through Education

The EMB has made limited use of compliance promotion as an integral part of its compliance and enforcement program. Although it has a well-established information and education division, most of its activities are neither linked nor made to complement enforcement activities. Components of compliance promotion, like education, technical assistance, information on success stories, and building environmental management capability, have mainly targeted those outside the regulated community.

Aside from strengthening its in-house capabilities, EMB must also address its ability to directly encourage compliance among the regulated community. As the incidence of pollution and its impacts increase over time, the Bureau must also provide a better environment of compliance through new or improved management approaches, policies, and mechanisms. Efforts to complement the regulatory mechanisms with MBIs Have this particular objective.

However, the realization of an improved climate for compliance is not merely confined to the ability of the EMB to come up with efficient and effective mechanisms to enforce environmental laws and maintain environmental standards. Improving compliance also depends highly on the competence of the regulated community to comply with the standards set by the Bureau. With this in consideration, the goal of improving compliance may now be envisioned as the combination of the adoption of potent environmental management instruments and the enhancement of the regulated community's capability to meet the standards set by the EMB.

Aside from the use of MBIs, another essential tool that may be adopted by the EMB in order to spur compliance is the public disclosure program. The revival of the Industrial ECOWATCH Program would essentially encourage a wider participation in monitoring compliance performance of firms and industrial facilities. By way of disclosing ratings of firms to the public, the Industrial ECOWATCH Program induces public pressure to firms to comply with the environmental standards set by the EMB. As the public becomes

aware of private industries' environmental compliance performance, the regulated community becomes wary of their actions resulting to more controlled and below-threshold emissions.

With the mix of these two mechanisms complementing the EMB's current CAC measures, the climate for compliance will eventually change. It is expected that through the combination of such approaches, the EMB can further encourage compliance among firms.

Improving the Compliance Capability of the Regulated Community

The current economic situation of the country prompts the careful crafting of approaches to enforce environmental laws and standards so as not to compromise the stability of operations of firms. To do this, the EMB must take an active part on building of appropriate capability of the regulated community.

Developing the capacity of the regulated community may be done in the form of granting loans, subsidies and building awareness of the regulated community through compliance promotion activities. The first two options may seem farfetched since the EMB itself do not have enough resources to support some of its own operations. To address this constraint, the EMB could work with financial institutions to facilitate the availability of funds for grants and loans to induce investments in pollution control.

The third option, which is to build the awareness of the regulated community through compliance promotion, is the most feasible alternative for the EMB at this moment. An essential component of this option lies on the refocusing of the Bureau's Information, Education and Communication campaign targets. The EMB has made limited use of compliance promotion as an integral part of its compliance and enforcement program. Although it has a well-established information and education division, most of its activities are detached to its enforcement responses rather than complementing it. Compliance promotion that includes education, technical assistance, success stories, creative financing arrangements, economic incentives, and building environmental management capability must be mainly targeted to those outside the monitored subset of the regulated community.

Education/Training

PD 984 and PD 1586

- Train the EMB staff to do environmental and natural resources valuation.

RA 8749

- train the EMB staff, especially those who would be responsible for computing and managing the funds generated, in fund management and accounting.

Across Mandates

- train the staff in the formulation of research and development proposals in order that it may be able to access funds from external sources. Research capability building of EMB staff is also necessary.

RA 9003

- design a training program for deputized enforcers of RA 9003. Hence, EMB has to get feedback from its regional offices and from LGUs so that it could design a suitable training program.
- With regards to the development of an accreditation and certification system for the conduct and holding of training programs on SWM, operationalize this during the initial stages of the implementation of RA 9003. This directive seems to be contradictory to the general education mandate of RA 9003. Since accreditation and Certification could stifle the growth of the market, i.e., the supply of SWM trainers, this directive may have to be reviewed.
- train EMB personnel who will be tasked with fund administration on fund management.
- identify additional funds for the SWM fund. The EMB needs to ensure that this fund would be self-sustaining.

Education

- conduct a massive IEC drive to educate the firms on the mechanics of the system in order to enjoin their participation. EMB would also need to educate the airshed governing boards, the LGUs and the general public on the emissions averaging and trading system.

(1) Absence of Doctorate Degree Holders in the EMB Staff

OPTION: EMB must encourage its personnel to pursue higher degrees of education preferably Doctorate degrees.

EMB personnel may argue that pursuing further degrees will take up much of their time away from their work. Although this is true, the EMB should view this as a form of a long-term investment. While personal development through the acquisition of higher educational degrees may conflict with duties and responsibilities, these benefit the EMB in the long run since the Bureau's knowledge base gets enhanced and the looming feeling of inferiority to its clientele tends to decrease.

By incorporating this thrust to the EMB's human resource development plan and creating an appropriate incentives scheme for those that are able to do pursue such, the EMB will find no trouble encouraging its personnel to engage in this endeavor. Moreover, an effective approach for the Bureau will be for its education department or division to find

ways to inculcate the virtue of personal development and its importance to its staff and key personnel.

(2) Inadequate Training Provisions for Rank-and-File Staff of the Bureau

OPTION: Reconfigure human resource development strategies.

To further develop the skills of its personnel and staff, the EMB will have to reconfigure its strategy on education and human resource development. Perhaps, the first thing it must do is to expand the scope of its education and HRD programs. This means that the educational program of the EMB should not only focus on the top management. Training and other human resource development activities must also be conducted down to the rank-and-file level. The EMB does not only rely on the top management to conduct its operations. The bureau also heavily depends on the performance of its rank-and-file employees.

Moreover, management must also be able to realize the importance and need for a human resources development plan that would essentially focus on the identification of employee needs. Such instrument could help enhance the performance of its staff and personnel by guiding management in addressing their needs.

2.1.6 Promote Strategic Alliances

There is a need to move towards a more collaborative, integrative approach to environmental issues. The EMB must identify and initiate strategic relations, work closely with agencies with environmental management responsibilities, pollution control programs, or those with units dealing with environmental matters or environment-related health conditions. Like some of the IAC/Ps, these strategic relations must be nurtured. The move towards greater integration with other environmental program-based agencies provides the material condition for the emergence of an environmental protection agency. Interestingly, the EPA in some countries was born out of the merging collaboration of various agencies with an environmental program.

Encourage the Pluralization of the Enforcement Function

Both quantitative and qualitative assessments undertaken reveal that the Environmental Management Bureau cannot perform its functions effectively by itself. If only because the environment occupies a small part of the government and the EMB could not depend on budgetary appropriations alone, the EMB's most logical option is to build on its networking potentials. It must find ways to develop a synergistic relationship with other environmental stakeholders and harness their resources for environmental management.

In the light of this option, it is strongly recommended that the EMB engage in the pluralization of its monitoring and enforcement function. Pluralization entails intensive EMB coordination and collaboration with other stakeholders of the environment by deputizing them to perform environmental management functions. Environmental management can thus proceed to the desired levels of quality by mobilizing the

resources and capabilities of other concerned stakeholders. The various inter-agency committees and projects represent a nascent form of this approach.

Deputize Enforcement Functions of the EMB

With limited resources, the EMB will not be able to achieve quality performance. In this regard, the EMB, as specified on section 6(k) of PD 984, can deputize or ask for the assistance of appropriate government agencies or instrumentalities for the purpose of enforcing, monitoring, detecting violations and remediation of environmental damages.

More specifically, the EMB, together with its regional enforcers (or regional offices), could deputize its enforcement and monitoring functions to other government units, non-government organizations, the academe, and concerned private organizations. In effect, national government agencies managing local land and water resources (e.g. National Irrigation Administration and the National Power Corporation) or overseeing environment-related health conditions, together with local government units in the provincial and city levels will become the enforcers of environmental laws. The role of the EMB in this arrangement is to build the technical capability of these units to enforce environmental laws and monitor the performance of deputized units. Academe, NGOs and the private sector, on the other hand, may be encouraged to participate in monitoring activities.

As the burden of the EMB is lessened through this configuration, the Bureau can devote more time and resources to other activities and functions, such as policy formulation, research, and IEC campaigns.

Encourage Broad-based Participation in Environmental Management

The revitalization of the Public Disclosure Program paves the way for the broad-based participation of other concerned parties in environmental management and protection. It encourages groups within the community to disclose the compliance performance of regulated firms and facilities. The net effect is public pressure on firms and facilities to comply with environmental standards set by the DENR/EMB.

As mentioned previously, the scenario envisioned by the Public Disclosure Program is one where the community, other groups including academe, non-government organizations, and private organizations participate in monitoring the performance of firms and facilities. Apart from extending monitoring assistance, the academe could provide valuable information regarding environmental quality from their studies. They also have the facilities and equipment for research activities. Environmentally concerned non-government organizations (NGOs) could serve as the eyes and ears of the EMB by monitoring and reporting incidences of various forms of pollution on the ground. Together with the local media and civic groups, NGOs can also be the voice of small communities since they can represent such communities in filing complaints against suspected polluters.

With the participation of local groups in environmental monitoring, EMB monitoring teams can now focus on frequent violators. This lessens the cost of monitoring and,

more importantly, provides flexibility for the EMB to focus on other activities such as research and policy formulation.

PD 984

The PAB shall deputize in writing or request assistance of appropriate government agencies or instrumentalities for the purpose of enforcing this Decree and its implementing rules and regulations and the orders and decisions of the Commission.

- Execute a Memorandum of Agreement (MOA) among the PAB, EMB and the City or Provincial Sheriff and the Mayor (to whom the Philippine National Police report to) to make this directive implementable. DAO 30, s. 1992 also authorizes the DENR to deputize local officials to enforce environmental laws.
- Provide resources such as honoraria and gasoline allowance for those deputized to enforce the fine or order of closure or stoppage of operations of violating firms. It may be necessary for the EMB to explore funding options such as the environmental revolving fund (ERF) under Presidential Decree 1586 or the Environmental Impact Statement (EIS) System. This is because a certain amount of fines and penalties from PD 984 accrue to the ERF. The ERF committee decides on the usage of the funds.

River/Water Body Classification and Water Quality Monitoring

- Strengthen partnerships with LGUs, private sector and civil society in “adopt a river”, or river revival programs.

RA 8749

Management of Non-Attainment Areas

- Expedite the creation of Airshed Governing Boards.

Air Quality Action Plan of LGUs

- Provided the first and second precursor activities are done, formulate guidelines on how to supervise the air quality action plan of the LGUs. EMB also needs to define the extent of its supervisory powers over the LGUs action plan.
- Build the training capability of LGUs to prepare them to undertake full administration of the air quality management and regulations within their territorial jurisdiction (Rule XLV of the CAA-IRR).

Air Quality Control Action Plan Multi-Sectoral Monitoring Team

- Although RA 8749 directs the DENR (through the EMB) to convene multi-sectoral monitoring teams per LGU, an airshed governing board, chaired by the DENR Secretary (represented by EMB or the EMB R.O.) may assume this function.

By year 2003, the EMB is expected to have established an Ambient Air Monitoring Network for the assessment of ambient air quality. Data from this network and the emissions inventory are supposed to be stored in the Air Quality Database and Air Quality Monitoring and Information Network. These are also necessary for EMB's enforcement functions. Hence, EMB needs to design, or contract out the design of these networks, initially in the proclaimed airsheds like the Metro Manila Airshed. The EMB would have to work with other concerned government agencies, like DOTC/ LTO, the Philippine Information Agency and with environmental NGOs, and with media in the establishment and operationalization of these networks. The creation of inter-agency committees or task forces could facilitate the accomplishment of these activities.

RA 9003

- EMB may perform education functions by either doing the activities itself, contracting these out or partnering with other stakeholders like LGUs.
- To encourage private sector initiatives and greater community participation and investments in livelihood programs, create incentives, documents, and success stories and disseminate these to the public, in partnership with the private sector, other government agencies like the P/A and civil society groups like NGOs and educational institutions.

The Inter-Agency Committees/Projects

Inter-agency committees/projects in environmental management, are considered as networks in the organizational parlance. They are usually created for a specific purpose or project and operate on an ad-hoc basis and have a definite organizational life. However, there are IAC/Ps whose organizational lives are perpetual unless the law creating them is revoked or a new law dissolving such IAC/P is enacted. These come in the form of commissions and inter-agency technical advisory councils or committees. Examples are the IATAC under RA 6969 and the National Solid Waste Management Commission (NSWMC) under RA 9003.

IAC/Ps, as networks are created to fast track or expedite the resolution of a problem, issue or pressing concern by involving multiple actors and sectors. Networks and looser forms of organizational structures are the order of the day.

With the increase in the complexity and severity of environmental problems and with the expansion of these beyond national boundaries, the growth and role of IAC/Ps will become more prominent. Hence, EMB, as a lead agency in several IAC/Ps, need to harness these IAC/Ps in order to fulfill its mandates and to, more importantly, to assert its leadership role in environmental management. As such, the EMB needs to study and where feasible, adopt strategic options. These are:

IAC/Ps where EMB is the Lead Agency and/or Secretariat

- Source out or generate additional resources for the operations of the IAC/Ps, e.g., funding, manpower, equipment
- EMB staff leading the IAC/Ps need to acquire skills in project management, meeting/workshop facilitation, process documentation, group dynamics, policy analysis, public speaking, negotiation, oral presentation, public relations, training management, records keeping, data-base management, alternative dispute resolution and conflict resolution.
- Acquire more knowledge about the subject matter and the tasks of the IAC/P, including the mandates of other member-agencies. EMB as the lead agency, must also be the leader in terms of knowing the latest developments in the field, what it is supposed to do and what other agencies could contribute to the achievement of the goals of the IAC/P. This is also true for IAC/Ps where EMB is a member. The EMB staff participating in the IAC/Ps need to be knowledgeable about the environmental laws, mandate, issues and concerns related to the tasks of the IAC/Ps.
- Recognize its limitations. IAC/Ps are created because no single agency can fulfill the tasks assigned to IAC/Ps. Hence, as the lead agency, EMB need not do all the task assigned to the IAC/Ps but rather harness the resources and the skills of the member agencies. Since EMB is the lead agency and is accountable for the accomplishment of the tasks of the IAC/Ps, it also needs to hold the members of the IAC/P committed and accountable to it, for their respective responsibilities

IAC/Ps where EMB is a Member

- Seek support from the lead agency in order for EMB to fulfill its responsibilities in the IAC/Ps. This would be in the form of resources, access to information, manpower, equipment and honoraria.
- In IAC/Ps where activities are not in the priority thrusts of EMB, the EMB must have the skill to persuade the lead agency and other members, to engage in activities that will also be in consonance with EMB's priorities, as a condition for EMB's active participation in the IAC/P.
- Acquire skills in policy analysis, negotiation, public speaking, oral presentation and personality development. EMB staff participating in IAC/P project the image of the bureau. The credibility of the EMB hinges on how the staff would conduct themselves in IAC/P meetings. Even their mode of dressing may reflect on the EMB as an organization.
- Serve as an expert on environmental laws, mandates and tasks of EMB. The inclusion of EMB in IAC/Ps is a recognition of its expertise in environmental concerns. Hence, it is expected that EMB staff participating in IAC/Ps make substantial contributions to the fulfilment of the IAC/Ps tasks.

- Recognize limitations and suggest alternative means of fulfilling responsibilities. There are some IAC/Ps wherein most of the tasks are given to EMB by the lead agency. EMB staff need to recognize their personal limitations and that of EMB, in terms of time and resources. For instance, there was one project wherein EMB staff were tasked to administer questionnaire to its industry clientele, the respondents of the study. Instead of this task, the EMB staff should have suggested that all respondents should be invited to a workshop, to be funded out of the project funds of the lead agency. Other alternatives would be for the lead agency to hire enumerators to administer the questionnaires, and these can be supervised by the EMB staff.

EMB as an Institution

The emergence of IAC/Ps and the work these entail point out the need in the short term, for a focal person to orchestrate or get the efforts of the IAC/Ps where EMB is a member. In the medium to long term, EMB needs to create a policy and special projects coordination unit. This unit would:

- Determine the synergy among the IAC/Ps.
- Devise strategies to use IAC/Ps to achieve EMB's policy agenda.
- Conduct policy analysis of proposed policies discussed in IAC/P meetings.
- Keep track of the different special projects both local and foreign assisted – their components, objectives and outputs. Some IAC/Ps require the same basic data and sometimes, similar outputs from EMB.
- Assist the EMB staff participating in the IAC/Ps by providing him/her with updates on other similar projects.

This report presented the membership of the EMB Central Office in inter-agency committees/projects in order to assess their implications on the EMB staff and on EMB as an organization. While IAC/Ps are viewed as additional work, they also contribute to the fulfilment of EMB's mandates as well as to the professional growth of EMB staff. The creation of the IAC/Ps and the inclusion of the EMB in these, are also a recognition of the important role of EMB in addressing environmental concerns, together with the private sector and civil society. What EMB needs to do is to harness these IAC/Ps in order to build an environmental constituency that would not only help it fulfill its mandates but more importantly, improve the state of the environment.

2.1.7 Consider Other Options and the Benefits of Autonomy

At least three organizational options are available to the EMB. One, it can remain as an attached agency of DENR. Two, it can affirm its line bureau status under DAO 2002-17 and organize itself either by sector or according to function. Three, it can de-link itself from the DENR, and become a separate body. The bills pending in the House of Representative or Senate respectively, the National Environmental Management Agency (NEMA) or the Philippine Environmental Protection Agency (PEPA) could pave the way for the Bureau to realize the third option.

There are at least two major benefits associated with the third option. First, the EMB could free itself from the structure and policy imperatives of the DENR, and allow the

agency to focus solely on environmental management, undistracted or unstifled by the resource developmental orientation of the Department. Second, as a separate technical body with its own staff, budget or fund-generating ability, it would enjoy relative autonomy from conflicting interests, and could effectively distance itself from politics.

Appendix D provides an annotated matrix of the different features of the NEMA and PEPA. Summarizing the comments, both bills seem to take a mechanical, pragmatic view of the proposed organization. They specify the functions, but do not differentiate the relative significance and strategic value of these functions. Both bills also describe the organization of the agency in terms of its various positions in the organizational chart, and the common sources of funds. The weakness of the adjudication process is implicitly recognized but seems to be addressed by giving a new name (Environmental Adjudication Commission) to the former PAB and increasing the number of positions relative to the PAB.

It is difficult to discern the expected dynamics and source of vitality of the organization from the Bills. The difference between the regulation function of the PEPA and the enforcement function of the NEMA is not clear. An apparent difference is their legal personality. While PEPA is a government agency, NEMA is a hybrid non-stock corporate body with mixed membership in the Board of Trustees representing government, private industry, NGO, academe and labor. The presence of regional regulatory offices and the bigger number of Assistant Director Generals (ADG) in the PEPA¹⁵ compared to the NEMA, would suggest either an unwieldy body or a more pervasive regulatory agency. Apart from an Office for Environmental Regulations with an ADG and regulatory offices in the regions, there are various regulatory functions of different government agencies (e.g. MMDA, HLURB, FPA, PNRI, DOE) that the PEPA will take over.

2.2 EMB Performance Indicators

Enforcement

Since EMB has operationalized the enforcement directives in PD 1586 and RA 6969, EMB's strategic options in strengthening enforcement along the directives in PD 1586 and RA 6969 are recommended to be in the following areas:

- Improvement of the quality of the performance of current activities, to wit:
 - Timeliness of enforcement responses, e.g., reduction in processing time for permits/clearances, short time to respond to a pollution complaint.
 - Streamlining of procedures in undertaking activities.
 - Incorporation of feedback from the clientele on services rendered (accessibility, transparency).

¹⁵ There is one ADG for the following functions, namely public affairs and education, legal and legislative, environmental planning and research, ecosystem management, environmental regulation, LLDA, and administrative, finance and management services.

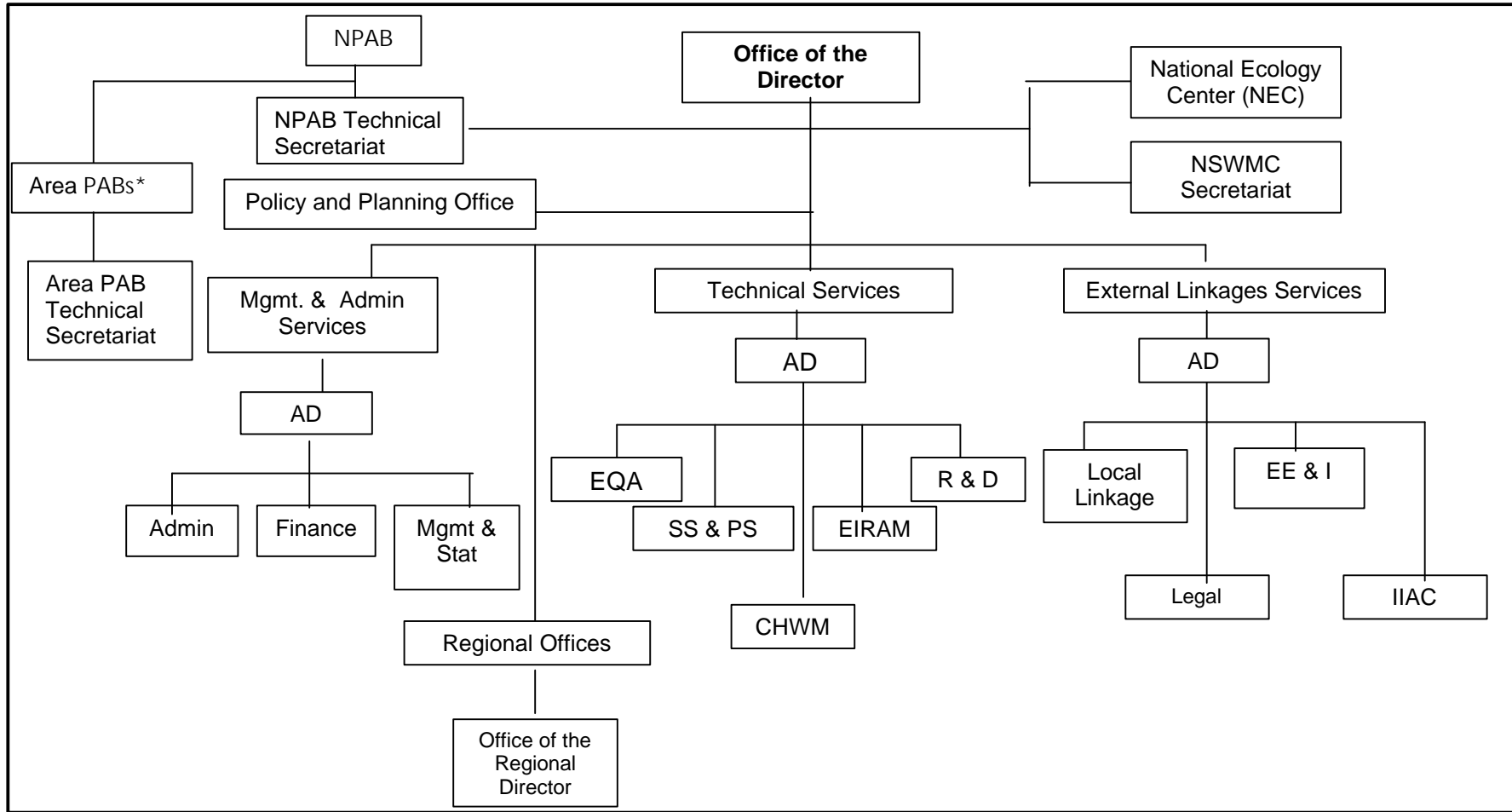
- Increase in compliance rates of clientele, i.e., encourage more firms covered by RA 6969 to register with the EMB.
 - Progress in making violators comply with requirements, i.e., reduce the time it takes for a violating firm to return to compliance.
 - Number of Enforcement Responses, e.g., increase the number of legal cases filed against violators, increase number of cases won.
- Formulation of more cost-effective ways of operationalizing the directives, e.g., phase-out activities that are no longer relevant and replace these with alternative activities.
- Decentralization of some activities to the regional offices or their devolution to the LGUs.

An Alternative Organizational Structure for Environmental Management

The **Figure** provides an alternative organizational structure for environmental management. While the proposed organizational chart shows the current functions of EMB as indicated in DAO 17, it is structured along functional lines. The proposed organization has three main services, each headed by an Assistant Director, and these are the following: (1) Management and Administration Service (MAS), (2) Technical Service (TS), and (3) the External Linkages Service (ELS).

The Technical Service and the External Linkage Service plays a crucial role within the proposed organization in the implementation of the strategic plan. In general, it is in Technical Service that the capacity for policy development and research will be housed, nurtured and put to full use. The above efforts to promote alliances and implement the pluralization strategy in enforcement shall be located in the External Linkages Service. Because of its role in encouraging broad-based participation, the program on Public Disclosure will be implemented and monitored in this Service.

**Figure
 Alternative Organizational Structure for Environmental Management**



Notes:
 * RPAB - In selected regions only
 Admin - Administrative Division. Includes (1) Human Resources Management Section, (2) Human Resources Development Section, (3) Records Section, (4) Property and Supply Section, (5) General Services Section.

- Finance – Finance Division. Includes (1) Budget and Fiscal Section, (2) Accounting Section and (3) Cashier Division.
- Mgmt&Stat – Management and Statistical Division. Includes (1) Environmental Statistics Section, and (2) System Development and Maintenance Section.
- EQA – Environmental Quality Assessment Division. Includes (1) Air Quality Assessment Section and (2) Water Quality Assessment Section.
- SS & PS – Standard Setting and Policy Studies Division. Includes (1) Standard Setting (Air & Water) Section and (2) Policy Analysis and Legislative Liaison Section.
- CHWM – Chemical and Hazardous Waste Management Division. Includes (1) Toxic Chemicals Management Section and (2) Hazardous Waste Management Section.
- EIRAM – Environmental Impact, Risk Assessment and Management Division. Includes (1) Review and Assessment Section, (2) Environmental Risk and Damage Assessment Section, and (3) Environmental Monitoring and Audit Assessment Section.
- R&D – Research and Development Division. Includes (1) Environmental Quality Standard and Criteria Section, (2) Environmental Laboratory Support Services Section, (3) Global Phenomena Research Section, (4) Environmental Technology Section, (5) Special Studies/Concerns Section, (6) Coastal Environment Management Section, and (7) River Rehabilitation Section.
- EE&I – Environmental Education and Information Division. Includes (1) Information and Public Advocacy, and (2) Environmental Education and Capability Building Section
- IIAC – International and Inter-Agency Commitments Division. Includes (1) International Commitment Section and (2) Inter-Agency Commitments Section
- Local Linkage – Local (Industry) Linkage Division. Includes (1) Inspection and Monitoring Section (for Air, water, hazardous waste and chemicals and EIS compliance), (2) Permitting Section and (3) LGU Coordination Section.
- Legal – Legal Division. Includes (1) Litigation, Prosecution, Evaluation and Enforcement Section and (2) Investigative Research Section.

The following three divisions are under the MAS. One, consisting of the Budget, Accounting, and Cashier Sections, the Finance Division is responsible for fund management, apart from the traditional budgetary request preparation, execution and expenditure accounting functions. It is also responsible for ensuring the proper and uniform treatment of receipts and expenditures by all the regional offices.

Two, the Administrative Division has the Human Resources Management and Development Sections, Records, Property and Supply, and General Services Sections. The functions of the Division include the provision of human resources and logistical requirements for the effective operation of the EMB. It is likewise responsible for installing uniform or standard operating procedures in all the regional offices.

Three, the Information Technology Management and Statistics Division coordinates the establishment and maintenance of information systems and databases to provide current information for the effective performance of Bureau functions. It is also responsible for the development and maintenance of a system for environmental accounting that can be used in the preparation of the State of Environment Report and for policy formulation. The Sections under this Division are the Environmental Statistics and Systems Development and Maintenance Sections.

The Technical Service has five (5) main Divisions: (1) Environmental Quality Assessment Division, (2) Standard Setting and Policy Studies Division, (3) Environmental Impact Assessment (EIA) Division, (4) Research and Development Division, and (5) Chemical and Hazardous Waste Management Division. The Environmental Quality Assessment Division covers all media of pollution (air, water, land, noise) but with current emphasis on air and water. Monitoring and assessment activities focus on the environment rather than on the regulated companies. The monitoring of the regulated companies will be a responsibility of the External Linkages Division.

The External Linkage Division formulates environment surveillance and monitoring schemes, and implements such programs together with the regional offices. The Sections under this Division are the Water Quality Assessment Section and the Air Quality Assessment Section, reflecting the current emphasis on the two media. The Division's functions, however, are not limited to air and water. It also includes other media (land and noise) and chemical and hazardous waste. The results of the assessment activities will be translated into standards and policies by the Standard Setting and Policy Studies (Formulation) Division of Technical Service.

The SSPS Division is responsible for formulating environmental standards for air, water, land and noise. The management, attainment or maintenance of such standards will be translated into policies in the formal Bureau, Department or PAB administrative issuances and other legal instruments. The Division will therefore have to interact with the appropriate administrative/ executive or legislative offices for the issuance or legislation of the recommended policies. Such proposals may emanate from two sections of this division, namely Standard Setting Section and the Policy Studies and Legislative Liaison Section.

The Environmental Impact Assessment (EIA) Division continues to be responsible for the review and evaluation of projects under the EIS System. It will also be responsible for enhancing the capability of the system to assess risks and damages of projects and activities, as well as ensuring compliance to conditions of the Environmental Clearance Certificate through the audit of the environmental management system or program (EMS or EMP) of project proponents. There will be three Sections under the EIA Division, namely the Review and Assessment Section, Environmental Monitoring and Audit Assessment Section, and the Environmental Risk and Damage Assessment Section. The study recommends that the function of routine inspection of proponents to validate compliance to ECC conditions be transferred to the Inspection and Monitoring Section under the External Linkages Service, Local Linkage Section. Instead, the Division will undertake monitoring through its EMP audit.

The fourth division under Technical Services is the Research and Development (R&D) Division. The Sections under the R&D Division reflect the scope of DAO 17, and these include the following: Environmental Quality Standard and Criteria Section; Global Phenomena Research Section; Environmental Technology Assessment Section; Special Studies/Concerns Section; Coastal Environment Management Section; Environmental Laboratory Support Section. The study also recommends the inclusion of the River Rehabilitation Section that is part of the Water Quality Management Division under DAO 17. Aside from providing laboratory support services, the Research and Development Division will draw up its priority research agenda and collaborate with research institutions and academe.

The Chemical and Hazardous Waste Management Division has the Toxic Chemicals Management Section and Hazardous Waste Management Section. Their functions include the setting of standard procedures and codes of practice guidelines for the proper storage, transport and disposal of chemical and the tracking and reporting of hazardous waste. It will also coordinate with other institutions for the effective implementation of RA 6969 and its rules and regulations, and harmonize activities as required by local and international commitments, among others. Based on the perspective underlying the proposed organizational structure, inspection activities and the issuance of permits belong more appropriately to the External Linkage Service Division.

The External Linkages Service consists of the following divisions: (1) Legal Division, (2) Environmental Education and Information Division, (3) International and Inter-Agency Commitment Division; and (4) Local Linkage Division. The Service in general deals with various groups outside the EMB whom it interacts in the performance of its functions or the implementation of its policies and programs. These groups include the (1) industry or private companies; (2) other government agencies; (3) non-governmental organizations (NGOs) and academe; (4) other governments and other international institutions; and lastly (5) the Local Government Units. The Service in general will be the vehicle to implement the pluralization strategy of the enforcement function and the Public Disclosure Program (PDP). PDP is one example of promoting community monitoring and environmental compliance. In particular, the Environmental Education and Information Division (EE&I) and Local Linkages may be responsible for identifying, networking,

orienting, and coordinating with the different deputized national and local government agencies and LGUs in the enforcement of environment rules.

The study proposes that all inspection and monitoring and issuance of permits and clearances, whether for air, water, EIA and toxic chemical and hazardous waste will be consolidated under one division (Local Linkages). The concerned division under the Technical Service shall of course provide the necessary technical support.

Under each division are the following sections that reflect their particular concern. In the Legal Division, we have the Litigation, Prosecution, Evaluation and Enforcement Section and the Investigative Research Section; for Environmental Education and Information Division: the Information and Public Advocacy Section and the Environmental Education and Capability Building Section; for International and Inter-Agency Commitment Division: the International Commitment Section and the Inter-Agency Commitment Section; and for Local Linkage Division; the Inspection and Monitoring Section, Permitting Section and the LGU Coordination Section.

The study recommends the transfer of Planning and Programming from a Division under DAO 17's Environmental Planning and Policy Service to the Office of the Director. It is in charge of the planning, monitoring, and evaluating projects and activities being undertaken by the various units of the organization.

Institutionalization of Alternative Organizational Structure: Action Plan

1. Issuance of DAO by the Secretary to order the change in structure. *(I think they are expecting this from us - a revised DAO 17).*
2. Presentation to the DBM and request for approval of the new structure and the corresponding plantilla.
3. Work on the approval of the new structure and plantilla positions with the DBM
4. (Re) appointment/assignment of EMB personnel to the new structure/ plantilla positions once approved by the DBM.
5. Conduct organizational planning workshops for the officers of the EMB and concerned DENR officers;
 - a. to set long term and short term goals and targets (in view of the latest mandates and new structure)
 - b. detail the specific functions of organizational units;
 - c. define functional relationships among the organizational units
 - d. set priorities of the Services/Divisions/Sections; redirect programs and projects
 - e. define duties and responsibilities of each position in each of organizational units
 - f. define new performance indicators for the new programs, projects activities
 - g. revise/set new operating procedures as may be required
6. Issue the necessary office orders/circulars: to prescribe the detailed functions of organizational units (to implement or supplement the DAO prescribing the new structure); to assign (designate) personnel to specific organizational units/position titles (pending plantilla approval); prescribe new or modified office

- operating systems and procedures as may be necessary; and prescribe the revised or new performance indicators.
7. Conduct orientation workshops for EMB personnel on the new organizational structure and the functions of the organizational units as well as their own roles in the organization as restructured.
 8. Prepare and implement the annual/quarterly work and financial program with the corresponding performance targets.

3. FINANCIAL PLAN

The staffing of the organizational structure is initially limited to the number of staff proposed in the implementation of DAO 17. This is partly in recognition of EMB's estimation of the minimum number of personnel required for the effective performance of its mandate. However, the study recommends a different staffing pattern that is needed in the implementation of the strategic plan.

3.1 *Proposed Staffing Pattern*

As specified in Section 5 of DAO 17 s 2002, the conversion of the EMB from a staff bureau to a line bureau will entail an expansion of personnel. The EMB Central Office, as well as Regional Offices, will have a total of nine hundred eighty-three (983) additional positions. Specifically, the EMB Central Office shall initially have an additional one hundred forty-six positions, while EMB Regional Offices shall have additional 837 positions. Of this total, 53 additional regional positions will be allocated to the National Capital Region Office and the remaining 784 positions will be equally allocated among the remaining Regional Offices.

The object of improving environmental management and enforcement in the country seems to be a reasonable and valid justification for the expansion of powers and functions of the EMB. However, the basis for the creation of additional positions and its distribution across regions is not clear. The proposed additional plantilla positions do not seem to reflect differential environmental conditions or concerns among the regions.

The Central Office as of fiscal year 2002 has a total of 171 personnel, including both permanent and casual or contractual employees with plantilla position. There are eight major divisions in the proposed conversion for the Central Office, consisting of the Office of the Director and Assistant Director; three secretariat offices for the National Ecology Center Secretariat, the National Solid Waste Management Commission, and the Pollution Adjudication Board; an Administrative and Finance Service, a Legal and Environmental education Service, an Environmental Planning and Policy Service and a Standard Setting and Monitoring Service. Based on the current personnel distribution, resources are concentrated in the Standard Setting and Monitoring Service (**Table 6**). This possibly reflects the significance attributed to this role within the Bureau. In fact, a significant portion of the proposed increase of plantilla positions in the Central Office (47 out of the 143 new positions).

Table 6
Expansion of Personnel of the EMB Central Office

OFFICE	CURRENT PERSONNEL	%	ADD'L PLANTILLA (Based on DAO 17)
CENTRAL OFFICE (Divisions are based on DAO 17)			
Office of the Director	11	6.4	5
PAB	8	4.6	-4
NEC	0	0	1
NSWMC	15	8.7	-13
Administrative and Finance Division	32	18.7	32
Environmental Planning and Policy Service	16	9.4	44
Standard Setting and Monitoring Service	65	38.0	47
Legal and Environmental Education Service	24	14.0	31
Total	171	100	143

Sources of Basic Information: DAO 17-2002, Annexes and EMB Planning (Central and Regional).

There is no explicit rationale for the quantitative changes in personnel distribution in both the CO and the Regions¹⁶. There is no explanation why the proposed increase for the regional offices, specifically, grants an additional of 56 positions to each of the regions, except NCR. **Table 7** shows how the increase in each region will be allocated among the different personnel category, i.e. key personnel, technical personnel, and administrative staff. In particular, the technical capability of the regional offices will be strengthened. Again, there is no explanation why the given number of technical personnel will be added to given technical staff in each region.

¹⁶ Such an explicit justification may strengthen the budgetary request of the Bureau or DENR to the DBM and CSC.

Table 7
Distribution of Personnel in Regional Offices

Regional Offices	Expansion
All Other Regions (I-XIII, CAR)	
Key Personnel	6
Technical	39
Administrative	11
Total	56
NCR	
Key Personnel	6
Technical	36
Administrative	11
Total	53

Source: DAO 17-2002, Annexes

A number of criteria may be used as a basis for the expansion or creation of additional plantilla positions for the EMB. These include the regional population, regional population density, the gross regional domestic product of regions (from industry and both industry and services), and the number of PAB cases per region. The index derived from each criterion may serve as the basis for the distribution of the increase in plantilla position. **Table 8** shows the alternative distribution across regions by each criterion. Because about the same number of additional personnel is involved, the cost of each option is relatively the same. **Table 9** gives the total cost of hiring the required personnel. Faced with the same cost, the agency can thus simply choose its preferred distribution mode.

Table 8
Alternative Modes of Distribution of Additional Plantilla Positions
Across Regions

Region	Number of Current EMB Personnel	Percentage Distribution of Additional 983 Personnel Based on Derived Indices				
		Population Index (21 EMB Personnel per 1M Persons)	Industry GRDP Index (Ilocos Region Index=1.11)	Industry and Services GRDP Index (0.00565 Ratio)	PAB Cases Index (2 EMB Personnel Per PAB Cases)	Hazardous Waste Index ^{1/}
Central Office and NCR	279	(7.01)	27.19	39.59	26.55	47.16
Ilocos	18	7.01		1.73	1.32	1.41
CAR	30	(0.10)	3.36	0	0.71	0.22
Cagayan Valley	11	4.81	0.71	1.12	(0.20)	0
Central Luzon	32	13.73	10.90	2.13	20.85	6.80
Southern Tagalog	43	20.54	23.32	18.78	11.09	20.34
Bicol	20	7.82	0.31	1.62	2.95	0.03
Western Visayas	19	11.12	7.03	8.43	10.58	2.59
Central Visayas	20	10.02	9.78	11.47	12.00	3.20
Eastern Visayas	15	6.11	2.14	1.62	1.83	4.07
Western Mindanao	11	5.41	0.71	1.52	2.54	0.02
Northern Mindanao	18	4.01	4.99	3.86	7.73	5.09
Southern Mindanao	25	8.42	4.58	5.08	3.36	2.79
Central Mindanao	11	4.41	3.67	2.34	2.03	6.24
CARAGA	6	3.81	1.53	0.81	(0.41)	0.02
ARMM						0
Philippines	558	100	100	100	100	100

Source: REECS. 2002. SEECCTA Second Progress Report.

^{1/}Source of basic information: EMB JICA Study on HWM in the Philippines. Taken from Fuentes, R.U. 2002.

Note: Values would not add-up to 100% because of rounding off.

Table 9
Financial Requirement of the Proposed Organizational Structure/Staffing
Summary of Personal Services

Item	Proposed Permanent Position	
	No. of Positions	Amount (In PhP)
Central Office	316	52,405,764
Regional Office	1,228	214,098,108
Total	1,544	266,503,872
Other Compensation		98,848,171
	(each)	
Pag-ibig Contribution	1,200	1,852,800
ECIP	1,200	1,852,800
RATA		6,348,000
Phil Health		2,181,450
PERA	500	9,264,000
Additional PERA	500	9,264,000
13 th Month		22,208,656
Clothing Allowance	4,000	6,176,000
Year-End Cash Gift	5,000	7,720,000
GSIS Contribution (AutoApp)	12%	31,980,465
Total Personal Services		365,352,043

Prepared by: Ms. Dulce Cacha, 2003

3.2 Strategy for Human Resource Development (HRD)

The recommended HRD strategy is based on the (1) assessment of the EMB's current human resources and on the (2) organizational assessment of EMB's performance of its key functions of enforcement, policy formulation and planning, research, education and fund generation in fulfillment of its five legal mandates.

3.2.1 Strategy to Address Issues on EMB's Current Human Resources

This portion draws out implications from the findings of the assessment of EMB's current human resource base. Then, it provides recommendations to address key issues which impinge on the capacity of the current EMB personnel to perform their functions.

(a) EMB Human Resources by Position Level

The conversion of EMB from a staff to a line bureau has several implications on the position levels of its human resources. The EMB Central Office administrative and first level personnel would have to provide administrative services to the EMB regional offices in two ways. First, pending the transfer of administrative personnel from the DENR R.O. to the EMB R.O. or the creation of new positions, the EMB C.O.

administrative personnel would have to train existing EMB R.O. personnel to perform administrative functions. These include functions formerly performed by the personnel, budget and accounting, cashier, records, property, training, information and public affairs, planning and legal offices of the DENR R.O. The existing authorized positions at the EMB R.O.s do not include items for these functions. Second, if and when the DENR transfers the administrative personnel and their positions to the EMB, the EMB C.O. administrative personnel would still have to provide the EMB R.O. administrative personnel with the guidelines, policies and directions for them to function efficiently and effectively. There were cases where the EMB C.O. provided logistic and manpower support to the EMB R.O.s. This trend is expected to continue until such time that the EMB R.O. would have the manpower and logistics to be self-supporting. From time to time, the EMB R.O.s also still seek manpower and logistical support from the DENR C.O. However, this trend is expected to taper down when the transfer of DENR R.O. personnel and positions to the EMB R.O.s gets approval from the DBM.

The EMB's options to strengthen the EMB R.O.s in terms of administrative and technical capacity would be to:

- Train existing EMB R.O. technical personnel to perform administrative functions and administrative personnel to perform technical functions, depending on the needs of the R.O. (short term). For example, in the NCR, only 44 percent of the personnel occupy second level positions. Since the bulk of industries requiring monitoring are in the NCR, the EMB NCR office needs more second level positions. This would also provide greater mobility for first level position personnel to transfer to second level positions.
- Download, detail or re-assign EMB C.O. administrative staff to the EMB regional offices (short-term).
- Review the proposed DENR positions and personnel to be transferred to the EMB and its R.O.s to ensure that all R.O.s have the administrative and technical positions and personnel they need. A caveat is that there might be DENR personnel from among those that are proposed for transfer to EMB R.O.s that would have to be assigned to other regions. In this case, it is suggested that the DENR ask the personnel proposed for transfer, their first, second and third preference with regards to regional assignment. This measure is similar to that undertaken during the massive government reorganization in 1986 to 1987 in compliance with E.O. 192 (short-term).
- Propose a staffing pattern with a more rational distribution of first and second level personnel to the DBM, with due consideration of the administrative and technical needs of each EMB regional office. This would also entail the reclassification of positions from first to second level in order to attract more qualified personnel (medium-term). For example during its conversion from a staff to a line bureau, the Mines and Geo-Sciences Bureau reclassified and upgraded the clerk position with a salary grade of 4 to computer operator I with a salary grade of 11. This motivated the existing clerks to upgrade their skills and pass the CSC eligibility requirements for computer operator I. A caveat was that there were fewer computer operator I

positions available since some vacant clerk positions were merged or abolished to provide resources for the higher salaries of the computer operator I positions. Nonetheless, this measure paved the entry of new, young but highly qualified staff.

b) EMB Human Resources by Status of Appointment

The EMB C.O. needs to review the eight co-terminus positions since these would be abolished when the incumbent holders of these positions get separated from the service. EMB C.O. would have to examine the possible reclassification or regularization of these positions and submit its proposal to the DBM, so that these positions would not be abolished.

- Based on interviews with several casual and contractual personnel at the EMB C.O., they said that they preferred to stay in their current status rather than apply for permanent positions. This is because they enjoy larger wages and less tax deductions as casuals or contractuales rather than apply for regular, permanent positions with lower salary grades. While these personnel have valid reasons, they also have to contend with delays in the approval of their contracts, non-security of tenure and non-enjoyment of benefits due to regular personnel. However, they are also able to avail of trainings in the EMB and gain experience in the performance of EMB functions and mandates. According to some casuals and contractuales, they entered the employ of EMB because of the trainings and experience that they would gain. The disadvantage of this situation is that when these highly trained and experienced casuals and contractuales leave EMB for better employment opportunities, the EMB incurs a depletion of its human resource base and capacity. To address this issue, it is suggested that the EMB review its current staffing pattern in order to upgrade and reclassify regular positions to make these attractive so that casuals and contractuales would have the incentive to apply for these. Furthermore, institutionalization of the activities of project contractual staff and greater involvement of regular staff in activities of special and foreign-assisted projects would minimize EMB's human resource capacity loss when project personnel leave.
- More than 53 percent of the total EMB human resources are located in the EMB C.O. and the NCR. Almost one third (34.18 percent) of the total EMB human resources are located in the EMB C.O. while most of the enforcement functions are performed by the regional offices. Almost one third of the personnel in the EMB C.O. are casual and contractual personnel while the regional offices only have an average of two casuals and barely any contractual personnel. It is recommended that some casual and contractual personnel from the EMB C.O. be detailed or assigned to the EMB R.O.s, especially in the R.O.s covered by the special and foreign-assisted projects where these personnel draw their wages from. It is suggested that the donor-agencies funding the special and foreign assisted projects allow this arrangement. This arrangement would also provide warmbodies of the special projects in the covered regions. This strategy would also physically declodge the congested offices of the EMB C.O.

c) EMB Human Resources by Educational Attainment

The statistics of EMB human resources according to educational attainment reveal the need for the EMB C.O. and R.O.s to upgrade the educational levels of their staff to be comparable with other bureaus of the DENR. The Mines and Geosciences Bureau, the Lands Management Bureau, the Forest Management Bureau, the Ecosystems Research and Development Bureau and the Parks and Wildlife Management Bureau have more than one regular staff that obtained his or her PhD while working in these agencies. Having staff with PhDs would also increase the capacity of EMB for more thorough policy and technical analysis and would improve EMB's credibility before its clientele and the general public. It is suggested that regular staff that are working on their doctoral degrees and who have great potential to contribute to the organizational growth of the EMB and the fulfillment of its mandates, be granted study leaves. Those at their dissertation stage need to be prioritized to avail of these study leaves. The study leave would have to be governed by the policies of the DENR Scholarship committee, i.e., a personnel who availed of the study leave would sign a contract for him to render a return service corresponding to the number of years of his study leave. It is expected that a maximum of three years of study leave would be allowed. Another staff should be assigned to take over the functions of the staff on study leave. This would also provide an opportunity to further train and develop the leadership skills of the staff who assumed the responsibilities of the staff who went on leave (short term).

d) EMB Human Resources by Length of Service and Age

The average length of service of 16 years of regular personnel indicates the difficulty of the mobility of staff in and out of the EMB. On the other hand, this means that staff stay longer in EMB, probably because of the security of tenure provided by government service compared with the private sector. Nonetheless, the average age of EMB regular staff is 43 years old. This means that the older staff of EMB are the ones that stay longer at EMB. This would also mean that the younger staff, especially the casuals and contractuels, do not stay very long at EMB. The EMB is considered a "young organization manned by old staff". While the EMB is a young organization compared to the other bureaus of DENR (since EO 192 created EMB in 1986), it is staffed by relatively older personnel. This implies that in the next 10 to 20 years, when the older staff of EMB would be retiring, there would be a shortage of young, highly trained personnel at EMB. This situation is more critical in regions 1, CAR, 2, 5, 6, 7, 9 and 13 since they do not have a pool of casuals and contractuels that would serve to replenish the personnel that would soon be retiring. Thus, some measures are recommended for EMB to undertake, to wit:

- Adopt an aggressive recruitment policy to (a) hire young, technical staff and immediately subject these to intensive training while the older staff are still in EMB, (b) hire middle-aged personnel who are already well-trained in environmental management, e.g., from the private sector or academe; (c) contract out highly technical and policy-related environmental matters to consultants out of the regular funds or out of funds of special and foreign-assisted projects (short term).

- Develop and implement a scholarship program for undergraduate courses, especially those related to the brown environment. The scholar would then be employed by the EMB upon his or her graduation and would render service equivalent to the number of years he enjoyed his EMB scholarship. This strategy has been adopted by the Mines and Geo-Sciences Bureau. EMB may collaborate with the private sector or industry to provide and or augment funds for such scholarships (short term to medium term).

e) Need for a more specific HRD program

For purposes of planning the career paths of EMB personnel, the EMB C.O. and its R.O. need to formulate a more specific HRD program that would include career path development, recruitment policies, trainings, promotion and compensation, development of supervisory and management skills and other measures to address identified HR needs of EMB personnel. In line with this, the EMB needs to conduct an inventory of the skills, trainings and expertise of its personnel coupled with career planning workshops (short term to medium term).

f) Regularize position in the Planning, MIS and PAB Secretariat

According to the EMB Personnel Section, personnel in the Planning and Management Staff (PMS) have been pulled out from various divisions in order to comprise the PMS since the current EMB authorized positions list has no positions for PMS staff. This is unlike the Mines and Geo-Sciences Bureau (MGB) that had regular positions for planning and development officers, even when it was still a staff bureau. These positions were further upgraded when the MGB became a line bureau in 1996¹⁷.

There are also no regular positions for the Management Information Systems Office (MIS) and the Secretariat of the Pollution Adjudication Board (PAB). To address these issues, it is recommended that EMB:

- Propose the upgrading and reclassification of existing positions, especially those that DENR plans to transfer to EMB, to provide for regular positions for the PMS, MIS and the PAB Secretariat (short term).
- Propose the creation of regular positions for these offices to the DBM (medium term).

g) Strengthen the Legal Division of EMB

Currently, there are only two lawyers in the EMB, i.e., the Chief of the Legal Division and the EMB Assistant Director. There is also a weak link between the PAB and the EMB Legal Division, since the latter is no longer involved in the PAB. Prior to 1995, the EMB Legal Division and staff from other EMB technical divisions comprised the PAB Secretariat. However, after 1995, the DENR Secretary assigned the leadership of the PAB Secretariat to the Environmental Quality Division. While the Coordinator of the PAB

¹⁷ The proposed upgrading and creation of new positions for MGB received DBM's approval in late 1998 to 1999

Secretariat is a regular EMB staff, almost two-thirds of the PAB Secretariat are contractual personnel. They conduct investigation of pollution cases by themselves, in coordination with the EMB regional offices. Seldom is the EMB Legal Division or other EMB C.O. divisions involved in the work of the PAB Secretariat. Although the EMB Assistant Director, a lawyer, seats in the PAB, the staff of the DENR Undersecretary for Legal Affairs performs most of the legal work. According to the Chief of the Legal Division, after sitting in the PAB for many years, he finds that the PAB hearings become routinary. Despite many hearings on a case, "You know what's going to happen in the end, i.e., there is a violation, so the firm is issued a cease-and-desist order. . ."

Notwithstanding the PAB (which covers only violations of PD 984 and RA 8947), the Legal Division provides legal services to all other EMB C.O. divisions and EMB R.O.s. It is also responsible for investigating and recommending action on various administrative cases. Currently, the EMB Legal Division has five staff. These are the Division Chief, a Special Investigator II, a Special Investigator III and two support staff. The Special Investigators are law graduates that lack the bar exam requirement to become full-pledge lawyers. There is also an EMB staff who finished his law degree but falls short of the bar exam. Although there are vacant lawyer positions, the EMB has had difficulty in recruiting new lawyers. This could be due to the relatively lower pay scale of national government agency lawyers compared to the private sector or to the courts of law. Also, lawyers gain more legal experience working in a law firm or in courts of law, i.e., the judicial branch of government rather than the executive branch such as the DENR-EMB. The EMB also sees these reasons as obstacles to the entry of new lawyers into the agency even if new lawyer positions that were proposed by EMB to DBM get approved. Hence, to address this issue of the shortage of lawyers at EMB, it is recommended that EMB:

- Provide a study leave for its three regular staff who are law graduates to enable them to properly review for the bar exams. This is with the condition that these staff would render a return-service to EMB after passing the bar exams. The terms and conditions attached to the leave would have to be in accordance with CSC and DENR policies (short term).
- Request for the detail, re-assignment or transfer of lawyers from the DENR
- Study the feasibility and implications of contracting out some of the activities of the legal Division or transferring these to other divisions. For example, the printing of the compilation of environmental laws or compendium could be transferred to the Environmental Education and Information Division or contracted out to another entity. The Legal Division would just provide the inputs for this compendium.

3.2.2 Training Strategy to Address Gaps in Fulfillment of the EMB Mandates

While section 3.2.1 focused on addressing the issues brought about by the inherent characteristics of EMB's human resource base, this section focuses on the use of trainings to address capacity gaps in the fulfillment of EMB's mandates. First, it provides an overview of the number and overall costs of the trainings according to EMB's five

major functions of enforcement, policy formulation and planning, research, education and fund generation and according to EMB's five legal mandates. Second, it matches the identified quantitative (absolute) and qualitative (relative) gaps with the trainings needed and requested by EMB staff. Trainings needed by other partners of the EMB such as the local government units are beyond the scope of this report.

To come up with the best possible options to strengthen EMB's organizational capacity, existing gaps and deficiencies in capabilities and knowledge base must be identified. Doing so would require the conduct of a *training needs assessment* (TNA) in consideration of the various mandates/functions. The TNA would serve as the baseline for the conduct of a deeper analysis of EMB's institutional structure. Alternative solutions to building and redefining EMB's institutional capabilities will be drawn from the TNA.

The results of the TNA show that in order to effectively carry out its various mandates, the EMB must undertake at least 133 trainings for its staff and personnel. **Table 10** shows the breakdown of these trainings.

Table 10
Number of Trainings by Functions per Mandate
Environmental Management Bureau

Mandates		Enforcement	Policy Formulation & Planning	Research	Education	Fund Generation	Across Functions	Total
PD 984	Water Quality Management	11	4	1	2	1	0	19
PD 8749	Air Quality Management	15	11	3	3	4	0	36
PD 1586	EIS System	8	7	4	2	0	0	21
RA 6969	Toxic and Hazardous Chemicals and Wastes Management	4	4	4	2	0	0	14
RA 9003	Solid Waste Management	3	5	4	2	2	0	16
Across Mandates					2	2	23	27
Total		41	31	16	13	9	23	133

Prepared by: Naz, C. and Velarde, F., 2002.

Based from the interviews, enforcement of environmental laws, policies and regulations is perceived to be the primary function. Hence, the most number of trainings requested by EMB staff is in enforcement. Although not explicitly identified by the staff, there is also a need for more trainings in the area of fund generation and management. On the

other hand, among the five mandates of the bureau, more trainings on air quality management is desired.

The estimated cost of the 133 identified trainings is estimated to be around PhP 19.21 million (**Table 11**). Costs per training range from a low of PhP 60,000 to a high of PhP 375,000. The trainings on PD 8749 are the most expensive with an estimated cost of PhP 5.51 million. On the other hand, trainings on RA 9003 have the least cost of PhP 1.975 million. This is because LGUs are primarily responsible for the implementation of RA 9003.

Table 11
Cost of Trainings by Function per Mandate
Environmental Management Bureau, In Pesos, 2002

Mandates		Enforcement	Policy Formulation & Planning	Research	Education	Fund Generation	Across Functions	Total
PD 984	Water Quality Management	1,235,000	450,000	100,000	200,000	200,000		2,185,000
PD 8749	Air Quality Management	2,535,000	1,425,000	400,000	550,000	600,000		5,510,000
PD 1586	EIS System	1,480,000	860,000	525,000	225,000			3,090,000
RA 6969	Toxic and Hazardous Chemicals and Wastes Management	560,000	800,000	800,000	175,000			2,335,000
RA 9003	Solid Waste Management	325,000	550,000	675,000	225,000	200,000		1,975,000
Across Mandates					225,000	240,000	3,650,000	4,115,000
Total		6,135,000	4,085,000	2,500,000	1,600,000	1,240,000	3,650,000	19,210,000

Prepared by: Naz, C. and Velarde, F.

(a) Methodology

The TNA mainly focuses on the skills and capabilities that are required in the tedious conduct of the EMB's operations. Hence, the TNA was designed in a manner by which it focuses on the identification of the needs required to carry the EMB's mandates or the five environmental laws. Key areas of concern were also identified for the assessment. Such areas are believed to be the focal points in the EMB's operations. These areas are enforcement, policy-making, research, education, and fund generation. The TNA is structured in order to address the absolute and relative gaps where training is needed.

In order to provide a clear insight of the requirements that the EMB has to satisfy, the assessment also includes an estimation of the costs of the identified trainings. Costs

were based on the duration of the training (number of days), the number of participants in each session and the allowable training costs set by the Civil Service Commission and the Commission on Audit. Due to the existence of various constraints, information for the TNA were gathered from secondary sources¹⁸, i.e., previously conducted TNAs, other reports, and from key informants at EMB.

(b) Training Needs for Each Function

Enforcement

One of the primary functions of the EMB is the enforcement of environmental laws. The tedious task of enforcing the laws essentially requires certain technical skills and capabilities. Although the Bureau has proven that it is capable of undertaking some of the tasks in enforcement, it still lacks the skills and technical know-how especially in the implementation of the new environmental laws. Thus, it is imperative for these gaps to be addressed to enhance enforcement capabilities. EMB must conduct appropriate trainings that would improve the skills and knowledge of its personnel.

Table 12 characterizes the training needs of the Bureau in enforcement. Overall, there are 41 trainings identified under the EMB's enforcement function. There are 11 trainings under water quality management; 15 for air quality management; 8 for the EIS system; 4 for the toxic and hazardous chemicals and wastes management; and 3 for solid waste management.

The costs per training range from a low of PhP 60,000 to a high of PhP 375,000. The total cost of all the trainings identified is approximately PhP 6.135 million.

¹⁸ The TNA results that were incorporated were from the Capacity Building for Social and Environmental Assessments: Indigenous Peoples and Resettlement conducted by the IPC of the Ateneo de Manila University, EMB-JICA Project-Type Technical Cooperation Project Proposal of 2002, The 2001 JICA Acid Deposition, Air Quality Management and Capacity Development Seminar, a TNA by Dr. Gene Peralta of the UP Diliman College of Engineering and from the WB-SEECCTA questionnaires on public disclosure.

Table 12
Training Needs for Enforcement Function
Environmental Management Bureau, 2002

PD 984-Pollution Control Law (Water Quality Management)					
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)	
Absolute Gap					
PAB Directives - Arbitration for the determination of reparations or restitution of the damages & losses from pollution (Damage Valuation)	1. Environment and Natural Resources Economics and Accounting (includes Valuation of Environmental Damages)	10	15	150,000	
	2. Risk Assessment	5	15	75,000	
Qualitative Gaps					
- River Classification - Water Quality Monitoring - Inspection - Dealing with Violations, e.g. detection, adjudication - Implementation of the Environmental User's Fee	3. Vulnerability Studies/Pollution Potential	5	20	100,000	
	4. Water Quality Monitoring and Surveillance	5	20	100,000	
	5. Water Quality Data Management	5	20	100,000	
	6. Inspection Skills on Wastewater Treatment Facilities	3	20	60,000	
	7. Implementation of Environmental Users Fee including firm visits and case studies (2 batches)	3	40	240,000	
	8. Ethics of Inspection	3	20	60,000	
	9. Monitoring of metals in water	5	30	150,000	
	10. Monitoring of organic substances in water	10	10	100,000	
	11. Installation, operation and maintenance of mobile water quality monitoring stations	5	20	100,000	
		Subtotal			1,235,,000

RA 8749-Philippine Clean Air Act (Air Quality Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
1. Motor Vehicles Emission Testing and Inspection - Pollution Control for In-Use Motor Vehicles - Visitorial Powers	1. Motor Vehicles Emission Testing and Control	5	20	100,000
2. Review of Environmental Management System Audit Reports	2. EMS Auditing	5	15	375,000
3. Emissions Trading Implementation	3. Emission Trading Implementation	10	15	150,000
Qualitative Gaps				
- Ambient Air Quality Monitoring - Emissions Monitoring - Inspection - Dealing with Violations	4. Stack monitoring	5	20	100,000
	5. Ambient air sampling	5	20	100,000
	6. Laboratory analysis (including elemental analysis, organic compounds, QA/QC)	10	20	200,000
	7. Data processing and analysis (including use of software)	15	20	300,000
	8. Data interpretation and presentation (e.g., GIS)	15	20	300,000
	9. Industrial Compliance on Air Pollution Control	3	20	60,000
	10. Monitoring of non-traditional air quality parameters	10	20	200,000
	11. Monitoring of toxic substances in air	10	20	200,000

Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
	12. Monitoring of metals in air	5	30	150,000
	13. Monitoring of organic substances in air	10	10	100,000
	14. Air quality monitoring: sampling and operation of sampling equipment	5	20	100,000
	15. Installation, operation and maintenance of mobile air quality monitoring	5	20	100,000
	Subtotal			2,535,000
PD 1586-Establishing an EIS System Including other Environmental Management Related Measures and for Other Purposes				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gaps				
- Review of EIA documents - Compliance Monitoring - Streamlining of Procedures - Review of Environmental Management Plans - Database development	1. How to Review IEE/EIS Documents	5	20	100,000
	2. Streamlining EIA Procedures	3	20	60,000
	3. Formulation of Environmental Management Plan	5	20	100,000
	4. Stakeholder analysis	3	20	60,000
	5. Preparation of statement of conditionalities	3	20	60,000
	6. Database development and management (3 batches)	15	60	900,000
	7. Social preparation	5	20	100,000
	8. Community organization	5	20	100,000
	Subtotal			1,480,000

RA 6969-Toxic Substances and Hazardous and Nuclear Waste Control Act (Toxic and Hazardous Chemicals and Wastes Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gaps				
- Evaluation of applications for permits and clearances - Monitoring of Industries - Inspection of Firms	1. Principles of Enforcement and Compliance	3	20	60,000
	2. Emergency Response and Preparedness	5	20	100,000
	3. Chemicals screening and testing	10	20	200,000
	4. Hazardous waste characterization	10	20	200,000
	Subtotal			560,000
RA 9003-Ecological Solid Waste Management Act (Solid Waste Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
- NEC to act as clearing house for CP/CT on SWM	1. SWM Technologies	5	15	75,000
Qualitative Gaps				
- Technical assistance to LGUs and other institutions	2. Solid waste characterization	5	30	150,000
	3. Provision of technical assistance to local government units ranging from solid waste management plan preparation, improving financial accounting procedures and forming clusters, developing and operating improve disposal and other waste management facilities	5	20	100,000
	Subtotal			325,000
	Total Cost			6,135,000

Policy-Formulation and Planning

As discussed earlier, the EMB is mandated by the law to formulate policies that would address the various issues relevant to environmental management. Tedious tasks such as this require a wide array of skills and expertise. In order to come up with effective policies, the EMB will have to broaden its knowledge in certain areas that mainly concern environmental protection and management. Drawing from the results of past studies, this assessment has come up with the essential training requirements that the Bureau must satisfy in this area.

Table 13 delineates the various trainings that must be undertaken by the Bureau's personnel in order to enhance their policy-making capabilities. A total of thirty-one (31) trainings were identified. Four (4) trainings are on water quality management while eleven (11) are for air quality management. Enhancing the EIS system would require the conduct of seven (7) trainings. Four (4) training sessions focusing on the various aspects of toxic and hazardous chemicals and hazardous wastes management were identified while five (5) trainings were found to be essential in the area of solid waste management.

The cost of conducting all of these trainings is around PhP 4.085 million. Costs per training for the enhancement of the Bureau's policy-making function range from PhP 60,000 to PhP 200,000.

Table 13
Training Needs for Policy-Formulation and Planning
Environmental Management Bureau, 2002

PD 984-Pollution Control Law (Water Quality Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
- Priority-setting and planning of activities, e.g. river classification, water quality monitoring, water resources management - Lack of environmental standards for groundwater	1. Integrated Water Resources Management and Planning	5	20	100,000
	2. Groundwater Contamination	5	20	100,000
	3. Monitoring of metals in air and water	5	30	150,000
	4. Monitoring of organic substances in air and water	10	10	100,000

	Subtotal			450,000
RA 8749-Philippine Clean Air Act (Air Quality Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
<ul style="list-style-type: none"> - Use of LAER - Design of Emissions Trading - Harmonization with International Standards - Air Quality Control Techniques - Reduction and Elimination of POPs 	1. Source Apportionment and Receptor Modeling	5	20	100,000
	2. Monitoring of non-traditional air quality parameters	10	20	200,000
	3. Monitoring of toxic substances in air	10	20	200,000
	4. Monitoring of metals in air	5	30	150,000
	5. Persistent Organic Pollutants and monitoring of organic substances in air	10	10	100,000
	6. Acid deposition monitoring: wet deposition, dry deposition, soil and vegetation survey (2 batches)	5	40	200,000
	7. Air pollution control technologies	5	20	100,000
	8. Orientation on International Standards for Stationary Sources	5	15	75,000
	9. Design of Emissions Trading System	10	15	150,000
Qualitative Gap				
<ul style="list-style-type: none"> - Review rules of air quality governing boards - Review of a) air quality guideline values, b) emission standards 	10. Legal Research and Policy Analysis	5	15	75,000
	11. Evaluation of impacts of standards on industry, on the economy and the environment	5	15	75,000

	Subtotal			1,425,000
PD 1586-Establishing an EIS System Including other Environmental Management Related Measures and for Other Purposes				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
<ul style="list-style-type: none"> - Periodic audits of the implementation of the EIA System (not done yearly) - Risk-based assessment - Environmental and spatial planning to provide policies that would guide the locational decisions of project proponents/investors - Revision of or addition to PD 1586 guidelines in relation to new laws, i.e. RA 8749, RA 9003, e.g. review of EMPs generated from certified ISO 14001 firms 	1. Predictive Methods on EIA	5	20	100,000
	2. Cumulative Effects Assessment	5	20	100,000
	3. Environmental Risk Assessment	10	20	200,000
	4. Requirements for ERA/emergency plan	10	20	200,000
	5. Preparation of guidelines for and conduct of Environmental Compliance Monitoring	5	20	100,000
	6. Identification of Impact Area	3	20	60,000
	7. Policy review/formulation/coordination	5	20	100,000
	Subtotal			860,000
RA 6969-Toxic Substances and Hazardous and Nuclear Waste Control Act (Toxic and Hazardous Chemicals and Wastes Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
<ul style="list-style-type: none"> - Updating of inventory of chemicals and mixtures (evaluation of chemicals and chemical substances under PMPIN process) - Updating of Priority Chemical List 	1. Principles of Toxic & Hazardous Waste Management	10	20	200,000
	2. Toxic and Hazardous Risk Assessment	10	20	200,000
	3. Chemicals screening and testing	10	20	200,000

- Chemical List Assessment of Priority Chemicals under CCO	4. Hazardous waste characterization	10	20	200,000
- Hazardous waste identification and characterization				
	Subtotal			800,000
RA 9003-Ecological Solid Waste Management Act (Solid Waste Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
- Development of safety nets and alternative livelihood programs for sectors affected by the construction and operation of a sanitary landfill	1. Solid waste characterization	5	30	150,000
- Procedures, standards and strategies to market recyclables and develop a market for recycled goods	2. Policy analysis and strategic planning	5	20	100,000
- Policies to eliminate barriers to waste reduction programs	3. Data compilation, information management and financial assessment and planning	5	20	100,000
	4. Marketing research	5	20	100,000
	5. Stakeholder's Analysis	5	20	100,000
	Subtotal			550,000
	Total Cost			4,085,000

Prepared by: Naz, C. and Velarde, F.

Research

The conduct of scientific investigations and research are essential tools that the EMB could use to improve the quality of its services. By putting concern towards discovering economical and practical methods of preventing water, air, and land pollution, the EMB could live up to the expectations of the general public as the leading government agency in environmental protection and management. Research would equip the EMB with the proper knowledge and skills required in tackling environmental issues. It could also provide the Bureau with some insights regarding the latest technologies that could complement its current strategies in the conduct of its operations.

Research, however, is a skill that needs to be developed. In order to come up with reliable findings and discoveries, one has to harness the essential abilities required in the conduct of research. Hence, efforts must be made to familiarize the Bureau's personnel with the appropriate skills that would enable them to conduct critical and exhaustive research.

In **Table 14**, a total of sixteen (16) trainings that focus on the research requirements of various environmental laws were identified. Training on the conduct of research regarding ground water quality assessment was identified as the priority for water quality management. Three (3) trainings for conducting research under air quality management were identified. These are trainings on the conduct of research concerning health risk assessment of air pollution, source apportionment and receptor modeling, and acid deposition monitoring. Enhancement of research capabilities in the aspect of impact assessment and the profiling of baseline environmental conditions for land, water and air biota, GIS for environmental planning and economic impacts of EIA policies were identified as the priority training needs of the EMB under the EIS system. Training on the conduct of research regarding chemicals screening and hazardous waste characterization, effects of chemicals and chemical substances on human health and the environment and research methods for toxicity testing were identified as the needed trainings of the EMB under RA 6969. For solid waste management, the EMB must focus on providing its personnel with training on the conduct of research concerning solid waste generation and characterization, SWM systems, leachate monitoring and standard setting and economic instruments in SWM. Lastly, the EMB needs to provide training on the conduct of participatory action research. The conduct of participatory action research will be useful in the implementation of the various mandates of the Bureau.

The sixteen (16) trainings identified will amount to a total of PhP 2.5 million. Costs per training would range from PhP 75,000 to PhP 300,000.

Table 14
Training Needs for Research
Environmental Management Bureau, 2002

PD 984-Pollution Control Law (Water Quality Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
- Groundwater quality assessment for formulation of policies/standards for ground water quality	1. Groundwater Quality Assessment	5	20	100,000
	Subtotal			100,000

RA 8749-Philippine Clean Air Act (Air Quality Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap (in Air Quality Action Plan)				
<ul style="list-style-type: none"> - Baseline studies on contribution of mobile and stationary sources to air quality determination - Impact of measures to reduce emissions from mobile and stationary sources - Impact of changes in full specifications on ambient air quality - Expansion of acid deposition monitoring 	1. Health Risk Assessment of Air Pollution	5	20	100,000
	2. Source Apportionment and Receptor Modeling	5	20	100,000
	3. Acid deposition monitoring: wet deposition, dry deposition, soil and vegetation survey (2 batches)	5	40	200,000
	Subtotal			400,000
PD 1586-Establishing an EIS System Including other Environmental Management Related Measures and for Other Purposes				
Initiatives ¹ (not Gaps)				
<ul style="list-style-type: none"> - Environmental impacts of development projects - GIS for mapping of environmentally critical areas and environmentally critical projects - Impact of EIA policies, e.g. on instruments 	1. Environmental Impact assessment and analysis	10	10	100,000
	2. Profiling baseline environmental conditions for land, water, air, and biota	5	20	100,000
	3. GIS for environmental planning (mapping of environmentally critical areas and projects)	15	15	225,000
	4. Economic impacts of EIA policies	10	10	100,000
	Subtotal			525,000

¹ There are no research activities mandated under PD 1586 but the EMB would like to undertake research initiatives to backstop enforcement, policy and planning functions.

RA 6969-Toxic Substances and Hazardous and Nuclear Waste Control Act (Toxic and Hazardous Chemicals and Wastes Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
- Evaluate characteristics of chemicals re: toxicity and their effects on health and the environment	1. Chemicals and chemical substances screening and testing	10	20	200,000
	2. Hazardous waste characterization	10	20	200,000
	3. Effects of chemicals and chemical substances on human health and the environment	20	10	200,000
	4. Research methods for toxicity testing	20	10	200,000
	Subtotal			800,000
RA 9003-Ecological Solid Waste Management Act (Solid Waste Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
- Establish methods and parameters for measurement of waste reduction, collection and disposal - Leachate standards - Economic instruments in SWM	1. Solid waste generation and characterization	5	30	150,000
	2. Solid waste management systems	10	30	300,000
	3. Leachate monitoring and standard-setting	10	15	150,000
	4. Economic instruments in SWM	5	15	75,000
	Subtotal			675,000
	Total Cost			2,500,000

Prepared by: Naz, C. and Velarde, F.

Education

The trainings mentioned in this section are geared towards enhancing the EMB's staff and personnel's knowledge on developments in the environmental management arena. Staff and personnel are one of the most valuable resources of the EMB. In order to fulfill their functions in accordance with the EMB's mandates, they need to have a deeper understanding of the various environmental laws and issues. With this in mind, it is a must for the Bureau to find ways to provide its personnel and staff with various media for education and skills development. It is also important for EMB personnel to know the latest policy and technological developments in environmental management in order for them to be able to address the growing complexity of environmental issues. The EMB personnel, especially those from the R.O.s who would attend the trainings are expected to echo these to their colleagues in the R.O.s. The identified trainings would also be useful to the EMB R.O. personnel when they conduct their IEC campaigns.

Table 15 summarizes the training needs of the EMB to improve its current education and human resources development (HRD) system. A total of thirteen (13) trainings were identified. Two (2) trainings are on water quality management and EIS system. RA 8749 would require three (3) trainings and RA 6969 will require two trainings. RA 9003 would require two (2) trainings. Two (2) trainings on the development of information, education and communication (IEC) materials, which cover the five mandates are proposed.

The cost of the thirteen (13) trainings is around PhP 1.6 million. The cost per training would range from a low of PhP 75,000 to a high of PhP 225,000.

Table 15
Training Needs for Education
Environmental Management Bureau, 2002

Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
PD 984-Pollution Control Law (Water Quality Management)				
Qualitative Gap				
- Collection and dissemination of information on water [air and land] pollution and its prevention and abatement	1. Wastewater Minimization Strategies	5	20	100,000
	2. Wastewater Treatment Technologies	5	20	100,000
	Subtotal			200,000

RA 8749-Philippine Clean Air Act (Air Quality Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
- Development of an air quality monitoring and information network with NSCB for data storage, retrieval and exchange	1. Air Quality Monitoring and Information Network Design and Operation	15	15	225,000
- Design and establishment of an Ambient Air Monitoring Network for the assessment of ambient air quality	2. Ambient Air Quality Monitoring Network Design and Operation	15	15	225,000
Qualitative Gap				
- Establishment of Air Quality Control Techniques Database (optional directive)	3. Air Pollution Control Technologies	5	20	100,000
	Subtotal			550,000
PD 1586-Establishing an EIS System Including other Environmental Management Related Measures and for Other Purposes				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
- Administration of EIA training systems and programs	1. Training Management	10	15	150,000
	2. Facilitation Techniques	5	15	75,000
	Subtotal			225,000

RA 6969-Toxic Substances and Hazardous and Nuclear Waste Control Act (Toxic and Hazardous Chemicals and Wastes Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
- IEC on the hazards and risks attendant to the manufacture, handling, storage, transportation processing, distribution, use and disposal of toxic chemicals and mixtures (effect on human and on the environment)	1. Toxic & Hazardous Waste Pollution Prevention	5	20	100,000
	2. Effects of Toxic Chemicals and Hazardous Waste on human health and the environment	5	15	75,000
	Subtotal			175,000
RA 9003-Ecological Solid Waste Management Act (Solid Waste Management)				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
- Promotion of the development of a recycling market through the establishment of a national recycling network	1. Market Research	5	15	75,000
	2. Design and Operation of a National Recycling Network and Database	10	15	150,000
	Subtotal			225,000

Across Mandates				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
- Development of IEC materials are highly centralized at the EMB CO	1. Development of IEC materials (workshop-type) for EMB ROs	10	15	150,000
	2. Desktop Publishing (for EMB ROs)	5	15	75,000
	Subtotal			225,000
	Total Cost			1,600,000

Prepared by: Naz, C. and Velarde, F.

For trainings across mandates, i.e., involving all the five legal mandates of EMB, training needs identified were the development of IEC materials and desktop publishing. These trainings are needed particularly by the EMB regional staff so that they would not be solely dependent on the EMB CO for materials. An alternative is that IEC materials development be contracted out to the regional offices of the Philippine Information Agency or to other entities. Nevertheless, the EMB regional offices would still have to provide the core concepts to be placed in the IEC materials and then, review the outputs of the contracted party.

Fund Generation and Management

Funds play a vital role in the implementation of EMB's mandates. Many times, the lack of funds have set constraints on the performance of EMB's functions and mandates. Based on the interviews conducted, the lack of sufficient funds has forced the EMB to cancel some of its activities during the latter part of 2002. The Bureau must understand that it cannot rely heavily on budget appropriations. It is high time for the EMB to find alternative ways of generating and managing funds to support its activities in fulfillment of its mandates.

To further strengthen the EMB's fund generation and management capabilities, the Bureau will have to undergo appropriate trainings that would address such need. Drawing from the results of previous studies done, the EMB will have to obtain the necessary skills and capabilities in handling and managing funds generated from penalties and sanctions. The estimated total cost of these trainings is PhP 1.24 million (**Table 16**).

Table 16
Training Needs for Fund Generation and Management
Environmental Management Bureau, 2002

Across Mandates				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Qualitative Gap				
- Operationalization and utilization of special funds, e.g., fines, penalties, revolving fund, trust fund under the 5 mandates	1. Computerized Accounting System	5	20	100,000
	2. SOPs on Fund Management (e.g., billing, collection, records keeping)	7	20	140,000
	Subtotal			240,000
PD 984 – Water Quality Management				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
	1. Administration, Computation, Collection and Auditing of the Environmental User's Fee (2 batches)	5	20	200,000
RA 8749 - Clean Air Act				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
- Consent agreement	1. Preparation of consent agreement and penalty computation	5	20	100,000
- Emission Charge System	2. Design and Collection of Emission Charges	10	20	200,000
- Emission trading	3. Design and Operation of Financial Aspects of Emissions Trading System	5	20	100,000

Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
- Financial Liability and Guarantee Mechanisms	4. Risk Assessment as Basis for Financial Guarantee Mechanisms	10	20	200,000
	Subtotal			600,000
RA 9003 – The Ecological Solid Waste Management Act				
Gaps Requiring Training	Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
Absolute Gap				
- Procedure and proforma for fund application	1. Development of SOPs for availment and use of SWM Fund	5	20	100,000
- Administration of the SWM Fund	2. Administration of the SWM Fund	5	20	100,000
	Subtotal			200,000
	Total Cost			1,240,000

Prepared by: Naz, C. and Velarde, F.

Trainings Across Mandates and Functions

Table 17 shows that EMB staff have identified 23 needed trainings in various fields that cut across the functions that EMB performs in fulfillment of its mandates. The range from technical trainings on environmental laboratory operation and management to non-technical but equally vital trainings like public speaking and workshop facilitation. The cost per training ranges from PhP 60,000 to PhP 500,000. The total cost for these trainings is PhP 3.65 million.

Table 17
Training Needs Across Functions
Environmental Management Bureau, 2002

Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
1. Technologies of participation	3	20	60,000
2. Orientation on the Philippines international commitments	3	20	60,000
3. Paradigms and values of development	3	20	60,000
4. Environmental management institutions: Structure and Functions	3	50	150,000
5. Environmental management systems (EMS): Application to industry and government	10	25	250,000
6. Gender Analysis	5	20	100,000
7. Stakeholder's Analysis	3	20	60,000
8. Conflict Resolution	3	40	120,000
9. Environmental Laboratory Operation and Management	5	50	250,000
10. Participatory Project Planning	5	20	100,000
11. Public Speaking and Oral Presentation	5	100	500,000
12. Project Proposal Development	5	40	200,000
13. Project Management	5	40	200,000
14. Environment and Natural Resources Economics and Accounting	10	20	200,000
15. Ethics in the Public Sector	5	40	200,000
16. Workshop/Meeting Facilitation and Robert's Rules of Order	3	40	120,000

Training Needs	Duration (days)	No. of Trainees	Cost of Training (PhP)
17. Memo and field work report writing	3	100	300,000
18. Research Article writing	3	20	60,000
19. Process Documentation	5	20	100,000
20. Group Dynamics	3	40	120,000
21. Negotiation	3	40	120,000
22. Alternative Dispute Resolution	3	40	120,000
23. Policy Analysis	10	20	200,000
Total Cost			3,650,000

3.2.3 Other Strategies to Address Identified Gaps in the Performance of Functions

As shown earlier in Volume 1, Report No. 1A (Table 10), on the reasons for the gaps in the performance of EMB's functions, not all of the gaps could be addressed by staff training. The lack of further guidelines and SOPs is the reason for 82 percent of the gaps. The lack of coordinative mechanisms is also the cause for 24 percent of the gaps. Hence, this report recommends the following:

- While EMB personnel can be trained on policy formulation such that they are able to draft proposed administrative orders and do policy analysis, they also need to develop the skills and gain experience in policy advocacy and in lobbying for the approval of proposed policies. This would consist of internal lobbying within EMB and DENR and external lobbying with Congress and with other decision-makers outside of DENR.
- EMB staff need to learn the art of lobbying from NGOs and other civil society groups. This would entail continuous presence during technical working group meetings and committee hearings in Congress (Upper and Lower Houses), in public hearings and in press conferences. EMB would have to devote resources for its staff to actively participate in such meetings.

- EMB needs to assign and train a regular staff to serve as a liaison officer between EMB and the legislative branch, i.e., Congress and the Senate. The assigned staff would also provide technical assistance to the committees on ecology and on environment and natural resources in the legislature.
- EMB needs to assign a focal person to coordinate the inter-agency committees and the special and foreign-assisted projects of the agency. This staff shall also serve as the link between the DENR-Foreign Assisted and Special Projects Office (FASPO) and EMB.
- EMB needs to assign a focal person on local government affairs. This staff shall be responsible for coordinating EMB's efforts with LGUs such as memoranda of agreement or understanding, joint projects and other areas of EMB-LGU cooperation. This person shall also coordinate efforts to study and review EMB functions that could be or need to be devolved to the LGUs.

3.3 Equipment

Aside from the urgent need to intensify the EMB's workforce, there is also a need to provide the Bureau with the appropriate laboratory facilities and equipment that are crucial for research and monitoring activities. Inadequate laboratory and environmental quality monitoring facilities have limited the capacity of the regional offices to monitor and study environmental conditions. In order to determine the laboratory and equipment requirements of the regional offices, an inventory of existing equipment and facilities was made. A list of the essential laboratory, water and air monitoring equipment was also drawn, together with their respective prices. **Appendix E** shows the various laboratory and air quality monitoring equipment available in the region, together with the required equipment and cost. The ideal or required equipment is based on the expressed need of the EMB-NCR Regional Office. The region's net requirement is thus based on the ideal NCR requirement less the available equipment in the region. The **Appendix E** also specifies the various logistical requirements and costs. Price and equipment information was obtained from private laboratories, private suppliers, and the EMB Central Office.

Table 18 shows the cost of laboratory, air quality monitoring, and logistical requirements in the 16 regions. Based on the given unit prices of listed items, it shows that the average cost of these requirements would amount to about 21.5 million pesos per region. Hence, the cost of making these facilities available to a particular number of priority regions would be based on this unit estimate.

Table 18
Summary of Equipment Requirements
for Regional Offices

Equipment Requirements	Total Number of Required Equipment (16 Regional Offices)	%	Total Cost of Required Equipment	%	Cost per Equipment	Cost per Region
Water Quality Monitoring	994	79	251,311,800.40	72.98	252,828.77	15,706,987.53
Air Quality Monitoring	20	2	52,612,760.00	15.28	2,630,638.00	3,288,297.50
Logistical Requirements	240	19	40,415,923.00	11.74	168,399.68	2,525,995.19
Total	1,254	100	344,340,483.40	100	274,593.69	21,521,280.21

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