on pollution source prioritization and inspection would be carried out 1) only within the EMB ROs, not through MSGs in WQMAs and 2) by means of a desk review of the current practice to minimize potential disruption of the on-going inspection resulting from such project specific and temporal exercises in comparison with the Draft Procedural Guidelines for Prioritization of Polluters for Compliance Inspection and the Draft Manual of Compliance Inspection.

3.4.8 Database Management

The table below presents the activity and the deliverables.

Table 3.37 Accomplishments on Database Management

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.8	Manage the database of pollution sources and WQ data survey results, and link the regional database to the national database at the EMB CO.	Enhanced operational database system developed under the Project

The results of the pollution source inventories and water quality data surveys were inputted to the internet-based database system linking EMB CO with the ROs. This database system also has a sub-database for tracking regulated establishments and which supports the permitting and wastewater charge accounting system.

3.4.9 Laboratory Strengthening

The table below presents the activity and the deliverables.

Table 3.38 Accomplishments on Laboratory Strengthening

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.9	Procure equipment for sampling, monitoring and analysis, and develop training materials to enhance capability of EMB regional laboratories; also assist ROs in initiating laboratory partnerships.	A set of laboratory instrument and equipment for Region III A set of laboratory instrument and equipment for Region VI A set of laboratory instrument and equipment for Region XII

Deterioration of analytical instruments had been a bottleneck of the EMB ROs in undertaking the mandates under the CWA IRR, as performing credible water quality monitoring and effluent discharge monitoring is the basis of decision making for intervention by EMB. The Project procured needed water quality equipment for the three pilot regional offices of EMB at the latter half of the Phase I. The lists of equipment are attached as Annex G. As the analytical instruments procured under the Project are not new to the EMB Central Laboratory, it is able to train the staff at the regional laboratory so that specific training for operating the equipment is judged unnecessary. The laboratory instruments and equipment procured include : Arsenic Generator and absorber assembly, Atomic Absorption Spectrophotometer, Autoclave, Current meter, Desiccating Cabinet, Distillation Unit,

Filtration Unit w/ pump, Fume Hood with wash and exhaust Unit, GPS, Hot Plate, Incubator, Ion Chromatograph, Laboratory Test Meter, Mercury Analyzer, Multiple Analyzer, Pure Water Supply Unit, Refrigerator, Secchi Disc, Sediment Sampler, Set of Support Apparatus for Analysis, Transparency Meter, Ultrasonic Cleaner, UV-Vis Spectrophotometer, Water Bath, Water Quality Checker, and Water Sampler.

3.4.10 Regional Water Quality Status Report

The table below presents the activity and the deliverables.

Table 3.39 Accomplishments on Regional Water Quality Status Report

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.10	Prepare and disseminate the first regional water quality status reports.	1. Region III Water Quality Status Report 2001-2005 2. Region VI Water Quality Status Report 2001-2005 3. Region XII Water Quality Status Report 2001-2005

In line with the Guidelines for Preparing the Regional and National Water Quality Status Reports for Public Information and Advocacy developed under Activity 2.6, the Regional Water Quality Status Reports were prepared for the three pilot regions in Phase I. Region III Water Quality Status Report 2001-2005 described the status of the water bodies within the jurisdiction of the EMB Region III with a total of 87 water bodies, comprising of 82 surface waters, and 5 coastal and marine waters. In Region VI Water Quality Status Report 2001-2005, status of water bodies were presented for the 57 water bodies, comprising of 49 inland surface waters and 8 coastal and marine waters. Region XII Water Quality Status Report 2001-2005 presented the water quality status for the 21 principal river systems, 19 minor rivers and creeks, 7 lakes, and 3 coastal and marine waters within the jurisdiction of Region XII.

3.4.11 Regional Cross-Visits

The table below presents the activity and the deliverables.

Table 3.40 Accomplishments on Regional Cross-Visits

ID	Activity in the Project Document	Deliverables and Accomplishments
Activity 4.11	Design and implement a program for RO staff in the non-pilot regions to visit and observe WQM procedures being implemented in the pilot regions.	Regional cross visit was conducted taking advantage of Orientation and Workshop convened in Metro Manila to visit some locations in MMO RS WQMA and wastewater treatment facilities operating in Metro Manila.

As part of the Orientation and Workshop convened at the end of each year, regional cross-visits was conducted. The participants of the Orientation and Workshop visited some of the locations in MMO RS WQMA in 2007, and two wastewater treatment plants-San Mateo, Rizal Septage Treatment Plant and UP Sewage Treatment Plant in Quezon City in FY 2009.

CHAPTER 4. ASSESSMENT AND CHALLENGES AHEAD

4.1 ASSESSMENT OF CAPACITY DEVELOPMENT

4.1.1 Introduction

The section of the report presents the assessment of the capacity development attained on the basis of questionnaires administered by the JICA TAT. In assessing the capacity development, the definition[29] proposed by UNDP was adopted. Since there is no stylized method for such purpose, the questionnaire survey was so designed to identify specific aspects of capacity development that were expectedly realized by the Project.

4.1.2 Methodology of Questionnaire Survey

The questionnaire surveys were conducted during the Project to inquire the perception of respondents on capacity in 2006 and 2010 from the view point of three broad categories according to the UNDP definition of capacity development, namely: 1) institutional, 2) organizational, and 3) individual aspects. The questionnaire formats were designed to quantify, as far as possible, the capacity development attained by assigning five ratings from 1 with the lowest to 5 with the highest appreciation of the achievement. The respondents were the counterpart staff of the Project, i.e. the staff of the Water Quality Management Section (WQMS) of EMB CO and those of the Pollution Control Division (PCD) of EMB ROs. Since the mandates of EMB CO to enforce the CWA are different from those of the ROs, the formats were designed separately for the CO and RO, particularly on the institutional and organizational aspects. The format of the questionnaire is attached as Annex H.

The ratings were computed for each question and expressed in terms of weighted mean as exemplified in the following case. The weighted mean value of the rating in the following case is computed at 2.7 as the product of rating and number of respondents.

Rate	1	2	3	4	5	Total
Number of respondent	4	0	3	1	2	10

Score = (1*4+2*0+3*3+4*1+5*2)/10 = 2.7

Further, the score for the pilot ROs was computed separately from the other ROs to compare the impact of the Project.

4.1.3 Capacity Development of the Central Office

The results of the questionnaire is presented graphically in the following figure.

Institutional Aspects: It indicated higher ratings in 2010 as against 2006 on all ten key questions. Among the ten questions, the following three (3) among others indicated sharp increase in their ratings:

1-1) Coordination with other agencies on WQM,

[29] The process by which individuals, groups, organizations, institutions and countries develop their abilities, individually and collectively, to perform functions, solve problems and achieve objectives.

1-7) Interaction between EMB CO and ROs, and

1-9) WQM Action Planning.

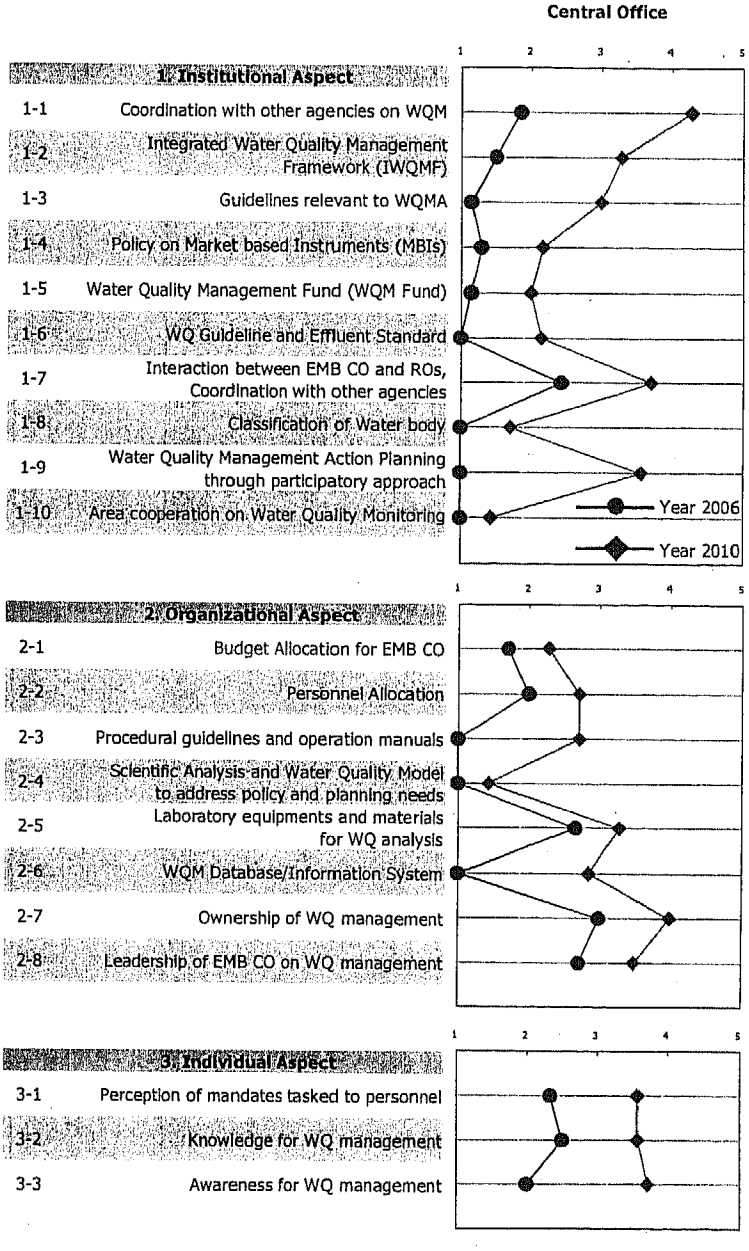

Figure 4.1 Indicative Capacity of EMB Central Office

These issues are closely linked with the development process of guidelines and standards wherein other National Governmental Agencies, public sector, and academe participated. EMB CO, in fact, invited a wide range of stakeholders in the technical meetings or the focus group discussions in preparing draft guidelines since the commencement of the project in 2006 so that their policies and past lessons learned relevant to water quality issues were reflected into the guideline.

The result of the survey also indicates that these practices enabled EMB CO to enhance their capability in terms of coordination or building partnership with other entities. However, regarding major components stated in the CWA, such as WQMA, Fund, MBIs and Classification, EMB CO are less likely capacitated,

even though the ratings of year 2010 are modestly higher than those of year 2006. This is because most of the draft guidelines have yet to be approved. Since the questionnaire survey in 2010 was conducted before the activities on area cooperation arrangement, majority of the respondents assigned a lower rating on the question.

Organizational Aspect: There was a sharp increase of capacity on the aspects of laboratory and database/information system. The survey indicated, further, increased sense of ownership and leadership of EMB CO on WQ management. The changes may have resulted from and gradually built up through a series of Project activities such as meetings with concerned agencies as Technical Working Groups (TWG), Technical Committees (TC), Focus Group Discussions (FDG), and frequent discussions with ROs as well. In contrast, the aspect on scientific analysis and WQ Model was rated lower most likely due to limited availability of WQ data, technical complexity and highly required expertise of the model. The rating on budget and personnel allocation remained relatively low.

Individual Aspect: The survey indicated that the staff of EMB CO perceived increased individual capacity to perform tasks as compared with the status in 2006. Having undergone a vast number of discussions in various meetings and orientation and workshops, the staff could deepen their understanding on WQ management under the CWA and became familiar with the issues.

4.1.4 Capacity Development of the Regional Offices

The results of the questionnaire for the ROs were presented separately for pilot regions and non-pilot regions. As with the case of the Central Office, both results of the two groups for year 2010 indicated higher ratings on all aspects as compared with the year 2006.

Institutional Aspect: Prominent differences were observed between pilot regions and non-plot regions particularly on the following aspects of capacity development.

1-1) Coordination with other agencies
1-3) Guidelines relevant to WQMA
1-9) Water Quality Management Action Planning through participatory approach
1-10) Area Cooperation on Water Quality Monitoring

The four aspects of the capacity development pertain to the consecutive activities on WQMA such as designating WQMAs and NAAs, setting up the GB, Action Planning and Area Cooperation Arrangement. The differences therefore are attributable to the direct exposure to the process of such activities in the pilot regions.

On the other hand, Item "1-2" on IWQMF was rated over 3 points. Question No.3 in the item is as follows so that formal approval of IWQMF as E.O. is a precondition to be rated above 3 in theory. If the questions were appropriately understood, the rating must have been 2.

✓ "IWQMF is approved as an Executive Order, and the implementation plan becomes effective",

This might be due to less understanding of the ROs for IWQMF, or limited communication between EMB CO and some ROs, in particular, in terms of updates on formalization.

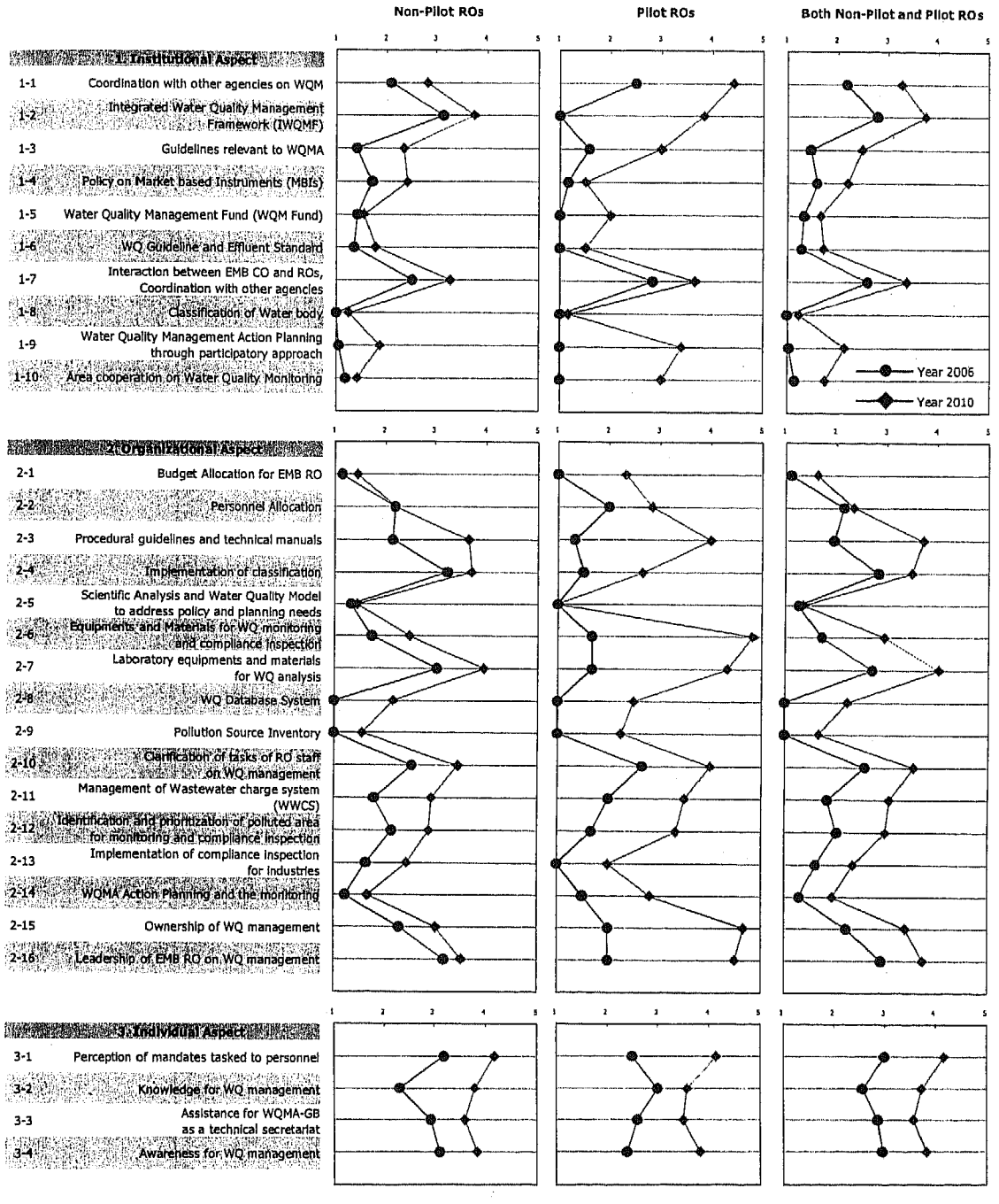

Figure 4.2 Indicative Capacity of EMB Regional Offices

Organizational Aspect: Provision of equipments appears to have significant impacts on their perception of capacity development achieved in the Pilot Regions. Furthermore, enhancement of sense of ownership and leadership were remarkable in the Pilot Regions, which likely resulted from a series of GBs where the officers of the ROs were compelled to play a critical role as technical secretariat. On the other hand, the questions on scientific analysis and WQ Model were rated very low most likely due to limited availability of

WQ data, technical complexity and highly required expertise of modeling technique. The rating on budget and personnel allocation also remained relatively low.

Individual Aspect: The result showed that most of the RO staff in both Pilot Regions and non Pilot Regions perceived their increased capacity as compared with the year 2006. This is because all offices of EMB have involved in the OWs which were conducted at the end of each fiscal year of the Project.

4.1.5 Overall Assessment of the Capacity Development

The results clearly showed that both CO and ROs have been capacitated in all aspects since the Project commencement in 2006.

In most cases of the institutional aspect, the delay of approval of draft guidelines, standards and manuals appears to be a hindering factor for enhancement of capacity of EMB. On the other hand, it is noteworthy that EMB's capability is significantly increased in terms of coordination with other NGAs and between EMB CO and ROs through a lot of meetings convened for developing the guidelines and other policy documents.

From the viewpoint of the organizational aspect, the ROs in the Pilot Regions, in general, appeared to be capacitated more than those in non Pilot Regions. It indicated that provision of equipments and materials had been imminent and is critical needs at the regional offices to undertake their mandates. And further, as shown in the case of Pilot Regions, experience as technical secretariat of WQMA GB worked as a strong driving force to enhance the capacity in terms of increased sense of ownership and leadership.

As for the individual aspect, the orientation and workshops, the venue to disseminate project experiences over the country, significantly contributed to their changes in capacity in performing their tasks.

In spite of the above-mentioned enhancement of capacity, scientific analysis and Water Quality Modeling remained a challenge for both the organizational and individual aspects of EMB. Even though the methodology of scientific analysis using modeling techniques has been established through the activities on action planning and classification of marine and coastal water, there are very few officers of EMB who can properly operate the modeling technique. There would be three options to address the issue:

1) Assign and/or train one or more modeling expert(s) at each of RO;

   This type of arrangement is the one that EMB initially intended. However, it certainly need reallocation of human resources, specifically for modeling, who would otherwise have been mobilized for other priority activities at the regions such as processing applications for discharge permit, coordinating with LGU members of the governing board, conducting laboratory analysis etc.;

2) Create a modeling section in the CO or regions;

   This is a technically and financially favorable option . But, in the short run, the current financial capacity of the EMB would be the barriers for creating and operating the section.

3) Mobilize external resources for special tasks such as Action Planning etc.

It appears to be technically and financially less favorable. However, it is viewed as the most feasible option in the short run.

4.2 VALUE ADDED OF JICA SUPPORT IN THE PROJECT

The external support provided to the DENR was critical to the implementation of the Project since JICA was able to provide a wide range of technical, planning and managerial expertise on the basis of the international experiences on water quality and water resource management in Asia and elsewhere in the world. It facilitated the mobilization of regional efforts and resources to overcome institutional and organizational barriers as demonstrated in the designation of the three (3) Water Quality Management Area in the pilot regions by networking the various government agencies related to water quality management and water users as well as academe and civic groups; and thus creating the governing boards as well as relevant institutional mechanisms such as Multi-Sectoral Groups for sustainable operation and implementation of appropriate water quality management strategies. Water quality and relevant management mechanisms are generally viewed as public goods, and accordingly, the government has taken the responsibility of providing and managing the service. However, the project enhanced and realized participation of private sectors by networking through active NGOs taking advantage of the shift from philanthropic CSR to core business stream CSR, particularly in MMO RS WQMA.

Without the combined resources, implementation of the Project would proceed at a significantly slower pace with disparate interventions dependent on the availability of Government funds; and would not fully benefit from the experience gained from other water-related projects worldwide. Considerable expertise and internationally based knowledge of the main issues relating to water quality management has been developed within DENR as well as among the private service providers in the country. JICA's presence also played a catalytic role in facilitating collaborative effort for mobilizing support from other donors such as U.S. Asia Environmental Partnership. Collaboration with other agencies in Japan including Japan's METI through Green Aid Plan funded by JETRO realized "ALL JAPAN" approach in extending official development assistance to the country for the water environmental sector.

During project implementation, JICA's involvement facilitated an integrated approach to water quality management with advanced expertise on modeling technique based on the experiences in the country. Innovative implementation arrangements for demand-driven program management was rendered to handle simultaneous implementation of multitasks that have eventually converged on action plans. The project has developed a set of industry specific effluent standards. They are most likely the first effluent standards in East Asia that were developed by real operating data of production processes and treatment technologies in the country.

JICA adopted consulting service contracts, bid on a competitive basis, for developing various guidelines. This minimized cost of policy development based on other project experiences of JICA Philippines in the country. JICA facilitated participation of managerial level officers of DENR in the project, which has contributed to deriving policy commitment to water quality issues under the DENR.

The Project also created values at the global context by tackling climate change that has widespread effects.

- ✓ A warmer atmosphere, for instance, is capable of holding more water vapor and the excess water vapor leads to more frequent heavy precipitation when atmospheric instability is sufficient to trigger precipitation events. Consequently, pollutants will be increasingly washed away to water bodies. On the other hand, increasing water temperature negatively affects the self-purification capacity of waterbodies by reducing the amount of oxygen that can be dissolved and used for biodegradation. The changes in discharge pattern and pollution load will trigger unexpected temporal and spatial changes in emergence of problematic water bodies. Any country around the globe could not escape from such climate change impacts. However, vulnerability to such environmental threat is more widespread and profound in countries where capacity to manage changes is lower due to lack of relevant information, institutional weakness, and limited resource mobilization in responding to a changing environment. It could also impede progress towards achieving the Millennium Development Goals. Vulnerabilities are related to lack of relevant information, institutional weakness in responding to a changing environment, and the need to mobilize resources.

The Water Quality Guidelines broadened the information basis to cope with and respond to such environmental threat by equipping the DENR-EMB with sensible indicators for potential changes that may take place in the coming decades.

Although the Capacity Development Project on Water Quality Management is by far the largest of JICA funded water quality related projects at the moment, it is further noteworthy that this is the first program of JICA in providing upstream service including policy development, which would contribute to addressing the water quality policy issues in other countries in the South East Asia, South Asia, the Middle East, Africa, Latin America and the Eastern Europe.

The Project has contributed to and built foundations for achieving the seventh goal of the Millennium Development Goals to ensure environmental sustainability by integrating the principles of sustainable development into country policies and programmes to reverse the loss of environmental resources. This is more specifically materialized by proposing and setting feasible effluent standards, designing appropriate guidelines for designation of WQMAs with a focus on pollution issues. All of the guidelines and approaches adopted in the Project have been designed and formulated to realize equitable and sustainable development of the riparian community by balancing the needs of current and future generations. The Department of Health (DOH) reported that diarrhea, a water-borne disease, remains the leading cause of morbidity for the past 10 to 15 years. Diarrhea and gastroenteritis are major causes of child mortality in the 1 to 4 and 5 to 9 age brackets. Water quality degradation taking place over the country needs immediate action at various parts of the country to eventually reduce child mortality through protection of various water uses such as drinking water sources and contact recreational water use. The 10-Year WQMA Action Plans, when implemented, would promote and increase sustainable access to improved water sources to urban and rural parts of the country.

4.3 CHALLENGES AHEAD

4.3.1 Approval of the Guidelines to ensure Project Sustainability

The project has developed a wide range of documents that are expectedly approved by appropriate policy instruments such as DAO, EO or MC. Twelve (12) guidelines and manuals have been already officially approved or published.

1. Procedural Manual for Designation of Water Quality Management Area, MC 2009-15
2. Ambient Water Quality Monitoring Manual Effluent Monitoring Manual, EMB MC 2008-08
3. User's Manual on Water Quality Information System, EMB MC 2008
4. Marilao-Meycauayan-Obando (MMO) River System WQMA, DAO 2008-07
5. Iloilo - Batiano River System WQMA, DAO 2009-11
6. Sarangani Bay WQMA, DAO 2009-12
7. Guidelines for Preparing Water Quality Status Report, Formally published
8. National Water Quality Status Report, Formally published
9. Region III Water Quality Status Report 2001-2005, Formally published
10. Region VI Water Quality Status Report 2001-2005, Formally published
11. Region XII Water Quality Status Report 2001-2005, Formally published
12. Compliance Inspection Manual, EMB 2010-005

The documents that are at their very final stage of development (fine tuning or incorporating comments from higher authorities) are presented in the table below. Table 4.1 presents the documents that have been submitted to the Office of the Undersecretaries for Policy and Planning for approval and signature by the Secretary.

Table 4.1 DENR Approval- Needing Immediate Action

Short Title	Policy, Guidelines and Manuals ready for Approval
WQG and GES	DENR Administrative Order on Water Quality Guidelines and General Effluent Standards
National Water Quality Management Fund	Implementing Guidelines on the Operationalization of the National Water Quality Management Fund under Republic Act 9275

Table 4.2 presents the documents that will be submitted to the Office of the Undersecretaries for Policy and Planning immediately after the signature of the abovementioned documents.

Table 4.2 DENR Approval- Needing Immediate Action

Short Title	Policy, Guidelines and Manuals ready for Approval
Area Water Quality Management Fund	Implementing Guidelines on the Operationalization of the Area Water Quality Management Fund under Republic Act 9275
Wastewater charge system	Implementing Rules and Regulations on Wastewater Charge System and Discharge Permits under Republic Act 9275
PCO	Revised Guidelines for Pollution Control Officer Accreditation

The endorsement of the Integrated Water Quality Management Framework is also indispensable to involve all the stakeholders in WQMA activities and scale up WQMA to other classified water bodies and WQMAs. The document will be subject to final review in the coming year before sending it to the Office of the Undersecretary for Policy and Planning.

Other policy and technical documents produced under the Project are also at the final stage for approval. The approval of the documents is the precondition for full implementation of water quality management under the CWA.

4.3.2 Continued Support to the GBs to ensure Project Sustainability

Although the GBs in the pilot regions are at a rudimentary stage of organizational development, the organizational and institutional sustainability of GB and MSG activities was judged high as the member organizations were increasingly involved in GB meetings and MSG members were willing to conduct sampling activities. It is viewed that the regional offices are able to handle regular activities and logistic arrangements. Further, approximately 1 million pesos per WQMA was allocated from the EMB CO.

1. Marilao-Meycauayan-Obando River system (MMO) WQMA in Region III
2. Iloilo Batiano River System WQMA in Region VI
3. Sarangani Bay WQMA in Region XII.

The EMB CO and ROs needs to monitor the following points in order to ensure the sustainability of the GB activities:

- ✓ There is good scope for generating or mobilizing local resources under the GB cooperation framework. However, the GB is not able to fully utilize such resources offered by participating organizations. Some LGUs are willing to allocate funds, however, the necessary conditions to utilize such funds has not yet been prepared (e.g. a work plan/financial plan and auditing system). Other agencies also offer to conduct water quality analysis, but only analyzed data from DENR-recognized laboratories can be used.
- ✓ No LGU has yet adopted a local ordinance to comply with the WQMA action plan in their jurisdiction. In order to get the strong commitment and initiative of the LGUs, the WQMA action plan needs to be endorsed by the LGUs through a local ordinance in due time.

✓ The regional offices are likely able to maintain their current functions to manage meetings and logistic arrangements. However, they are understaffed and they may be overloaded when WQMA activities are expanded.

4.3.3 Assistance to Non-Pilot Regions

a) Assistance for WQMA Designation

A questionnaire administered during the orientation and workshop also identified priority waterbodies for future WQMA designation. The EMB CO has come up with twelve (12) proposed waterbodies. It is recommended that a desk review of the waterbodies be undertaken before initiating a field survey to come up with WQMAs with an appropriate size and to prioritize WQMAs. This is because some of the proposed waterbodies appear to be oversized as a WQMA from a managerial aspect.

For instance, the proposed WQMA for Cagayan de Oro River System have several tributaries including Oponan River, Alae River, Bitan-ag Creek, Umalag River, Bigaan River, Cugman River, and eventually discharges to Macajalar Bay through Cagayan de Oro River. It appears to be oversized and thus is predicted that difficulty would be experienced in formulating action plans because a large number of stakeholders with different visions would participate in the planning process.

Table 4.3 Proposed Waterbodies for WQMA designation

Island	Region	Waterbody and WQMA
Luzon	CAR	Balili River
Luzon	R1	Dagupan-Sinucalan River
Luzon	R2	Pinacanauan de Tuguegarao
Luzon	R4-A	Ylang-Ylang River
Luzon (Mindoro)	R4-B	Calapan River System WQMA
Luzon	R5	Lake Bato Water Quality Management Area, Bato, Camarines Sur
Visayas	R6	Jaluar River System Water Quality Management Area
Visayas	R7	Butuanon River WQMA
Mindanao	R9	Tumaga River
Mindanao	R10	Cagayan de Oro River System WQMA (composed of Cagayan de Oro River, Oponan River, Alae River, Bitan-ag Creek, Umalag River, Bigaan River, Cugman River, Macajalar Bay)
Mindanao	R11	Davao River WQMA
Mindanao	R13	Taguibo River Water Quality Management Area (TRWQMA)

In addition to the issue of scale of WQMA, the pace of designating WQMA would need to be cautiously managed to ensure that effective and efficient interventions are designed and implemented at the appropriate time. Additional designation of WQMAs may need consideration on the availability of budget for implementation of the actions and management capacity of the EMB CO to handle incremental load of paper works as the DENR has already designated six (6) WQMAs over the country as presented in the figure below.

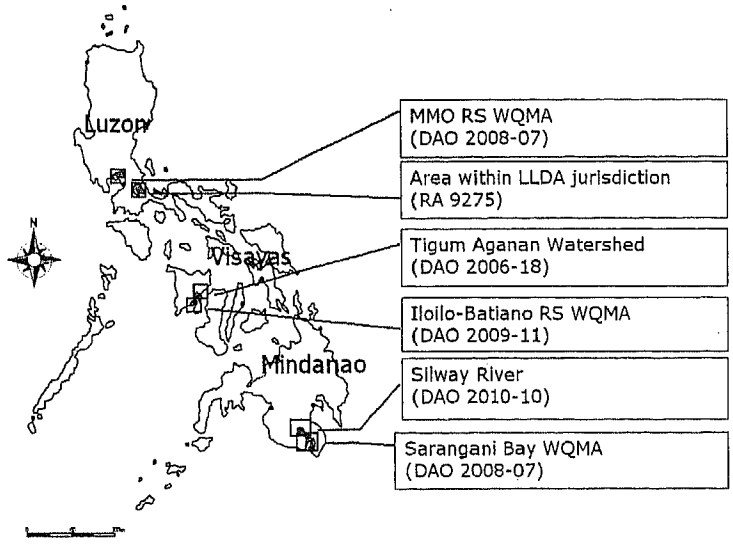

Figure 4.3 Designated WQMA

b) Assistance for Waterbodies for Classification

The questionnaire survey has also identified seven priority waterbodies for classification, from which the EMB CO has chosen three (3) waterbodies 1) Albay Gulf in Region V, and 2) Toledo-Balamban Coastal Waters in Region VII, and 3) Macajalar Bay in Region X as part of activity in FY 2010.

The table below presents the proposed waterbodies for classification, which would serve as basis for further actions. In addition to the specific activities under the Project, it is also of vital importance to design cautious management interventions at the earliest possible period of time for other waterbodies such as Paoay Lake, Sabang Bay, Davao Gulf, etc. considering their economic values.

Table 4.4 Proposed Waterbodies for Classification

Water	Region	Waterbody
Lake	R1	Paoay Lake; Hundred Island (coastal/marine)
Marine	R2	China sea along the stretch of Cagayan Economic Zone Authority (CEZA) in Sta. Ana, Cagayan
Bay	R4-B	Sabang Bay, Puerto Galera, Oriental Mindoro
Bay	R5	Albay Gulf, Legazpi City, Sto. Domingo, Albay and Manito, Albay Sorsogon City, Rapu-Rapu
Coastal	R7	Toledo-Balamban Coastal Waters
Bay	R11	Davao Gulf – Davao del Norte Area
Coastal	R9	West Coast of Zambo. City (Brgy. Cawa-cawa to Brgy. Patalon)

Annex

Annex A: Clean Water Act Mandates to DENR

Table A Clean Water Act Mandates to DENR

Mandates	Deadline (Date of Implementation)	Implementing Agency
Preparation of National Water Quality Status Report (sec. 19a)	Within 24 months (May 6, 2006) & review/revise and publish annually	DENR
Preparation of an Integrated Water Quality Management Framework (sec. 19b)	Within 12 months after completion of status report (May 6, 2007)	DENR
Preparation of a 10-year WQMA Action Plan (sec. 19c)	Within 12 months after completion of framework (May 6, 2008)	DENR
Designation of WQMAs (sec. 5)	None	DENR in coordination with NWRB
Constitution of the Governing Board (sec. 5)	After designation of WQMA	DENR
Designation of Non-attainment areas (sec. 6)	None	DENR
Enforcement, review & revision of water quality guidelines (sec. 19e)	Within 12 months (May 6, 2006) & every 5 years thereafter	DENR
Review and setting of effluent standards (sec. 19f)	Within 5 years (May 6, 2009) & every 5 years thereafter	DENR
Establishment of internationally-accepted procedures for sampling & analysis of pollutants (sec. 19g)	Within 12 months (May 6, 2005)	DENR
Formulation of testing procedures and establishment of accreditation system for laboratories (sec. 19g)	Within 12 months (May 6, 2005)	DENR
Categorization of point & non-point sources of water pollution (sec. 19h)	Within 18 months (November 6, 2005)	DENR
Revision and publication of a list of Categories of Industry Sector (sec. 12)	Within 24 months (May 6, 2006) & every 2 years thereafter	DENR
Classification or reclassification of all water bodies (sec. 19j)	None	DENR
Formulation of wastewater charge formula (sec. 13)	Within 6 months (November 6, 2004)	DENR
Formulation of guidelines for the re-use of wastewater for irrigation & other agricultural uses & for the prevention, control & abatement of pollution from agriculture & aquaculture activities (sec. 22c)	None	DA in coordination with DENR
Preparation & publication of a national groundwater vulnerability map (sec. 19d)	Within 24 months (May 6, 2006)	DENR (MGB & NWRB with EMB)
Classification of groundwater sources (sec. 19i)	Within 12 months (May 6, 2005)	DENR
Preparation of National Sewerage and Septage Management Program (sec. 7)	Within 12 months (May 6, 2005)	DPWH, via its relevant agencies, in coordination with DENR, LGUs & other concerned agencies
Connection of existing sewage line in certain establishments to available sewerage system	Within 5 years (May 6, 2009)	Agency vested to provide water supply and

Mandates	Deadline (Date of Implementation)	Implementing Agency
for highly urbanized cities (sec. 8)		sewerage facilities and/or concessionaires in MM and HUCs
Employment of septage or combined sewage-septage management system for non-highly urbanized cities (sec. 8)	None	DPWH, in coordination with DENR, DOH, and other concerned agencies
Formulation of guidelines and standards for the collection, treatment and disposal of sewage (sec. 8)	None	DOH in coordination with other government agencies
Formulation of guidelines for the establishment and operation of centralized sewage treatment system (sec. 8)	None	DOH in coordination with other government agencies
Preparation of program for evaluation, verification, development & dissemination of pollution prevention & cleaner production technologies (sec. 22e)	None	DOST
Preparation & implementation of comprehensive & continuing public education & information program (sec. 22f)	None	DepEd, CHED, DILG, PIA in coordination with DENR
Establishment of a National Research & Development Program for prevention & control of water pollution (sec. 24)	None	DENR in coordination with DOST & other concerned agencies & academic research institutions

Annex B: Project Design Matrix

Project Development Matrix (PDM)
Capacity Development Project on Water Quality Management
Project Area: Whole of the Philippines (particularly DENR EMB Central Office and EMB Regional Offices)
Target Group: Staff of EMB, Local area stakeholders in water quality management
Project Period: January 2006 to January 2011
Version 2
Prepared: October 25th, 2007

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Goal: Under initiatives of the WQMA Governing Boards, industries commercial entities, LGUs, and other public organizations take necessary actions for achieving the water quality goal established in the WQMA Action Plans.	Water quality improvement action plans are being implemented by WQMA boards and LGUs, and industrial and commercial entities are complying with discharge permitting system and water quality / effluent standards, with resulting improvement in ambient water quality. DENR-EMB enforcing legal requirements of the CWA, and have adequate staff equipped with administrative and technical know-how to perform WQM functions. Cooperation with other agencies involved in water quality management is established	Records of EMB on the CWA compliance activities of WQMA boards, LGUs, and regulated industrial and commercial entities. Integrated national WQM framework adopted by government, and is being implemented through appropriate agency and WQMA organizational structures, operating procedures, manuals and work plans, information systems, and support facilities and equipment. Information from EMB on water quality conditions.	National government agencies maintains strong support for the objectives of CWA. The required budget for implementation is allocated.
Project Purpose: Capabilities of EMB Central and Regional Offices to implement priority actions mandated under the CWA IRR are strengthened.	EMB Central Office and 3 pilot ROs assisted by the Project are efficiently and effectively implementing their mandates under the Clean Water Act IRR through; • Adequate WQM procedures in conformity with CWA requirements • WQMS staff trained in WQM procedures • Adequate equipment and information systems • Linkages with related WQM agencies and concerned stakeholders Capacity of the staff in charge of water quality management in non-pilot ROs is strengthened through;	Survey of performance using interviews and questionnaires. Project monitoring and interim evaluation, including activity/tasks completion reports.	DENR mobilizes funds to replicate the strengthening activities to the non-pilot regions, specifically in applying the guidelines developed under the Project. WQMA Government Boards mobilizes funds to implement the action plans. EMB Central and Regional

	• Participation in the learning process such as orientation/workshop to be conducted in the project • Adequate understanding on the procedures and guidelines on the CWA enforcement • Familiarization with the experiences of 3 pilot regions on the WQMA designation and action planning through various types of communication		offices have adequate number of technical staff as well as resources to support the operation, EMB CO and RO personnel trained under the project continue to work for implementation of the CWA mandates. Other agencies mandated to perform specific roles under the CWA are cooperative and mobilizes funds to implement their roles.
Outputs:			
1.0 Integrated policy framework for WQM based on the CWA is established and supported by adequate procedural guidelines and training for EMB staff	Publication of the policy framework that clearly specifies: • water quality goals and targets • period of compliance • water pollution control strategies and techniques • water quality information and education program • human resource development program Publication and dissemination of the supporting procedural guidelines Completed orientation-training programs on the policy framework and supporting procedures	Policy documents; proceedings of policy deliberations and inter-agency coordination activities DENR policy documents, department administration order, memorandum circular, etc. Training materials and course proceedings Evaluation reports on completed training courses	DENR and other national government agencies translate the policies and guidelines into EO/DAOs/MC. EMB CO personnel trained under the project continue to work for the implementation of the CWA mandates during the project period.
2.0 Capacity of EMB Central Office to lead and support the Regional Offices is strengthened	Management system in place, evidenced by: • water quality model being set up and running in the pilot regions • operational water quality and pollution source databases with geo-referencing capability (GIS) • establishment of an Internet-based information and communication network	Intra-organizational documents Project activity and completion reports	EMB will facilitate access of the Project Team to existing records and databases, including base maps and *shapefiles* for developing the GIS interface (from DENR

	• publication of the first national water quality status report; and • project proposals developed to generate additional assistance for the non-pilot regions • CO WQMS staff provided with equipment and trained CO effectively coordinating the implementation of CWA administrative and technical procedures in the 3 pilots			and NAMRIA). EMB will facilitate coordination by the Project Team with other agencies holding important data/information needed for the modeling work (e.g., hydrologic data from NWRB).
3.0 Capability of EMB Regional Offices to establish and support WQMAs and related institutions is strengthened in 3 pilot regions	At least one WQMA in each pilot region is established, with action plan prepared The WQMAs established have functional: • Governing Boards • Technical Secretariats • Multi-sectoral action groups • Area fund management system • Reporting system	Interviews or questionnaire surveys Process documentation of WQMA activities	EMB will be able to designate at least one WQMA in each of the pilot regions in a timely manner so that institution-building support activities under the Project will not be delayed or be subject to undue time pressure. The EMB RO in each pilot region has adequate number of staff who can be assigned to work in the Technical Secretariat, and if necessary, the EMB Regional Directors will designate staff in other units for Secretariat work. Relevant government agencies and LGUs in the WQMAs will be prepared to perform their roles—with their own budgets--so that area	

			management plans are properly prepared and actually implemented.
4.0 Overall capability of EMB Regional Offices in water quality management is strengthened in 3 pilot regions.	Major point pollution sources in pilot regions are complying with the discharge permitting/charge system, including the SMR system, and supported by: • Database of point and non-point sources; • Functional system for assessment, collection and accounting of pollution charges; and • Reward/incentive system First regional water quality status report for each of the 3 pilot regions published Principal/priority waterbodies in pilot regions classified (or re-classified as needed). Calibrated WQ model and database in regions are operational, linked to central information system, and are used for WQ status reporting. Equipment of EMB regional laboratories in pilot regions upgraded, and linkage with partner laboratories established. Water sampling and monitoring equipment for regional WQMS staff procured and staff trained WQM training courses for EMB RO staff completed.	Regional Office accomplishment reports to EMB CO Project monitoring and interim evaluation reports	Adequate and timely budget is provided for pilot EMB ROs' operations so that new WQM mandates can be performed effectively EMB RO personnel trained under the Project continue to work for the implementation of the CWA mandates during the project period.

Main Activities:

1.1 Set up multi-agency coordination system to formulate an integrated water quality management framework and implementation plan. 1.2 Prepare procedural guidelines for designating Water Quality Management Areas (including identification of non-attainment areas as defined under the CWA). 1.3 Formulate a comprehensive policy on use of market-based instruments for water quality management, including procedural guidelines for implementation. 1.4 Prepare procedural guidelines for classifying inland and marine water	**Input from Japanese Side:** (1) *Long-Term Experts*: The following tree long-term experts will be provided. The total man-hours of these long-term experts are estimated at about 150 M/M over 5 years. • Team Leader (specialist in environmental policy development and implementation)	Counterpart staff and support facilities are provided by EMB in a timely manner (Identify specifically how many staff and the counterpart support facilities required)

bodies as well as groundwater, including guidelines for conducting groundwater vulnerability mapping. 1.5 Prepare procedural guidelines for facilitating WQMA action planning (by the Area Governing Board) and follow-on compliance planning (by LGUs). 1.6 Prepare procedural guidelines, including system and procedures, for pollution load and charge computation in support of the discharge permitting system. 1.7 Prepare procedural guidelines for managing the National Water Quality Management Fund. 1.8 Prepare procedural guidelines for categorization of industries, including point and non-point sources of water pollution. 1.9 Develop approach and prepare guidelines for establishing cooperation programs with other agencies and civic groups in water quality monitoring. 1.10 Prepare guidelines and initiate coordination arrangements for allowing flexibility in enforcing discharge standards for specific types of industry sources. 1.11 Prioritize pollution sources and in prepare an operations manual on conducting compliance inspections for various types of polluting facilities. 1.12 Review water quality guidelines to provide basis for water re-classification and revision of effluent standards. 1.13 Design and implement a training program for EMB CO and RO staff in all regions for each set of procedural guidelines; prepare training materials and conduct the training. 1.14 Integrate Policies on WQM 2.1 Establish coordination system with EMB Regional Offices in implementing the guidelines developed under Output 1. 2.2 Select or develop appropriate water quality modeling techniques, including calibration, testing and demonstration in selected regions. 2.3 Design, develop, trial implement a national information campaign for raising public awareness of water quality management issues. 2.4 Design and develop a water quality and pollution source database management and reporting system for use by ROs, with capability for mapping pollution sources using GIS. 2.5 Design and develop an Internet-based WQM information and communication system to link the EMB CO with the ROs. 2.6 Integrate regional reports and publish the first national status report on water quality. 2.7 Implement procedures for managing the national water quality management fund (based on procedural guidelines developed under Activity 1.7). 2.8 Procure sampling equipment for WQMS staff, and streamline operations of the EMB central lab as a reference laboratory and training center for RO laboratory personnel.	• Team Member (specialist in water quality management, industrial pollution control, and plant inspections) • Team Member (specialist in organizational and institutional areas) (2) *Short-Term Experts*: JICA will provide 4 short-term experts to assist and advise in special technical fields. The total man-hours of the short-term expert are estimated at about 30 M/M over 5 years. • Specialist in water quality monitoring • Specialist in pollution source control • Specialist in environmental information systems • Specialist in water quality modeling (3) *Local Consultants and Local Sub-Contractors*: Will assist EMB in formulating plans and guidelines and providing the training through workshops and OJT training in pilot regional offices (4) *Local Assistant and Secretaries*: to provide general assistance in implementing the Project. (5) *Equipment and Materials*: The categories of equipment and materials to be provided are shown in the following table. The actual items will be decided after a precise survey on needs. • Equipment for field sampling, monitoring, and measurement, and vehicle • Equipment and materials for water laboratory • Equipment for water quality information system (6) *Technical Training in Japan or Third Countries*: This is intended for EMB staff engaged in water quality management. The fields of training, periods, training places and trainees will be decided in the course of the project implementation. **Input from Philippine Side:**	**Preconditions:** Additional staff from other DENR units will be detailed to the PMO and TWGs as needed in both CO and ROs, thru formal orders.

2.9 Design and implement a training program for EMB CO staff on use of the information and communication system developed, including fund management. 2.10 Conduct activities to generate resources for non-pilot ROs, e.g., planning workshops with other donor agencies (e.g., World Bank, ADB). 3.1 Implement the guidelines for WQMA delineation. 3.2 Set up the Governing Board and Technical Secretariat for the designated WQMAs. 3.3 Facilitate the formulation of WQMA GB action plans and LGU compliance plans based on guidelines developed under Activity 1.5. 3.4 Assist WQMA GBs in establishing and managing the area water quality management fund and the activities of multi-sectoral monitoring groups. 3.5 Assist in establishing area-based cooperation arrangements in water quality monitoring based on procedures developed under Activity 1.9. 4.1 Identify attainment and non-attainment areas based on the procedures developed under Activity 1.2. 4.2 Classify or re-classify water bodies as needed based on guidelines developed in Activities 1.4 and 1.12. 4.3 Implement the discharge permitting and wastewater charge system based on procedures developed under Activity 1.6. 4.4 Set up collection and accounting systems for permitting fees and wastewater charges. 4.5 Conduct pollution source inventories and water quality field surveys. 4.6 Apply the water quality model developed under Activity 2.2, for example, in allocating pollution quotas in non-attainment areas. 4.7 Implement procedures (developed under Activities 1.8 and 1.11) for pollution source categorization, prioritization and compliance inspections. 4.8 Manage the database of pollution sources and WQ data survey results, and link the regional database to the national database at the EMB CO. 4.9 Procure equipment for sampling and analysis, and develop training materials to enhance capability of EMB regional laboratories; also assist ROs in initiating laboratory partnerships. 4.10 Prepare and disseminate the first regional water quality status reports. 4.11 Design and implement a program for RO staff in the non-pilot regions to visit and observe WQM procedures being implemented in the pilot regions.	(1) Counterpart Staff: Designated counterpart staff shall work as the counterparts of the Japanese side to implement the Project whenever requested. • Chairman of Joint Coordination Committee • Project Director • Project Manager • Assistant Project Manager • Focal Persons • Project members • Members of Technical Working Groups/Technical Committees • Members who work jointly in the pilot regional offices (2) Facilities for Japanese side: The Philippine side will provide office space under the secure conditions. The facilities will be equipped with desks, meeting tables, air conditioners, communication equipment, etc. (3) Equipment and Materials: The Philippine side will provide other necessary equipment and materials necessary for project implementation. (4) Budget for Project Operation: The Philippine side will provide salary and allowance for the staff of the Philippine side, including budget for travel expenses and operation expenses required under the project.	

Annex C: Duties of the Sstaff of the Central Project Management Office

Table C Duties of the staff of the Central Project Management Office

Officers			Duties
Project Manager (Chief of EQD)			□ Execute an overall supervision of project activities and review prior to endorsing all guidelines, manuals and other policy instruments prepared to DENR for approval through EMB Director; and □ Report to the EMB Director for the accomplishments and problems encountered in the course of the Project to assure smooth implementation of the Project.
Asst. Project Manager (Chief of WQMS)			□ Assist the Project Manager in - supervising and monitoring all the activities in close collaboration with the project coordinator; - coordinating with the Regional Offices for project activities undertaken in the regions; and - collaborating closely with the JICA TAT in ensuring the timely completion of various project activities.
EMB CO Counterparts			□ Lead and support the pilot and non-pilot ROs in implementing the project; □ Be primarily responsible for orienting/training the appropriate staff in the no-pilot EMB regional offices; and □ Disseminate the various policies, procedures, and guidelines to the EMB regional offices.
	Project Coordinator		□ Coordinate with related agencies such as FASPO, JICA Philippine Office and others in convening JCC and other meetings under the supervision of the Assistance Project Manager ; and □ Coordinate among the focal persons in managing and monitoring the Project.
	Focal Persons for WQMA Action Planning	Overall Focal Person	□ Coordinate with the three Focal Persons in preparing WQMA Action Plans; □ Consolidate information and report to the Assistant Project Manager on the progress, issues and challenges in preparing WQMA Action Plans; and □ Coordinate among the concerned officers within the EMB for replication of the project experiences to the non-pilot regions.
		Focal Person for Luzon	□ Lead and support the Region III in preparing the WQMA Action Plan; □ Coordinate with all the regional offices in Luzon for providing orientation-workshop to appropriate staff with regards to Action Planning; and □ Support the ROs in Luzon for replication of the project experiences to non-pilot regions.
		Focal Person for Visayas	□ Lead and support the Region VI in preparing the WQMA Action Plan; □ Coordinate with all the regional offices in Visayas for providing orientation-workshop to appropriate staff with regards to Action Planning; and □ Support the ROs in Visayas for replication of the project experiences to non-pilot regions.
		Focal Person for Mindanao	□ Lead and support the Region XII in preparing the WQMA Action Plan; □ Coordinate with all the regional offices in Mindanao for providing orientation-workshop to appropriate staff with regards to Action Planning; and □ Support the ROs in Mindanao for replication of the project experiences to non-pilot regions.

Focal Persons for WQM Implementation	Focal Persons for National and Area WQM Fund	□ Follow up the activity for finalizing the relevant guidelines and promoting approval as DAO; □ Undertake relevant actions for operationalizing National and Area Water Quality Management Funds; and Wastewater Charge System; and □ Coordinate with pertinent agencies for Operationalization of the fund and wastewater charge system.
	Focal Person for Database	□ Follow up the activity for finalizing the database; and □ Coordinate with all the regional offices to operationalize the database.
Focal Persons for Command and Control	Focal Person for the Industry-Specific Effluent Standards under the JICA Project	□ Supervise and manage the activity for Industry-Specific Effluent Standards under the JICA Project; and □ Coordinate with all the regional offices to provide Orientation-Workshop on the Industry-Specific Standards
	Focal Person for the Industry-Specific Effluent Standards under EMB Resources[30]	□ Develop Industry-Specific Effluent Standards under EMB Resources by leveraging the experiences in the JICA Project; and □ Coordinate with all the regional offices to provide Orientation-Workshop on the Industry-Specific Standards.
Focal Persons for Market-Based Instruments	Focal person for Incentive and Rewards	□ Follow up the activity for finalizing the relevant guidelines and promoting approval as DAO; and □ Coordinate all the relevant agencies to operationalize the Incentive and Rewards system.
Focal Persons for Information Dissemination		□ Design and launch information dissemination campaign.
Focal Persons at 3 Pilot Regional Offices		For preparing the Action Plans, □ Collaborate closely with the consultants in ensuring the timely completion of the different project activities; □ Collaborate closely with the JICA TAT in designing appropriate interventions for capacity development; and □ Disseminate the various policies, procedures, guidelines to other EMB regional offices in each region.
Focal Persons at Non-Pilot Regions		□ Closely liaise with the CO Focal Persons throughout the project period; □ Participate in the Orientation-Workshop; □ Disseminate the lessons and findings of the Orientation-Workshop at each RO.