

Executive Summary
Operational Plan for the
Manila Bay Coastal Strategy
(OPMBCS)



Bahagi Ka sa Pagbuo ng Obra Maestra!

December 2005



LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|-----------|--|
| ADCOM | Advocacy and Communication |
| AFMA | Agriculture and Fisheries Modernization Act |
| AO | Administrative Order |
| BFAR | Bureau of Fisheries and Aquatic Resources |
| BOI | Board of Investment |
| BOO | Build Operate Own |
| BOT | Build Operate Transfer |
| BSWM | Bureau of Soils and Water Management |
| CBFM | Community-based Forest Management |
| CHED | Commission on Higher Education |
| CLUPs | Comprehensive Land Use Plans |
| CMMD | Coastal and Marine Management Division |
| CMMO | Coastal and Marine Management Office |
| CMT | Civil Military Training |
| CPUE | Catch Per Unit Effort |
| CREBA | Chamber of Real Estate and Builders Association, Inc. |
| CSTF | Centralized Sewage Treatment Facilities |
| CWTP | Centralized Wastewater Treatment Plant |
| CWTS | Civic Welfare Training service |
| DA | Department of Agriculture |
| DAO | DENR Administrative Order |
| DENR | Department of Environment and Natural Resources |
| DepEd | Department of Education |
| DFA | Department of Foreign Affairs |
| DILG | Department of the Interior and Local Government |
| DLR | Department of Land Reform |
| DND | Department of National Defense |
| DOE | Department of Energy |
| DOH | Department of Health |
| DOJ | Department of Justice |
| DOJ-MOAC | Department of Justice-Maritime and Ocean Affairs Center |
| DOST | Department of Science and Technology |
| DOT | Department of Tourism |
| DOT-PTA | Department of Tourism-Philippine Tourism Authority |
| 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 |
| ECC | Environmental Compliance Certificate |
| ECO-CORPS | Environmental Conservation through Citizen's Organized Participation and Support |
| EIS | Environmental Impact Statement |
| EMB | Environmental Management Bureau |
| EO | Executive Order |
| ERA | Environmental Risk Assessment |
| ESWM | Environmental Solid Waste Management |
| FAOs | Fisheries Administrative Orders |
| FARMCs | Fisheries and Aquatic Resources Management Councils |
| FGDs | Focus Groups Discussions |
| FMB | Forest Management Bureau |
| GAA | General Appropriation Act |
| GEF | Global Environment Facility |
| GOP | Government of the Philippines |
| HLURB | Housing and Land Use Regulatory Board |
| HUDCC | Housing and Urban Development Coordinating Council |
| IBP | Integrated Bar of the Philippines |
| ICM | Integrated Coastal Management |
| IEC | Information, Education and Communication |

| | |
|--------------|---|
| IEMP | Integrated Environmental Management Program |
| IFDMP | Integrated Forestry Development and Management Plan |
| IFMA | Integrated Forest Management Agreement |
| IIMS | Integrated Information Management System |
| IMO | International Maritime Organization |
| IPs | Indigenous People |
| IPRA | Indigenous People's Right Act |
| IRA | Internal Revenue Allocation |
| IRR | Implementing Rules and Regulations |
| JICA | Japan International Cooperation Agency |
| KBP | <i>Kapisanan ng mga Brodkaster sa Pilipinas</i> |
| LDPs | Local Development Plans |
| LGUs | Local Government Units |
| LLDA | Laguna Lake Development Authority |
| LUC | Land Use Committee |
| LWUA | Local Water Utilities Authority |
| M&E | Monitoring and Evaluation |
| MAO | Municipal Agriculture Office |
| MARINA | Maritime Industry Authority |
| MARPOL 73/78 | Marine Pollution-International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 |
| MBCS | Manila Bay Coastal Strategy |
| MBEMP | Manila Bay Environmental Management Project |
| MBIN | Manila Bay Information Network |
| MBOP | Manila Bay Operational Plan |
| MCD | Municipal Coastal Database |
| MENRO | Municipal Environment and Natural Resources Office |
| MEY | Maximum Economic Yield |
| MFARMCs | Municipal Fisheries and Aquatic Resources Management Councils |
| MGB | Mines and Geosciences Bureau |
| MHOs | Municipal Health Offices |
| MM | Metro Manila |
| MMDA | Metro Manila Development Authority |
| MOA | Memorandum of Agreement |
| MOAC | Maritime and Ocean Affairs Center |
| MOU | Memorandum of Understanding |
| MPDO | Municipal Planning Development Office |
| MRF | Materials Recovery Facility |
| MSY | Maximum Sustainable Yield |
| MTPDP | Medium Term of the Philippines Development Plan |
| MWSS | Manila Waterworks and Sewerage System |
| NAMRIA | National Mapping and Resource Information Authority |
| NAPC | National Anti Poverty Commission |
| NCAA | National Collegiate Athletic Association |
| NCCA | National Commission on Culture and Arts |
| NCIP | National Commission on Indigenous People |
| NCR | National Capitol Region |
| NDCC | National Disaster Coordinating Council |
| NEDA | National Economic Development Authority |
| NFARMC | National Fisheries and Aquatic Resources Management Council |
| NFRDI | National Fisheries Research and Development Institute |
| NGAs | National Government Agencies |
| NGOs | Non-government Organizations |
| NHI | National Historical Institute |
| NIA | National Irrigation Authority |
| NIPAS | National Integrated Protected Areas System |
| NMTT | Navotas-Malabon-Tullajan-Tinajeros River |
| NOCOP | National Operation Center on Oil Pollution |
| NPC | National Power Corporation |
| NSTP | National Service Training Program |

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|------------|---|
| NSWMC | National Solid Waste Management Commission |
| NWIN | National Water Information Network |
| NWRB | National Water Regulatory Board |
| ODA | Official Development Assistance |
| OPMBCS | Operational Plan for the Manila Bay Coastal Strategy |
| OPRC | Oil Pollution Preparedness, Response and Cooperation |
| PAs | Protected Areas |
| PAGASA | Philippine Atmospheric, Geophysical and Astronomical Services Administration |
| PAMARISAN | Pasig–Marikina–San Juan River |
| PAO | Provincial Agriculture Office |
| PAR | Physical Accomplishment Report |
| PATLEPAM | Philippine Association of Tertiary Level Educational Institution in Environmental Protection and Management |
| PAWB | Protected Areas and Wildlife Bureau |
| PCAP, Inc. | Pollution Control Association of the Philippines, Inc. |
| PCC | Project Coordinating Committee |
| PCCI | Philippine Chambers of Commerce and Industry |
| PCG | Philippine Coast Guard |
| PCGA | Philippine Coast Guard Auxiliary |
| PCMARD | Philippine Council for Marine and Aquatic Resources Development |
| PCRA | Participatory Coastal Resource Assessment |
| PD | Presidential Decree |
| PDF | Provincial Development Fund |
| PENRO | Provincial Environment and Natural Resources Office |
| PEPP | Philippine Environmental Partnership Program |
| PEMSEA | Partnerships in Environmental Management for the Seas of East Asia |
| PEZA | Philippines Economic Zone Authority |
| PHIVOLCS | Philippine Institute of Volcanology and Seismology |
| PIA | Philippine Information Agency |
| PMES | Performance Monitoring and Evaluation System |
| PMO | Project Management Office |
| PMTDP | Philippine Medium Term Development Plan |
| PN | Philippine Navy |
| PNP | Philippine National Police |
| PNRI | Philippine Nuclear Research Institute |
| PPA | Philippine Ports Authority |
| PPA | Plans/Programs/Activity |
| PPDO | Provincial Planning and Development Office |
| PPFP | Provincial Physical Framework Plans |
| PPPs | Public-Private Partnerships |
| PRA | Philippine Reclamation Authority, formerly Public Estates Authority (PEA) |
| PRRC | Pasig River Rehabilitation Commission |
| RA | Republic Act |
| RDs | Regional Directors |
| RDC | Regional Development Council |
| REDs | Regional Executive Directors |
| RPPF | Regional Physical Framework Plan |
| RRA | Refined Risk Assessment |
| SB | <i>Sangguniang Bayan</i> |
| SDS-SEA | Sustainable Development Strategy for the Seas of East Asia |
| SIFMA | Socialized Industrial Forestry Management Agreements |
| SMOs | Site Management Offices |
| SP | <i>Sangguniang Panlalawigan</i> |
| STD | Storage, Treatment and Disposal |
| SW | Solid Waste |
| SWM | Solid Waste Management |
| TBT | Tributyltin |
| TDL | Total Discharge Loading |
| TESDA | Technical Education and Skills Development Authority |

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|---------|---|
| THW | Toxic and Hazardous Waste |
| TLRC | Technology and Livelihood Resource Center |
| TWG | Technical Working Group |
| UN | United Nations |
| UNCLOS | United Nations Convention on the Law of the Sea |
| UNDP | United Nations Development Program |
| UP | University of the Philippines |
| UP-MSI | University of the Philippines-Marine Science Institute |
| UP-NHRC | University of the Philippines- National Hydrological Research Center |
| UP-NIGS | University of the Philippines-National Institute of Geological Sciences |
| UWM | Unit Work of Measurement |
| VTs | Vessel Traffic Separation |
| WWTF | Wastewater Treatment Facility |

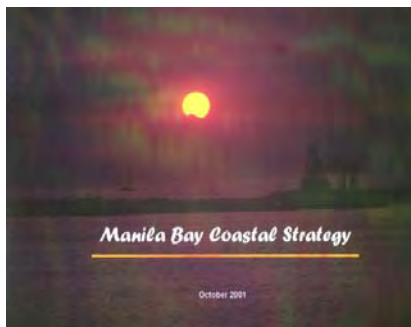
EXECUTIVE SUMMARY

OPERATIONAL PLAN FOR THE MANILA BAY COASTAL STRATEGY (OPMBCS)

1.0 Introduction

The Manila Bay Coastal Strategy (MBCS) provides stakeholders with a common mission - what needs to be done now to achieve our shared vision of the future and framework that defines long-term actions as well as the necessary support and participation of all stakeholders.

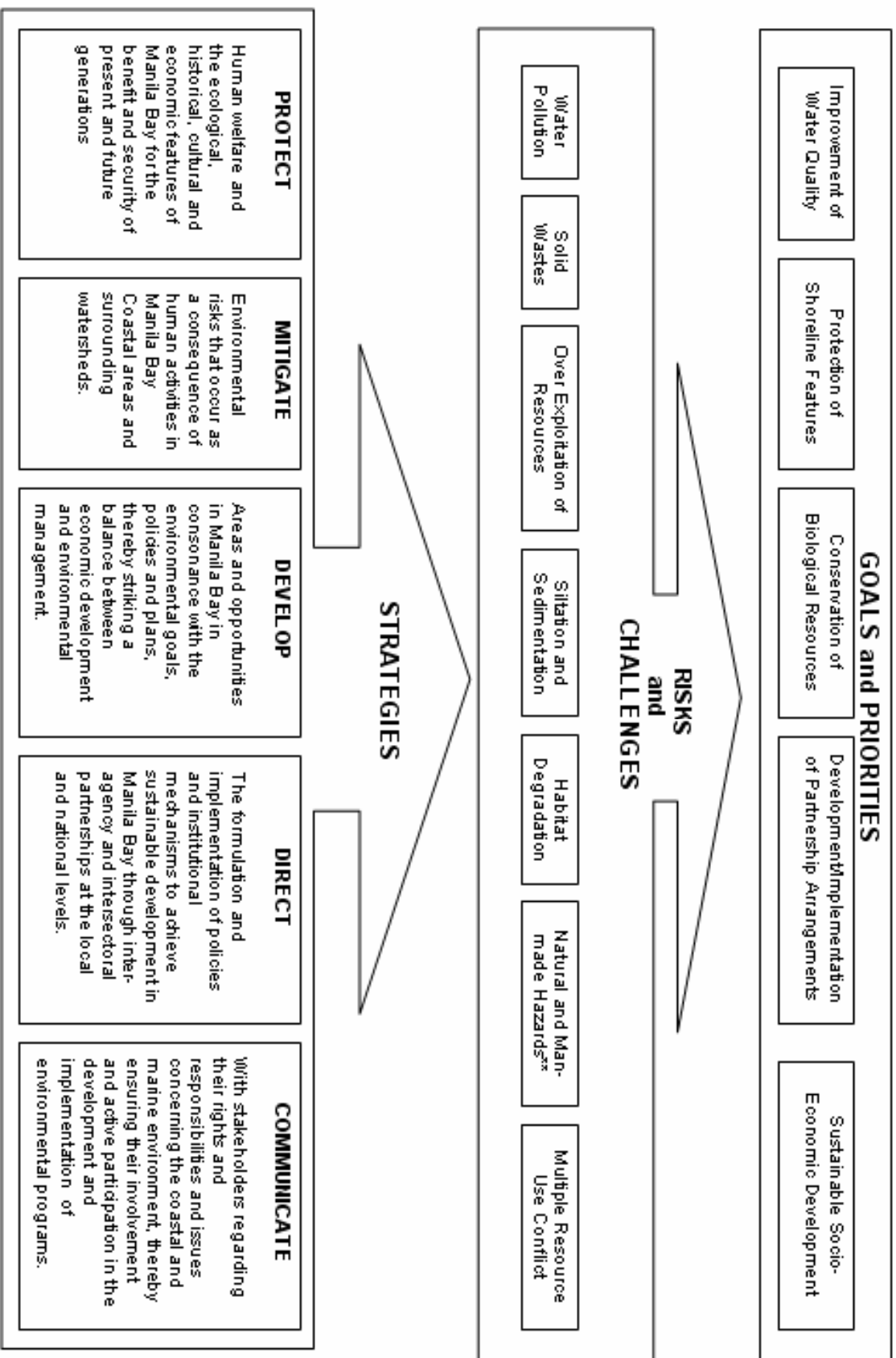
The “Shared Vision” crafted by various stakeholders is stated as:



“Manila Bay - reflective of God’s glory - is a clean, safe, wholesome and productive ecosystem, a center of socioeconomic development, and a natural heritage nurtured by Filipino values with regard to better quality of life for the present and future generations”.

With this, five (5) executing strategies were identified in the MBCS and served as basis in the development of the Operational Plan for Manila Bay Coastal Strategy (OPMBCS). These strategies have been translated into action programs and operational plans in conformity with the priority areas of concern identified in the Refined Risk Assessment (RRA) report. The RRA uses scientific and technical assessment of available information to determine the significance of risk posed by various factors on human health and ecosystem. The overall Framework of the Manila Bay Coastal Strategy in relation to RRA is summarized in Figure 1.

Figure 1. Overall Framework of the Manila Bay Coastal Strategy in Relation to Refined Risk Assessment



** Oil Spills, Sea-level, ballast Water, invasive species, Environmental protection emergencies

2.0 Challenges and Opportunities

The Manila Bay, being the premier international gateway to the country's political, economic and social centers, offers many challenges and opportunities. Currently, it is confronted with three (3) major issues/concerns, namely: water pollution; overexploitation of resources and degradation of habitats and historical, cultural, religious, archeological and unique sites; and weak coordination, management and governance. Of these, partnership and governance is the most pronounced issue which needs to be immediately addressed for effective and efficient integration and sustainable management of the bay. This is the greatest challenge being faced by the stakeholders in the Manila Bay.

Below are the priorities of the above-mentioned issues/areas of concerns:

| Priority Issues/Areas of Concern | | Reference |
|---|---|-----------|
| PARTNERSHIPS AND GOVERNANCE | | |
| 1. Absence of integrated management framework | Multiple-use conflicts | MBCS, RRA |
| | Limited or sectoral planning | |
| | Fragmented or weak institutional arrangements | |
| | Lack of coordination among concerned agencies, and between the national and local governments | |
| | Absence of comprehensive mechanism to address the negative impacts of development within the bay region | |
| 2. Lack of awareness and capacity | Limited ICM program replication | |
| | Lack of sense of ownership | |
| | Lack of understanding of the values of the bay and its socioeconomic benefits | |
| | Unsustained IEC campaign | |
| | Limited environment and resource management courses within the formal education system | |
| | Viewed primarily as a government responsibility instead of stakeholders' responsibility | |
| | Lack of political will & commitment | |
| | Limited corporate environmental and social responsibility | |
| | Undocumented corporate initiatives | |
| | Inadequate application of skills acquired during training, workshops and seminars | |
| Limited skilled human resources in | | |

| | | |
|--|---|-----------|
| | coastal management/governance | |
| 3. Lack of resources | Limited private sector investments | |
| | Limited stakeholders' involvement | |
| | Inconsistent enforcement of environmental laws/regulations | |
| | Limited access/understanding of appropriate technologies/effective approaches for important interventions | |
| | Inefficient/unsustainable financing facilities & programs | |
| | Poor track record on private investment in environmental infrastructures and services | |
| | Unsustained government support | |
| WATER POLLUTION | | |
| 4. Water quality | | |
| a. Water column | Coliform | RRA, MBCS |
| | Nutrients (phosphate) | RRA, MBCS |
| | Pesticides | RRA, MBCS |
| | Oil and grease | RRA, MBCS |
| b. Sediment | Heavy metals: mercury and copper | RRA, MBCS |
| | Heavy metals: lead, zinc, cadmium, chromium | RRA, MBCS |
| | Total Polycyclic Aromatic Hydrocarbon | RRA |
| 5. Harmful algal blooms | Red tide | RRA, MBCS |
| | Fish kills | RRA, MBCS |
| 6. Solid waste | Sources: | |
| | Domestic/household | MBCS |
| | Commercial and industrial | MBCS |
| | Agricultural (animal manure, leaves, hay, etc.) | MBCS, RRA |
| | Septage sludge | MBCS, RRA |
| | Dredged materials | MBCS, RRA |
| 7. Toxic and hazardous waste | Industrial waste | MBCS, RRA |
| | Hospitals and health-care related | MBCS, RRA |
| 8. Soil pollution | | BSWM |
| RESOURCES AND HABITATS | | |
| 9. Over-exploitation of resources | Fisheries, Shellfisheries | MBCS, RRA |
| | Groundwater | MBCS |
| | Biodiversity | MBCS |
| 10. Destruction/Degradation of habitats and ecosystems | Mangroves | MBCS, RRA |
| | Mudflats | MBCS, RRA |
| | Coral reefs | MBCS, RRA |
| | Seagrass beds | MBCS, RRA |
| | Beaches/sandy shores | MBCS, RRA |
| | Forests and watershed areas | MBCS |
| | Other wetlands (e.g., swamps) | MBCS |
| | Rivers and lake | MBCS |
| 11. Coastal hazards (natural and man-made) | Flooding | MBCS, RRA |
| | Earthquakes | MBCS, RRA |
| | Typhoons | MBCS, RRA |

| | | |
|---|---|-----------|
| | Volcanic eruption | MBCS, RRA |
| | Accidental spills/land based | |
| | Environmental emergencies (terrorism) | |
| | Shipping and port operations accidents | |
| 12. Sea-level rise | Flooding, sedimentation, climate change | RRA |
| 13. Changes in shoreline features | Uncontrolled development | MBCS, RRA |
| | Reclamation | MBCS, RRA |
| | Siltation/erosion | MBCS, RRA |
| 14. Destruction of historical, cultural, archaeological and unique geological sites | Uncontrolled development | MBCS |
| | Reclamation | MBCS |
| | Pollution (air and water) | MBCS |

Challenges also lie in addressing properly the threats being faced by the natural environment of the Bay, which include; over-population, pollution discharges from land-and sea-based sources, over-fishing, uncontrolled coastal development and habitat degradation. The effects of said threats on the ecosystem and human health have resulted to increasing infrastructure and rehabilitation costs as well as health and social services expenditures.

In general, these challenges lie in establishing, fostering, creating, and adopting effective institutional and operational support mechanisms as these are being required by the OPMBCS.

Opportunities abound in the sustainable development of the bay region for settlements, manufacturing industries, shipping and ports, mining and quarrying, commercial areas, and industrial areas, among others. Examples of areas of development are the following:

- Restoration and maintenance of appropriate water quality
- Restoration of degraded habitats
- Protection of municipal fisheries and biodiversity
- Management of coastal and river waters for safe public recreation
- Provision of safe potable water supply to 100% of the households in the Bay area
- Systematic and safe management and disposal of toxic and hazardous wastes
- Sustainable development of the coastal areas
- Operationalization of a centralized sewage treatment facilities
- Operationalization of Integrated solid waste management systems in every LGU
- Operationalization of ports waste reception facilities
- Establishment and management of protected areas

It is worthy to note that these areas of development could yield the highest potential fishing catch within the Manila Bay region, thereby resolving various social conflicts arising from the multiple use of the bay. Also,

realization of these areas of development will ultimately restore the functional integrity of the Manila Bay region's habitats.

3.0 Operational Plan

3.1 Scope and Objectives

The scope of the Operational Plan covers the entire Manila Bay Region, consisting of the National Capital Region (NCR), four (4) coastal provinces (Bataan Bulacan, Cavite and Pampanga) and four (4) non-coastal provinces in the watershed areas (Laguna, Nueva Ecija, Rizal and Tarlac).

The Operational Plan transforms the Manila Bay Coastal Strategy into a set of objectives and action plans with measurable targets, timeframe, budgetary requirements, implementing arrangements - responsible agency/sector/partner, and enabling policies and laws. It also contains financing strategy, Information-Education-Communication Plan of Action, and monitoring and evaluation procedures.

Desired Outcomes:

- Endorsement of the Operational Plan by national and local levels of government, the private sector, civil society, donors, financial institutions, and international agencies and organizations;
- Adoption of the OPMBCS by the Regional Development Councils (RDCs) of Regions 3 and 4 and NCR, and National Economic Development Authority (NEDA), for incorporation into the Medium-Term Philippine Development Plan (MTPDP); and
- Mobilization of funds from national agencies and local government units, the private sector, NGOs, and external sources (e.g., donor agencies, international financing institutions, foundations, etc.).

The Operational Plan, with short-, medium-, and long-term action plans, calls for the inter-agency, inter-governmental and multi-sectoral approach to effectively and efficiently implement the target activities. The plan will be implemented through public and private partnerships. Various concerned agencies and collaborating partners with vital roles in the realization of the OPMBCS' objectives are identified in the plan.

3.2 Targets by Issues/Areas of Concern

MANILA BAY OPERATIONAL PLAN

| ISSUE/AREAS OF CONCERN OBJECTIVE/MAIN FOCUS | | TIME FRAME | | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | | | | |
|--|---|---------------------------|--|--|----------------------------|--|--|--|--|--------------------------|--|--|--|--|-------------------------------------|--|--|--|------|
| | | SHORT-TERM (2006-2010) | | | MEDIUM-TERM (2011-2015) | | | | | LONG-TERM (2016 onwards) | | | | | | | | | |
| 1. PARTNERSHIP AND GOVERNANCE | | | | | | | | | | | | | | | 192.90 | | | | |
| Objective 1 | Develop, adopt and implement an integrated land use and sea use plan for the Manila Bay Region by 2012. | | | | | | | | | | | | | | | | | | 43.1 |
| | ACTIVITY 1: Review and consolidation of pertinent information on several habitats and resources | | | | | | | | | | | | | | | | | | 3 |
| | ACTIVITY 2: Assessment and alignment of existing land-use plans, development plans, programs and projects and CRM/ICM-related efforts | | | | | | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 3: Amendment of CLUP guidelines to include sea/water use and foreshore uses | | | | | | | | | | | | | | | | | | 5 |
| | ACTIVITY 4: Delineation of water boundaries of coastal municipalities and cities | | | | | | | | | | | | | | | | | | 0.15 |
| | ACTIVITY 5: Development of the integrated land and sea-use zoning plan for the Manila Bay area | | | | | | | | | | | | | | | | | | 7 |
| | ACTIVITY 6: Harmonization of the land-use plans of the municipalities and cities in the Manila Bay region to make them consistent with the integrated Land and Sea-Use Plan | | | | | | | | | | | | | | | | | | 0.45 |
| | ACTIVITY 7: Implementation of Manila Bay Area's integrated land and sea-use plan | | | | | | | | | | | | | | | | | | 25 |
| Objective 2 | Establish appropriate institutional arrangements to oversee, coordinate and guide the implementation of Manila Bay Coastal Strategy and Operational Plan by 2007. | | | | | | | | | | | | | | | | | | 2.65 |
| | ACTIVITY 1: Conduct studies/assessments on existing policies, legislations and administrative arrangement to identify options on institutional arrangements | | | | | | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 2: Strengthening of the PCC as interim body to coordinate the implementation of the MBCS and its Operational Plan until the Manila Bay Sustainable Development Council is established. | | | | | | | | | | | | | | | | | | 0.15 |
| | ACTIVITY 3: Formulation of a policy framework declaring Manila Bay as water quality management area. | | | | | | | | | | | | | | | | | | --- |
| | ACTIVITY 4: Drafting of appropriate institutional arrangements and legal mechanism | | | | | | | | | | | | | | | | | | --- |

| ISSUE/AREAS OF CONCERN OBJECTIVE/MAIN FOCUS | | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | |
|--|---|---------------------------|--|--|--|----------------------------|--|--|--|--------------------------|--|--|--|-------------------------------------|---|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | | |
| | ACTIVITY 5: Lobbying for the approval of the proposed institutional arrangements | | | | | | | | | | | | | | --- |
| | ACTIVITY 6: Operationalization/implementation of the approved/ appropriate institutional arrangement | | | | | | | | | | | | | | |
| Objective 3 | Develop, set-up and operationalize Integrated Coastal Area and River Basin management system covering 100% of the Manila Bay Region by 2010. | | | | | | | | | | | | | | 55.75 |
| | ACTIVITY 1: Development, implementation and promotion of the Manila Bay-Pasig River-Laguna de Bay as a model of integrated coastal area and river basin management. | | | | | | | | | | | | | | 13.75 |
| | ACTIVITY 2: Conduct of rapid appraisal, consultations, identification of key areas of concern, classification/re-classification of each river system, and development/formulation of criteria for prioritization on identified major river systems. | | | | | | | | | | | | | | 20 |
| | ACTIVITY 3: Development of the integrated coastal area and river basin management plan | | | | | | | | | | | | | | 12 |
| | ACTIVITY 4: Implementation of the integrated coastal area and river basin management plan of each of the identified river system | | | | | | | | | | | | | | --- |
| | ACTIVITY 5: Setting up and implementation of ICM in each coastal province, city and municipal government around the Bay area | | | | | | | | | | | | | | At least 2% of the 20% Development Fund |
| | ACTIVITY 6: Replication of best ICM practices. | | | | | | | | | | | | | | 10 |
| Objective 4 | Create awareness, build capacity and mobilize 50% of the coastal communities to participate in activities related to the implementation of the MBCS by 2010. | | | | | | | | | | | | | | 25.25 |
| | ACTIVITY 1: Conduct of stakeholder analysis and awareness assessment of different stakeholders consistent with those identified in the Advocacy and Communication Plan (AdComp) of MBEMP. | | | | | | | | | | | | | | 3 |
| | ACTIVITY 2: Updating of the communication plan for the Manila Bay Coastal Strategy and its Operational Plan | | | | | | | | | | | | | | 1 |
| | ACTIVITY 3: Integration of environmental lessons and activities in the NSTP/CWTS | | | | | | | | | | | | | | 0.75 |
| | ACTIVITY 4: Organization and implementation of activities for school children/youth | | | | | | | | | | | | | | 1.5 |

| ISSUE/AREAS OF CONCERN | OBJECTIVE/MAIN FOCUS | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | | | | |
|------------------------|--|---------------------------|--|--|--|----------------------------|--|--|--|--------------------------|--|--|--|-------------------------------------|--|--|--|------|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | | | | | |
| | ACTIVITY 5: Conduct of Information, Education, and Communication (IEC) and advocacy program for national and local legislators, policy-makers, educators, industries, civil society groups, and other stakeholders | | | | | | | | | | | | | | | | | 3 |
| | ACTIVITY 6: Organization and implementation of community activities | | | | | | | | | | | | | | | | | 4.5 |
| | ACTIVITY 7: Conduct of capacity-building activities, including training workshops and pilot programs on alternative livelihood for different stakeholders | | | | | | | | | | | | | | | | | 9 |
| | ACTIVITY 8: Promotion of corporate environmental and social responsibility in the private sector. | | | | | | | | | | | | | | | | | 2.5 |
| Objective 5 | Increase to at least 75% the number of LGUs within the Manila Bay region implementing development and investment programs through private sector and public-private sector partnerships by 2010. | | | | | | | | | | | | | | | | | 10.5 |
| | ACTIVITY 1: Identification and documentation of best practices involving partnership arrangements and experiences | | | | | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 2: Development of guidelines on alternative partnership arrangements applicable to the Manila Bay region | | | | | | | | | | | | | | | | | 0.25 |
| | ACTIVITY 3: Development and implementation capacity-building programs for LGUs to engage in PPPs | | | | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 4: Identification of environmental investment opportunities and development of environmental investment packages/project proposals | | | | | | | | | | | | | | | | | 1 |
| | ACTIVITY 5: Conduct of pre-feasibility studies, willingness-to-pay surveys and stakeholder consultations | | | | | | | | | | | | | | | | | 6 |
| | ACTIVITY 6: Negotiation and entry into agreements with potential partners | | | | | | | | | | | | | | | | | 0.75 |
| | ACTIVITY 7: Monitoring and evaluation of compliance to partnerships commitments | | | | | | | | | | | | | | | | | 0.5 |
| Objective 6 | Reduce by 25% the illegal settlers, establishments and structures along coast lines by 2010 and prevent future preoccupation of these shorelines. | | | | | | | | | | | | | | | | | 29.0 |
| | ACTIVITY 1: Conduct of inventory and assessment of structures, establishments and illegal settlements along coastlines, riverbanks and waterways. | | | | | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 2: Development of investment/financial plan | | | | | | | | | | | | | | | | | 1 |
| | ACTIVITY 3: Implementation of a program for the relocation of informal settlers living along the coastlines and waterways | | | | | | | | | | | | | | | | | 25 |
| | ACTIVITY 4: Development and issuance of regulation, standards and guidelines concerning buffer setback zoning in beach areas | | | | | | | | | | | | | | | | | 2.5 |

| ISSUE/AREAS OF CONCERN | OBJECTIVE/MAIN FOCUS | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | |
|---------------------------|---|---------------------------|--|--|--|----------------------------|--|--|--|--------------------------|--|--|--|-------------------------------------|-----------|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | | |
| | ACTIVITY 5: Implementation of buffer and setback zones along beach/shores | | | | | | | | | | | | | | --- |
| Objective 7 | Develop and implement a Natural Hazards Contingency, Preparedness and Quick-Response System for the Manila Bay Region by 2008. | | | | | | | | | | | | | | 9.25 |
| | ACTIVITY 1: Development of natural hazards map and identification of risk and hazard-prone areas | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 2: Review of the National Disaster Coordination Plan, and assessment in relation with the needs of the Manila Bay Region. | | | | | | | | | | | | | | 0.25 |
| | ACTIVITY 3: Development of a Natural Hazard Contingency Plan and Response System with concerned agencies and sectors | | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 4: Adoption and implementation of the contingency plan and response system. | | | | | | | | | | | | | | 5 |
| Objective 8 | Develop and institutionalize a performance monitoring and evaluation system for Manila Bay Region by 2007. | | | | | | | | | | | | | | 17.4 |
| | ACTIVITY 1: Development of appropriate monitoring and evaluation (M&E) system for the Manila Bay region | | | | | | | | | | | | | | 2 |
| | ACTIVITY 2: Institutionalization of the M&E system developed | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 3: Institutionalization of the Integrated Information Mgt. System (IIMS) and the Manila Bay Information Network (MBIN) | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 4: Conduct of training on capacity-building of stakeholders on M&E and IIMS | | | | | | | | | | | | | | 7.5 |
| | ACTIVITY 5: Mobilization of communities and other stakeholders for data generation, monitoring, law enforcement, etc. | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 6: Development of voluntary agreements with industries, hospitals, commercial and tourism enterprises operating in the Manila Bay area | | | | | | | | | | | | | | 0.45 |
| | ACTIVITY 7: Assistance to industries towards implementation of Environment Management System (EMS) and pollution prevention programs through Phil. Environment Partnership Program (PEPP) | | | | | | | | | | | | | | 0.45 |
| | ACTIVITY 8: Implementation of the Eco-watch and Baywatch programs as monitoring and incentives programs | | | | | | | | | | | | | | 2.5 |
| 2. WATER POLLUTION | | | | | | | | | | | | | | | 17,741.20 |

| ISSUE/AREAS OF CONCERN OBJECTIVE/MAIN FOCUS | | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | | | |
|--|---|---------------------------|--|--|--|----------------------------|--|--|--|--------------------------|--|--|--|-------------------------------------|--|--|----------|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | | | | |
| Objective 1 | Reduce by 50% the discharges of raw sewage, septage and untreated and inadequately treated wastewater (from commercial, industrial, agricultural, and fisheries/aquaculture) by 2015. | | | | | | | | | | | | | | | | 2,557.50 |
| | ACTIVITY 1: Identification of point sources of pollution loading and determination of total discharge loading | | | | | | | | | | | | | | | | 549 |
| | ACTIVITY 2: Establishment of time-bound pollution-reduction target for identified major point sources | | | | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 3: Enforcement of installation and maintenance of adequate septic tanks | | | | | | | | | | | | | | | | 0.50 |
| | ACTIVITY 4: Implementation of a pilot project on sewerage system in the Parañaque, Las Piñas and Zapote river system | | | | | | | | | | | | | | | | 500 |
| | ACTIVITY 5: Preparation/updating of investment plans for sewerage treatment plants (STPs) and waste water treatment facilities (WWTF). | | | | | | | | | | | | | | | | 5 |
| | ACTIVITY 6: Construction of sewerage systems and centralized sewage treatment facilities (CSTF) in priority areas | | | | | | | | | | | | | | | | 1,500 |
| | ACTIVITY 7: Development of guidelines, criteria, and standards for collection, treatment, recycling, and disposal of agricultural and aquacultural wastes. | | | | | | | | | | | | | | | | 0.50 |
| Objective 2 | Establish integrated solid waste management programs in all LGUs by 2007. | | | | | | | | | | | | | | | | 12,673.5 |
| | ACTIVITY 1: Reconstitution and/or strengthening of SWM Boards and brgy. committees and 10-year SWM plan | | | | | | | | | | | | | | | | 91.5 |
| | ACTIVITY 2: Development of Investment Plan for SWM systems in major LGUs | | | | | | | | | | | | | | | | 10 |
| | ACTIVITY 3: Conversion of existing open dumpsites into "controlled dumpsites" | | | | | | | | | | | | | | | | 1,830 |
| | ACTIVITY 4.a: Implementation of 10-year SWM plan | | | | | | | | | | | | | | | | 10,741.5 |
| | ACTIVITY 4.b: Construction of MRFs and composting facilities | | | | | | | | | | | | | | | | |
| | ACTIVITY 4.c: Construction of sanitary landfill | | | | | | | | | | | | | | | | |
| | ACTIVITY 5: Prohibition of operation of open dumpsites | | | | | | | | | | | | | | | | 0.5 |
| Objective 3 | Develop and implement toxic and hazardous waste management system by 2008. | | | | | | | | | | | | | | | | 2,340.00 |
| | ACTIVITY 1: Mandatory registration of all hazardous waste generations, importation and use of new chemicals, and update database on sources, volume of waste generated by type | | | | | | | | | | | | | | | | 20 |
| | ACTIVITY 2: Preparation of investment plan for an integrated toxic and hazardous waste management system | | | | | | | | | | | | | | | | 10 |

| ISSUE/AREAS OF CONCERN | OBJECTIVE/MAIN FOCUS | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | | | |
|--|--|---------------------------|--|--|--|----------------------------|--|--|--|--------------------------|--|--|--|-------------------------------------|--|--|-----------------|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | | | | |
| | ACTIVITY 3: Implementation of the integrated toxic and hazardous waste management system | | | | | | | | | | | | | | | | 2,300 |
| | ACTIVITY 4: Implementation of segregation of healthcare/hospital/toxic/hazardous wastes and prevent mixing with municipal solid waste | | | | | | | | | | | | | | | | 10 |
| Objective 4 | Stop sea-dumping of sewage, industrial sludge, solid waste, and contaminated dredged materials by 2006. | | | | | | | | | | | | | | | | 7.5 |
| | ACTIVITY 1: Identification of sea dumping activities | | | | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 2: Identification of companies with dumping permits | | | | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 3: Development of guidelines on alternative land-based disposal sites, treatment and disposal methods | | | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 4: Issuance and enforcement of moratorium on sea dumping | | | | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 5: Revoking of licenses and permits | | | | | | | | | | | | | | | | 2.5 |
| Objective 5 | Stop discharges of operational waste (oily bilge and ballast water) from ships and the use of anti-fouling paints with TBTs and other harmful compounds by 2006. | | | | | | | | | | | | | | | | 156.50 |
| | ACTIVITY 1: Estimation of volume of discharges by type of waste and source | | | | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 2: Construction/installation of shore reception facilities in major ports | | | | | | | | | | | | | | | | 150 |
| | ACTIVITY 3: Identification of environment-friendly paints and anti-fouling chemicals for all ships and boats | | | | | | | | | | | | | | | | 2 |
| | ACTIVITY 4: Implementation of guidelines on discharges of operational wastes from ships, and use of harmful paints and anti-fouling chemicals | | | | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 5: Development and implementation of "Port Safety and Environmental Management System" | | | | | | | | | | | | | | | | 1.5 |
| Objective 6 | Activate a bay-wide, multi-sectoral oil spill prevention and response program by 2006. | | | | | | | | | | | | | | | | 6.2 |
| | ACTIVITY 1: Finalization and adoption of the "Manila Bay Oil Spill Contingency Plan" | | | | | | | | | | | | | | | | 0.7 |
| | ACTIVITY 2: Implementation of "Masterplan for Maritime Safety" | | | | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 3: Pilot testing of the Manila Bay Oil Spill Contingency Plan | | | | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 4: Promotion of the ratification of the Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) | | | | | | | | | | | | | | | | 2.5 |
| 3. Overexploitation of Resources and Degradation of Habitats and Historical, Cultural, Religious, Archeological and Unique Geological Sites | | | | | | | | | | | | | | | | | 1,067.30 |

| ISSUE/AREAS OF CONCERN OBJECTIVE/MAIN FOCUS | | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | | | |
|--|--|---------------------------|--|--|--|----------------------------|--|--|--|--------------------------|--|--|--|-------------------------------------|--|--|------|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | | | | |
| Objective 1 | Set-up sustainable institutional arrangements and management programs in all declared Protected Areas (PAs) and Critical Habitats in the Manila Bay Region by 2007. | | | | | | | | | | | | | | | | 20.0 |
| | ACTIVITY 1: Identification and assessment of existing and proposed protected areas (PAs) and critical habitats in the Manila Bay region | | | | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 2: Preparation of detailed Protected Area and Critical Habitat Management Plan in the Manila Bay region | | | | | | | | | | | | | | | | 5 |
| | ACTIVITY 3: Establishment/restoration and management of designated protected areas and critical habitats | | | | | | | | | | | | | | | | 12.5 |
| Objective 2 | Implement a no net loss policy for existing mangroves, mudflats, shorelines, beaches and sandy shores by 2010. | | | | | | | | | | | | | | | | 56.0 |
| | ACTIVITY 1: Review of results of the Integrated Environmental Management Program (IEMP) | | | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 2: Preparation of detailed rehabilitation and management plan for mangrove and mudflat areas | | | | | | | | | | | | | | | | 1 |
| | ACTIVITY 3: Conduct of consultations with LGUs, NGOs, and IP and community stakeholders, and preparation of Action Plan | | | | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 4: Implementation of Action Plan for rehabilitation and maintenance of mangroves and mudflats | | | | | | | | | | | | | | | | 20 |
| | ACTIVITY 5: Review and reconciliation of existing laws and ordinances on mangroves and mudflats; enforcement of the laws and ordinances | | | | | | | | | | | | | | | | 0.50 |
| | ACTIVITY 6: Monitoring of progress of the Action Plan | | | | | | | | | | | | | | | | 2 |
| | ACTIVITY 7: Conduct of rapid assessment of the entire stretch of the shorelines along Manila Bay | | | | | | | | | | | | | | | | 5 |
| | ACTIVITY 8: Preparation of masterplan for the development of foreshore areas | | | | | | | | | | | | | | | | 5 |
| | ACTIVITY 9: Issuance of moratorium on mining/quarrying of sand from rivers and on reclamation of shallow coastal waters; enforcement of laws on mining/quarrying of sand from beaches and on dumping of garbage, sludge and dredged materials along beaches/shores | | | | | | | | | | | | | | | | 0.25 |
| | ACTIVITY 10: Implementation of programs/projects on beach nourishment/stabilization | | | | | | | | | | | | | | | | 10 |
| | ACTIVITY 11: Implementation of the Eco-watch and Blue Flag system in the Manila Bay area | | | | | | | | | | | | | | | | 10 |

| ISSUE/AREAS OF CONCERN OBJECTIVE/MAIN FOCUS | | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | |
|--|---|---------------------------|--|--|--|----------------------------|--|--|--|--------------------------|--|--|--|-------------------------------------|--------|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | | |
| | ACTIVITY 12: Development and issuance of guidelines and standards for coastal road construction | | | | | | | | | | | | | | 0.25 |
| Objective 3 | Increase by 80% the forest cover in the entire Manila Bay watershed area by 2015. | | | | | | | | | | | | | | 539.50 |
| | ACTIVITY 1: Updating of maps on watershed boundaries/characteristics in the Manila Bay region | | | | | | | | | | | | | | 1 |
| | ACTIVITY 2: Identification and assessment of the implementation of relevant various national and local programs/projects/activities | | | | | | | | | | | | | | 1 |
| | ACTIVITY 3: Development of Integrated Forestry Development and Management Plan (IFDMP) for the Manila Bay region | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 4: Conduct of consultation/workshop on the finalization of IFDMP | | | | | | | | | | | | | | 1 |
| | ACTIVITY 5: Implementation of the IFDMP | | | | | | | | | | | | | | 400 |
| | ACTIVITY 6: Enforcement of laws, regulations and ordinances on illegal logging within the Manila Bay region. | | | | | | | | | | | | | | 135 |
| Objective 4 | Formulate and implement a restoration and maintenance program for important cultural, historical, religious and architectural landmarks and archeological and unique geological sites within the Manila Bay Region by 2010. | | | | | | | | | | | | | | 226.80 |
| | ACTIVITY 1: Conduct of inventory and assessment of all cultural, historical, architectural, religious and archeological sites | | | | | | | | | | | | | | 5 |
| | ACTIVITY 2: Conduct of study on the carrying capacities and appropriate management approaches for the above-mentioned sites, as well as the criteria and guidelines for preservation/rehabilitation/restoration | | | | | | | | | | | | | | 10 |
| | ACTIVITY 3: Development of management plan for the restoration and maintenance of these sites | | | | | | | | | | | | | | 1.5 |
| | ACTIVITY 4: Restoration/rehabilitation/preservation of these sites | | | | | | | | | | | | | | 200 |
| | ACTIVITY 5: Inclusion of the set criteria for the preservation/rehabilitation/restoration of these sites in the Environmental Impact Assessment (EIA) criteria for evaluation of development projects | | | | | | | | | | | | | | 0.1 |
| | ACTIVITY 6: Formulation and implementation of restoration and maintenance program to ensure the preservation of these sites | | | | | | | | | | | | | | 10 |
| | ACTIVITY 7: Incorporation of the zoning, protection, restoration/rehabilitation and maintenance of these sites into local and national development plans, and land-use plans (CLUPs) | | | | | | | | | | | | | | 0.2 |

| ISSUE/AREAS OF CONCERN OBJECTIVE/MAIN FOCUS | | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) |
|--|---|---------------------------|--|--|--|----------------------------|--|--|--|--------------------------|--|--|--|-------------------------------------|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | |
| Objective 5 | Increase the productivity of fishery resources within the Manila Bay Region to attain maximum sustainable yield (MSY) by 2020. | | | | | | | | | | | | | 125.0 |
| | ACTIVITY 1: Conduct study on different factors/parameters regarding fishery resources within the Manila Bay region | | | | | | | | | | | | | 1 |
| | ACTIVITY 2: Conduct socio-economic survey of the coastal population | | | | | | | | | | | | | 1 |
| | ACTIVITY 3: Determination and evaluation of appropriate regulatory/ legal and economic instruments in Manila bay region | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 4: Development of integrated plan for sustainable fisheries in the Manila Bay region, consistent with the Fisheries Code | | | | | | | | | | | | | 2 |
| | ACTIVITY 5: Implementation of the integrated plan for sustainable fisheries (for entire bay and each region) | | | | | | | | | | | | | 120 |
| | ACTIVITY 6: Establishment of permitting and licensing system for municipal fishing in the Manila bay region | | | | | | | | | | | | | 0.5 |
| Objective 6 | Achieve sustainable and ecologically-sound aquaculture and mariculture production in Manila Bay by 2015. | | | | | | | | | | | | | 6.75 |
| | ACTIVITY 1: Conduct study on carrying capacity for aquaculture and mariculture in Manila Bay region | | | | | | | | | | | | | 2.5 |
| | ACTIVITY 2: Conduct inventory of owners and operators and assessment of the aquaculture and mariculture farms/industries in Manila Bay | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 3: Review and assessment of appropriate policy instruments and development of guidelines and standards for aquaculture and mariculture farms/industries | | | | | | | | | | | | | 0.5 |
| | ACTIVITY 4: Delineation of areas for aquaculture and mariculture | | | | | | | | | | | | | 1 |
| | ACTIVITY 5: Requiring owners and operators to apply appropriate aquaculture and mariculture methods and practices | | | | | | | | | | | | | 2.25 |
| | ACTIVITY 6: Revoking of permits of aquaculture and mariculture farms in areas that are not designated for such use, and removal of all illegal pens/cages/ponds in Manila Bay and Laguna de Bay | | | | | | | | | | | | | --- |
| | ACTIVITY 7: Restoration of production of windowpane oyster and seaweeds, if appropriate | | | | | | | | | | | | | --- |
| Objective 7 | Increase coverage of water supply distribution by 50% in areas with unsustainable groundwater extraction to protect aquifers from contamination and salt-water intrusion by 2015. | | | | | | | | | | | | | 93.25 |

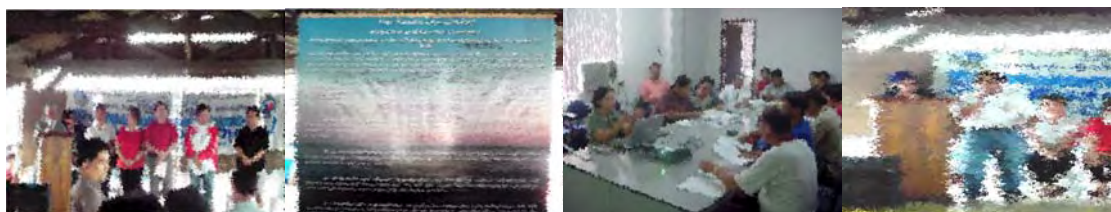
| ISSUE/AREAS OF CONCERN | OBJECTIVE/MAIN FOCUS | TIME FRAME | | | | | | | | | | | | ESTIMATE COST (In Million Pesos) | | |
|------------------------|---|---------------------------|---|---|---|----------------------------|---|---|---|--------------------------|---|---|---|-------------------------------------|---|------|
| | | SHORT-TERM (2006-2010) | | | | MEDIUM-TERM (2011-2015) | | | | LONG-TERM (2016 onwards) | | | | | | |
| | ACTIVITY 1: Conduct study or collation/updating of information on matters regarding to groundwater use | ■ | | | | | | | | | | | | | | 5 |
| | ACTIVITY 2: Conduct of feasibility study and development of investment plan to expand coverage and supply of surface water | | ■ | ■ | | | | | | | | | | | | 5 |
| | ACTIVITY 3: Development of groundwater management plan | ■ | ■ | ■ | | | | | | | | | | | | 2.5 |
| | ACTIVITY 4: Construction of water supply facilities | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 40 |
| | ACTIVITY 5: Construction/rehabilitation of irrigation systems and rehabilitate multi-purpose water reservoirs to increase water availability for agricultural and municipal use | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 40 |
| | ACTIVITY 6: Development and issuance of guidelines and standards on water use reduction technologies and processes, water recycling, groundwater extraction, and post-closure of abandoned wells. | ■ | ■ | ■ | | | | | | | | | | | | 0.25 |
| | ACTIVITY 7: Establishment of appropriate water pricing system | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 0.25 |
| | ACTIVITY 8: Establishment of monitoring and evaluation system for groundwater extraction, saltwater intrusion, land subsidence, and contamination of groundwater | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 0.25 |
| | | Estimate Grand Total | | | | | | | | | | | | 19,001.40 | | |

Legend:

- Objective
- ▨ Activity

3.3 Targets and Action Plans

3.3.1 Partnership and Governance



- **Goals:** Promote partnerships and ensure the implementation of good environmental governance as means to achieve the sustainable development of the Manila Bay Region

- **Objective and Activities**

Objective 1 - Develop, adopt and implement an Integrated Land and Sea-use Zoning Plan for the Manila Bay Area by 2012

| Activities | Timeframe |
|---|------------|
| 1. Review and consolidate pertinent information on: - Corals, mangroves, seagrass beds, mudflats, swamps, avifauna, Fisheries, shellfishes, seaweeds, Benthos, phytoplanktons, zooplanktons, beaches/ sandy shores, foreshore areas, built-up areas, bedrocks | 2006-2007 |
| 2. Assess and align existing land-use plans (RPFs, PPFs, CLUPs), various development plans, programs & projects and related CRM/ICM efforts at different levels of government Note: Use the following as reference. RPFs - Reg'l Physical Framework plans PPFs - Provincial PPFs | 2007 |
| 3. Amend CLUP guidelines to include sea/water use and foreshore uses | 2006 |
| 4. Delineate water boundaries of coastal municipalities and cities | 2006-2008 |
| 5. Develop the integrated land and sea-use zoning plan for Manila Bay Area Include: - Protected Area Zones o National Parks | 2007 -2012 |

| | |
|--|-----------|
| <ul style="list-style-type: none"> ○ NIPAS Zone ○ Sanctuaries ○ Ancestral Domain - Rehabilitation/Buffer Zones - Sustainable Fisheries Use Zone - Coastal Tourism, other eco-tourism zones - Port and shipping zones - Human settlement areas (residential and commercial) - Agricultural and institutional zones - Industrial zones - Waste management zone (sanitary landfill, wastewater and sewerage treatment facilities, etc.) - Forest zone (production and protection) | |
| 6. Harmonize the land use plans (RPFs, PPFs and CLUPs) of the municipalities and cities in the Manila Bay Region to make them consistent with the Integrated Land- and Sea Use Plan. | 2007-2012 |
| 7. Implement Manila Bay Area's integrated land and sea-use plan | 2007-2012 |

- *Success Criteria:* Approved and implemented integrated land and sea-use zoning plan for Mla. Bay Area in accordance with guidelines on responsibilities/jurisdiction of LGUs and various agencies (delineation matters and CLUP)

- *Total Budgetary Requirements :* PhP 43.1 M

- *Concerned Agency :*

Lead: MBEMP, DENR-NAMRIA, NEDA, HLURB & LGUs

Cooperating Agencies/Institutions/Partners: DILG, MMDA, DA, PEA, DOT, DFA-MOAC, MARINA, PCG, DPWH, PS, Key ACADEME and CIVIL SOCIETY Groups

Objective 2 - **Establish appropriate institutional arrangements to oversee, coordinate and guide the implementation of Manila Bay Coastal Strategy and Operational Plan by 2007.**

| Activities | Timeframe |
|--|-----------|
| 1. Study/assess existing policies, legislations and administrative arrangements, review needs and objectives, and conduct social/stakeholder analysis to identify options on institutional | 2005 |

| | |
|--|-----------------------------|
| arrangements for the management of the Manila Bay Region. | |
| 2. Strengthen the Project Coordinating Committee as the interim National Coordinating Committee to coordinate the implementation of the Manila Bay Coastal Strategy and its Operational Plan until the Manila Bay Sustainable Development Council is established | 2005 |
| 3. Formulate and adopt a policy framework declaring Manila Bay as 'Water Quality Management Area' with a governing board (in accordance with the provisions of the Clean Water Act). | 1 st qtr. 2006 |
| 4. Draft appropriate institutional arrangements and legal mechanism. | 1st Qtr 2006 |
| 5. Lobby for the approval of the proposed institutional arrangements | 2nd Qtr 2006 - 4th Qtr 2006 |
| 6. Operationalize/implement the approved/appropriate institutional arrangement (staffing, budgeting) | 2007-2010 |

- *Success Criteria:* Operationalized the appropriate institutional arrangement for Manila Bay and declared Manila Bay as water quality management area
- *Total Budgetary Requirements:* PhP 2.65 M
- *Concerned Agency:*
Lead: MBEMP/PCC
Cooperating Agencies/Institutions/Partners: DENR, DBM, DILG, NEDA, DA, PCG, DOTC, DFA-MOAC, HLURB, DPWH, PS, NHI, PRRC, LGUs

Objective 3 - **Develop, set-up and operationalize Integrated Coastal Management (ICM) and Integrated River Basin Management system covering 100% of the Manila Bay Region by 2010.**

| Activities | Timeframe |
|--|------------|
| 1. Develop, implement and promote the Manila Bay-Pasig River-Laguna de Bay as a model of integrated coastal area and river basin management, using ecosystem-based | 2006 -2015 |

| | |
|--|-------------|
| management approach (including classification of Manila Bay and Pasig River). | |
| <p>2. Conduct the following activities:</p> <ul style="list-style-type: none"> - rapid appraisal - consultations - identification of key areas of concern - classification/re-classification of each river system, and - develop/formulate a criteria for prioritization <p>for the enumerated major river systems:</p> <ul style="list-style-type: none"> a. Pampanga River b. NCR Rivers (Parañaque, Las Piñas, Zapote rivers) c. Navotas-Malabon-Tullahan-Tenejeros d. Maragondon River (Cavite) e. Talisay River (Bataan) f. Angat Watershed and tributaries/major rivers g. Pasig - Marikina - San Juan (PAMARISAN) River h. Pasag River (Sasmuan, Masantol, Macabebe Pampanga) i. Pasig-Potrero River (Pampanga) j. Porac-Gumain River (Pampanga) k. Imus River (Cavite) | 2006 - 2008 |
| 3. Develop the integrated coastal area and river basin management plan and include required institutional arrangements and information network for the river systems identified in Activity | 2006 - 2007 |
| <p>4. Implement the integrated coastal area and river basin management plan of each river system</p> <p>Include:</p> <ul style="list-style-type: none"> - IIMS and Manila Bay Information Network - restoration/rehabilitation of habitats and resources - integrated land- and sea-use zoning - marine sanctuaries, riverside parks - investment opportunities in environmental facilities and services - existing projects | 2007 - 2010 |
| 5. Set-up and implement ICM in each coastal province, city and municipal government around the Bay area | 2007 -2015 |
| 6. Replicate best ICM practices | 2007 -2015 |

- *Success Criteria:* Integrated coastal management and river basin management Implemented with Mla.

Bay-Pasig River Laguna de Bay as Model for ecosystem based management approach; implemented and replicated ICM in each coastal city, province and municipalities around Manila Bay area;

- Total Budgetary Requirements: PhP 55.75 M
- Concerned Agency:

Lead: MBEMP/PCC

Cooperating Agencies/Institutions/Partners: DENR, LGUs, DILG, NEDA, DA, LLDA, MWSS, NIA, NPC, LWUA, PRRC, NIA, DFA, MMDA, DPWH, PS, CIVIL SOCIETY GROUPS

Objective 4 - **Create awareness, build capacity and mobilize at least 50% of the coastal communities to participate in activities related to the implementation of the MBCS by 2010.**

| Activities | Timeframe |
|--|----------------|
| 1. Conduct stakeholder analysis and awareness assessment of different stakeholders (local community, school children, local and national political leaders and functionaries, civil society, private) consistent with the Advocacy and Communications Plan of MBEMP. | 2005-2006 |
| 2. Update communication plan for the Manila Bay Coastal Strategy and its Operations Plan <ol style="list-style-type: none"> Target audience Strategy Programs Milestones Responsible offices Budgetary requirements | 2005-2006 |
| 3. Integrate lessons on pollution prevention, waste management as well as the protection of important natural and unique geological areas, historical, cultural, religious and architectural landmarks in the curriculum of primary, secondary and tertiary schools (focus on Manila Bay), and environmental activities in the NSTP/CWTS. NSTP - National Service Training Program CWTS - Civic Welfare Training Service | 2005 onwards - |
| 4. Organize and implement activities for school | 2006 - |

| | |
|--|-----------------------|
| <p>children/youth, e.g., ecological camps, youth fora, essay writing, drawing/painting contest, tree planting, coastal and river clean up, slogan and poster contest to build awareness and mobilize participation for the long-term management of pollution and the natural/ecological, economic and social values of Manila Bay region</p> | <p>onwards</p> |
| <p>5. Conduct Information, Education, and Communication (IEC) and advocacy program for national and local legislators, policy-makers, educators, industries, civil society groups, and other stakeholders</p> <ul style="list-style-type: none"> • Conduct of Manila Bay Summit • Disseminate policy briefs, case studies, and other IEC on: <ul style="list-style-type: none"> - pollution prevention and waste management (solid waste, sewage and industrial wastewater, toxic and hazardous waste) - restoration/rehabilitation, protection/conservation and management of habitats, natural values, historical, cultural, religious and architectural landmarks, and archaeological and unique geological sites in Manila Bay region - aquaculture zones, quota system and appropriate aquaculture methods and practices and their benefits - environmental impacts of unregulated application of feeds (inappropriate type of feeds, over-use of feeds) - impacts of illegal logging and deforestation and measures to restore forests and mangroves - impacts of illegal, destructive and unregulated fishing, and measures to address sustainable fisheries in Manila Bay region - tree planting and coastal and river clean-up activities among schoolchildren, youth, communities, civic and non-government organizations, private sector and LGUs - impacts of over-extraction of groundwater - water recycling and water use reduction - international conventions, national laws and regulations related to protection and management of the environment, natural - the contents of the CLUP, especially among those involved in processing building permits, housing permits, business permits, ECCs, etc., as well as the various | <p>2005 onwards -</p> |

| | |
|---|----------------|
| enforcement groups (e.g., Bantay Dagat groups, etc.) | |
| 6. Organize and implement community activities (civil society, industries, and other stakeholders) e.g., ecological camps, fora, essay writing, drawing/painting contest, tree planting, coastal and river clean up, bird watching, slogan and poster contest to build awareness and mobilize participation for the long-term management of pollution and the natural/ecological, economic and social values of Manila Bay region | 2006 onwards - |
| 7. Conduct capacity-building activities, including training workshops and pilot programs on environmentally-sound practices, alternative livelihood programs, environmental monitoring, environmental and resources management, critical and protected area management, and monitoring and evaluation programs for fisherfolks, aquaculture owners and operators, farmers, livestock growers, upland dwellers, informal settlers, industries, government employees, civil society groups, pollution officers, etc. on | 2006 - 2010 |
| 8. Promote corporate environmental and social responsibility in the private sector | 2006 onwards - |

- *Success Criteria:* Enhanced the awareness level of various Manila Bay stakeholders; conducted various trainings/workshops/dialogues; produced/disseminated IEC materials; and 50% of coastal communities mobilized/participated in activities related to MBCS 'activities implementation, e.g. river/coastal resource management and protection programs/activities
- *Total Budgetary Requirements:* PhP 25.25 M
- *Concerned Agency:*
Lead: DENR, MBEMP, DEPED & LGUs
Cooperating Agencies/Institutions/Partners: DENR, DILG, DTI, PIA, NCCA, PMO, KBP, Academe, NGOS, PS, Civil Society Groups, Public & Private Schools and concerned stakeholders

Objective 5 - Increase to at least 75% the number of LGUs within the Manila Bay region implementing development and investment programs through Public - Private Partnerships (PPP) by 2010.

| Activities | Timeframe |
|--|----------------|
| 1. Identify, document and disseminate to local officials, legislators, key NGAs, GFIs, and other stakeholders best practices involving partnership arrangements and experiences (within the Manila Bay Region and outside) | 2006 |
| 2. Develop guidelines on alternative partnership arrangements applicable to the Manila Bay Region for the implementation of environmental investment projects | 2006 |
| 3. Implement capacity-building programs for national government, LGUs and financing institutions to engage in PPPs and enhance private sector investments in pollution reduction and resource conservation projects | 2006 - Onwards |
| 4. Identify environmental investment opportunities and develop environmental investment packages/project proposals, and incentives (including appropriate guarantees, user-fee system and other cost-recovery scheme) to allow private sector participation | 2006 |
| 5. Conduct pre-feasibility studies, willingness-to-pay surveys and stakeholder consultations to assess viability and include the viable projects in the LGUs' Local Development Plan, of the projects for private sector participation. | 2006 - Onwards |
| 6. Negotiate and enter into agreements (with supporting resolutions and ordinances) with potential partners (local private partners, foreign donors, etc.) as well as financing institutions to develop, finance and implement the environmental investment projects | 2006 - Onwards |
| 7. Monitor and evaluate compliance to partnership commitments | 2006 - Onwards |

- *Success Criteria:* Partnership with various stakeholders forged and enforced through MOAs, demonstration projects and others; and 75% of the total LGUs within Manila Bay region implementing development and investment programs through PPP

- Total Budgetary Requirements: PhP 10.5 M

- Concerned Agency:

Lead: DENR, MBEMP, DOF, DBM, GFIS, and Key GOCCs

Cooperating Agencies/Institutions/Partners: DTI, DILG, PIA, KBP, PS, Academe, Civil Society Groups, Financing Institutions and Donor Agencies

Objective 6 - **Reduce by 25% the illegal settlements, establishments and structures along coastlines, riverbanks and waterways by 2010 and prevent future reoccupation of these areas.**

| Activities | Timeframe |
|--|--------------|
| 1. Conduct inventory and assessment of structures, establishments and illegal settlements along coastlines, riverbanks and waterways. | 2006 |
| 2. Develop investment/financial plan on the: <ol style="list-style-type: none"> removal/relocation of structures and settlers (legal and illegal) development of relocation sites and livelihood programs for relocated settlers, and rehabilitation and protection of important natural, social and cultural sites along the coastlines, riverbanks and waterways. | 2006 |
| 3. Implement a program for the relocation of informal settlers living along the coastlines and waterways to meet the allowable TDLs/reduction targets, and users' fees system | 2006 - 2010 |
| 4. Develop and issue regulations, standards and guidelines concerning buffer setback zoning in beach areas, and allocation of areas for public recreational use, and building of tourism and port facilities. | 2006-2007 |
| 5. Implement buffer and setback zones along the beach/shores in accordance with the Integrated Land and Sea Use Plan This includes the: <ul style="list-style-type: none"> - adoption of the action plan and zoning scheme for the beach areas and foreshore areas - removal/relocation of structures in the zoned area | 2007 onwards |

| | |
|--|--|
| <ul style="list-style-type: none"> - setting up of protected areas/ sanctuaries for shorebirds and nesting sites of marine turtles - setting of appropriate berthing areas for artisanal fishing boats and jetties for coastal tourism establishments and industries | |
|--|--|

- *Success Criteria:* Operationalized the buffer and setback zones along beach/shores; Inventoried and assessed structures, establishments, and illegal settlements along coastlines, riverbanks and waterways; and developed investment/financial plan on removal/relocation of structures and settlers, livelihood implementation, and rehabilitation and protection of important natural, social and cultural sites along coastlines, riverbanks, and waterways.
- *Total Budgetary Requirement:* PhP 29 M
- *Concerned Agency:*
 Lead: LGUs, NHA, HLURB and DENR
 Cooperating Agencies/Institutions/Partners: LLDA, PCG, PPA, DOT, DPWH, NGOs, DILG, DOTC, NCCA, DA, DOE, PRA, GIFs and GOCCs

Objective 7 - **Develop and implement a Natural Hazards Contingency, Preparedness and Quick-Response System for the Manila Bay Region by 2008.**

| Activities | Timeframe |
|--|-----------|
| 1. Develop natural hazards map and identify risk and hazard-prone areas (flooding, land subsidence, earthquake, faultlines, volcanic eruption, lahar flow, flash flood and landslides, forest fires, tsunamis, red tide, fish kill) | 2006 |
| 2. Review the National Disaster Coordination Plan, and assess in relation with the needs of the Manila Bay Region. | 2006 |
| 3. Develop a Natural Hazard Contingency Plan and Response System with concerned agencies and sectors as well strengthen and protect natural defenses, e.g. mangrove, upland forest, etc. a. Identify the ecosystems, human settlements, and historical, cultural, religious, architectural, archeological and unique geological sites that are at | 2006 |

| | |
|---|-------------|
| <ul style="list-style-type: none"> b. Identify and develop mitigation measures c. Develop response system | |
| 4. Adopt and implement the contingency plan and response system. | 2006 - 2007 |

- *Success Criteria* : Established Emergency Quick Response Centers and implemented the contingency Plan for risk and hazards prone areas
- *Total Budgetary Requirements*: PhP 9.25 M
- *Concerned Agency*:
Lead: NDCC, DENR/MGB, NAMRIA & Philvocs
Cooperating Agency/Institution/Partner: DILG, DND, PNP, LLDA, BFAR, Academe, DOST, DSWD, PCC, NCCA, PAGASA, Civil Defense, LGUs & MMDA

Objective 8 - Develop and institutionalize a performance monitoring and evaluation system for Manila Bay Region by 2007.

| Activities | Timeframe |
|---|------------|
| 1. Develop appropriate monitoring and evaluation system for the Manila Bay Region (See M & E Strategy-Section 6.0) <ul style="list-style-type: none"> a. Review and assess existing monitoring and evaluation (M& E) programs b. Incorporate the output of the Pilot Integrated Environmental Monitoring Program (IEMP) and Risk Assessment including performance indicators/standards c. Delineate and clearly define roles and responsibilities of LGUs, NGAs, private sectors, communities in the monitoring and evaluation of programs/projects/activities in Manila Bay | 2006-2007 |
| 2. Institutionalize the M & E system developed | 2006 -2008 |
| 3. Institutionalize the IIMS and MBIN | 2006- 2008 |
| 4. Conduct training on capacity-building of stakeholders (LGUs, communities, national government agencies, etc.) on M&E; IIMS | 2006- 2008 |
| 5. Mobilize communities (including indigenous peoples, women, and other vulnerable sectors) | 2005- 2025 |

| | |
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| and other stakeholders for data generation, monitoring, law enforcement, etc. | |
| 6. Develop voluntary agreements (e.g., self-regulation, disclosure, etc.) with industries, hospitals, commercial and tourism enterprises operating in the Manila Bay area | 2006-onwards |
| 7. Assist industries towards implementation of Environmental Management System (EMS) and pollution prevention programs through Phil Environment Partnership Program (PEPP) | 2006- 2008 |
| 8. Implement the Eco-watch and Baywatch programs as monitoring and incentives programs (including regular fora, web-based and public consultations) | 2005- 2015 |

- *Success Criteria:* Appropriate monitoring and evaluation system for Manila Bay region developed, adopted and implemented

- *Total Budgetary Requirements:* PhP 17.4 M

- *Concerned Agency:*

Lead: DENR-MBEMP and LGUs

Cooperating Agencies/Institutions/Partners: PCC members, Private Sector, PCG, DOT and MARINA.

3.3.2 Water Pollution



- *Goals:* Protect the waters in Manila Bay and its tributaries (rivers and lakes) and ensure that they are safe for various uses (e.g., recreation, irrigation, transportation, fisheries and other living resources, source of potable water).

- *Objective and Activities*

Objective 1 - Reduce by 50% the discharges of raw sewage, septage and untreated and inadequately treated wastewater (i.e. commercial, industrial, agricultural, and fisheries/aquaculture) by 2015.

| Activities | Timeframe |
|--|------------|
| 1. Conduct study to <ul style="list-style-type: none"> (a) identify point sources and determine total discharge loading (TDL) of raw sewage and other key parameters from domestic sources; (b) determine pollution loadings from fisheries and aquaculture and from farmlands & livestock industries; and, (c) determine pollution loadings from manufacturing industries and commercial establishments, into the following river systems: <ul style="list-style-type: none"> a. Pampanga River b. NCR Rivers (Parañaque, Las Piñas, Zapote rivers) c. Navotas-Malabon-Tullahan-Tenejeros d. Maragondon River (Cavite) e. Talisay River (Bataan) f. Angat Watershed and tributaries/ major rivers g. Pasig-Marikina-San Juan (PAMARISAN) River h. Pasag River (Sasmuan, Masantol, Macabebe Pampanga) i. Pasig-Potrero River (Pampanga) j. Porac-Gumain River (Pampanga) k. Imus River (Cavite) | 2006 -2007 |
| 2. Establish time-bound pollution-reduction targets for identified major point sources in the identified river systems. | 2006-2007 |
| 3. Enforce the ordinances on the installation and maintenance of adequate septic tanks on target households along the major river systems and all other areas directly or indirectly draining sewage to Manila Bay. | 2006-2007 |
| 4. Implement a pilot project on sewerage system in the Parañaque, Las Piñas and Zapote river system. | 2006-2007 |
| 5. (a) Prepare/update/implement investment plan/master plan for the establishment of sewerage systems/sewerage treatment plants (STPs) for the priority point sources in the other | 2006 |

| | |
|--|-----------|
| major rivers to meet the allowable TDL/reduction targets by 2015 (b) prepare & Implement Investment Plan for common waste water treatment facilities (WWTF) in key industrial areas and economic zones | |
| 6. Construct sewerage systems and centralized sewage treatment facilities (CSTF) in priority areas, including subdivisions and housing projects, based on the reduction targets and investment plan - monitor the implementation of MWSS programs/concessionaire projects - leverage LGU and private sector investment, national government and local and external financing sources and/or access the Manila Bay Fund | 2006-2015 |
| 7. Develop guidelines, criteria, and standards for collection, treatment, recycling, and disposal of agricultural and aquaculture wastes | 2006 |

- *Success Criteria:* Timely report on point sources and pollution loadings, updated database/Integrated information Management System, adequate septic tanks installed and maintained by target households, sewerage system and Centralized sewerage treatment Facilities operationalized; policy instrument on the management of agricultural and aquaculture wastes.

- *Total Budgetary Requirements:* PhP 2,557.5 M

- *Concerned Agencies:*

Lead: MWSS, DA-BFAR, DBM, DOF, NEDA, GFIs

Cooperating Agencies/Institutions/Partners: LGUs, DA, DENR, PRRC, water concessionaires, LLDA, DOH, DOST, PCAP Inc., MMDA, DFA-MOAC, Homeowners, Maynilad, LWUA, WDs, DPWH, HUDCC/HLURB, PEZA, CREBA, and GOCCs

Objective 2 - Establish integrated solid waste management plans and programs in all LGUs by 2007.

| Activities | Timeframe |
|---|-----------|
| 1. Reconstitute, strengthen and build capacity of functional solid waste management (SWM) | 2006 |

| | |
|---|----------------------------------|
| Boards and Brgy. Solid Waste Committees to prepare and implement the 10-year SWM Plans | |
| 2. Develop a Waste Management Plan for Manila Bay Region and Investment Plans for SWM systems (collection, transport, disposal, segregation, recycling, and composting) in major LGUs (cities and municipalities) <ul style="list-style-type: none"> - at least 1 per city/cluster of municipalities for each province - get support of key NGAs, GFIs, IFIs, and other donor agencies | 2006 |
| 3. Convert existing open dumpsites into 'controlled dumpsites'. | 2006 |
| 4. Implement the 10-year SWM Plan <ul style="list-style-type: none"> 4a. Establish and implement waste reduction, storage, collection, transport, disposal and treatment system for SW from household, commercial and industrial establishments 4b. Construct MRFs (for sorting and recycling) and composting facilities based on Investment Plan 4c. Construct sanitary landfill for the disposal of residual waste 4d. Develop strategic partnership and leverage LGU and private sector investment, national government and local and external financing sources and/or access the Manila Bay Fund | 2006 onwards 2006 onwards |
| 5. Prohibit the operation of open dumpsites. | 2006 |

- *Success Criteria:* Functional SWM Boards and Committees in every LGU; implemented 10-year SWM Plans in every LGU; no open and/or controlled dumpsites; operating MRFs and/or MRSs in key barangays/municipalities; operating sanitary landfills
- *Total Budgetary Requirements:* PhP 12,674 M
- *Concerned Agencies:*
Lead: LGUs and NSWMC
Cooperating Agencies/Institutions/Partners: DENR-EMB, DILG, MMDA, NGOs, DOH, BOI, NEDA, DepEd, MGB, DOJ, IBP

Objective 3 - **Develop and implement toxic and hazardous waste management system by 2008.**

| Activities | Timeframe |
|--|------------------|
| 1. Mandatory registration of: a. all hazardous waste generators b. importation and use of new chemicals, and update database on sources, volume of waste generated by type | 2006 onwards |
| 2. Update the existing feasibility studies and implement the investment plan for an integrated toxic and hazardous waste (THW) management system (collection, transport, recycling, and treatment of hazardous waste and proper disposal of treated hazardous wastes). - in special economic zones - in key industrial areas - healthcare wastes | 2006 |
| 3. Implement the integrated storage, treatment, and disposal (STD) plan 3a. Construct and operate a THW management facility (including collection, transport, recycling, treatment and proper disposal) 3b. Require all generators to use the THW management facilities (integrated STD) - part of Environment Compliance Certificate (ECC) 3c. Require all importers/exporters of THW to secure permit/ clearance from EMB | 2006 onwards |
| 4. Implement segregation of healthcare/hospital/toxic/hazardous wastes and prevent mixing with municipal solid waste. | 2006 onwards |

- *Success Criteria:* Updated registration database/IIMS, operating integrated STD system, compliance to ECC Monitoring system for ECC compliance, hospital and other medical institutions implementing segregation of toxic/hazardous wastes
- *Total Budgetary Requirements:* PHP 2,340 M
- *Concerned Agencies:*
Lead: Private Sector/industry Association (Ind-Estate, World-Bank/IFC, ADB)

Cooperating Agencies/Institutions/Partners: LGUs, EMB-DENR, PEZA, THW generators, chemical industries, Inter-agency technical advisory council, DOH, PNRI, DFA-MOAC, DOF-Bureau of Customs, NSWMC, DOST, DOJ, IBP

Objective 4 - **Stop sea-dumping of sewage, industrial sludge, solid waste, and contaminated dredged materials in Manila Bay by 2006.**

| Activities | Timeframe |
|--|-----------|
| 1. Identify sea dumping activities (e.g. dredged materials, septage sludge, solid waste, toxic & hazardous waste, etc.). | 2006 |
| 2. Identify companies with dumping permits. | 2006 |
| 3. Identify, develop and implement guidelines on alternative land-based disposal sites, treatment and disposal methods. | 2006 |
| 4. Issue and enforce moratorium on sea dumping and prohibit future dumping - formulate implementing rules and regulation (IRR) - draft and issue A.O. and other relevant regulations | |
| 5. Revoke licenses and permits of dumping | 2006 |

- *Success Criteria:* no more sea dumping activities, availability of an alternative land-based disposal system
- *Total Budgetary Requirements:* PhP 7.5 M
- *Concerned Agencies:*

Lead: PCG, DENR-EMB

Cooperating Agencies/Institutions/Partners: MARINA, DFA-MOAC, DPWH, MWSS, MMDA, LLDA, BFAR,

Objective 5 - Stop discharges of operational waste (e.g., oily bilge and ballast water) from ships (cargo, passenger, tankers, fishing boats/ships, etc.) and the use of anti-fouling paints with TBTs and other harmful compounds by 2006.

| Activities | Timeframe |
|---|--------------|
| 1. Estimate the volume of discharges by type of waste and source | 2005-2006 |
| 2. Construct/install shore reception facilities in major ports (e.g., PPA ports, Navotas fish port, Cavite ports, Bataan ports, public private ports) as part of the masterplan | 2006 onwards |
| 3. Identify environment-friendly paints and anti-fouling chemicals for all ships and boats | 2005-2006 |
| 4. Implement guidelines on the following: 4a. discharges of operational waste from ships 4b. use of harmful paints and anti-fouling chemicals | 2005-2006 |
| 5. Develop and implement "Port Safety and Environmental Management System" | 2005-2006 |

- *Success Criteria:* operating shore reception facilities, alternative environment friendly paints and anti-fouling agents
- *Total Budgetary Requirements:* PhP 156.5 M
- *Concerned Agencies:*
Lead: PCG, PPA, MARINA & DENR-EMB
Cooperating Agencies/Institutions/Partners: Shipping Industry Associations, PCGA, Phil. Fisheries Development Authority, DFA-MOAC, BFAR, NEDA, DOST, Fish Port Authority

Objective 6 - Activate a bay-wide, multi-sectoral oil spill prevention and quick response program by 2006.

| Activities | Timeframe |
|---|-----------|
| 1. Finalize and adopt the "Manila Bay Oil Spill Contingency Plan" | 2005 |
| 2. Implement the 'Masterplan for Maritime Safety' | 2005 |

| | |
|--|------|
| and put in place navigational aids and vessel traffic separation (VTS) scheme | |
| 3. Pilot test Manila Bay Oil Spill Contingency Plan | 2006 |
| 4. Promote ratification of the Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) | 2006 |

- *Success Criteria:* Navigational aids and vessel traffic separation (VTS) scheme, ratified OPRC
- *Total Budgetary Requirements:* PhP 6.2 M
- *Concerned Agencies:*

Lead: PCG

Cooperating Agencies/Institutions/Partners: DOTC, PPA, MARINA, EMB-DENR, other agencies represented by TWG, petroleum companies, DFA-MOAC, shipping companies, DND

3.3.3 Over-Exploitation and Degradation of Habitats and Historical, Cultural, Religious, Archeological and Unique Geological Sites



- **Goals:** Ensure protection, restoration and sustainable development of resources, habitats, natural areas, and historical, cultural, religious and archeological sites that are essential in achieving the ecological, social, and economic well-being of communities and stakeholders in the Manila Bay region
- *Objectives and Activities:*

Objective 1 - **Set-up sustainable institutional arrangements and management programs in all declared Protected Areas (PAs) and Critical Habitats in the Manila Bay Region by 2012.**

| Activities | Timeframe |
|--|-----------|
| 1. Identify and assess existing and proposed Protected Areas (PAs) and critical habitats in the Manila Bay region and key habitats and resources to be designated as Protected Areas and critical habitats, including those declared and proposed by LGUs | 2005-2007 |
| 2. Prepare detailed Protected Area and Critical Habitat Management Plan in the Manila Bay region based on the approved integrated land and sea-use zoning plans to include but not limited to: <ul style="list-style-type: none"> - Plan for the protection and restoration/ rehabilitation of the following habitats: (Including guidelines, criteria and procedures): <ul style="list-style-type: none"> a. coral reefs, b. seagrass beds, c. mangroves, mudflats d. swamps (e.g., Candaba Swamps), e. inland and other wetlands, and, f. forests - Designation/delineation of: <ul style="list-style-type: none"> a. fishing area and fish sanctuaries b. mangrove and mudflat sanctuaries c. sanctuaries for rare and endangered species (turtles, birds, other wildlife) d. buffer zones e. setback zones for beach areas f. river easements g. eco-tourism sites h. national parks - Guidelines and criteria - Consultations with concerned government units/agencies, LGUs, NGOs, informal settlers, and other stakeholders for the finalization of the PA Management Plan and capacity building for implementation of the PA Mgt. - Roles and responsibilities of each agency/sector involved in the implementation - Monitoring and evaluation system - Management of invasive species | 2005-2007 |
| 3. Establish/restore and manage designated | 2006 |

| | |
|---|---------|
| <p>Protected Areas and critical habitats together with LGUs, POs, NGOs, concerned NGAs, academe, private sector, donor agencies, and other stakeholders in accordance with the PA Mgt. Plan</p> <p>3.1. Establish and manage sanctuaries/protected areas (e.g., fish, mangroves and mudflats, forests, swamps, birds/turtles/wildlife, etc.)</p> <p>3.2. Establish the Candaba Swamps as bird sanctuary and national park, in view of being declared as a Ramsar site</p> <p>3.3. Maintain existing national parks in each province/ municipality/city, including adoption of users fee system and community-based resource management programs</p> | onwards |
|---|---------|

- *Success Criteria:* Establishment/restoration and management of designated Protected Areas (PAs), sanctuaries and critical habitats; and Institutional arrangements and management programs in all declared Protected Areas (PAs) and critical habitats implemented
- *Total Budgetary Requirement:* P 20 M
- *Cooperating Agency:*
Lead: DENR, PAWB & LGUs
Cooperating Agencies/Institutions/Partners: NAMRIA, LLDA, HLURB, LGUs, DILG, DA-BFAR, DOT, PTA, NGOs, POs, Civic organizations, Academe, DA, PCG, DFA-MOAC (Maritime and Ocean Affairs Center), FARMCs, Communities affected, PRRC

Objective 2 - **Implement a no net loss policy for existing mangroves, mudflats, shorelines, beaches and sandy shores by 2010.**

| Activities | Timeframe |
|---|-----------|
| 1. Review results of Integrated Environmental Monitoring Program (IEMP) and assess the condition of the existing mangrove areas and mudflats. | 2005 |
| 2. Prepare detailed rehabilitation and management plan for mangrove and mudflat areas | 2006 |

| | |
|---|---------------------|
| <p>Include:</p> <ul style="list-style-type: none"> - Mangrove reforestation under the Community-based Forest Management Framework - Revert back abandoned fishponds into mangrove areas (if gov't. property or untitled; for privately owned in cooperation with owners) - Measures/actions to prohibit further decrease of mangrove and mudflat areas due to conversion into aquaculture and salt beds, land reclamation for human settlement, industrial development, removal for fuel wood, pollution and sedimentation as a result of upland and upstream activities, pest infestation, among others - Mobilize/strengthen community organization/ associations - Monitoring and evaluation system, including list of indicators to determine whether or not objectives of the plan are achieved - Inventory of titled mangrove areas | |
| <p>3. Conduct consultations with LGUs, NGO, IP and community stakeholders, and prepare Action Plan for the rehabilitation and sustainable mgt. of mangroves and mudflats</p> | <p>2006</p> |
| <p>4. Implement Action Plan for rehabilitation and maintenance of mangroves and mudflats</p> <ul style="list-style-type: none"> 4.1. Organize and mobilize community organizations, associations, NGOs and private sector for the mangrove reforestation 4.2. Restore/revert back into mangroves all abandoned fishponds 4.3. Reforest mangrove areas through community-based management approach (if gov't. property or untitled; for privately owned in cooperation with owners) 4.4. Provide livelihood programs for communities managing and protecting the mangrove and mudflat areas 4.5. Establish Mangrove and Bird Sanctuary in the Reclamation Area (as model for eco-tourism in mangrove areas) 4.6. Promote regular clean-up activities in the mudflat areas with the communities and LGUs | <p>2006-2010</p> |
| <p>5.a. Review and reconcile existing laws and ordinances on the following:</p> | <p>2005 onwards</p> |

| | |
|---|--------------|
| <ul style="list-style-type: none"> - conversion of mangroves and mudflats into fishponds and shrimp ponds - reclamation, dredging and dumping activities in mangrove and mudflat areas - cutting of mangroves and filling in of mudflat areas for resettlement, tourism, industrial and commercial areas - unify all municipal fisheries ordinances <p>5. b. Enforce the laws and ordinances.</p> | |
| 6. Monitor progress of the Action Plan for mangrove and mudflat rehabilitation and management | 2006 onwards |
| 7. Conduct rapid assessment of the entire stretch of shorelines along Manila Bay, and review current activities/structures, related policies, regulations and permitting system, and proposed plans, programs and projects to be implemented along the foreshore areas. | 2006 |
| 8. Prepare masterplan for the development of foreshore areas in accordance with the integrated land-and sea-use plan and the integrated watershed and coastal area management framework, including: <ul style="list-style-type: none"> - appropriate methods for the restoration of damaged beaches/shores, and mitigation of coastal erosion; - rehabilitation and protection of mangroves, which serve as natural barriers to shoreline updrift and pro-gradation; and, - Action plan for the Manila Bay Region prepared by the stakeholders | 2006 - 2007 |
| 9. a. Issue moratorium on: <ul style="list-style-type: none"> - mining/quarrying of sand from rivers - reclamation of shallow coastal waters to build housing and tourist establishments <p>9. b. Enforce laws on:</p> <ul style="list-style-type: none"> - mining/quarrying of sand from beaches - dumping of garbage, sludge and dredged materials along beaches/shores | 2006 |
| 10. Implement programs/projects on beach nourishment/ stabilization and mitigation measures to address coastal erosion. (to be coordinated with implementation of the Integrated Forestry Development and Management Plan, the restoration and protection activities for mangroves and mudflats). | 2006 onwards |
| 11. Implement the Eco-watch and Blue Flag system | 2006 onwards |

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| in the Manila Bay area to monitor beach and coastal water quality, and to provide incentives for beach protection. | |
| 12. Develop and issue guidelines and standards for coastal road construction, and enhancement of scenic view along the coasts. | 2006 |

- *Success Criteria:* Rehabilitation and management plan for mangroves and mudflats developed and implemented; Master plan for foreshore areas in accordance with the integrated land-and-sea use plan and the integrated watershed and coastal management framework developed; Abandoned fishponds and mudflats reverted and restored to mangroves; Areas reforested and managed through community-based approach; Environment friendly livelihood programs provided; Model mangrove and bird sanctuary established; Cases on illegal activities utilizing mangroves and mudflats filed and prosecuted; Erosion mitigation programs/projects implemented; Beach nourishment/stabilization programs implemented; and Eco-watch/Blue flag system in place
- *Total Budgetary Requirement :* P 5.6 M
- *Concerned Agency:*

Lead Agency: DENR-FMB, DA-BFAR, PRA, and DPWH

Cooperating Agencies/Institutions/Partners: NAMRIA, MGB, Phil. Coast Guard, PPA, HUDCC, HLURB, MMDA, DOE, NPC, DA-BFAR, DA-BSWM, NGOs, Pos, FMB, LLDA, DOST-PCMARD, LGUs, DILG, DENR-CMMO, PAWB, DOT-PTA, NCIP, PNP, , PCG, Navy, Private sector, communities affected, civic organizations, cooperatives, DTI, TLRC, DepEd (Alternative Learning System), rural banks, hotel, resort and restaurant owners and operators, coastal industries, UP College of Engineering

Objective 3 - Increase by "80%" the forest cover in the entire Manila Bay watershed area by 2015.

| Activities | Timeframe |
|--|-----------|
| 1. Update maps on watershed boundaries/characteristics in Manila Bay region, and the Manila Bay IIMS | 2006 |

| | |
|--|--------------|
| 2. Identify and assess the implementation of various national and local programs/projects/activities related to forest management policies and forest restoration/rehabilitation programs | 2006 |
| 3. Develop Integrated Forestry Development and Management Plan (IFDMP) for the Manila Bay region | 2006-2007 |
| 4. Conduct consultation/ workshop on the finalization of Integrated Forestry Development and Management Plan (IFDMP) | 2006-2007 |
| 5. Implement the IFDMP 5.1. Reforest open and denuded areas and protect forest resources through appropriate arrangements, e.g., Community-based Forest Management (CBFM), Industrial Forest Management Agreements (IFMA), Socialized Industrial Forest Management Agreements (SIFMA) 5.2. Undertake appropriate riverbank stabilization projects 5.3. Package investment opportunities for CBFM projects 5.4. Monitor and implement forest land use (mapping of forest and non-forest boundaries, ground survey, demarcation, etc.) 5.5. Grant appropriate security of tenure to upland dwellers 5.6. Provide technical assistance to the private sector and NGOs in the establishment of industrial forest plantations 5.7. Apply appropriate economic instruments to capture resource rents 5.8. Provide alternative livelihood programs/projects 5.9. Establish eco-tourism programs 5.10. Undertake intensified forest protection campaign on forest fires and illegal logging. | 2007-onwards |
| 6. Enforce laws, regulations, and ordinances on illegal logging within the Manila Bay region. | 2006 Onwards |

- *Success Criteria:* Open/denuded areas rehabilitated and reforested; Kilometers of riverbanks stabilized and rehabilitated; number of tenurial rights issued; Investment opportunities and CBFM projects packaged; number of livelihood programs implemented; eco-tourism sites/projects established; Illegal loggers

apprehended; Forest products, equipment and conveyances confiscated; and cases filed in court and resolved/decided

- Total Budgetary Requirement : P539.50 M

- Concerned Agency:

Lead: LGUs, City Government, POs, NGOs and DENR (NCR, Regions 3 & 4A)

Cooperating Agencies/Institutions/Partners: DENR, NAMRIA, NWRB, LGUs, DA-BSWM, DPWH, MGB, PHIVOLCS, HLURB, DA, Academe, DILG, NEDA, DTI, , NGOs, POs, , DOT, DPWH, NIA, Private Sectors, PNP, NCIP, Media, Office of the President, PNP, Judiciary, IBP-Environmental Ombudsman, and MMDA

Objective 4 - **Formulate and implement a restoration and maintenance program for important cultural, historical, religious and architectural landmarks and archeological and unique geological sites within the Manila Bay Region by 2010.**

| Activities | Timeframe |
|--|--------------|
| 1. Conduct inventory and assessment of all cultural, historical, architectural, religious and archeological sites. | 2006-2007 |
| 2. Conduct study on carrying capacities and appropriate management approaches for important cultural, historical, religious, archeological, architectural and unique geological sites, including criteria and guidelines for preservation/ rehabilitation/ restoration | 2006-2007 |
| 3. Develop management plan to restore and maintain important cultural, historical, religious, archeological and unique geological sites, including: - legal and financial mechanisms - monitoring and enforcement system | 2006-2007 |
| 4. Restore/rehabilitate/preserve cultural, historical, religious, archeological, architectural, and unique geological sites, in accordance with the criteria and guidelines | 2006-onwards |
| 5. Include the criteria/guidelines for | 2006 |

| | |
|--|----------------|
| preservation/ rehabilitation/ restoration of important cultural, historical, religious, archeological, architectural and unique geological sites in the Environmental Impact Assessment (EIA) criteria for evaluation of development projects | |
| 6. Formulate and implement restoration and maintenance program to ensure the preservation of important cultural, historical, religious, archeological, architectural and unique geological sites, including the establishment of: - tourism guidelines using information on carrying capacities of prioritized sites - users fee schemes & enforcement system - standards and certification program | 2006-onwards |
| 7. Incorporate the zoning, protection, restoration/rehabilitation and maintenance of cultural, historical, religious and architectural landmarks and archeological and unique geological sites into local and national development plans, and land-use plans (CLUPs) | 2006 onwards - |

- *Success Criteria:* Management Plan for the restoration and maintenance of important cultural, historical, religious, archeological and unique geological sites developed; restoration and maintenance programs formulated and implemented; preserved sites restored/rehabilitated; and tourism guidelines using information on carrying capacity of prioritized sites, user fee schemes and enforcement system, and standard and certification program
- *Total Budgetary Requirement:* P226.80 M
- *Concerned Agency:*
Lead Agency; NCCA, National Museum, DOT, HLURB & LGUs
Cooperating Agencies/Institutions/Partners: DENR-EMB, NHI, Academe, DOST, DENR, NEDA, DILG, MMDA, NGOs, POs, National Museum, LLDA, NCCA

Objective 5 - Increase the productivity of fishery resources within the Manila Bay Region to attain the maximum sustainable yield (MSY) by 2020.

| Activities | Timeframe |
|---|-----------|
| 1. a. Conduct study on fish stock trends, diversity of pelagic, demersal and fresh water fish and other ecologically important species, and determine feasible, socially accepted resource management intervention 1.b Conduct study on maximum sustainable yield (MSY) and maximum economic yield (MEY) for pelagic, demersal and fresh water fish in Manila Bay Region, and the open and closed seasons and areas for harvesting commercially and ecologically important species 1.c. Conduct study on the trends of fish kills due to red tide and determine biotoxicity for sediments, fish and shellfishes | 2006 |
| 2. Conduct socio-economic survey of the coastal population- including fisherfolk, current fish catch, fishing effort | 2006 |
| 3. Determine and evaluate appropriate regulatory/legal and economic instruments (moratorium on commercial fisheries, open/close season for fishing, licensing and permitting system) in Manila Bay Region | 2006 |
| 4. Develop integrated plan for sustainable fisheries in Manila Bay region, consistent with the Fisheries Code Include but not limited to: <ul style="list-style-type: none"> - Integrated Coastal Management (ICM) program - sustainable fishing methods and practices - appropriate policy instruments - fishing areas/zones - fish sanctuaries; no-catch zones - open and closed seasons and areas for commercially and ecologically important species - alternative livelihood programs and support services - institutional arrangements - infrastructure system - detailed work and financial plan - non-intro of exotic, alien or destructive species | 2006-2007 |

| | |
|--|--------------|
| <ul style="list-style-type: none"> - reduction of population of exotic species detrimental to indigenous aquatic species - monitoring of fishery resources and activities | |
| <p>5. Implement the integrated plan for sustainable fisheries (for entire bay and each region)</p> <p>5.1. Establish fishing areas and fish sanctuaries (in accordance with the integrated land-and sea-use plan/zoning scheme)</p> <p>5.2. Implement the designated closed season for harvesting commercially and ecologically important species and designated closed areas for identified migration routes of commercially and ecologically important fish species.</p> <p>5.3. Implement existing laws and policies on commercial fishing, trawling, and other illegal fishing methods in Manila Bay.</p> <p>5.4. Provide communities with appropriate alternative livelihood programs and support services (e.g., mussel culture, seaweeds farming, mudcrab fattening, microfinance, etc.).</p> <p>5.5. Construct/rehabilitate fish ports with fish storage and other necessary facilities and market road network.</p> | 2008-onwards |
| <p>5.6. Allocate and construct berthing areas for artisanal fishers.</p> <p>5.7. Institutionalize the IEMP, specifically the monitoring system for fishery resources and fishing effort in the Manila Bay region.</p> <p>5.8. Implement Fishery Code RA 8850.</p> | |
| <p>6. Establish permitting and licensing system for municipal fishing in Manila Bay Region, and track the number of fisherfolks and fishing effort.</p> | 2006-2007 |

- *Success Criteria:* Integrated Plan for sustainable fisheries developed and implemented; resolution and ordinances (moratorium on commercial fisheries, illegal fishing gears, boats, and fish corral operations; designated open/close seasons; fish sanctuaries) passed; number of fish sanctuaries established; violators apprehended/penalized; fish ports with fish storage and other necessary facilities constructed; Kilometers of fish port/farm-to-market roads constructed/ rehabilitated; number of berthing areas for artisanal fishers established; and permitting and licensing system for municipal fishing established
- *Total Budgetary Requirement:* P125 M

- *Concerned Agency:*

Lead Agency: DA-BFAR LGUs, LLDA

Cooperating Agencies/Institutions/Partners: DOST-PCMARD, NFRDI, DENR, EMB, LLDA, NGOs, Pos, LGUs, DILG, FARMCs, DPWH, PRA, PPA, Private Sector, PCG

Objective 6 - **Achieve sustainable and ecologically-sound aquaculture and mariculture production in Manila Bay Region by 2015.**

| Activities | Timeframe |
|---|--------------|
| 1. Conduct study on carrying capacity for aquaculture and mariculture in Manila Bay region | 2006-2008 |
| 2. Conduct inventory of owners and operators (both with permits and without permits) and assessment of the aquaculture and mariculture farms/industries in Manila Bay relative to its carrying capacity and net socio-economic benefits | 2006-2007 |
| 3. Review and assess appropriate policy instruments and develop guidelines, aquaculture and mariculture standards, and regulations concerning implementation, monitoring and enforcement of: <ul style="list-style-type: none"> - users fee, quota system and other economic instruments - appropriate technology, methods, practices, feeds (type and application methods) and specifications for the pens/cages/ponds (e.g., size of mesh, distance of poles, etc.) | 2006-2008 |
| 4. Based on the integrated land- and sea-use plan, delineate areas for aquaculture and mariculture, and establish quota system in accordance with the carrying capacity. | 2007-2015 |
| 5. Require owners and operators to apply appropriate aquaculture and mariculture methods and practices | 2006 onwards |
| 6. Revoke permits of aquaculture and mariculture farms in areas that are not designated for aquaculture and mariculture production, and remove all illegal pens/cages/ponds in Manila Bay and Laguna de Bay. | 2006-onwards |
| 7. Restore production of windowpane oyster and seaweeds (as alternative livelihood) in | 2006-onwards |

| | |
|---|--|
| appropriate sites with appropriate LGUs, POs, NGOs, private sector and donor agencies | |
|---|--|

- *Success Criteria:* Zoning system for aquaculture and mariculture areas in place; areas for aquaculture and mariculture delineated; quota system for aquaculture and mariculture production established; aquaculture and mariculture farm permits not in designated areas revoked; Illegal pens/cages/ponds removed; and Production of window pane oysters and seaweeds as alternative livelihood restored
- *Total Budgetary Requirement:* P 6.75 M
- *Concerned Agency:*
 Lead: DA-BFAR, LGUs & DOST-PCMARD
 Cooperating agencies/Institutions/Partners: DENR, DOST-PCMARD, NFRDI, LLDA, Academe, LGUs, DILG, HLURB, DOST, DENR, private sector, NGOs, Pos

Objective 7 - **Increase coverage of water supply distribution system by 50% in areas with unsustainable groundwater extraction to protect aquifers from contamination and salt-water intrusion by 2015.**

| Activities | Timeframe |
|--|-----------|
| 1. Conduct study/collate/update information on: <ol style="list-style-type: none"> a. the incidence of salt-water intrusion and land subsidence around Manila Bay b. extent of groundwater use (profile of users, volume and rate of extraction) c. current state of the aquifers d. existing water supply from surface water and groundwater e. current and projected water demand by sector and location f. potential surface water sources g. priority municipalities/cities h. contamination due to leachate from dumpsites, gasoline stations, etc. i. review of permitting system and fee system for groundwater users j. abandoned deepwells k. technologies related to recharging of aquifers | 2007-2008 |

| | |
|---|--------------|
| 2. Conduct feasibility studies and develop investment plan to expand coverage and supply of surface water to coastal areas, areas outside of the central distribution system of MWSS, and other water districts. | 2006-2007 |
| 3. Develop groundwater management plan, including the establishment of time-bound targets to reduce groundwater extraction and allow the recovery of aquifers, conservation (ERs) and other demand-side management measures | 2006 |
| 4. Construct water supply facilities (from surface water; Level III service) in coastal areas, areas outside of the central distribution system of MWSS, and other water districts with critical water requirements and salt-water intrusion problems. | 2007 onwards |
| 5. Construct/rehabilitate irrigation systems and rehabilitate multi-purpose water reservoirs to increase water availability for agricultural and municipal use, including programs to mitigate erosion, siltation and sedimentation to prolong lifespan of water reservoirs | 2007 onwards |
| 6. Develop and issue guidelines and standards on water use reduction technologies and processes, water recycling, groundwater extraction, and post-closure of abandoned wells. | 2006-2008 |
| 7. Establish appropriate water pricing system to reflect full cost of groundwater use, surface water impoundment, treatment and distribution, and wastewater discharges. | 2006-onwards |
| 8. Establish monitoring and evaluation system for groundwater extraction, salt-water intrusion, land subsidence, and contamination of groundwater. - Collaboration with the National Water Information Network (NWIN) and Manila Bay Information Network (MBIN) | 2006 onwards |

- *Success Criteria:* Groundwater management plan developed; groundwater extraction reduced; Water supply system established; Irrigation systems rehabilitated/constructed; Water reservoir rehabilitated; siltation/erosion mitigation projects implemented; and water pricing system established;
- *Total Budgetary Requirement:* P 93.25 M

- *Concerned Agency:*

Lead: NWRB & DENR Concessionaires, LWUA and Water Districts, NIA, LWUA, and MWSS, DENR-EMB LWUA

Cooperating Agencies/Institutions/Partners: EMB, LLDA, DOST-PNRI, MGB, DA, NIA, DOE, NPC, MWSS, concessionaires, LWUA and Water Districts, LGUs, DOT, golf course owners, industries, DOH, DA, DTI-BOI, NWRB, DENR, DPWH, MWSS, MMDA, Cooperatives

4.0 Financing the Operational Plan for Manila Bay Coastal Strategy (OPMBS)

The OPMBCS requires a financial plan and strategy. The plan consists of proposed budgetary requirements/estimated financial costs, possible funding sources, and list of concerned agencies and partners.

The proposed budgetary requirements have included the funds allotted to some activities that are already existing and being carried out by concerned agencies as part of their mandate and approved PPAs.

4.1 Financing Requirements

The estimated financial requirements for OPMBCS identified activities are based on the figures derived from the estimation methodology adopted by the existing projects or previous projects as follows:

- a) Fixed
 - i. Capital
 - ii. Building,
 - iii. structures, equipment
 - iv. Quasi-fixed: wages, salaries
 - v. Etc.
- b) Variable
 - i. Operating and maintenance cost
 - ii. Acquisition of new technology and services
 - iii. Interest payments

The total financial requirements of the OPMBCS activities for short, medium and long-term are posted as follows:

4.1.1 Partnerships and Governance

For 2006-2010: PhP 149.95

- Capital : P 51.5 M
- Non-Capital: PhP 98.45 M

For 2011- 2015: PhP 14 M

- Capital: -
- Non-Capital: PhP 14 M

For 2016-2025: PhP 28.95 M

- Capital : -
- Non-Capital: PhP 28.95 M

4.1.2 Water Pollution

For 2006-2010: PhP 6.7 B

- Capital : PhP 6 B
- Non-Capital: PhP .7 B

For 2011- 2015: PhP 1.8 B

- Capital: PhP 1.8 B
- Non-Capital: P 7.5 M

For 2016-2025: PhP 95 M

- Capital: PhP 80.0 M
- Non-Capital: PhP 15.0 M

4.1.3 Overexploitation of Resources and Degradation of Habitats and Historical, Cultural, Religious, Archeological and Unique Geological Site

For 2006-2010: PhP 601.05 M

- Capital: PhP 262 M
- Non-Capital: PhP 339.05 M

For 2011- 2015: PhP 395.25 M

- Capital: PhP 20 M
- Non-Capital: PhP 376.25 M

For 2016-2025: PhP 70 M

- Capital : PhP 20 M
- Non-Capital: P 50 M

4.2 Funding Sources

In the selection of the financial strategy, the following factors were considered:

- The strategy used to solve existing environmental problems and prevent future potential problems;

- The choice of instrument: use of market and non-market solutions, or a combination of both to achieve efficient outcomes; and
- The partners in development - private sector participation, concerned citizens, non-government groups, international conservation groups, etc.

The OPMBCS recognizes that government has limited funds to finance its development programs. In this regard, there is a need to come-up with an effective and efficient financing program that will leverage investment in environmental infrastructures and services, protection of habitats, resources, and historical, cultural, religious, archeological and unique geological sites.

Thus, the OPMBCS is developed based on the existing mechanisms and other innovative approaches.

A mixture of market-based and non-market instruments is considered to be adopted to mobilize funds to support the implementation of the OPMBCS activities. Market-based instruments take the forms of incentives for companies to increase environmental investments. These include user charges and polluters fees; incentives for investing in technology (e.g. waste water treatment).

The non-market based instruments take the form of good performance of regulatory functions by the national and local governments which could generate funds as follows:

- a) Adoption of a good land use and development plan that expands and regulate economic activities thereby increasing real property tax and business taxes
- b) GFIs open credit windows for LGUs for Sanitary Landfill and waste water treatment facilities
- c) National government could provide needed capacity building of LGUs in the implementation of the Plan
- d) Inclusion of expenditures of OPMBCS in the operating budgets of the LGUs, NGAs and in the Priority Development Allocation Fund (PDAF) of representatives
- e) Public-Private Partnership
 - Build-On-Operate
 - Build-Operate-Transfer
 - Joint Ventures Agreements
 - Concession Agreement
 - Service/Management contracts
 - Multi-Stakeholder Partnership

- f) Attracting support from financing institutions and donors through replication of best practices; and
- g) Manila Bay Fund - A Manila Bay Fund will be set-up to pool resources from various National Government Agencies (NGAs), proceeds from users' fees, donor agencies/institutions, among others. The fund will be used to finance primarily the capacity building programs, assistance on how to prepare project proposal and access funds for overall implementation of the OPMNBC'S target activities.

A summary sheet indicating the list of concerned agencies/sector/partners, which will act as lead agency in the implementation of each activity identified in the OPMBCS, is presented in Table 2. The lead agency does not necessarily mean that the required budget for an activity will be shouldered by the identified agency. This only shows that the agency will need/require fund to be able to implement those activities under its jurisdiction).

5.0 Information, Education and Communication (IEC) Plan

The IEC Plan is one of the components of the OPMBCS. It is here where the clear message of the Manila Bay Plan is presented to the various stakeholders to solicit their support and cooperation in the implementation of various programs/projects/activities supportive of the OPMBCS. Its over-arching strategy is largely anchored on the strategies of Social Marketing/Social Mobilization/Alliance Building and Networking. Appropriate communication strategies and processes are followed to deliver the message which can initiate awareness, acceptance, endorsement, adoption, implementation and support by various stakeholders to OPMBCS different activities.

The Plan hinges on the principal message "*Bahagi Ka ng Obra*", which connotes that every stakeholder is part and parcel to the successful implementation of the Manila Bay Plan.

It is geared towards the attainment of the following objectives:

- 1) To create awareness and appreciation of stakeholders on the OPMBCS goals, objectives an action programs and projects;
- 2) To promote the OPMBCS for endorsement and adoption of the various identified stakeholders within the Manila Bay region;
- 3) To encourage the participation of stakeholders in the implementation of the OPMBCS; and

- 4) To encourage stakeholders' positive attitudes and practices supportive of the OPMBCS implementation.

The IEC Plan has a general and specific set of activities. General activity centers on the launching of the OPMBCS, involving all stakeholders, and specific areas of concern in the Manila Bay area as well as the long-term Coastal Strategy and the action plans as set forth in the Operational Plan, set in place appropriate institutional arrangements, and build strategic partnerships to mobilize resources for the implementation of the Operational Plan.

The following are among the suggested list of IEC activities:

Creating Awareness

- Prepare advocacy materials
- Develop radio-TV plugs
- Conduct press conferences
- Conduct fora, meetings, conferences, dialogues
- Conduct eco-tours and site visitation (bird watching, trekking, camping, etc.)

Endorsement and Adoption

- Conduct the Manila Bay Summit
- Conduct fora, meetings, dialogues with key stakeholders
- Sponsor 'kapihan'-style fora
- Identify and recruit legislators as well as other stakeholders as champions for OPMBCS advocacy and implementation

Sustaining Awareness and Implementation

- Solicit pledges of commitments
- Develop/compile/evaluate and present viable project proposals to funding institutions
- Develop and present co-management concepts to stakeholders
- Conduct techno-demos for Ecological Solid Waste Management (ESWM) as well as enterprises options
- Sustain the radio-TV plugs
- Sustain the development and dissemination of advocacy materials
- Conduct and/or link with special events/activities such as tree planting, clean-up activities, on-the spot drawing contests, photo contests, sports events, slogan-making contests, and other related activities/events
- Identify, disseminate and award best practices
- Establish partnership with Manila Bay stakeholders and concerned partners
- Sustain the inclusion of special areas of Manila Bay for eco-tourism related activities

6.0 Monitoring and Evaluation of the OPMBCS

The developed monitoring, evaluation and reporting plan for the OPMBCS outlines the steps that will be undertaken to ensure that the project/activity implementation is on track. Monitoring of project's intervention is essential to determine whether or not the project/activity has achieved the specified goals and objectives or determine the needs of the project/activity to improve its implementation.

The areas of monitoring cover the Physical Accomplishments (input-output), Financial Performance and Field Inspection. Guidelines on these are described including the source documents, report forms and flow of reports in the OPMBCS.

The other concern is the evaluation aspect. This pertains to periodic assessment of the relevance, efficiency, effectiveness, and impact of the project in relation to development objectives. The OPMBC proposes sample monitoring and evaluation sheet for the use of implementing agency/institutions/other partners.

The proposed monitoring, evaluation and reporting guidelines are described in this section of the OPMBCS.



Table 1 LINKING THE ISSUES/AREAS OF CONCERN TO MBCS AND REFINED RISK ASSESSMENT

| MANILA BAY COASTRAL STRATEGY | ISSUES/AREAS OF CONCERN | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|-------------------------|---|---|---|---|---|--|---|---|---|---|---|---|----------------------------|---|---|---|---|---|---|---|
| | WATER POLLUTION | | | | | | OVER-EXPLOITATION OF RESOURCES AND DEGRADATION OF HABITATS AND HISTORICAL, CULTURAL, RELIGIOUS, ARCHEOLOGICAL AND UNIQUE GEOLOGICAL SITES | | | | | | | PARTNERSHIP AND GOVERNANCE | | | | | | | |
| | Objectives | | | | | | Objectives | | | | | | | Objectives | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| PROTECT | | | | | | | | | | | | | | | | | | | | | |
| Objective 1 | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | | █ | █ |
| Objective 2 | | █ | █ | █ | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | | █ | █ |
| MITIGATE | | | | | | | | | | | | | | | | | | | | | |
| Objective 1 | | | | █ | █ | █ | | | | | | █ | | | | | | █ | █ | | |
| Objective 2 | █ | █ | █ | █ | █ | █ | | █ | | | █ | | | | | | | █ | | █ | █ |
| Objective 3 | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | | | █ | █ |
| DEVELOP | | | | | | | | | | | | | | | | | | | | | |
| Objective 1 | | | | | | | █ | █ | █ | █ | | | █ | | | █ | | | | █ | |
| Objective 2 | | █ | █ | █ | | | | | | | | | | | | | | | | | |
| Objective 3 | | | | | | | █ | █ | | | | █ | █ | █ | | | | | | | |
| Objective 4 | █ | | | | | | █ | | | █ | █ | | | | | | | | | █ | |
| COMMUNICATE | | | | | | | | | | | | | | | | | | | | | |
| Objective 1 | | | | | | | █ | █ | | | | █ | █ | | | | | █ | | | █ |
| Objective 2 | | | | | | | █ | █ | | | | | | | █ | █ | █ | | | | █ |
| Objective 3 | | █ | █ | █ | █ | | █ | █ | █ | █ | | | | | | | | | █ | | █ |
| Objective 4 | | █ | | | | | █ | █ | | | | █ | █ | | | | | | | | █ |
| Objective 5 | | | | | | | █ | █ | █ | | | | | | | | | | | | █ |

LEGEND: █ Direct Link █ Indirect Link

LINKING THE ISSUES/AREAS OF CONCERN TO THE MANILA BAY COASTAL STRATEGY AND REFINED RISK ASSESSMENT

| MANILA BAY COASTRAL STRATEGY | ISSUES/AREAS OF CONCERN | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|-------------------------|---|---|---|---|---|--|---|---|---|---|---|---|----------------------------|---|---|---|---|---|---|---|
| | WATER POLLUTION | | | | | | OVER-EXPLOITATION OF RESOURCES AND DEGRADATION OF HABITATS AND HISTORICAL, CULTURAL, RELIGIOUS, ARCHEOLOGICAL AND UNIQUE GEOLOGICAL SITES | | | | | | | PARTNERSHIP AND GOVERNANCE | | | | | | | |
| | Objectives | | | | | | Objectives | | | | | | | Objectives | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| DIRECT | | | | | | | | | | | | | | | | | | | | | |
| Objective 1 | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Objective 2 | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Objective 3 | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Objective 4 | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| ON RESOURCES | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 1 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Action Plan 2 | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| ON HABITATS | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 1 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Action Plan 2 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Action Plan 3 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Action Plan 4 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Action Plan 5 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| ON SHORELINE CHANGES | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 1 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Action Plan 2 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| ON BOTTOM TOPOGRAPHY | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 1 | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |
| Action Plan 2 | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ | █ |

LEGEND:  Direct Link  Indirect Link



LINKING THE ISSUES/AREAS OF CONCERN TO THE MANILA BAY COASTAL STRATEGY AND REFINED RISK ASSESSMENT

| MANILA BAY REFINED RISK ASSESSMENT | ISSUES/AREAS OF CONCERN | | | | | | | | | | | | | | | | | | | | |
|--|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|----------------------------|---|---|---|---|---|---|---|
| | WATER POLLUTION | | | | | | OVER-EXPLOITATION OF RESOURCES AND DEGRADATION OF HABITATS AND HISTORICAL, CULTURAL, RELIGIOUS, ARCHEOLOGICAL AND UNIQUE GEOLOGICAL SITES | | | | | | | PARTNERSHIP AND GOVERNANCE | | | | | | | |
| | Objectives | | | | | | Objectives | | | | | | | Objectives | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| ON ECOLOGICAL RISKS | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 1 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 2 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 3 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 4 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 5 | | | | | | | | | | | | | | | | | | | | | |

LEGEND:  Direct Link  Indirect Link

LINKING THE ISSUES/AREAS OF CONCERN TO THE MANILA BAY COASTAL STRATEGY AND REFINED RISK ASSESSMENT

| MANILA BAY REFINED RISK ASSESSMENT | ISSUES/AREAS OF CONCERN | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|----------------------------|---|---|---|---|---|---|---|
| | WATER POLLUTION | | | | | | OVER-EXPLOITATION OF RESOURCES AND DEGRADATION OF HABITATS AND HISTORICAL, CULTURAL, RELIGIOUS, ARCHEOLOGICAL AND UNIQUE GEOLOGICAL SITES | | | | | | | PARTNERSHIP AND GOVERNANCE | | | | | | | |
| | Objectives | | | | | | Objectives | | | | | | | Objectives | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| ON HUMAN HEALTH RISKS | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 1 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 2 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 3 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 4 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 5 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 6 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 7 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 8 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 9 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 10 | | | | | | | | | | | | | | | | | | | | | |
| ON HARMFUL ALGAL BLOOM | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 1 | | | | | | | | | | | | | | | | | | | | | |
| Action Plan 2 | | | | | | | | | | | | | | | | | | | | | |

LEGEND:  Direct Link  Indirect Link

**Table 2: Manila Bay Environmental Management Project
OPMBCS Activities by Lead Agencies**

Partnership and Governance

| Agency | Objective/Activity | Estimated Budget (In Million P) |
|---|---|--|
| Manila Bay Environmental Management Project (MBEMP) Project Management Office (PMO) and Site Management Offices (SMOs) | Objective 4 | 4 |
| | Act. 1. Conduct stakeholder analysis and awareness assessment of different stakeholders (local community, school children, local and national political leaders and functionaries, civil society, private) consistent with the Advocacy and Communications Plan of MBEMP. | 3 |
| | Act. 2. Update communication plan for the Manila Bay Coastal Strategy and its Operations Plan a. Target Audience b. Strategy c. Programs d. Milestones e. Responsible offices f. Budgetary requirements | 1 |
| Manila Bay Environmental Management Project (MBEMP) Project Coordinating Committee (PCC) | Objective 2 | .15 |
| | Act. 2. Strengthen PCC as interim body to coordinate the implementation of the Manila Bay Coastal Strategy and its Operational Plan until the Manila Bay Sustainable Development Council is established. | 0.15 |
| | Act. 3. Formulate and adopt a policy framework declaring Manila Bay as "Water Quality Management Area" with a governing board (in accordance with the provisions of the Clean Water Act). | - |
| | Act. 4. Draft appropriate institutional arrangements and legal mechanism. | - |
| | Act. 5. Lobby for the approval of the proposed institutional arrangements. | - |
| Department of Environment and Natural Resources (DENR) | Objective 1 | 10 |
| | Act. 1. Review and consolidate pertinent information on: corals, mangroves, seagrass beds, mudflats, swamps, avifauna, fisheries, shellfishes, seaweeds, benthos, phytoplanktons, zooplanktons, beaches/sandy shores, foreshore areas, built-up areas, bedrocks | 3 |
| | Act. 5. Develop the integrated land and sea-use zoning plan for Manila Bay Area | 7 |
| | Objective 2 | 58.25 |
| | Act. 1. Study/assess existing policies, legislations and administrative arrangements, review needs and objectives, and conduct social/stakeholder analysis to identify options on institutional arrangements for the management of the Manila Bay Region. | 2.5 |
| | Act. 6. Operationalization/implementation of the approved/ appropriate institutional arrangement (staffing, budgeting) | 55.75 |
| | Objective 3 | 45.75 |
| | Act. 1. Develop, implement and promote the Manila Bay-Pasig River-Laguna de Bay as a model of integrated coastal area and river basin management, using ecosystem-based management approach (including classification of Manila Bay and Pasig River). | 13.75 |

| Agency | Objective/Activity | Estimated Budget (In Million P) |
|--------|---|---------------------------------|
| | <p>Act. 2. Conduct the following activities:</p> <ul style="list-style-type: none"> - rapid appraisal - consultations - identification of key areas of concern - classification/re-classification of each river system, and - develop/formulate a criteria for prioritization <p>for the enumerated major river systems:</p> <ul style="list-style-type: none"> a. Pampanga River b. NCR Rivers (Parañaque, Las Piñas, Zapote rivers) c. Navotas-Malabon-Tullahan-Tenejeros d. Maragondon River (Cavite) e. Talisay River (Bataan) f. Angat Watershed and tributaries/major rivers g. Pasig-Marikina-San Juan (PAMARISAN) River h. Pasag River (Sasmuan, Masantol, Macabebe Pampanga) i. Pasig-Potrero River (Pampanga) j. Porac-Gumain River (Pampanga) k. Imus River (Cavite) | 20 |
| | <p>Act. 3. Develop the integrated coastal area and river basin management plan and include required institutional arrangements and information network for the river systems identified in Activity 2.</p> | 12 |
| | <p>Act. 4. Implement the integrated coastal area and river basin management plan of each river system. Include:</p> <ul style="list-style-type: none"> - IIMS and Information Network - restoration/rehabilitation of habitats and resources - integrated land- and sea-use zoning - marine sanctuaries, riverside parks - investment opportunities in environmental facilities and services - existing projects | - |
| | Objective 4 | 25.25 |
| | <p>Act. 1. Conduct stakeholder analysis and awareness assessment of different stakeholders (local community, school children, local and national political leaders and functionaries, civil society, private) consistent with the Advocacy and Communications Plan of MBEMP.</p> | 3 |
| | <p>Act. 2. Update communication plan for the Manila Bay Coastal Strategy and its Operations Plan</p> <ul style="list-style-type: none"> a. Target audience b. Strategy c. Programs d. Milestones e. Responsible offices f. Budgetary requirements | 1 |
| | <p>Act. 3. Integrate lessons on pollution prevention, waste management as well as the protection of important natural and unique geological areas, historical, cultural, religious and architectural landmarks in the curriculum of primary, secondary and tertiary schools (focus on Manila Bay), and environmental activities in the NSTP/CWTS.</p> <p>NSTP – National Service Training Program CWTS – Civic Welfare Training Service</p> | 0.75 |
| | <p>Act. 4. Organize and implement activities for school children/youth, e.g.,</p> | 1.5 |

| Agency | Objective/Activity | Estimated Budget (In Million P) |
|--------|--|---------------------------------|
| | ecological camps, youth fora, essay writing, drawing/painting contest, tree planting, coastal and river clean up, slogan and poster contest to build awareness and mobilize participation for the long-term management of pollution and the natural/ecological, economic and social values of Manila Bay region | |
| | <p>Act. 5. Conduct Information, Education, and Communication (IEC) and advocacy program for national and local legislators, policy-makers, educators, industries, civil society groups, and other stakeholders</p> <ul style="list-style-type: none"> • Conduct of Manila Bay Summit • Disseminate policy briefs, case studies, and other IEC on: <ul style="list-style-type: none"> - pollution prevention and waste management (solid waste, sewage and industrial wastewater, toxic and hazardous waste) - restoration/rehabilitation, protection/conservation and management of habitats, natural values, historical, cultural, religious and architectural landmarks, and archaeological and unique geological sites in Manila Bay region - aquaculture zones, quota system and appropriate aquaculture methods and practices and their benefits - environmental impacts of unregulated application of feeds (inappropriate type of feeds, over-use of feeds) - impacts of illegal logging and deforestation and measures to restore forests and mangroves - impacts of illegal, destructive and unregulated fishing, and measures to address sustainable fisheries in Manila Bay region - tree planting and coastal and river clean-up activities among schoolchildren, youth, communities, civic and non-government organizations, private sector and LGUs - impacts of over-extraction of groundwater - water recycling and water use reduction - international conventions, national laws and regulations related to protection and management of the environment, natural resources and historical and cultural sites - the contents of the CLUP, especially among those involved in processing building permits, housing permits, business permits, ECCs, etc., as well as the various enforcement groups (e.g., Bantay Dagat groups, etc.) | 3 |
| | Act. 6. Organize and implement community activities (civil society, industries, and other stakeholders) e.g., ecological camps, fora, essay writing, drawing/painting contest, tree planting, coastal and river clean up, bird watching, slogan and poster contest to build awareness and mobilize participation for the long-term management of pollution and the natural/ecological, economic and social values of Manila Bay region | 4.5 |
| | Act. 7. Conduct capacity-building activities, including training workshops and pilot programs on alternative livelihood, for fisherfolks, aquaculture owners and operators, farmers, livestock growers, upland dwellers, informal settlers, industries, government employees, civil society groups, pollution officers, etc. on environmentally-sound practices, alternative livelihood programs, environmental monitoring, environmental management, and monitoring and evaluation programs | 9 |
| | Act. 8. Promote corporate environmental and social responsibility in the private sector | 2.5 |

| Agency | Objective/Activity | Estimated Budget (In Million P) |
|--------|---|---------------------------------|
| | Objective 5 | 6 |
| | Act. 1. Identify and document best practices involving partnership arrangements and experiences (within the Manila Bay Region and outside) | Budget lodged to DILG |
| | Act. 3. Develop and implement capacity-building programs for LGUs to engage in PPPs and enhance private sector investments in pollution reduction and resource conservation projects | Budget lodged to DTI |
| | Act. 5. Conduct pre-feasibility studies, willingness-to-pay surveys and stakeholder consultations to assess viability of the projects for private sector participation. | 6 |
| | Objective 6 | 2.5 |
| | Act. 4. Develop and issue regulations, standards and guidelines concerning buffer setback zoning in beach areas, and allocation of areas for public recreational use, and building of tourism and port facilities. | 2.5 |
| | Objective 7 | 1.5 |
| | Act. 1. Develop natural hazards map and identify risk and hazard-prone areas (flooding, land subsidence, earthquake, faultlines, volcanic eruption, lahar flow, flash flood and landslides, forest fires, tsunamis, red tide, fish kill). | 1.5 |
| | Objective 8 | 15.45 |
| | Act. 1. Develop appropriate monitoring and evaluation system for the Manila Bay Region a. Review and assess existing monitoring and evaluation (M&E) programs b. Incorporate the output of the Pilot Integrated Environmental Monitoring Program (IEMP) and Risk Assessment including performance indicators/standards c. Delineate and clearly define roles and responsibilities of LGUs, NGAs, private sectors, communities in the monitoring and evaluation of programs/projects/activities in Manila Bay | 2 |
| | Act. 2. Institutionalize the M&E system developed. | 1.5 |
| | Act. 3. Institutionalize the IIMS and MBIN | 1.5 |
| | Act. 4. Conduct training on capacity-building of stakeholders (LGUs, communities, national government agencies, etc.) on M&E; IIMS | 7.5 |
| | Act. 5. Mobilize communities (including indigenous peoples, women, and other vulnerable sectors) and other stakeholders for data generation, monitoring, law enforcement, etc. | Budget lodged to LGUs |
| | Act. 7. Assist industries towards implementation of Environmental Management System (EMS) and pollution prevention programs through Phil Environment Partnership Program (PEPP) | 0.45 |
| | Act. 8. Implement the Eco-watch and Baywatch programs as monitoring and incentives programs (including regular for a web-based and public consultations) | 2.5 |

| Agency | Objective/Activity | Estimated Budget (In Million P) |
|--|--|---------------------------------|
| Department of Education (DepEd) | Objective 4 | 6.75 |
| | Act. 3. Integrate lessons on pollution prevention, waste management as well as the protection of important natural and unique geological areas, historical, cultural, religious and architectural landmarks in the curriculum of primary, secondary and tertiary schools (focus on Manila Bay), and environmental activities in the NSTP/CWTS. NSTP – National Service Training Program; CWTS – Civic Welfare Training Service | .75 |
| | Act. 4. Organize and implement activities for school children/youth, e.g., ecological camps, youth fora, essay writing, drawing/painting contest, tree planting, coastal and river clean up, slogan and poster contest to build awareness and mobilize participation for the long-term management of pollution and the natural/ecological, economic and social values of Manila Bay region | 1.5 |
| | Act. 6. Organize and implement community activities (civil society, industries, and other stakeholders) e.g., ecological camps, fora, essay writing, drawing/painting contest, tree planting, coastal and river clean up, bird watching, slogan and poster contest to build awareness and mobilize participation for the long-term management of pollution and the natural/ecological, economic and social values of Manila Bay region | 4.5 |

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| Philippine Information Agency (PIA) | Objective 4 | |
| | Act. 5. Conduct Information, Education, and Communication (IEC) and advocacy program for national and local legislators, policy-makers, educators, industries, civil society groups, and other stakeholders <ul style="list-style-type: none"> • Conduct of Manila Bay Summit • Disseminate policy briefs, case studies, and other IEC on: <ul style="list-style-type: none"> - pollution prevention and waste management (solid waste, sewage and industrial wastewater, toxic and hazardous waste) - restoration/rehabilitation, protection/conservation and management of habitats, natural values, historical, cultural, religious and architectural landmarks, and archaeological and unique geological sites in Manila Bay region - aquaculture zones, quota system and appropriate aquaculture methods and practices and their benefits - environmental impacts of unregulated application of feeds (inappropriate type of feeds, over-use of feeds) - impacts of illegal logging and deforestation and measures to restore forests and mangroves - impacts of illegal, destructive and unregulated fishing, and measures to address sustainable fisheries in Manila Bay region - tree planting and coastal and river clean-up activities among schoolchildren, youth, communities, civic and non-government organizations, private sector and LGUs - impacts of over-extraction of groundwater - water recycling and water use reduction - international conventions, national laws and regulations related to protection and management of the environment, natural resources and historical and cultural sites - the contents of the CLUP, especially among those involved in processing building permits, housing permits, business permits, | Budget lodged to DENR |

| Agency | Objective/Activity | Estimated Budget (In Million P) |
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| | ECCs, etc., as well as the various enforcement groups (e.g., Bantay Dagat groups, etc.) | |
| Department of Trade and Industry (DTI) | Objective 5 | 2.75 |
| | Act. 1. Identify and document best practices involving partnership arrangements and experiences (within the Manila Bay Region and outside) | 0.5 |
| | Act. 2. Develop guidelines on alternative partnership arrangements applicable to the Manila Bay Region | 0.25 |
| | Act. 3. Develop and implement capacity-building programs for LGUs to engage in PPPs and enhance private sector investments in pollution reduction and resource conservation projects | 1.5 |
| | Act. 7. Monitor and evaluate compliance to partnership commitments | 0.5 |
| Department of the Interior and Local Government (DILG) | Objective 5 | 0.5 |
| | Act. Identify document and and promote replication of best practices involving partnership arrangements and experiences (within the Manila Bay Region and outside) | 0.5 |
| National Mapping and Resource Information Authority (NAMRIA) | Objective 7 | |
| | Act. 1. Develop natural hazards map and identify risk and hazard-prone areas (flooding, land subsidence, earthquake, faultlines, volcanic eruption, lahar flow, flash flood and landslides, forest fires, tsunamis, red tide, fish kill). | Budget lodged to DENR |
| Department of Agriculture – Bureau of Fisheries and Aquatic Resources (DA-BFAR) | Objective 1 | 0.15 |
| | Act. 4. Delineate water boundaries of coastal municipalities and cities | 0.15 |
| National Disaster Coordinating Council (NDCC) | Objective 7 | 7.75 |
| | Act. 1. Develop natural hazards map and identify risk and hazard-prone areas (flooding, land subsidence, earthquake, faultlines, volcanic eruption, lahar flow, flash flood and landslides, forest fires, tsunamis, red tide, fish kill). | Budget lodged to DENR |
| | Act. 2. Review the National Disaster Coordination Plan, and assess in relation with the needs of the Manila Bay Region. | 0.25 |
| | Act. 3. Develop a Natural Hazard Contingency Plan and Response System with concerned agencies and sectors a. Identify the ecosystems, human settlements, and historical, cultural, religious, architectural, archeological and unique | 2.5 |

| Agency | Objective/Activity | Estimated Budget (In Million P) |
|---|---|---------------------------------|
| | geological sites that are at risk or in hazard-prone areas b. identify and develop mitigation measures c. Develop response system | |
| | Act. 4. Adopt and implement the contingency plan and response system. | 5 |
| Housing and Land Use Regulatory Board | Objective 1 | 5 |
| | Act. 3. Amend CLUP guidelines to include sea/water use and foreshore uses | 5 |
| National Economic Development Authority (NEDA) | Objective 1 | 5 |
| | Act. 3. Amend CLUP guidelines to include sea/water use and foreshore uses | 5 |
| Local Government Units (LGUs) | Objective 1 | 25 |
| | Act. 3. Amend CLUP guidelines to include sea/water use and foreshore uses | Budget lodged to HLURB |
| | Act. 7 Implementation of Manila Bay Areas integrated land and sea use plan | 25 |
| | Objective 3 | 7.45 |
| | Act. 5. Set-up and implement ICM in each coastal province, city and municipal government around the Bay area | 7 |
| | Act. 6. Replicate best ICM practices | 0.45 |
| | Objective 4 | 3 |
| Act. 5. Conduct Information, Education, and Communication (IEC) and advocacy program for national and local legislators, policy-makers, educators, industries, civil society groups, and other stakeholders <ul style="list-style-type: none"> • Conduct of Manila Bay Summit • Disseminate policy briefs, case studies, and other IEC on: <ul style="list-style-type: none"> - pollution prevention and waste management (solid waste, sewage and industrial wastewater, toxic and hazardous waste) - restoration/rehabilitation, protection/conservation and management of habitats, natural values, historical, cultural, religious and architectural landmarks, and archaeological and unique geological sites in Manila Bay region - aquaculture zones, quota system and appropriate aquaculture methods and practices and their benefits - environmental impacts of unregulated application of feeds (inappropriate type of feeds, over-use of feeds) - impacts of illegal logging and deforestation and measures to restore forests and mangroves - impacts of illegal, destructive and unregulated fishing, and measures to address sustainable fisheries in Manila Bay region - tree planting and coastal and river clean-up activities among schoolchildren, youth, communities, civic and non-government | 3 | |

| Agency | Objective/Activity | Estimated Budget (In Million P) |
|--------|---|---------------------------------|
| | <p>organizations, private sector and LGUs</p> <ul style="list-style-type: none"> - impacts of over-extraction of groundwater - water recycling and water use reduction - international conventions, national laws and regulations related to protection and management of the environment, natural resources and historical and cultural sites - the contents of the CLUP, especially among those involved in processing building permits, housing permits, business permits, ECCs, etc., as well as the various enforcement groups (e.g., Bantay Dagat groups, etc.) | |
| | Objective 6 | 1.5 |
| | <p>Act. 1. Conduct inventory and assessment of structures, establishments and illegal settlements along coastlines, riverbanks and waterways.</p> <p>a. removal/relocation of structures and settlers (legal and illegal) with PNP</p> | 0.5 |
| | <p>Act. 2. Develop investment/financial plan on the:</p> <p>a. development of livelihood programs for relocated settlers, and</p> <p>b. rehabilitation and protection of important natural, social and cultural sites along the coastlines, riverbanks and waterways.</p> | 1 |

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| Local Government Units (LGUs) | Objective 6 | 27.50 |
| | Act. 3. Implement a program for the relocation of informal settlers living along the coastlines and waterways to meet the allowable TDLs/ reduction targets. | 25 |
| | Act. 4. Develop and issue regulations, standards and guidelines concerning buffer setback zoning in beach areas, and allocation of areas for public recreational use, and building of tourism and port facilities. | 2.5 |
| | <p>Act. 5. Implement buffer and setback zones along the beach/shores This includes the:</p> <ul style="list-style-type: none"> • adoption of the action plan and zoning scheme for the beach areas and foreshore areas • removal/relocation of structures in the zoned area • setting up of protected areas/ sanctuaries for shorebirds and nesting sites of marine turtles • setting of appropriate berthing areas for artisanal fishing boats and jetties for coastal tourism establishments and industries | - |
| | Objective 8 | 1.95 |
| | Act. 5. Mobilize communities (including indigenous peoples, women, and other vulnerable sectors) and other stakeholders for data generation, monitoring, law enforcement, etc. | 1.5 |
| | Act. 6. Develop voluntary agreements (e.g., self-regulation, disclosure, etc.) with industries, hospitals, commercial and tourism enterprises operating in the Manila Bay area | 0.45 |

| Agency | Objective/Activity | Estimated Budget (In Million P) |
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| Provincial Planning and Development Office (PPDOs) | Objective 1 | 2.5 |
| | Act. 2. Assess and align existing land-use plans, various development plans, programs and projects, and related CRM/ICM efforts at different levels of government | 2.5 |
| | Act. 3. Amend CLUP guidelines to include sea/water use and foreshore uses | Budget lodged to DENR |

Water Pollution

| Agency | Objective/Activity | Estimated Budget (In Million P) |
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| Department of Environment and Natural Resources (DENR) | Objective 1 | 551.5 |
| | 1. Conduct study to (a) identify point sources and determine total discharge loading (TDL) of raw sewage and other key parameters from domestic; | 549 |
| | (b) Conduct study to determine pollution loadings from fisheries and aquaculture and from farmlands & livestock industries; | |
| | (c) Conduct study to determine pollution loadings from manufacturing industries and commercial establishments, into the following river systems: a. Pampanga River b. NCR Rivers (Paranaque, Las Pinas, Zapote rivers) c. Navotas-Malabon-Tullahan-Tenejeros d. Maragondon River (Cavite) e. Talisay River (Bataan) f. Angat Watershed g. Pasig-Marikina-San Juan (PAMARISAN) River h. Pasag River (Sasmuan, Masantol, Macabebe, Pampanga) i. Pasig-Potrero River (Pampanga) j. Porac-Gumain River (Pampanga) k. Imus River (Cavite) | |
| | 2. Establish time-bound pollution-reduction targets for identified major point sources in the identified river systems. | 2.5 |
| | Objective 3 | 2,340 |
| | 1. Mandatory registration of: a. all hazardous waste generators b. importation and use of new chemicals, and update database on sources, volume of waste generated by type | 20 |
| | 2. Prepare investment plan for an integrated toxic and hazardous waste (THW) management system (collection, transport, recycling, and treatment of hazardous waste and proper disposal of treated hazardous wastes). - in special economic zones - in key industrial areas - healthcare wastes | 10 |
| | 3. Implement the integrated storage, treatment, and disposal (STD) plan | 2,300 |

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| | 3.a. Construct and operate a THW management facility (including collection, transport, recycling, treatment and proper disposal | |
| | 3.b. Require all generators to use the THW management facilities (integrated STD) – part of Environment Compliance Certificate (ECC) | |
| | 3.c. Require all importers/exporters of THW to secure permit/ clearance from EMB | |
| | 4. Implement segregation of healthcare/hospital/toxic/hazardous wastes and prevent mixing with municipal solid waste. | 10 |
| | Objective 4 | 1.5 |
| | Object 4 3. Develop guidelines on alternative land-based disposal sites, treatment and disposal methods for sewage, industrial sludge, solid waste, and contaminated dredged materials. | 1.50 |
| | Objective 5 | 2.0 |
| | 3. Identify environment-friendly paints and anti-fouling chemicals for all ships and boats | 2.0 |

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| Department of Agriculture – Bureau of Fisheries and Aquatic Resources (DA-BFAR) | Objective 1 | 0.50 |
| | 7. Develop guidelines, criteria, and standards for collection, treatment, recycling, and disposal of agricultural and aqua-cultural wastes | 0.50 |

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| Philippine Coast Guard (PCG) | Objective 4 | 6.0 |
| | 1. Identify sea dumping activities (e.g. dredged materials, septage sludge, solid waste, toxic & hazardous waste, etc.). | 0.50 |
| | 2. Identify companies with dumping permits. | 0.50 |
| | 3. Develop guidelines on alternative land-based disposal sites, treatment and disposal methods for sewage, industrial sludge, solid waste, and contaminated dredged materials. | Budget lodged to DENR |
| | 4. Issue and enforce moratorium on sea dumping - formulate implementing rules and regulation (IRR) - draft and issue A.O. | 2.50 |
| | 5. Revoke licenses and permits for sea dumping of sewage, industrial sludge, solid waste, and contaminated dredged materials. | 2.50 |
| | Objective 5 | 0.50 |
| | 4. Implement guidelines on the following: (a) discharges of operational waste from ships (b) use of harmful paints and anti-fouling chemicals | 0.50 |
| | 5. Develop and implement “Port Safety and Environmental Management System” | Budget lodged to PPA |
| | Objective 6 | 6.20 |
| | 1. Finalize and adopt the “Manila Bay Oil Spill Contingency Plan” | 0.70 |
| 2. Implement the ‘Masterplan for Maritime Safety’ and put in place | 2.50 | |

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| | navigational aids and vessel traffic separation (VTS) scheme | |
| | 3. Pilot test Manila Bay Oil Spill Contingency Plan | 0.50 |
| | 4. Promote ratification of the Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) | 2.50 |
| MARINA | Objective 5 | |
| | 4. Implement guidelines on the following: (a) discharges of operational waste from ships (b) use of harmful paints and anti-fouling chemicals | Budget lodged to PCG |
| Philippine Port Authority (PPA) | Objective 5 | 154 |
| | 1. Estimate the volume of discharges of operational waste (e.g., oily bilge and ballast water) from ships (cargo, passenger, tankers, fishing boats/ships, etc.) by type and source | 2.5 |
| | 2. Construct/install shore reception facilities in major ports (e.g., PPA ports, Navotas fish port, Cavite ports, Bataan ports, public private ports) as part of the masterplan | 150 |
| | 5. Develop and implement "Port Safety and Environmental Mngt. System" | 1.5 |
| Department of Transportation and Communication (DOTC) | Objective 6 | |
| | 1. Finalize and adopt the "Manila Bay Oil Spill Contingency Plan" | Budget lodged to PCG |
| | 4. Promote ratification of the Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) | Budget lodged to PCG |
| Local Government Units (LGUs) | Objective 1 | 0.50 |
| | 3. Enforce the ordinances on the installation and maintenance of adequate septic tanks on target households along the major river systems and all other areas directly or indirectly draining sewage to Manila Bay. | 0.5 |
| | 5. (a) Prepare/update investment plan/master plan for the establishment of sewerage systems/sewerage treatment plants (STPs) for the priority point sources in the other major rivers to meet the allowable TDL/reduction targets by 2015 (b) prepare Investment Plan for common waste water treatment facilities (WWTF) in key industrial areas and economic zones | Budget lodged to MWSS |
| | 6. Construct sewerage systems and centralized sewage treatment facilities (CSTF) in priority areas, including subdivisions and housing projects, based on the reduction targets monitor the implementation of MWSS programs/ concessionaire projects | Budget lodged to MWSS |
| | Objective 2 | 12,673.5 |
| | 1. Reconstitute and/or strengthen functional solid waste management (SWM) Boards and Brgy. Solid Waste Committees and prepare 10-year SWM Plan. | 91.50 |
| | 2. Develop Investment Plan for SWM systems (collection, transport, | 10.0 |

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| | disposal, segregation, recycling, and composting) in major LGUs (cities and municipalities) - at least 1 city/cluster of municipalities for each province | |
| | 3. Convert existing open dumpsites into “controlled dumpsites” | 1,830 |
| | 4. Implement the Solid Waste Management Plan (SWMP) and Investment Plan | 10,741.5 |
| | 4.a Establish and implement collection for SW from household, commercial and industrial establishment | |
| | 4.b. Construct Materials Recovery Facilities (MRFs) (for sorting and recycling) and composting facilities for solid waste based on Investment Plan | |
| | 4.c. Construct sanitary landfill for the disposal of residual waste. | |
| | 5. Prohibit the operation of open dumpsites. | 0.50 |

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| Metropolitan Waterworks and Sewerage System (MWSS) | Objective 1 | 2,005 |
| | 4. Implement a pilot project on sewerage system in the Parañaque, Las Piñas and Zapote river system. | 500 |
| | 5. (a) Prepare/update investment plan/master plan for the establishment of sewerage systems/sewerage treatment plants (STPs) for the priority point sources in the other major rivers to meet the allowable TDL/reduction targets by 2015 (b) prepare Investment Plan for common waste water treatment facilities (WWTF) in key industrial areas and economic zones | 5 |
| | 6. Construct sewerage systems and centralized sewage treatment facilities (CSTF) in priority areas, including subdivisions and housing projects, based on the reduction targets monitor the implementation of MWSS programs/ concessionaire projects | 1,500 |

Over-Exploitation of Resources and Degradation of Habitats and Historical, Cultural, Religious, Archeological and Unique Geological Sites

| Agency | Objective/Activity | Estimated Budget (In Million P) |
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| Department of Environment and Natural Resources (DENR) | Objective 1 | 20 |
| | Act. 1. Identify and assess existing and proposed Protected Areas (PAs) and critical habitats in the Manila Bay region and key habitats and resources to be designated as Protected Areas and critical habitats, including those declared and proposed by LGUs | 2.5 |
| | Act. 2. Prepare detailed Protected Area and Critical Habitat Management Plan in the Manila Bay region based on the approved integrated land and sea-use zoning plans to include but not limited to : <ul style="list-style-type: none"> • Plan for the protection and restoration/rehabilitation of the following habitats: <ul style="list-style-type: none"> - coral reefs, - seagrass beds, - mangroves, mudflats - swamps (e.g., Candaba Swamps), - inland and other wetlands, and, - forests • Designation/delineation of: | 5 |

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| | <ul style="list-style-type: none"> - fishing area and fish sanctuaries - mangrove and mudflat sanctuaries - sanctuaries for rare and endangered species (turtles, birds, other wildlife) - buffer zones - setback zones for beach areas - river easements - eco-tourism sites - national parks • Consultations with concerned government units/ agencies, LGUs, NGOs, informal settlers, and other stakeholders for the finalization of the PA Management Plan • Roles and responsibilities of each agency/sector involved in the implementation • Monitoring and evaluation system • Management of invasive species | |
| | <p>Act. 3. Establish/restore and manage designated Protected Areas and critical habitats</p> <p>3.1. Establish and manage sanctuaries/protected areas (e.g., fish, mangroves and mudflats, forests, swamps, birds/turtles/wildlife, etc.)</p> <p>3.2. Establish the Candaba Swamps as bird sanctuary and national park, in view of being declared as a Ramsar site Maintain existing national parks in each province/ municipality/city, including adoption of users fee system and community-based resource management programs</p> | 12.5 |
| | Objective 2 | 55.75 |
| | Act. 1. Review results of Integrated Environmental Monitoring Program (IEMP) and assess the condition of the existing mangrove areas and mudflats. | 1.5 |
| | <p>Act. 2. Prepare detailed rehabilitation and management plan for mangrove and mudflat areas</p> <p>Include:</p> <ul style="list-style-type: none"> - Mangrove reforestation under the Community-based Forest Management Framework - Revert back abandoned fishponds into mangrove areas - Measures/actions to prohibit further decrease of mangrove and mudflat areas due to conversion into aquaculture and salt beds, land reclamation for human settlement, industrial development, removal for fuel wood, pollution and sedimentation as a result of upland and upstream activities, pest infestation, among others - Mobilize/strengthen community organization/associations - Monitoring and evaluation system, including list of indicators to determine whether or not objectives of the plan are achieved - Inventory of titled mangrove areas | 1 |
| | Act. 3. Conduct consultations with LGUs, NGO, IP and community stakeholders, and prepare Action Plan. | 0.5 |
| | <p>Act. 4. Implement Action Plan for rehabilitation and maintenance of mangroves and mudflats</p> <p>4.1. Organize and mobilize community organizations, associations, NGOs and private sector for the mangrove reforestation</p> <p>4.2. Restore/revert back into mangroves all abandoned fishponds</p> <p>4.3. Reforest mangrove areas through community-based management approach</p> <p>4.4. Provide livelihood programs for communities managing and protecting the mangrove and mudflat areas</p> | 20 |

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| 4.5. Establish Mangrove and Bird Sanctuary in the Reclamation Area (as model for eco-tourism in mangrove areas) | |
| 4.6. Promote regular clean-up activities in the mudflat areas with the communities and LGUs | |
| Act. 5.a. Review and reconcile existing laws and ordinances on the following: - conversion of mangroves and mudflats into fishponds and shrimp ponds - reclamation, dredging and dumping activities in mangrove and mudflat areas - cutting of mangroves and filling in of mudflat areas for resettlement, tourism, industrial and commercial areas - all municipal fisheries ordinances 5.b. Enforce the laws and ordinances. | .50 |
| Act. 6. Monitor progress of the Action Plan for mangrove and mudflat rehabilitation and management | 2 |
| Act. 7. Conduct rapid assessment of the entire stretch of shorelines along Manila Bay, and review current activities/structures, related policies, regulations and permitting system, and proposed plans, programs and projects to be implemented along the foreshore areas. | 5 |
| Act. 8. Prepare masterplan for the development of foreshore areas in accordance with the integrated land-and sea-use plan and the integrated watershed and coastal area management framework, including: - appropriate methods for the restoration of damaged beaches/shores, and mitigation of coastal erosion; - rehabilitation and protection of mangroves, which serve as natural barriers to shoreline updrift and pro-gradation; and, - Action plan for the Manila Bay Region prepared by the stakeholders | 5 |
| Act. 9.a. Issue moratorium on: - mining/quarrying of sand from rivers - reclamation of shallow coastal waters to build housing and tourist establishments 9.b. Enforce laws on: - mining/quarrying of sand/rocks from beaches and PAs - dumping of garbage, sludge and dredged materials along beaches/shores | 0.25 |
| Act. 10. Implement programs/projects on beach nourishment/stabilization and mitigation measures to address coastal erosion. <i>(to be coordinated with implementation of the Integrated Forestry Development and Management Plan, the restoration and protection activities for mangroves and mudflats).</i> | 10 |
| Act. 11. Implement the Eco-watch and Blue Flag system in the Manila Bay area to monitor beach and coastal water quality, and to provide incentives for beach protection. | 10 |
| Objective 3 | 539.40 |
| Act. 1. Update maps on watershed boundaries/characteristics in Manila Bay region, and the Manila Bay IIMS (NAMRIA) | 1 |
| Act. 2. Identify and assess the implementation of various national and local programs/projects/ activities related to forest management policies and forest restoration/rehabilitation programs | 1 |
| Act. 3. Develop Integrated Forestry Development and Management Plan (IFDMP) for the Manila Bay region | 1.5 |

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| Act. 4. Conduct consultation/ workshop on the finalization of Integrated Forestry Development and Management Plan (IFDMP) | 1 |
| Act. 5. Implement the IFDMP 5.1. Reforest open and denuded areas and protect forest resources through appropriate arrangements, e.g., Community-based Forest Management (CBFM), Industrial Forest Management Agreements (IFMA), Socialized Industrial Forest Management Agreements (SIFMA) 5.2. Undertake appropriate riverbank stabilization projects 5.3. Package investment opportunities for CBFM projects 5.4. Monitor and implement forest land use (mapping of forest and non-forest boundaries, ground survey, demarcation, etc.) 5.5. Grant appropriate security of tenure to upland dwellers 5.6. Provide technical assistance to the private sector and NGOs in the establishment of industrial forest plantations 5.7. Apply appropriate economic instruments to capture resource rents 5.8. Provide alternative livelihood programs/ projects 5.9. Establish eco-tourism programs 5.10. Undertake intensified forest protection campaign on forest fires and illegal logging. | 400 |
| Act. 6. Enforce laws, regulations, and ordinances on illegal logging within the Manila Bay region. | 135 |
| Objective 4 | |
| Act. 5. Include the criteria/guidelines for preservation/ rehabilitation/ restoration of important cultural, historical, religious, archeological, architectural and unique geological sites in the Environmental Impact Assessment (EIA) criteria for evaluation of development projects | Budget lodged to NCCA |
| Objective 7 | 13.25 |
| Act. 1. Conduct study/collate/update information on: a. the incidence of salt-water intrusion and land subsidence around Manila Bay b. extent of groundwater use (profile of users, volume and rate of extraction) c. current state of the aquifers d. existing water supply from surface water and groundwater e. current and projected water demand by sector and location f. potential surface water sources g. priority municipalities/cities h. contamination due to leachate from dumpsites, gasoline stations, etc. i. review of permitting system and fee system for groundwater users j. abandoned deepwells k. technologies related to recharging of aquifers | 5 |
| Act. 2. Conduct feasibility studies and develop investment plan to expand coverage and supply of surface water to coastal areas, areas outside of the central distribution system of MWSS, and other water districts. | 5 |
| Act. 3. Develop groundwater management plan, including the establishment of time-bound targets to reduce groundwater extraction and allow the recovery of aquifers, conservation (ERs) and other demand-side mgt. measures | 2.5 |
| Act. 6. Develop and issue guidelines and standards on water use reduction technologies and processes, water recycling, groundwater extraction, and post-closure of abandoned wells. | .25 |

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| | Act. 7. Establish appropriate water pricing system to reflect full cost of groundwater use, surface water impoundment, treatment and distribution, and wastewater discharges. | .25 |
| | Act. 8. Establish monitoring and evaluation system for groundwater extraction, salt-water intrusion, land subsidence, and contamination of groundwater. - Collaboration with the National Water Information Network (NWIN) | 0.25 |

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| Department of Agriculture – Bureau of Fisheries and Aquatic Resources (DA-BFAR) | Objective 5 | 125 |
| | Act. 1.a. Conduct study on fish stock trends, diversity of pelagic, demersal and fresh water fish and other ecologically important species, and determine feasible, socially accepted resource management intervention. 1.b. Conduct study on maximum sustainable yield (MSY) and maximum economic yield (MEY) for pelagic, demersal and fresh water fish in Manila Bay Region, and the open and closed seasons and areas for harvesting commercially and ecologically important species 1.c. Conduct study on the trends of fish kills due to red tide and determine bioaccumulation of sediments, fish and shellfishes | 1 |
| | Act. 2. Conduct socio-economic survey of the coastal population-including fisherfolk, current fish catch, fishing effort | 1 |
| | Act. 3. Determine and evaluate appropriate regulatory/legal and economic instruments (moratorium on commercial fisheries, open/close season for fishing, licensing and permitting system) in Manila Bay Region | 0.5 |
| | Act. 4. Develop integrated plan for sustainable fisheries in Manila Bay region, consistent with the Fisheries Code Include but not limited to: - Integrated Coastal Management (ICM) program - sustainable fishing methods and practices - appropriate policy instruments - fishing areas/zones - fish sanctuaries; no-catch zones - open and closed seasons and areas for commercially and ecologically important species - alternative livelihood programs and support services - institutional arrangements - infrastructure system - detailed work and financial plan - non-intro of exotic, alien or destructive species - reduction of population of exotic species detrimental to indigenous aquatic species monitoring of fishery resources and activities | 2 |
| | Act. 5. Implement the integrated plan for sustainable fisheries (for entire bay and each region) 5.1. Establish fishing areas and fish sanctuaries (in accordance with the integrated land- and sea-use plan/zoning scheme) 5.2. Implement the designated closed season for harvesting commercially and ecologically important species and designated closed areas for identified migration routes of commercially and ecologically important fish species. 5.3. Implement existing laws and policies on commercial fishing, trawling, and other illegal fishing methods in Manila Bay. | 120 |

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| | <p>5.4. Provide communities with appropriate alternative livelihood programs and support services (e.g., mussel culture, seaweeds farming, mudcrab fattening, microfinance, etc.).</p> <p>5.5. Construct/rehabilitate fish ports with fish storage and other necessary facilities and market road network.</p> <p>5.6. Allocate and construct berthing areas for artisanal fishers.</p> <p>5.7. Institutionalize the IEMP, specifically the monitoring system for fishery resources and fishing effort in the Manila Bay region</p> <p>5.8. Implement Fishery Code RA 8850</p> | |
| | Act. 6. Establish permitting and licensing system for municipal fishing in Manila Bay Region, and track the number of fisherfolks and fishing effort. | 0.5 |
| | Objective 6 | 6.75 |
| | Act. 1. Conduct study on carrying capacity for aquaculture and mariculture in Manila Bay region | 2.5 |
| | Act. 2. Conduct inventory of owners and operators (both with permits and without permits) and assessment of the aquaculture and mariculture farms/industries in Manila Bay relative to its carrying capacity | 0.5 |
| | Act. 3. Review and assess appropriate policy instruments and develop guidelines, aquaculture and mariculture standards, and regulations concerning implementation, monitoring and enforcement of: <ul style="list-style-type: none"> - users fee, quota system and other economic instruments - appropriate technology, methods, practices, feeds (type and application methods) and specifications for the pens/cages/ponds (e.g., size of mesh, distance of poles, etc.) | .5 |
| | Act. 4. Based on the integrated land- and sea-use plan, delineate areas for aquaculture and mariculture, and establish quota system in accordance with the carrying capacity. | 1 |
| | Act. 5. Require owners and operators to apply appropriate aquaculture and mariculture methods and practices | 2.25 |
| | Act. 6. Revoke permits of aquaculture and mariculture farms in areas that are not designated for aquaculture and mariculture production, and remove all illegal pens/cages/ponds in Manila Bay and Laguna de Bay | |
| | Act. 7. Restore production of windowpane oyster and seaweeds (as alternative livelihood), in appropriate sites with LGUs, POs, NGOs, academe, private sector | |

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| Department of Public Works and Highways (DPWH) | Objective 2 | .25 |
| | Act. 12. Develop and issue guidelines and standards for coastal road construction, and enhancement of scenic view along the coasts | 0.25 |
| | Objective 7 | |
| | Act. 5 Construct/rehabilitate irrigation systems and rehabilitate multi-purpose water reservoirs to increase water availability for agricultural and municipal use, including programs to mitigate erosion, siltation and sedimentation to prolong lifespan of water reservoirs | Budget lodged to NIA |

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| Department of Tourism (DOT) | Objective 4 | 10 |
| | Act. 6. Formulate and implement restoration and maintenance program to ensure the preservation of important cultural, historical, religious, archeological, architectural and unique geological sites, including the | 10 |

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| | establishment of: - tourism guidelines using information on carrying capacities of prioritized sites - users fee schemes & enforcement system - standards and certification program | |
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| National Commission on Culture and Arts (NCCA) | Objective 4 | 216.50 |
| | Act. 1. Conduct inventory and assessment of all cultural, historical, architectural, religious and archeological sites. | 5 |
| | Act. 2. Conduct study on carrying capacities and appropriate management approaches for important cultural, historical, religious, archeological, architectural and unique geological sites, including criteria and guidelines for preservation/ rehabilitation/restoration | 10 |
| | Act. 3. Develop management plan to restore and maintain important cultural, historical, religious, archeological and unique geological sites, including: - legal and financial mechanisms - monitoring and enforcement system | 1.5 |
| | Act. 4. Restore/rehabilitate/preserve cultural, historical, religious, archeological , architectural, and unique geological sites, in accordance with the criteria and guidelines | 200. |

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| Housing and Land Use Regulatory Board | Objective 4 | .2 |
| | Act. 7. Incorporate the zoning, protection, restoration/rehabilitation and maintenance of cultural, historical, religious and architectural landmarks and archeological and unique geological sites into local and national development plans, and land-use plans (CLUPs) | .2 |

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| Laguna Lake Development Authority (LLDA) | Objective 5 | |
| | Act. 6. Establish permitting and licensing system for municipal fishing in Manila Bay Region, and track the number of fisherfolks and fishing effort. | Budget lodged to DA-BFAR |
| | Objective 6 | |
| | Act. 6. Revoke permits of aquaculture and mariculture farms in areas that are not designated for aquaculture and mariculture production, and remove all illegal pens/cages/ponds in Manila Bay and Laguna de Bay. | Budget lodged DA-BFAR |

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| National Water Resources Board (NWRB) | Objective 7 | |
| | Act. 1. Conduct study/collate/update information on: a. the incidence of salt-water intrusion and land subsidence around Manila Bay b. extent of groundwater use (profile of users, volume and rate of extraction) c. current state of the aquifers d. existing water supply from surface water and groundwater e. current and projected water demand by sector and location f. potential surface water sources g. priority municipalities/cities h. contamination due to leachate from dumpsites, gasoline stations, | Budget lodged to DENR |

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| | <ul style="list-style-type: none"> etc. i. review of permitting system and fee system for groundwater users j. abandoned deepwells k. technologies related to recharging of aquifers | |
| | Act. 2. Conduct feasibility studies and develop investment plan to expand coverage and supply of surface water to coastal areas, areas outside of the central distribution system of MWSS, and other water districts. | Budget lodged to DENR |
| | Act. 3. Develop groundwater management plan, including the establishment of time-bound targets to reduce groundwater extraction and allow the recovery of aquifers. | Budget lodged to DENR |
| | Act. 6. Develop and issue guidelines and standards on water use reduction technologies and processes, water recycling, groundwater extraction, and post-closure of abandoned wells. | Budget lodged to DENR |
| | Act. 7. Establish appropriate water pricing system to reflect full cost of groundwater use, surface water impoundment, treatment and distribution, and wastewater discharges. | Budget lodged DENR |
| | Act. 8. Establish monitoring and evaluation system for groundwater extraction, salt-water intrusion, land subsidence, and contamination of groundwater. - Collaboration with the National Water Information Network (NWIN) | Budget lodged DENR |

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| National Irrigation Administration (NIA) | Objective 7 | 40 |
| | Act. 5. Construct/rehabilitate irrigation systems and rehabilitate multi-purpose water reservoirs to increase water availability for agricultural and municipal use, including programs to mitigate erosion, siltation and sedimentation to prolong lifespan of water reservoirs | 40 |

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| Local Government Units (LGUs) | Objective 1 | |
| | Act. 3. Establish/restore and manage designated Protected Areas and critical habitats 3.4. Establish and manage sanctuaries/protected areas (e.g., fish, mangroves and mudflats, forests, swamps, birds/turtles/wildlife, etc.) 3.5. Establish the Candaba Swamps as bird sanctuary and national park, in view of being declared as a Ramsar site 3.6. Maintain existing national parks in each province/municipality/city, including adoption of users fee system and community-based resource management programs | Budget lodged to DENR |
| | Objective 4 | |
| | Act. 7. Incorporate the zoning, protection, restoration/rehabilitation and maintenance of cultural, historical, religious and architectural landmarks and archeological and unique geological sites into local and national development plans, and land-use plans (CLUPs) | Budget lodged to HLURB |
| | Objective 5 | |
| | Act. 6. Establish permitting and licensing system for municipal fishing in Manila Bay Region, and track the number of fisherfolks and fishing effort. | Budget lodged to DA-BFAR |
| | Objective 6 | |
| Act. 2. Conduct inventory of owners and operators (both with permits and without permits) and assessment of the aquaculture and mariculture | Budget lodged to | |

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| | farms/industries in Manila Bay relative to its carrying capacity | DA-BFAR |
| | Act. 4. Based on the integrated land- and sea-use plan, delineate areas for aquaculture and mariculture, and establish quota system in accordance with the carrying capacity. | Budget lodged to DA-BFAR |
| | Act. 6. Revoke permits of aquaculture and mariculture farms in areas that are not designated for aquaculture and mariculture production, and remove all illegal pens/cages/ponds in Manila Bay and Laguna de Bay. | |

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| Concessionaires /Water Districts | Objective 7 | 40 |
| | Act. 4. Construct water supply facilities (from surface water Level III service) in coastal areas, areas outside of the central distribution system of MWSS and other water districts with critical water requirements and salt-water intrusion problems | 40 |