STRUCTURE OF MBSDMP DELIVERABLES

- Inception Report
- Situation Analysis Report
- Strategy Building Report
  - Final Draft Master Plan
  - Institutional Set-Up Report
  - Capacity Building Report
- Final Report
  - Action Plan / Investment Report
    - Updated Final Master Plan
    - Final Action Plan / Investment Report

Legend:
- Submitted
- This Report
- Not yet due

Submitted reports are available at www.mbsdmp.com/reports
Chapter 4 describes the proposed institutional set-up for the MBSDMP.

Chapter 5 provides the detailed Action Plan of the MBSDMP that overlays the programs, activities, and projects (PAPs) of the priority measures on the ICZM Planning Framework and integrates the enabling environment needed by the priority measures.

Chapter 6 is the indicative implementation schedule which plots the PAPs across the 2020-2040 timeframe.

Chapter 7 is the Investment Report which shows investment requirements per measure, by implementing agency, source of funds, and by identified spatial coverage.

Chapter 8 is the communication strategy for the MBSDMP.

And Chapter 9 provides an initial discussion on the alignment and contribution of the MBSDMP to the Philippines’ Recovery Plan from the COVID-19 pandemic.
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ACRONYMS

AO  Administrative Order  MARINA  Maritime Industry Authority
BFAR  Bureau of Fisheries and Aquatic Resources  MBA  Manila Bay Area
BMB  Biodiversity Management Bureau  MBSDMP  Manila Bay Sustainable Development Master Plan
BOD  Biochemical Oxygen Demand  MBTF  Manila Bay Task Force
CCA  Climate Change Adaptation  MBDC  Manila Bay Development Commission
CDP  Comprehensive Development Plan  MPAs  Marine Protected Areas
CLD  Coastal Line of Defense  MRF  Materials Recovery Facility
CLUP  Comprehensive Land Use Plan  MWCI  Manila Water Company Inc.
DA  Department of Agriculture  MWSI  Maynilad Water Services Inc.
DBM  Department of Budget and Management  MWSS  Metropolitan Waterworks and Sewerage System
DENR  Department of Environment and Natural Resources  NAMRIA  National Mapping Resource and Information Agency
DILG  Department of the Interior and Local Government  NCR  National Capital Region
DOH  Department of Health  NEDA  National Economic and Development Authority
DOST  Department of Science and Technology  NGA  National Government Agency
DOT  Department of Tourism  NHA  National Housing Authority
DPWH  Department of Public Works and Highways  NIPAS  National Integrated Protected Areas System
DRRMP  Disaster Risk Reduction Management Plan  NSWMC  National Solid Waste Management Commission
DSS  Decision Support System  OPMBCS  Operational Plan for the Manila Bay Coastal Strategy
EIA  Environmental Impact Assessment  PAPs  Programs, Activities, and Projects
EMB  Environmental Management Bureau  PCG  Philippine Coast Guard
ERDB  Ecosystems Research and Development Bureau  PDP  Philippine Development Plan
FARMC  Fisheries and Aquatic Resources Management Council  PPA  Philippine Ports Authority
FCRMP  Fisheries and Coastal Resources Management Plan  PPP  Public-Private Partnership
GAqPs  Good Aquaculture Practices  PRA  Philippine Reclamation Authority
GDP  Gross Domestic Product  PRST  Promote Responsible and Sustainable Tourism
GES  General Effluent Standards  RA  Republic Act
ERDB  Ecosystems Research and Development Bureau  REF  Reduce Exposure to Flooding
FARMC  Fisheries and Aquatic Resources Management Council  RNH  Restore Natural Habitats
FCRMP  Fisheries and Coastal Resources Management Plan  RPL  Reduce Pollution Load
GAqPs  Good Aquaculture Practices  SDGs  Sustainable Development Goals
GDP  Gross Domestic Product  SLF  Sanitary Land Fill
GES  General Effluent Standards  URR  Unified Rules and Regulations
ERDB  Ecosystems Research and Development Bureau  WTE  Waste-to-Energy
FARMC  Fisheries and Aquatic Resources Management Council  IATF  Inter-Agency Task Force
ICZM  Integrated Coastal Zone Management  GOCC  Government-owned and Controlled Corporations
IATF  Inter-Agency Task Force  GOCC  Government-owned and Controlled Corporations
ICZM  Integrated Coastal Zone Management  IEC  Information, Education and Communication
IEC  Information, Education and Communication  ISFs  Informal Settler Families
ISFs  Informal Settler Families  ISWM  Improve Solid Waste Management
ISWM  Improve Solid Waste Management  KRA  Key Result Area
KRA  Key Result Area  LCCAP  Local Climate Change Action Plan
LCCAP  Local Climate Change Action Plan  LGU  Local Government Unit
LGU  Local Government Unit  LWUA  Local Water Utilities Administration
LWUA  Local Water Utilities Administration
## INTRODUCTION

### A SUSTAINABLE DEVELOPMENT FOR MANILA BAY

Manila Bay is amongst the primary gateway for socio-economic development in the Philippines. Being a natural harbor serving the Port of Manila and the Metro Manila, and strategically locates the capital of the Philippines, Manila Bay is amongst the country’s most significant area in terms of impact to economy and governance.

With an area of nearly 200 thousand hectares, the Manila Bay is situated in the western part of Luzon with 190 kilometers coastline from the southeast to east coast of Bataan, the coasts of Pampanga and Bulacan, coast of Metro Manila, and up to the coast of Cavite.

Manila Bay Region is bounded by the Caraballo mountains to the north, the Zambales mountains to the northwest, the Bataan mountains to the west, and the Sierra Madre Mountain Range to the east crisscrossed by network of river systems that exit through the coastal lowlands of Manila Bay.

Its watershed area, also referred to as the Manila Bay Catchment Area, covers 213 LGUs; 40 cities and 173 municipalities (in 14 provinces and three (3) regions). By 2015, the MBA has a total population of 23.21 million – about 23% of the whole population of the Philippines with about 5% (1.19 million) crowding in the 31 coastal cities and municipalities of Manila Bay.

The beauty of Manila Bay is sustained by its ecology and environment. Mangroves are among the most productive ecosystems that provide a nursery function to various species of fish and other marine life. Mangroves provide shoreline defense against floods and erosion. Mangroves are also carbon sinks; it absorbs CO$_2$ and converts it to O$_2$ through photosynthesis. Wetlands of Manila Bay cover 81,675 hectares within the 2-meter water column (Wetlands International and IUCN Netherlands 2018) that provide food and habitat of fish, water birds and other wildlife; maintaining and improving water quality of rivers, lakes and estuaries, acting as reservoir for watersheds, and protecting adjacent and downstream properties of the area from potential flood damage. While there has been significant decline over time, tidal flats and coral reefs remain important habitats for fish and benthic life forms, and in the functioning of the Manila Bay ecosystem. Seagrass beds are particularly found in the mouth of the Bay, e.g., in Orion and Mariveles, Bataan, and around Corregidor Island.

The immense ecological, economic, cultural, historical and aesthetic values of Manila Bay notwithstanding, its sustainability is seriously being challenged by interconnected environmental, social, and economic pressures which include:

- Degradation of water quality, ecology and the environment in Manila Bay
- Decline of fishery resources
- Loss of coastal erosion, siltation and sedimentation
- Coastal flooding particularly in North Manila Bay
- Unregulated housing development in coastal and riverine areas
- Inadequate assessment protocols for land reclamation and indiscriminate conversion of foreshore areas to aquaculture and settlement areas
- Loss and degradation of natural habitats and ecosystems

Communities in areas with extreme land subsidence spent significant amount of their earnings just to cope with the regular coastal flooding by raising their roads, public areas, and even flooring of their residences.

The complex nature of the Manila Bay has brought further challenge to institutions that are required by law to ensure that Manila Bay is safe for human contact (i.e., swimming, skin-diving, and other forms of contact recreation). While there are various plans and programs that aim to address specific concerns related to Manila Bay, these were developed more or less in isolation of other interests. As reported in the January 2015 Disaster Risk Reduction Mission Report, “in spite of the substantial and profound economic benefits from the Bay and the many problems besetting the severely degraded area, there is no overarching plan or supervising entity that is responsible and accountable for its management and development”. This was confirmed with the 2008 and 2010 Supreme Court decisions on Manila Bay (G.R. No. 171947-48 or the Mandamus on the Manila Bay clean up) that mandated and directed 13 government agencies to clean up, rehabilitate, and preserve Manila and restore and maintain its water to make it fit for swimming, skin-diving, and other forms of contact recreation.

The most relevant and current plan for Manila Bay is the Operational Plan for the Manila Bay Coastal Strategy (OPMBCS). Initiated in 2004, the plan has gone through 4 stages of development with the present one covering the period 2017 till 2022. Even with the OPMBCS and the Writ of Continuing Mandamus issued by the Supreme Court, the challenge to improve the coastal and marine ecosystem of the Manila Bay remains.

In response to the need for a comprehensive plan for Manila Bay, the National Economic and Development Authority (NEDA) through its administered Infrastructure Development Preparation (IDP) Fund under the 2017 General Appropriations Act (GAA) initiated the Formulation of the Manila Bay Sustainable Development Master Plan (MBSDMP). On January 2018, the Joint Venture of OIDCI, TRACT, and UPLBFI was engaged by NEDA to be the Local Consulting Firm (LCF) for the Formulation of the MBSDMP. Simultaneously, the Government of the Philippines (through NEDA) and the Government of the Kingdom of Netherlands (through the Ministry of Foreign Affairs) signed a Memorandum of Agreement to fund the engagement of the Dutch Expert Team (DET) for the Formulation of the MBSDMP. The 30-month assignment is to produce a Master Plan and an Action Plan and Investment Program by July 2020.

On the urgency to address the growing Manila Bay challenges, on February 2019, the President of the Philippines, His Excellency Rodrigo Duterte issued Administrative Order No. 16 – expediting the rehabilitation and restoration of the coastal and marine ecosystem of the Manila Bay and creating the Manila Bay Task Force (MBTF) under the leadership of DENR Secretary Roy Cimatu. The MBTF divided the task with the creation of the Key Result Areas (KRA) with KRA 7 (under the leadership of NEDA) is the formulation of the master plan – the MBSDMP.

The MBSDMP complements and builds on the outcomes of the short-term plan (up to 2022) of the MBTF that are intended largely for cleaning up the Manila Bay.
LOCATION

The Manila Bay is the Philippines’ most significant natural harbor located at 14°31’N, 120°46’E in Luzon with its entrance at the south southwest between the province of Bataan and Cavite. The entrance channel is divided by the islands of Corregidor and Caballo where the seawater from the West Philippine Sea enters and Manila Bay waters exit.

CHARACTERISTICS

CATCHMENT AREA AND BASIN

Bounded by the Bataan mountains, Zambales mountains, Caraballo mountains, and the Sierra Madre Mountain Range, the Manila Bay catchment area encompasses a sizable portion of Region III and Region IV-A, a few cities and municipalities in Region II, and the whole of Metropolitan Manila. The 1.765 million hectares of the Manila Bay catchment area that drains towards the Manila Bay basin consists of four (4) major basins, namely Bataan Watershed, Pampanga River Basin, Pasig-Marikina River Basin, and Cavite Watershed.

SLOPE

Most of the Manila Bay catchment area is relatively flat (about 47% at <3% slope and about 49% with 3-8% slopes) and coastal LGUs are almost or nearly flat to rolling terrain. A large portion of the narrow Bataan Watershed, however, has steep slope. These topographic features are significant to the degree of impact and frequency of flooding. Steep slopes and highly elevated areas of the catchment are prone to rain-induced landslide, while low-lying areas going to the coast receive the deluge of water and eroded materials from the upstream.
ELEVATION AND LAND SUBSIDENCE

Areas with elevation less than 100 meters above sea level constitute a large portion of the catchment area at 953,909 hectares. Majority of these areas are situated in the central valley. About 135,531 hectares of the area—constituting the coastal LGUs—are lower than 100 meters above sea level. Some coastal barangays are even just a few meters above sea level with portions of the area are inundated almost whole year round.

A study made by Narod Eco (Department of Science and Technology) in 2011 presented subsidence in the northern part of the Manila Bay ranging from 0.5 to 4.5 centimeters per year. The subsidence is attributed mainly to massive extraction of groundwater.

WATER CIRCULATION AND TIDAL MOVEMENT

Effects of tides and wind-driven currents vary at different locations around the bay due to bathymetry and distance from the mouth. Except in shallow areas alongside the coast, water circulation in Manila Bay is generally driven by tidal forcing. Both wind and tide-driven flows are characterized by two (2) asymmetrical, counter rotating gyres.

For tidal flow, said gyres are separated at the midsection, where the deepest part of the bay is located. Tidal velocities, and likewise, tidal advection, are strongest at the mouth and weakest towards the head of the bay, thus decreasing the bay’s capacity to flush out material to the open sea, especially pollutants discharged along and adjacent to the coast.

Tides affect the status of ecosystems, as water circulation significantly impacts the distribution, diversity, and composition of species, sediment, nutrients, and salinity.
ECOSYSTEM AND NATURAL RESOURCES

The Manila Bay ecosystem consists of multiple habitats that are interconnected by materials and energy fluxes and exchange, and are facilitated by the biological components of and human activities within the system. Terrestrial, aquatic, coastal and marine ecosystems thrive in Manila Bay and its catchment areas. Forest cover in both the upland and coast has been degraded through the years.

Mangrove forests, currently present in patches of less than a hectare to tens of hectares, have been diminishing significantly over the years as these mangrove areas have been replaced by fishponds. The degradation of mangroves has adversely affected the health of ecosystems in Manila Bay. The current estimated area of mangrove forests by NAMRIA (2019) is 1,092 hectares.

Mudflats, mostly intertidal and are subjected to daily water inundation and exposure, are currently estimated at around 1,343 hectares (UNEP-TEEB 2017). These are located in sheltered sections of the bay, close to major river outfalls.

Shallow mud is relatively narrow and are along the contour of the bay. Sections of this habitat (near river outfalls) are characterized by highly variable salinity.

While no data is available on the distribution and extent of seagrass beds in Manila Bay, anecdotal accounts point to the abundance of these habitats in shallow, sheltered sections of the bay.

Coral reefs in Manila Bay are narrow and fringing—found mostly on the more exposed part of the bay. Most of the reefs in Mariveles and Corregidor Island grew from an igneous rock base and is structurally complex.

Shallow water habitat are areas with depths less than 6 meters. These are the areas that fishes and other aquatic organisms need for concealment, spawning, breeding, and feeding. Currently, a significant portion of the northern and southeast part of the bay has this physical characteristic (<6m depth). However, for this area to be conducive, it needs the presence and robustness of the other habitats (i.e., mangroves, seagrass, corals)

Fishes are dependent on these habitats. Besides the degradation of its natural habitat, overexploitation has decimated the fish stock density from 4.61 tons/km² in 1947 (Warfel and Manacop, 1950) to 0.48 tons/km² in 2015 and 0.32 tons/km² in 2014 (Bendano et al. 2017).

A very large number of migratory shorebirds are also dependent on the intertidal areas and fishponds in Manila Bay—particularly during the ten-month bird migration season from August to May. During the Asian Waterfowl Census (AWC) in the Philippines (Li et al. 2009, Mundkur et al. 2017, BirdLife International 2017a), the bay area has consistently hosted some of the highest numbers of migratory waterbird species. With an area of 130,465 hectares, northern Manila Bay has been declared as an Important Bird and Biodiversity Area (IBA No. PH010) by Birdlife International (Haribon Foundation and BirdLife International 2001, BirdLife International 2017a).

Covering 96,338 hectares of wetland—from the northern Metro Manila to Bataan—is a Key Biodiversity Area (KBA No. 25) accorded by the Department of Environment and Natural Resources (DENR).

STRATEGIC LOCATION AND FUNCTIONALITIES

Within Manila Bay’s strategic and natural harbor are the busiest ports in the country, both national and international. Besides economic activities, the Philippine armed forces maintains an air base and a naval reservation near Cavite, on the southeastern shore. With the navigational shipping lanes, these seaports, bases, and restricted areas are amongst the special use zones that are protected by law.

The bay’s waters is also used for cooling systems by industrial establishments situated along the coast of Manila Bay.

With the population growth and expansion at the coasts of the bay, increase in the demand for new road networks, expressways, and international gateways (i.e., airports) is expected.
**METROPOLITAN SETTLEMENT AND URBAN POOR**

The Manila Bay Area is home to one-third of the country’s total population, and it is also a main driver of economic growth. Similar to other sizeable urban communities, intra-urban inequality is also very large. There is a high level of income segregation and different income groups have a very different level of access to these opportunities and services; resulting in a large number of informal settler families (ISF). This is aggravated by unregulated migration of people in search for livelihood opportunities that are otherwise unavailable from where they originated.

The quality of life is significantly impacted by pollution, frequency of floods, poor solid waste management system, lack of affordable housing, lack of basic sanitation and access to safe drinking water, and inefficient and inadequate transport system. Amongst these essential public services, the transport sector has attracted a number of private investment proposals. Investments, however, on improved technology and scale in flood control, affordable housing, waste management and wastewater treatment services remains inadequate.

**ECONOMIC ACTIVITIES AND PRODUCTIVE AREA**

Besides fisheries, the Manila Bay catchment area, with the Philippine’s capital in it, has been the leading center of diverse economic activities that generates some 53% of the Philippines’ Gross Domestic Products (GDP). However the improper management of solid and liquid wastes from these activities including fishponds at the coasts; agricultural areas in Region 3; manufacturing, factories, and industries; tourism; services; and commercial and business establishments in regional centers and metropolis significantly contributed to the pollution of Manila Bay waters.

The most vulnerable sectors in the Manila Bay Area is the agriculture sector—which includes the fishing communities along the bay. Majority of the fisherfolks and their dependents remain poor and marginalized. Fishing has become more difficult with the increasing number of fishermen matched with declining fish population and shifts in fish catch composition.

Aside from this problem of overfishing, extensive habitat destruction, severe pollution, water quality degradation, and increased susceptibility of coastal settlements to increasing frequencies of climate extremes reduces overall community resilience by exacerbating poverty and aggravating settlement problems of local fisherfolks. These stressors further marginalize the poor, particularly the fisherfolks and informal settlers of the bay, alienating them to the inclusive growth targeted by the government.

**TOURISM AND RECREATION**

Eastern Manila Bay boasts of one of the best places where people (including local and foreign tourists) gather daily to enjoy and relish the ever astonishing view of the iconic Manila Bay sunset.

While many beaches in Manila Bay has been declared as not safe for human contact and swimming due to the very high contents of fecal coliform, there are still residents who can’t resist to take a swim. Currently, only one portion of Manila Bay—the Aguawan Beach in Mariveles, Bataan—has been declared by DENR as safe for swimming.

Aside from its beaches and rich forests, Manila Bay area is host to several historical areas that are popular destinations for recreation for both locals and tourists.
MAJOR PROJECTS IN PIPELINE AND PROPOSED PROJECTS IN MANILA BAY

There are currently many projects being proposed or in the process of approval that are located in or at the coast of Manila Bay. These projects range from roads and bridges, land development projects in titled lots that have already subsided and are now inundated, and reclamation projects.

These proposed large developments are expected to have significant impacts on Manila Bay with the anticipated movement and influx of people in the proposed areas and the wastes it will generate. The recently approved Bataan-Cavite Bridge and proposed coastal expressway integrated with flood control are expected to improve mobility of population within the Manila Bay area, and with the improved access, trade, business, and commerce will follow. Being a tourist haven, the new access facilities will improve mobility of tourist and provide better alternative routes and easier access to once difficult to reach tourists as well as provide easier access to once difficult to reach tourist destinations.

These proposed projects, especially the land reclamation projects, may also affect the protected habitat and ecosystem in the area. If left uncoordinated and unmanaged, and without a more robust process to assess the impacts of proposed land reclamation projects, the water movement and circulation in the bay can be altered with negative consequences on natural ecosystems. Such alteration may even nullify the benefits that can be gained through the proposed habitat restorations.

The drastic deterioration of the ecosystems in Manila Bay threatens the remaining sparse fish sanctuaries and spawning grounds. If left unchecked, the implementation of these projects may further stress and harm the remaining fish biomass and reverse the efforts on increasing fish stock.

The inevitability of developments in Manila Bay poses the challenge of judiciously balancing the economic gains of development and the cost to the ecology of the bay in order to ensure the sustainability of its services for the present and future generations.
*Moratorium on Reclamation Projects in the Manila Bay dated 27 May 2020
STATUS OF MANILA BAY

Overall, the water quality of the Manila Bay has deteriorated significantly. This is indicated by the pollution and contamination in the Manila Bay and its tributaries. Aside from the monitoring results of stations of the Environmental Management Bureau (EMB), this concern is strongly articulated by the communities living at the coast of Manila Bay.

By 2018, all monitoring stations of Manila Bay still reported fecal coliforms beyond the Marine Water Class SB Standard of 100MPN/100ml. All monitoring stations of the EMB, except those that record Talisay and Pampanga Rivers, measured Biochemical Oxygen Demand (BOD) and phosphate (PO4) beyond the Water Quality Guidelines (WQG) as stipulated in DENR Administrative Order 2016-06. The high quantity of pollutants entering Manila Bay are attributed to:

- Households in Metro Manila that are still not served by sewerage or septage treatment facilities;
- Households outside of Metro Manila that are either not yet served by septage treatment facilities or that have sanitation facilities but are not connected to appropriate septic tank;
- Effluents from point sources (i.e., institutional buildings, commercial/industrial establishments, livestock farms) that do not meet the effluent standards; and
- Wastewater from non-point sources (i.e., agriculture, aquaculture, ships/boats) not properly managed (i.e., nutrient overloading, oil/fuel).

While the Philippine Clean Water Act of 2004 (RA 9275) clearly provided a comprehensive and integrated strategy to protect the country’s water bodies from pollution coming from land-based sources, enforcement remains a challenge. From 2011 to 2015, only 45.41% of the industrial establishments monitored are compliant with the Effluent Standards. And the total number of industrial establishments monitored is roughly about 91% of the estimated total (at 9,600).

Besides wastewater, solid waste within the Manila Bay Area is inadequately managed. This is apparent with the large amount of garbage that is entering and already in the Manila Bay, in addition to proliferation of open dump sites. These solid waste challenges are caused by:

- the increase and improper management of solid wastes,
- the limited number and size of sanitary landfills, and
- the inadequate mechanism and facilities for processing of divertible solid wastes.

The Ecological Solid Waste Act of 2000 (RA 9003) enabled the creation of necessary institutional mechanisms and incentives, declaration of certain acts prohibited and imposing penalties, and appropriation of funds. Enforcement of which, however, is far from what has been envisioned. Solid waste diversion rate in Manila Bay catchment area is still around 47% in 2018. With almost half of the biodegradable and recyclable wastes not sorted out and diverted, they either fill up sanitary landfills quickly, thus shortening their lifespan, or end up in open dump sites, waterways, and even along roads, public areas, and places that shall not be littered with anything in the first place.

Population within the catchment area has increased by two-fold over the last 25 years. The demand for housing has been faster than the options for housing (or its financing) across all income classes. As a result, aside from the increase in number of informal settlers, the complex aspects of housing problems and their impacts become difficult to address, despite the provisions of the law supporting socialize housing, such as Social Reform and Poverty Alleviation Act (RA 8425), and national key strategies like the National Informal Settlements Upgrading Strategy (NISUS). Informal settlements live in small spaces in a...
densely populated neighborhood that also lack basic sanitation facilities, therefore adding to concerns of untreated effluents unreservedly discharged to water bodies that enter Manila Bay.

It is estimated that as of 2015, about 5 Million people are exposed to coastal flooding within the Manila Bay Area. In 2040 there will be some 12 Million people that are likely to be exposed to flooding as sea level rise continues and land subsidence remains unabated due to increase dependence on groundwater.

Consistent with the Philippine strategy for climate change, the MBSDMP shall endeavor to reduce the number of people exposed to coastal flooding in Manila Bay.

Mangroves, which are natural coastal protection against storm surge and erosion, are sparse in favor of settlement areas and economic activities (i.e., aquaculture, fishponds). The approximately 54,000 hectares of mangroves in Manila Bay in the beginning of the 20th century (TEEB Philippine Country Study 2019) has been decimated—leaving only 1,092 hectares by 2019 (NAMRIA). Similar fate is observed in mudflats.

Almost half of the seagrass habitat then is lost due to heavy siltation and settlement expansion and development along the coasts of Manila Bay. The decimation of Manila Bay’s natural habitats that threatens the spawning of fishes is further aggravated by overfishing, degradation of water quality due to emissions of untreated effluent and excessive aquaculture and agriculture fertilizers, and other practices that harm juvenile fishes.

By 2014, the fish stock density has extensively dropped to an estimated 0.32 tons/km² (Bendano et al. 2017) from 4.61 tons/km² in 1947 (Warfel and Manacop, 1950). The Philippine Fisheries Code of 1998 (RA 8550) has provisions for management and conservation of fisheries and aquatic resources, in a manner consistent with integrated management of the coastal area, hence the importance of coordinated planning among Fisheries and Aquatic Resources Management Councils (FARMCs) of every coastal LGU.
COMMUNITY ASPIRATIONS

The recently conducted focus group discussions (FGDs) with 45 selected barangay communities in the Manila Bay catchment area captured the aspirations of the communities in Manila Bay. The barangay communities were purposively selected to cover the varying situations and diverse conditions of communities living in, impacting, and/or impacted by the Manila Bay. The stakeholder community aspirations is validated and further supplemented by representatives of LGUs, agencies, and organization; and members of the Technical Committee.

The aspirations of the communities as a whole reflects a meaningful, cohesive, and sustainable way of addressing the challenges of Manila Bay—through the communities’ lenses. Below are the key aspirations of the communities in the Manila Bay Area.

- In general, the community aspires to having a clean Manila Bay that can and will support the current as well as the future generations. Support here means providing food for their family, a source of income, another mode of transportation, option to manage waste, and recreation and relaxation.

- While the communities, in general, aspire to have better living condition that is, a decent flood-free housing with access to basic services and economic opportunities, their strong community spirit and neighborhood support system cause hesitation among many community members to realize their aspirations by relocating to a new place.

- Recognizing their strength and endurance—being a cohesive community, the communities, in general, aspire to play a more active role in the development of their area. This active role is in terms of
taking initiative to addressing their problems, actively participating—from planning to execution to O&M, and ultimately investing their efforts towards building a sense of ownership of the project and a sense of fulfillment by being part of the solution instead of being the problem.

- There were communities that also hope that government projects in their area will be more responsive and appropriate to their needs, practices, and conditions of the area. This was mentioned after recalling some government projects in their area that were either not strong enough against extreme conditions (i.e., saltwater, frequent waves) or are already not usable/functional.

- The community also recognizes the hindrances in implementing projects in their area and hopes that other viable financing and funding mechanisms be made available to support their LGU’s and/or community’s initiatives.

- The communities also admit their shortcoming in strictly adhering to certain laws and programs (i.e., solid waste segregation and disposal, zero open defecation, ecosystem protection, approved fishing practices) and believes enforcement is necessary. They recommended that vigorous IEC on these programs and laws be undertaken and shall be included in the basic education curricula.

- Indigenous knowledge and practices can contribute to achieve sustainable development objectives. Thus, shall be considered in the implementation of MBSDMP PAPs without eroding the value of indigenous knowledge and practices.

- The communities also aspire for development and progress in their areas, in having industries and factories that create sufficient viable livelihood opportunities. However, they also aspire to have clean air and environment, a good health, and to live a long and happy life.
VISION AND OBJECTIVES

Consistent with the aspiration of the communities, the overall objective of the MBSDMP is captured in the vision statement

“A Sustainable and Resilient Manila Bay”

—a comprehensive yet simple phrase that exemplifies the long-term vision of the Filipinos of having a “Matatag, Maginhawa at Panatag na Buhay” (strongly rooted, comfortable, and secure life) in terms of what Manila Bay will look like and be in the context of the AmBisyon Natin 2040.

This is also consistent with the Writ of Mandamus where the Supreme Court ordered:

“...defendant-government agencies to clean up, rehabilitate, and preserve Manila Bay, and restore and maintain its waters to SB level (Class B sea waters per Water Classification Tables under DENR Administrative Order No. 34 [1990]) to make them fit for swimming, skin-diving, and other forms of contact recreation”

which will lead to a sustainable and resilient Manila Bay.

Towards achieving this vision, the objectives of the MBSDMP is

*To restore and maintain a resilient Manila Bay that sustainably delivers a variety of services to its communities, and*

*To reduce the risk of communities against flooding under present and expected climate change conditions.*

In meeting these objectives, proposed measures shall also

*Promote inclusive growth while improve living conditions of informal settlements that affect or are affected by the Manila Bay.*

This master plan is designed to be implemented until 2040—consistent with the AmBisyon Natin 2040—but shall be subject to future review and update.
2040 PROJECTION

The degradation of Manila Bay, in both land and water, is expected to worsen in the upcoming years if things remain “business-as-usual” including the present enforcement of and compliance to policies and programs.

By 2040, population in the Manila Bay area is estimated to be 35% larger than it was in 2015. Pressure on Manila Bay will be more than it is now with the projected growth rate and the increase in competition for space and housing, and demand for at least basic services.

As Metro Manila continues to be the priority for major investments and development, more people will gravitate towards it with considerable portion likely to spill over to the nearby regions of CALABARZON and Central Luzon, thus creating more competition and related problems.

The decline of Manila Bay conditions remains, despite government wishes to the contrary and programs for intervention. Ad-hoc protection of remaining habitats (e.g. mangroves, mudflats) notwithstanding, biodiversity in the bay will remain low and in peril. Greater opportunities for solid waste diversion are now available through infrastructures and IEC programs, yet improper waste disposal exists and likely will persist into the future.

Wastewater management has kept pace with population growth, but overall coverage in the catchment has not increased. It is still not considered safe to swim in bay waters. People are increasingly concerned about the present and future impacts of climate change, and are increasingly looking towards the government to provide effective adaptation solutions to these challenges. Disaster preparedness has improved, such as with the Greater Metro Manila Earthquake Impact Reduction Study (GMMEIRS) — an ongoing comprehensive study on earthquake risk reduction of the entire Greater Metro Manila Area (GMMA).

Nonetheless, the government remains deficient in capacity to adequately respond to future disasters and relies on international largesse to sufficiently and promptly address the needs of those affected. There is increasing awareness among the general population about the connection between land subsidence and groundwater abstraction, such that actions to
reduce reliance on groundwater sources are gaining popular support.

On-going and firmly planned interventions (i.e., approved and with funding) that are expected to continue even without MBSDMP, were operationalized to minimize, if not eliminate, said problems. These projects are:

- OPMBCS – the work of Manila Bay Coordinating Office, now strengthened by the President’s Clean-up program;
- Sewerage and treatment projects by Maynilad and Manila Water;
- National-level IEC on Solid Waste Management by DENR-EMB;
- Various PDP projects, led by DENR-EMB; and
- Various activities from LGUs, including DRR activities and fishery projects.

Aside from these commitments, the Philippines has one of the most comprehensive set of environmental laws in the world. It is often said that the challenge lies in the implementation and compliance. If the provisions of environmental laws and policies are adhered to by stakeholders and strongly enforced by authorities, current problems and challenges in saving Manila Bay will not exist in the first place. For Manila Bay, the challenge lies in matching the scale of decision-making and adherence to laws to the ecological scale of the Bay. Passive attitude towards said laws, irresponsible management and utilization of resources, and lack of appropriate facilities and interventions will worsen the following scenarios come 2040.

By 2040, the population increase outside of Metro Manila without increase in sewerage coverage and septage management will lead to water quality failing the allowed limits for nutrient, BOD, and fecal coliform, making Manila Bay totally unswimmable and strategies for saving it more difficult — despite the fulfillment of concessionaire’s commitment for 2030.

Weak enforcement of segregation and recovery of wastes at the household and LGUs pushes the government back from hitting the targeted 80% diversion rate by 2022. The current number and capacity of sanitary landfills will not be enough to serve the projected volume of solid wastes (including residuals) for disposal, especially if no new sanitary landfills are constructed. The hard-liner stance of the current government in strictly enforcing the law will force the LGUs to close existing open dumpsites, yet the lack of facilities coupled with ballooning population will make proliferation of open dumpsites inevitable. Adding lax enforcement to the mix, solid waste diversion rate might even drop from the 46% baseline of 2015.

The number of people at risk in coastal areas will increase due to population growth and the combined effect of sea-level-rise and land subsidence in the northern part of the Manila Bay. At present, minimizing dependency on groundwater is a challenge, resulting to decrease in sources of safe, clean water, and continuous and faster land-sinking. Coastal LGUs in Bulacan and Pampanga had built structures along the coast for protection against coastal flooding and storm surge. However, these structures are inadequate and poorly maintained.

By 2040, the number of people at risk will grow to 7.6 million, of which about 50% live in NCR. Highly vulnerable communities, such as those living in islands and coastal barangays, will eventually be displaced, which raises the question of where to place these communities, taking into account their basic needs, livelihood, culture, and way of life.

Fishing pressure is already very high in Manila Bay. The lack of integrated management of fisheries and aquatic resources that will provide oversight in the whole coast of the bay creates more problem, especially competition among fisherfolks, whose livelihood and food depend so much on Manila Bay’s resources. Furthermore, most habitats have already been exploited and fragmented. Mangroves and other critical habitats become less resilient as climate change worsens every year. This scenario will affect life cycle stages of commercially important fishes further contributing to the increasingly negative trajectory of stock density from 2022 to 2040. Degradation of water quality shall also significantly decimate ecosystems and the fishes that thrive in Manila Bay.
INTRODUCTION

The current and projected problems in Manila Bay expose the need for a comprehensive and cohesive approach and strategy that is implementable, engaging, and sustainable.

The overall approach is the establishment of the four (4) pillars of MBSDMP:

- The Integrated Coastal Zone Management (ICZM) Planning Framework,
- The Priority Measures,
- The Enabling Environment, and
- The Stakeholder Engagement.

In a snapshot, the ICZM Planning Framework defines the various use zones in the bay and the principles to guide any development projects in any zone in Manila Bay. The Priority Measures are developed to focus and strategically address current and projected future Manila Bay critical target gaps. The Enabling Environment reiterates the various elements needed to ensure that the Priority Measures are ready and executable on time. And the Stakeholder Engagement defines the commitment and active participation of concerned NGAs, LGUs, private sector and other stakeholders in crafting and implementing the MBSDMP action plan and investment plan as well as the proactive compliance to existing policies and programs that is needed by the Enabling Environment.
INTEGRATED COASTAL ZONE MANAGEMENT (ICZM) PLANNING FRAMEWORK

INTRODUCTION

The Integrated Coastal Zone Management (ICZM) Planning Framework for Manila Bay is the overall guiding framework of the MBSDMP. It adopts a holistic and integrative approach in addressing the complex social and ecological issues in the Manila Bay Coastal Area. Further, it seeks to engage the participation and cooperation of all stakeholders to realize the overall goal of having a “Sustainable and Resilient Manila Bay” by balancing and harmonizing the sectoral objectives (environment, economic, social, cultural and recreational).

PRACTICAL APPLICATION

The ICZM Planning Framework sets the parameters by which the proposed developments under MBSDMP is to be designed and implemented. In support to the AmBisyon Natin 2040: Matatag, Maginhawa, at Panatag na Buhay, the MBSDMP ICZM Planning Framework can also be used as:

- Basis for updating of CLUPs/Zoning ordinances of coastal LGUs in a manner that will harmonize the socioeconomic development goals of the LGUs and Manila Bay;
- Basis for LGUs in determining the best/suitable uses of municipal waters within its jurisdiction;
- Framework to guide in resolving use of areas commonly claimed by two or more LGUs;
- Framework for resolving conflicting uses of Manila Bay;
- Framework for the evaluation of unsolicited land reclamation proposals;
- Framework for identification of areas where building activities may or may not be allowed;
Basis for implementing measures to mitigate adverse impacts of existing and prospective uses of, and practices/activities in Manila Bay and coastal areas; and

Guide for the private sector in identifying and developing potential projects.

The latest full copy of the ICZM Planning Framework can be downloaded at www.mbsdmp.com/reports.

POTENTIAL DEVELOPMENTS

The potential developments within Manila Bay can be grouped into three (3):

- Protection projects pertain to development works to protect the integrity of existing historical monuments, ports and transport routes, and ecosystems and natural habitats.

- Restoration projects pertain to development works to improve the area towards its original intent and purpose.

- Improvement and upgrading projects pertain to development works to improve the area towards achieving new objectives that may be beyond or different from the original intent and purpose. Land reclamation projects are included in this project category.

Protection and restoration projects are designed to maintain and/or improve the quality of natural habitats and ecosystems. On the other hand, land reclamation, by its very nature, causes alteration of natural habitats and ecosystems in the bay. Hence, proposed new reclamation projects shall be subject to a robust impact assessment protocols.
ZONES IN MANILA BAY

The Manila Bay ICZM Planning Framework defines the three (3) non-mutually exclusive major zones as follows:

**Zone 1** refers to the Strict Protection Zones (SPZ) consisting of natural areas with high biodiversity value. These areas are to be closed to all human activities except for scientific studies and/or ceremonial or non-extractive uses by the indigenous peoples. Habitats of threatened species, or degraded areas that have been designated for restoration and subsequent protection are included in this zone. This zone also includes a buffer zone to maximize the protection of habitats where the majority of dispersing fish and invertebrate larvae are predicted to settle.

**Zone 2** refers to Special Use Zones (SUZ) which are portions of the Manila Bay with specific functions that are specified and protected by law. Human activities in this zones are also defined and limited by law. These areas include the shipping navigational lanes, ports and harbors, naval bases, restricted areas, and protected areas.

The shipping navigational lanes are areas designated by law as navigation lanes primarily for water transportation of products and people and related activities, including scientific and ceremonial or religious activities, and are closed to all other human activities including land reclamation and building of structures that will impede the safe movement of all authorized sea vessels.
Zone 3 refers to the Production Use Zone (PUZ)—zones which are primarily intended for economic and recreation purposes. As such, these zones are where suitable human activities may be allowed, thus outside the Strict Protection Zones (SPZ). Subzones under Zone 3 are:

- Recreation Zone (RZ) – beaches, beachfronts and adjoining coastal waters primarily designated for sunset watching, swimming, other recreational and ecotourism related activities, scientific and ceremonial or religious activities.

- Fishery Use Zone (FUZ) – all areas within PUZ but outside NZ and RZ that may be used for fishing, aquaculture, including scientific, religious and other human activities that may not compromise the sustainability and accessibility of areas to fisherfolks.

- Multiple Use Zone (MUZ) – all areas within PUZ but outside of NZ, RZ and FUZ where land reclamation, building of structures and infrastructures may be allowed following strict implementation of EIA and other related laws and regulations governing such projects. This zone may also be used for other suitable uses described in other PUZ subzones.

OTHER PLANNING CONSIDERATIONS

WATER CIRCULATION AND TIDAL MOVEMENT

Inherent and critical to maintaining the ecosystems of Manila Bay is maintaining its water circulation and tidal movement. This is indicated in the study of Villanoy and Martin (1997) “Modeling the Circulation of Manila Bay: Assessing the Relative Magnitude of Wind and Tide Forcing”. All proposed developments within the bay need to be designed and implemented while taking this under serious consideration.
LAND SUBSIDENCE

With the rate of land subsidence plus sea level rise at the north of Manila Bay, any flood protection measure or development project initiated now are likely to become dysfunctional within the next decades. With the rate of population growth and expansion in these areas, addressing the concerns of communities on being exposed to flooding has become more complicated and difficult to manage.

Based on the results of rapid assessment of the conditions of the coastal areas, the disappearance of the original coastline, unabated land subsidence and sea level rise, the need to draw a new coastline that will serve as the ‘Coastal Line of Defense’ (CLD) was deemed necessary. The CLD will be the basis for distinguishing:

- areas that can be developed and protected (based on cost-benefit analysis), and
- areas that are too costly to improve and protect in the long run—thus retreat is inevitable to ensure the long-term security of people exposed to flooding, and to avoid loss of investments in development and flood protection that are likely to be inundated in the future.

With this line, measures and developments above and below the CLD can be designed and implemented more appropriately and suited to the conditions onsite.
GUIDING PRINCIPLES ON DEVELOPMENTS WITHIN MANILA BAY

1. “Pangalagaan at panumbalikin ang ating ecosystem.”
   Protect and Restore Existing Ecosystem. Protection and restoration projects in any zones, when necessary, shall be implemented.

   This will be under the mandate of the Department of Environment and Natural Resources (DENR).

2. “Pangalagaan ang kanlungan ng mga isda at buhay ilang.”
   Protect Habitat of Fishes, Migratory Birds, and Large Marine Mammals. No development project in zone is allowed that will cause alteration or permanent loss of mangrove, intertidal mudflats, coral reefs, marine protected areas, fish sanctuary, and marine key biodiversity areas, including shallow water surrounding marine complex areas (combination of mangrove, intertidal mudflats, coral reefs, marine protected areas, fish sanctuary, and/or marine key biodiversity areas).

   This will be under the mandate of the BFAR and DENR-BMB.

3. “Panatilihin ang tanging gamit ng tukoy na lugar ayon sa batas.”
   Sustain Use of Areas as Defined by Law. Development projects within the Zone 2 (zones defined by law) are allowed as per its intent and purpose as defined by law.

   This will be under the mandates of the following: LGUs, PPA, MARINA, and PCG.

4. “Panatilihin ang likas na galaw ng tubig.”
   Maintain Water Circulation and Tidal Movement. Any developments in any zones shall not significantly impede or alter water circulation and tidal movement that will have significant impact on the sustainability of Manila Bay’s critical habitat.

   This will be under the mandate of the Department of Environment and Natural Resources (DENR).

5. “Tiyakin ang ibayo at maingat na gamit ng ating likas yaman.”
   Optimize the use of available resources for greater benefits. Any development projects within Zone 4 are allowed. This includes potential change of economic activities in favor of better economic and financial outcomes.

   This will be under the mandates of LGUs, DENR and PRA.
OPERATIONALIZATION OF THE ICZM PLANNING FRAMEWORK

Assess the suitability of ongoing PAPs and proposed PAPs to the zone where the PAPs are being implemented and are being proposed to be implemented.

The assessment of all PAPs related to mangroves, key biodiversity areas, corals and mudflats in Strict Protection Zone, shall be under the responsibility of DENR BMB and EMB. For all PAPs related to fishery, fish sanctuaries and marine protected areas, the assessment shall be the responsibility of DA-BFAR.

In Special Use Zone, the assessment of PAPs related to navigation lanes, seaports, etc. shall be the responsibility of PPA, MARINA and PCG.

For PAPs related to fishery in Production Use Zone (PUZ), the assessment shall be the responsibility of DA-BFAR. All other PAPs in the PUZ shall be assessed by DENR-EMB. In all zones, the assessment of suitability of all ongoing and proposed PAPs shall be done by the concerned NGAs in close collaboration with concerned LGUs.
PRIORITY MEASURES

REDUCE POLLUTION LOAD

Water quality refers to the condition of the water, including its chemical, physical, biological, and radiological characteristics. It is a measure of the condition of the water relative to the requirements of one or more biotic species and/or to any human need or its suitability for a particular purpose. The Clean Water Act of the Philippines (RA 9275) defines water quality as the characteristics of water which defines its use in terms of physical, chemical, biological, bacteriological or radiological characteristics by which the acceptability of water is evaluated.

Over the years, the water quality of Manila Bay has continuously deteriorated due to increasing discharges from untreated domestic and industrial sources, as well as urban and agricultural runoffs. Sea-based activities such as aquaculture and waste dumping from passenger ships and cargo vessels also contribute to the increasing pollutant load of the Bay.

Key measures to improve the water quality of the Bay will involve increase investment in environmental infrastructures for wastewater collection and treatment; enabling environment with stricter enforcement of pollution laws; and increase in public awareness on the health and environmental hazards associated with untreated wastewater so that there will be willingness to pay for the service.
IMPROVE SOLID WASTE MANAGEMENT

Pollution brought about by inadequate solid waste management (SWM) is also a major contributor to the water quality of the waterways and the Manila Bay. Domestic, commercial, and industrial activities generate solid wastes that currently enter the Bay directly or via river and drainage systems, and impairs the drainage facilities, deteriorates aesthetics, and contaminates the bay. The solid waste that clog the waterways also aggravate the flooding problem.

The RA 9003 has long been passed into law yet there is still much to be done in effectively managing solid waste. There are still open dumpsites operating in the area. Compliance to submission and approval of solid waste management plans is still low. Diversion rate, on the other hand, 18 years after the law was passed, is only at 46-48%. The measures proposed under this Master Plan are meant to address all these gaps.

The proposed measures to improve solid waste management in the Manila Bay region are combination of infrastructures and soft measures varying from increased capacities of solid waste disposal facilities and increased MRFs to information, education and communication (IEC) campaigns, institutional strengthening and policy reform.

REDUCE EXPOSURE TO FLOODING

The marine, coastal and terrestrial ecosystems, along with urban areas within the Manila Bay Area are exposed and vulnerable to climate change and other natural hazards. The mortality and damage due to climate change and natural disasters can impinge on the attainment of inclusive growth, improvement of informal settlements and water quality, and ecosystem protection. Additionally, the exposure and vulnerability of Manila Bay Area to climate change and natural hazards are either attenuated or amplified by increasing human activities in the area, and the degradation of the natural environment. In the absence of appropriate measures to reduce risks and vulnerabilities, and enhance adaptive capacity, the adverse impacts of natural disasters and climate change on Manila Bay and the entire MBA can result to substantial general welfare losses that can lead to more poverty and decline in adaptive and coping capacity of vulnerable sectors, and eventually compromising the sustainability of Manila Bay.

The overarching objective of this measure is to reduce the number of people exposed to flooding. The achievement of this objective rests on two essential pre-conditions: minimization of additional number of people exposed to flooding, and the implementation of nature-based solutions to flood protection measures that at the same time contribute to ecosystem protection and enhanced livelihoods for the most marginalized fisher families along the coast. For these conditions to exist, key PAPs were identified based on the outputs of various FGDs with stakeholders, Technical Committee meetings, DET advice, key informant interviews, and review of various government plans, programs and related documents.
RESTORE NATURAL HABITATS

The Manila Bay ecosystem is under serious threat and the Supreme Court’s Mandamus has ordered that the ecosystem be protected. Adherence to the order is critical if ecosystem productivity and its benefits, and public well-being are to improve in Manila Bay. As the foundation for social and economic development, the environment drives inclusive growth, contributes to water quality improvement, reduces the community’s exposure to disasters and vulnerability to climate change impacts, and, when maintained intact, provides coastal protection that leads to safer settlement areas. Consequently, with the current business-as-usual attitude to environmental protection of the Manila Bay, climate change, natural and man-made disasters are expected to impinge on the attainment of inclusive growth and the improvement of settlements of, primarily, the most marginalized sector in Manila Bay (i.e., fisherfolks, farmers, informal settlers).

Improved management of Natural Protected areas contributes to the overall productivity and resilience of Manila Bay by providing habitats to a diverse community of species, enhancing ecosystem productivity and biodiversity, and increasing the capacity of the system to assimilate pollution. This measure requires the execution of cross-cutting strategies that include baseline research, protected area establishment and wetland management; capacity building; community and science monitoring; large-scale restoration of intertidal areas, ecosystem sensitive flood mitigation approaches and conservation programs; and, the development of sustainable ecotourism. When, provided with sustainable funding, capacity-building and adequate expertise, the target area for protection can be achieved and even exceeded.

BOOST FISH BIOMASS

Years of unsustainable fishing practices compounded by high concentration of pollutants and habitat loss have caused the near collapse of fisheries in Manila Bay (Santos et al. 2017). The lack of a clear, coordinated action to address overfishing, environmental degradation, and habitat destruction has lead to shifts in catch composition and the decimation of wild fish stocks.

The goal of this measure is to improve the standing fish stock biomass in Manila Bay by increasing the biomass of adult spawning stock and the area of protected critical fish habitats. In time, fish recruitment will be enhanced since fecundity is dependent on the size of the spawning adult, while the survival of their larvae is strongly influenced by the condition of the nursery habitat. Enhanced recruitment, particularly that of commercially important species, is essential to sustain the fisheries sector in Manila Bay and prevent its predicted collapse. In general, the achievement of this objective rests on three essential pre-conditions: the reduction of fishing pressure by arresting illegal and unsustainable fishing activities; the implementation fish stock enhancement programs; and the strengthening of community development programs. A sustained and improved standing stock biomass of commercially important fish species will benefit the marginalized municipal fisherfolks, and improve the overall social inclusiveness at least within the designated plan area.

The PAPs proposed in this measure generally focus on enforcement of laws, enhancement of stocks, community development and poverty reduction. These are key areas of focus viewed as essential in reversing the effects of overfishing and improving the overall ecological state of Manila Bay.
PROMOTE RESPONSIBLE AND SUSTAINABLE TOURISM

Tourism is recognized by the government as an important contributor to the generation of foreign exchange earnings, investments, revenues, and employment, as well as to the growth of the country’s economic output. In 2017, direct contribution of travel and tourism to Philippine GDP was estimated at PhP1.377 Trillion or 8.7% of GDP.

Besides having the primary gateways (i.e., international airport and seaport), the Manila Bay area possesses a wealth of ecological and cultural attractions as well as diverse tourist destinations (i.e., nature and ecotourism sites, scuba diving, golf courses, yachting and marinas, hiking and trekking, urban attractions).

Foremost amongst the challenges is the largely private sector driven nature of tourism industry. Hence, without effective, coherent and coordinated government policies and actions (including in other sectors on which tourism activities depend) tourism will fail to exploit fully its potential.

In Manila Bay area, the tourism challenge includes the current condition of the bay and the challenges in Metro Manila and its neighboring coastal municipalities/cities that has already affected and deteriorated the bay (i.e., beaches with high fecal coliform, solid waste everywhere including waterways and bay).

Recognition of the importance of tourism within the field of sustainable development, along with increased worldwide interest in environmental issues, have helped spur the need for the creation of sustainable tourism principles. This tourism measure aims to promote a responsible, ethical, sustainable and an eco-friendly tourism that will complement the other measures towards achieving the MBSDMP objectives. Specifically, this measure will promote more diversity, reduce concentration in high-density destinations, and exemplify long-term strategies that are ecologically sustainable and socially inclusive. While improving the tourist’s experiences, the measure also aims to trigger positive spillover effects on the wider economy by adhering to sustainable tourism development principles, promotion of responsible and ethical tourism, development of urban green tourism products and capacity-building of LGUs on sustainable tourism development. Ultimately, it will contribute to economic growth that is shared broadly across society while improves the ecosystem as well as the well-being of the Filipinos.
ENABLING ENVIRONMENT

INSTITUTIONALIZE AND ENFORCE ICZM PLANNING FRAMEWORK

Being amongst the four (4) pillars of MBSDMP, the ICZM Planning Framework needs to be instituted soon. The ICZM Planning Framework needs to be adopted by the Manila Bay Task Force (MBTF) with a resolution to enforce its use and implementation. Succeeding activities towards updating the ICZM Planning Framework are already embedded in the list of PAPs of the MBSDMP. Upon its adoption, the MBTF shall be enabled to strictly enforce adherence of all LGUs, NGAs, and private sector to the ICZM Framework. Part of the institutionalization is Harmonization of ICZM Planning Framework with all relevant plans of LGUs and NGAs. Conduct of IEC on the ICZM Framework will be essential in advocating strict compliance. Development of comprehensive system of monitoring the PAPs and the state of ecosystems and resources in various zones will generate up-to-date information and datasets that will be useful for updating the ICZM framework.

INSTITUTIONAL SET-UP AND CAPACITY BUILDING FOR MBSDMP IMPLEMENTATION

The current institutional set-up being considered for the implementation of the MBSDMP is one that has substantial authority to make management decisions as well as powers to coordinate, regulate, and enforce compliance consistent with the conservation of ecosystems and within the sustainable economic potential of Manila Bay.

For the short-term (2020 to 2022), the institutional set-up of the MBSDMP is the current MBTF under the AO 16. Annex 1 provides recommendations to enhance the current structure and arrangements of the MBTF.

For the medium to long term (2022-2040), various options are still being discussed and
considered. While the requirements of the institutional set-up, in general, has been presented, discussed, and understood with the various line agencies and stakeholders through series of presentation and consultation meetings (i.e., small meetings, Technical Committee Meetings, MBTF meeting, InfraCom), the decision for the long-term institutional set-up is yet to be finalized and agreed upon with the MBTF and other concerned agencies. Latest draft of the Institutional Set-up that presents options of its arrangement and structure can be found in Annex 1.

DECONGESTING METRO MANILA

The Manila Bay region is amongst the most crowded places in the world. Increasing population without adequate infrastructure support add pressures to the degradation of Manila Bay ecosystem. Urban population growth is the primary driving force of the continuous increase of waste load to Manila Bay. An increasing population and urban area also lead to higher exposure to natural disasters, not to mention the growing and unmanaged informal settlements in hazard-prone areas with usually makeshift and substandard living quarters.

To address the increasing population in Manila Bay area, policies and programs that will incentivize people to move out of NCR must be judiciously explored to effectively decongest the region and distribute development elsewhere.

Decongestion of Metro Manila may have negative impacts on its economy and GDP. However, the benefits from decongestion such as relief of pressure on and improvement in the delivery of basic services (i.e., water, sewerage, housing, transportation, health and education) can far outweigh its negative impacts.

PROMOTING ENVIRONMENTALLY FRIENDLY DEVELOPMENT

Section 16 of the 1987 Philippine Constitution declares that “The State shall protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.” This is evident...
with the comprehensive set of environmental laws being implemented in the country. However, there is still a need to strengthen existing laws and regulations, and to develop new standards and controls to safeguard the natural environment within the MBA.

This enabling measure intends to emphasize the urgency to promote and utilize environment-friendly solutions and interventions by integrating eco-friendly options and solutions across all PAPs for a longer-term solutions.

**COMPLIANCE TO EXISTING POLICIES AND PROGRAMS**

The strict enforcement of and compliance to existing policies, rules and regulations, and timely implementation of critical government programs, will be essential to the successful execution of measures and PAPs in the MBSDMP. In particular these policies, rules, regulations and programs include:

- PD 1067 Water Code of the Philippines; IRR adopted at the 119th meeting of the National Water Resources Council on June 11, 1979; Revised IRR adopted at the 29th meeting of the National Water Resources Board on March 21, 2005;
- PD 856 Code of Sanitation of the Philippines; IRR of PD 856
- RA 9483 Oil Pollution Compensation Act (2007);
- RA 9993 New Philippine Coast Guard Law (2009); IRR approved by DOTC on April 8, 2011
- RA 9003 Ecological Solid Waste Management Act (2001); IRR of RA 9003; NSWMC Resolution No 6 (Dec 2005), Guidelines on Categorized Final Disposal Facilities; DAO 2006-10, Guidelines on Categorized Final Disposal Facilities (Sanitary Landfills);
- PD 1586 Environmental Impact Statement System;
- EO 510 (OP, 2006) creating the River Bain Control Office (RBCP); EO 816 (OP, 2009) RBCO as lead agency for river basin management in the country; EO 533 Adopting ICM (OP, 2006);
- Preparation of Comprehensive Land Water Air Subsurface Use Plan (CLWASUP);
- PD 1096, Building Code of the Philippines, National Structural Code of the Philippines, DPWH 2015 Design Guidelines, Criteria and Standards (DGCS, particularly Volumes 1 through 5 dealing with horizontal infrastructure), and with both DGCS Volume 6 (on Buildings and Other/ Related Structures i.e. vertical infrastructure), Green Building Code;
- Zero Open Defecation of DOH;
- National Greening Program (NGP);
- RA 7586 National Integrated Protected Areas System (NIPAS) Law; and
- The GeoRiskPH hazard and risk assessment platforms which have been approved during the 39th Cabinet Meeting in 2019 to help the government increase the nation’s resilience to natural hazards.

**POLICY DEVELOPMENT AND REFORM**

**RECLAMATION PROJECTS**

Strict implementation of the provisions under EO 74 (2019) will help minimize the adverse environmental impacts of reclamation in Manila Bay. As provided for in EO 74 (2019), the review and approval of all proposed reclamation projects shall be based on the aggregate and cumulative impacts of all proposed and existing reclamation projects. This will require the shift from project-based impact assessment to programmatic and/or strategic impact assessment.

One of salient provisions under EO 74 (2019) is the directive for the Philippine Reclamation Authority (PRA), in coordination with the DENR, NEDA and LGUs, to formulate a national and/or regional reclamation and development plan as basis for the approval of reclamation projects (Section 7 of EO 74).

To effectuate the formulation of the National Reclamation and Development Plan, NEDA has proposed and recommended to PRA the creation of a Technical Working Group (TWG) to be spearheaded by the PRA, and composed of NEDA, DENR, Department of the Interior and Local Government (DILG) and concerned LGUs. PRA has already affirmed the need for the creation of the said TWG, and has requested the concerned agencies for official designation to the TWG.

Another important provision set forth under Section 6 of EO 74 is the required holistic approach to reclamation wherein reclamation projects shall be evaluated by PRA based on their cumulative impacts rather than on a per project basis. It is understood that the conduct of programmatic Environmental Impact Assessment (EIA) for reclamation projects may require a single entity to lead the assessment, which will involve several projects with different proponents, timelines, financing and other concerns. The implementation arrangement for the said purpose may need to be elaborated in the report. Furthermore, it is suggested that necessary coordination be conducted with PRA on how this can be pursued with respect to the PRA’s Reclamation Planning Decision Support System (DSS).

Amongst the recent government policies and other updates/developments concerning land reclamation projects is the Memorandum to PRA dated 27 May 2020 from the Office of the Executive Secretary. This Memorandum directs PRA to impose a moratorium on all reclamation projects situated at the Manila Bay waterfront of the City of Manila except those initiated by national government agencies and those that have been issued a Notice to Proceed be integrated in the report, specifically its possible effects on reclamation proposals initiated by the private sector.

It is understood that the said moratorium was issued in view of the “National Cultural
Heritage Act of 2009” and the “Strengthening Peoples’ Nationalism through Philippine History Act”, which declared the Manila Bay waterfront as a National Historical Landmark.

TOURISM DIRECTION
The efforts to shift from a mass tourism to high-value tourism shall be sustained by: (1) adherence to sustainable tourism development principles; (2) promotion of sustainable tourism; (3) development of urban green tourism products; and (4) capacity-building of LGUs on sustainable tourism development shall be promoted to make tourism programs of the LGUs more competitive, inclusive and sustainable.

SAFE WATER AND FOOD SECURITY
To safeguard water and food security in the Manila Bay Area amidst the urban development pressure, the following programs, activities and projects of Department of Agriculture and all its attached bureaus shall be strengthened and scaled up, that includes: Establishment of Small Water Impounding Systems, Capacity Building for Income Diversification for Farmers; Establishment of Soil Conservation Techno-Demo Farms for Manila Bay Rehabilitation; and Adoption of Agricultural Wastewater Treatment Management and Technology.

PASSAGE OF NATIONAL LAND USE ACT
The Manila Bay Area is a major focal area of the current Build-Build-Build (BBB) program of the national government. This includes the expansion of existing railway networks, urban mass transport development, construction of new air and sea ports, building new roads and bridges, and establishment of new and better cities. It is expected that the Manila Bay Area stands to benefit largely from this program.

However, the absence of National Land Use Policy can make the BBB program a driver of indiscriminate conversion of prime agricultural lands, forests and other natural lands leading to costly losses in crop production, biodiversity and ecosystem services. Hence, there is a need for a National Land Use Policy to put in place a judicious system of allocating and using limited land resources optimally and sustainably.
BALANCED HOUSING AND INFORMAL SETTLEMENTS

Strict implementation of RA 7279 Urban Development and Housing Act (UDHA) particularly the provision on balanced housing policy is essential to uplift the conditions of the informal settlers consistent with the government’s inclusive growth policy. Full compliance by both regulators and stakeholders with provisions found in RA 10884 (entitled “An Act Strengthening the Balanced Housing Development Program, Amending for the Purpose Republic Act 7279) shall also apply to land reclamation projects. There is need however to detail the official interpretation as well as the implementation and enforcement mechanisms of the provisions of the applicable laws and its Stream of Regulations (SoRs) as to how these can specifically apply to responsible land reclamation efforts.
STAKEHOLDER ENGAGEMENT

FOSTERING PARTICIPATION AND COMMITMENT

The SDG Goal 16 underlines promotion of peaceful and inclusive societies for sustainable development, and building of effective, accountable and inclusive institutions that set critical targets for achieving progress, including public access to information and protection of fundamental freedoms in accordance to relevant laws, standards, and agreements; and using responsive, inclusive, participatory and representative decision-making at all levels of engagement in every phase of a project or program (Guidance Note on Stakeholder Engagement - UNDP Social and Environmental Standards). Effective stakeholder engagement is crucial to attaining such goals, thus ensuring that “no one is left behind” - the very essence of MBSDMP’s aspiration for inclusive growth.

Reaching out to and building relationships with civil society organizations (CSOs) and actors, private sectors, national and local government agencies, local communities, academic institutions, and other partners is an indispensable element of our planning protocol that we implemented from the very start of the MBSDMP Project, particularly during the Situational Analysis phase. This was presented and illustrated in the Inception Report (see Figure 1) through the divergence-convergence process for involving stakeholders in decision-making. The said efforts were sustained during the preparation of Strategy Building Report and the Final Strategic Master Plan, and will continue until the main components of the Final Action and Investment Plan are finalized and accepted.

The types of stakeholder engagement methods that MBSDMP employs includes the following:

- Key Informant Interview (KII);
- Focus/Work Group Discussions;
- Questionnaire; and
- Meetings/Forums

NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY
From the Project Kick-off Meeting on February 2018 to the Consultation with Province of Bataan regarding PAPs on DRR-CCA and SWM on March 9, 2020, more than 2,391* stakeholders (51% male, 49% female) were engaged by the project in varying levels of participation and involvement.

Amongst the stakeholder engagements, the event with the biggest attendance in a day is the Technical Committee Meeting—with about 200 stakeholders attending and representing various agencies, LGUs, institutes, and organizations.

During the Project Inception and Situation Analysis Phase around 459 stakeholders (59% male, 41% female) were consulted and provided inputs towards producing the Situation Analysis Report and the Manila Bay Area Atlas.

Around 793 stakeholders (64% male, 36% female) were consulted and involved during the Strategy Building Phase. With the iterative nature of this process of gathering inputs and refinements of the strategies and measures, the number of stakeholders engaged in strategy building can very well exceed 850 stakeholders. This includes stakeholder-led meetings where the Study Team is requested to present the Master Plan and where feedback are gathered.

*Number based on attendance sheet.
Besides the stakeholder engagement with LGUs, line agencies, institutions, and organizations, the Study Team also consulted and validated the formulated strategy, measures, and indicative PAPs with the barangay communities—in terms of its responsiveness to their needs and aspirations. The barangay community consultation and validation was done in 45 barangay communities—selected based on its characteristics, features, and geographical distribution that roughly represents the diversity of community barangays within the Manila Bay Area. Amongst the barangay characteristics and features considered were:

- Barangay that is flooded/regularly inundated (almost whole year round);
- Barangay affected by coastal flooding;
- Barangay affected by fluvial flooding;
- Barangay not flooded but a neighbor of regularly inundated barangay;
- Barangay with sanitary landfill in the area;
- Barangay without sanitary landfill;
- Barangay with other sanitation and solid waste management facility;
- Barangay that practices waste segregation;
- Barangay with high number of ISFs in high-risk area (coastal and/or fluvial flooding);
- Barangay that can only be access by boat/banca;
- Barangay with an ecosystem protected area;
- Barangay along the coast with deteriorating ecosystem;
- Barangay in coast but in industrial area;
- Barangay in sea port/airport;
- Fisherfolk barangay;
- Farmers barangay;
- Aquaculture barangay;
- Barangay along polluted waterway;
- Barangay along not-polluted waterway;
- Barangay in Manila Bay tourist area;
- Barangay with industrial area that significantly pollutes MB;
- Barangay in residential area with view on Manila Bay; and
- Barangay receiving/sending relocatees from Manila Bay Clean-up.

The community consultation focus group discussion (FGD) was participated by a total of 732 (54% male, 46% female) barangay community members and officials.

**STAKEHOLDER INVOLVEMENT IN IMPLEMENTATION**

Effective stakeholder engagement is fundamental to achieving sustainable development as it supports and strengthens constructive and responsive relationships amongst decision-makers, project implementers, and stakeholders that are crucial to development of robust plan, responsive project design, and well-consulted project implementation.

MBSDMP recognizes the crucial role of consulting with stakeholders in an open, transparent, and respectful process—not only to build strong productive relationships but to encourage participation and foster lasting involvement and commitment to a common vision for Manila Bay.

Project acceptance emphasizes the recognition of stakeholder ownership—that each element in the MBSDMP is developed along with the stakeholder in the process. As such, the projects, programs, and activities are expected to be more effective (as it complements other PAPs) and sustainable as stakeholders understand their stakes, roles, responsibilities, benefits and opportunities on said PAPs.

Ultimately, the Manila Bay Sustainable Development Master Plan is not just another government’s plan but a stakeholders’ master plan for the sustainable development of Manila Bay where the active role of the LGUs in local development (i.e., planning process, project implementation, M&E) and local governance is crucial.
GENDER AND DEVELOPMENT IN MBSDMP

The MBSDMP recognizes gender development as a key driver for inclusive growth and aims to promote equality of access to economic opportunities for all genders—this being amongst the key element of a well-functioning community that aspire for sustainable economic development.

In this perspective, the MBSDMP espouses the principles derived from "Mainstreaming Gender in Development Planning: Framework and Guidelines" that recognizes:

- Equality between women and men is a key women’s human right;
- Participation in development is crucial to the empowerment of women and men;
- Gender equality means promoting the equal participation of women as agents of economic, social, and political change; and
- Achieving equality between women and men may involve the introduction of specific measures designed to eliminate prevailing gender inequalities and inequities.

Overall, the MBSDMP is aligned with safeguarding gender development and equality as provided in the 1987 Constitution as well as other enacted legislations which includes:

- RA 7192 of 1992 – Women in Development and Nation Building Act – an Act promoting the integration of women as full and equal partners of men in development and nation building and for other purposes;
- EO 273 of 1995 – Approving and adopting the Philippine Plan for Gender Responsive Development for 1995 to 2025; and
- RA 9710 of 2009 or the Magna Carta of Women (MCW) – a comprehensive women’s human rights law that seeks to eliminate discrimination against women by recognizing, especially those in the marginalized sectors.

Within this context, Gender and Development in MBSDMP is sustained with the planning, budgeting and implementation mechanisms of MBSDMP PAPs are to be undertaken following and consistent with existing laws and policies. This includes (i) sustaining the practice of collecting gender-disaggregated data in all phases of MBSDMP-related projects, programs, and activities, and (ii) undergoes specific review and assessment to ensure gender equity is mainstreamed in project proposals, such as:

- Ensuring engagement of women during feasibility development for each PAP;
- Ensuring funding proposals for each PAP included in the Master Plan are evaluated for gender impact;
- Ensuring project will include resources required to mainstream gender during implementation and will allocate enough funds to ensure that gender considerations are met during the life of the project;
- Ensuring GAP recommendations are consistent with existing initiatives; and
- Ensuring project implementation mechanisms satisfy stakeholder requirements.
INSTITUTIONAL REQUIREMENTS

To respond to the fast-paced changes and highly complex and complicated context of the Manila Bay (and the Manila Bay Area it serves), and orchestrate the effective implementation of MBSDMP towards achieving the envisioned Manila Bay 2040, the governing body for Manila Bay must be able to:

- stimulate and effect synergy and integration to all plans, policies, and programs as well as across all stakeholders of Manila Bay Area;
- have (and/or source-out) sufficient funds for the full implementation of multi-sector and multi-agency MBSDMP Projects, Activities, and Programs;
- exact compliance while leverage existing strengths and opportunities to all concerned agencies and LGUs—towards addressing long-standing socio-political, economic, and technology related challenges;
- agilely make urgent and strategic decisions—having the capacity to mobilize various resources and multi-sector collaboration within limited timeframes;
- withstand political dynamics and changes in government—navigating through the changes in administration (i.e., 2022 onwards) while maintaining its influence and some level of authority over top level leaders of different government agencies, LGUs and the private sector within Manila Bay Area; and
- sustain the momentum of the Manila Bay Task Force and the formulation of the MBSDMP.

Ultimately, the institutional requirements for the MBSDMP is a formal body with clear mandates to oversee the sustainable development of Manila Bay while meet all the key institutional requirements to deliver a comprehensive, integrated, sustainable and responsive Manila Bay development within the next 10-15 years.

For this report, we will be using ‘Manila Bay Development Commission’ to ‘name’ the said institution, however, it is understood that this name may change.
MISSION
The MBDC is a government agency committed to undertake policy advocacy, oversee Manila Bay-related efforts, employ science-based information in decision making, and safeguard inclusive and meaningful participation of all stakeholders towards achieving Manila Bay 2040 while contributing to AmBisyon Natin 2040.

MANDATE
With the AmBisyon Natin 2040 (long-term vision) of Matatag, Maginhawa at Panatag na Buhay (Filipinos enjoy a strongly rooted, comfortable, and secure life), and the vital services of the Manila Bay to the Manila Bay Area and its inhabitants, the MBDC shall:

- Ensure integration, complementation, and consistency of all development plans and efforts in or that will be affecting Manila Bay to the MBSDMP.
- Provide focused, integrated, science-based, agile, efficient, and timely response with relevant agencies and local government units in addressing pressing challenges and concerns in the MBA.
- Ensure stakeholder engagement and participation in the whole process towards building sustainability of efforts and investments.
- Continuously monitor and evaluate results of efforts and interventions in or that is affecting Manila Bay, and ensure that the MBSDMP is properly updated and remains steadfast and true to its objectives.

FUNCTIONS
To perform its mandate, the functions of the MBDC are as follows:

- Coordinates with different national and local government agencies and the private sector to assure full implementation of all MBSDMP measures, programs, projects, and activities;
- Recommend measures and improvements to development plans, policies, priorities, and efforts in alignment with the MBSDMP;
- Update MBSDMP in partnership with all stakeholders to ensure that it remains in harmony with and supportive to development plans, policies, priorities and programs of concerned NGAs and LGUs without compromising the achievement of the vision for Manila Bay;
- Implement MBDC-led programs, projects, and activities and oversee implementation of all plans and efforts related to the sustainable development of Manila Bay;
- Undertake or commission relevant research and studies including impact assessment to generate datasets and information that are useful basis for keeping MBSDMP on course and relevant;
- With a pool of experts and practitioners, establish and sustain operations of a Manila Bay Decision-Support System; and
- Provide, make available, and be the repository of all Manila Bay-related information, reports, and reference materials to and for all stakeholders.
TRANSITION PROCESS

The current structure of the AO 16, the Manila Bay Task Force (MBTF), provides the most effective transitional structure while necessary legal requirements and capacity build-up are being set up for the MBDC. The Task Force can jump start the implementation of the Sustainable Development Master Plan and integrate its implementation with the OPMBCS for 2020. Its structure already mirrors the different thematic packages in the Master Plan and the OPMBCS, and its current leadership, the DENR Secretary, has the mandate and support of the President of the Philippines to mobilize organizations and resources to deliver results.

The MBDC shall be created through the passage of a law and which shall be an attached agency to the Office of the President for administrative purposes.

In Annex 1, there is a Gantt Chart that presents steps, legal/procedural requirements, and indicative timetable for strengthening the Task Force and major activities toward eventual creation of the MBDC.

MBSDMP IMPLEMENTATION STRUCTURE

The MBSDMP is both a framework—that guides the decision-makers and stakeholders in designing and implementing interventions and responses towards achieving the vision and goals for Manila Bay—and a consolidation of intervention and responses of stakeholders—in the form of Programs, Activities, and Projects (PAPs).

The planning, budgeting, and implementation process of each respective PAPs follows the existing policies and guidelines of the concerned Executing Agency. As such, Executing Agencies are MBA stakeholders who are responsible for the design/development, budgeting, procurement, and overall execution of the PAPs. In some cases, Executing Agencies are also the Implementing Agencies of the PAPs (i.e., implementation of PAPs). However, in some cases, such as for large PAPs, multiple stakeholders (i.e., various Provincial LGUs, Municipal/City LGUs) are required to implement a project of one entity (i.e., Line Agency). In such case, the Executing Agency is the Line Agency and the Implementing Agencies are the provincial LGUs or the municipal/city LGUs.

Overall, the role of the MBDC is to coordinate and provide support, guidance, and recommendation to the MBA stakeholders such that interventions and responses (i.e., PAPs) to the Manila Bay challenges are comprehensive and complementary as well as well-orchestrated towards the achievement of Manila Bay 2040 vision.

Annex 1 provides further details to the Implementation Structure which proposes the composition of the Commission and discusses the delineation of key roles and responsibilities of the various National Government Agencies (NGAs), concerned LGUs, private sector entities, academe, civil society organizations and other stakeholders.
INTRODUCTION

Across a 20-year timeline, the Action Plan is a list of complementing actions, responses, or interventions by various stakeholders that contribute towards achieving the Manila Bay 2040 vision.

The Action Plan is organized following the overall 4-pillar approach of MBSDMP, namely:

▪ The Integrated Coastal Zone Management (ICZM) Planning Framework,
▪ The Priority Measures,
▪ The Enabling Environment, and
▪ The Stakeholder Engagement.

▪ Soundly defining the spatial zones on the Manila Bay and the principles that guides any development projects in any zones.
▪ Comprehensively reducing pollution load that enters the bay.
▪ Collectively improving solid waste management.
▪ Participatory approach to reducing exposure of people, livelihood, and properties to flooding.
▪ Conscientiously restoring natural habitat.
▪ Strategically boosting fish biomass.
▪ Actively promoting responsible and sustainable tourism.
▪ Consistently inspiring active participation and involvement of stakeholders, as well as proactive compliance all to laws and standards.
▪ Willfully establishing functional institutional set-up and building capacities to implement MBSDMP.
▪ Cooperatively decongesting Metro Manila (“Balik Probinsya”).
▪ Strictly promoting environmentally friendly responses and developments.
▪ Prudently reforming relevant policies.
ICZM PLANNING FRAMEWORK

IPL01 | Endorse and Adopt ICZM Planning Framework

Upon completion of the MBSDMP, the MBSDMP with the ICZM Planning Framework, shall be adopted by the Manila Bay Task Force through a resolution to enforce its use and implementation. Succeeding activities towards updating the ICZM Planning Framework are already embedded in the list of PAPs of the MBSDMP.

IPL02 | Enable MBTF to strictly enforce adherence of all LGUs, NGAs, and private sector to the ICZM Framework

Part of the PAP to strengthen MBTF as the governing body of Manila Bay and as the coordinating and oversight body for the implementation of the MBSDMP is the granting of authority and responsibility to ensure that all current and future PAPs are compliant with the ICZM Framework. For a current or an ongoing PAP that is located in a zone where it is not allowed, MBTF shall have the authority to require the lead implementor of the PAP all necessary measures to minimize and/or mitigate any and all impacts that undermine the primary intent of the zone. For a future PAP, the MBTF shall have the authority to evaluate its fitness to the zone where it is being proposed to be implemented, and to ensure that adverse impacts on the zone’s primary intent is minimized to innocuous level.

IPL03 | Harmonize ICZM Planning Framework with all relevant plans of LGUs and NGAs

Comprehensive Land Use Plans (CLUP), zoning ordinances, agricultural development plans of all coastal LGUs shall be harmonized with the ICZM Framework so as to minimize if not totally avoid conflicting goals and targets of, and promote synergy of development activities in the different project areas in the same zone. Likewise, sectorial plans of NGAs shall be harmonized with the ICZM Framework. The harmonization process shall be mutually agreed upon by all concerned LGUs and NGAs. If needed capacity building or technical assistance shall be provided to support current efforts of Housing and Land Use Regulatory Board (HLURB) on the formulation or update of CLUPs and Local Shelter Plans of LGUs and to facilitate the harmonization process. The MBTF shall orchestrate the harmonization process.

IPL04 | Conduct IEC on the ICZM Framework

The MBTF shall implement an IEC program to disseminate information about the ICZM Framework. The various groups of Manila Bay resources users and stakeholders shall be targeted by the IEC program in order to guide them on what projects may or may not be allowed in various parts of Manila Bay. It will also provide guidance on which practices are allowed and which are not.
IPL05 | Develop comprehensive system of monitoring the PAPs and state of the ecosystems and resources in various zones

A comprehensive monitoring and evaluation system shall be developed by a team consisting of representatives of DA-BFAR, DENR BMB and EMB, PPA, MARINA, PCG, concerned coastal LGUs, and academe led by MBTF. The datasets and information that will be gathered shall be used as basis for assessing the impacts of various PAPs in different zones.

STAKEHOLDER ENGAGEMENT

Enforce Programmatic EIA

Projects that consist of wide range of individual projects and/or implemented on a long-time frame and across an extensive area, such as reclamation projects, shall be required to undergo a programmatic EIA to assess the cumulative impacts of the project, and the quality of stakeholders’ participation in the development and assessment of the projects. Specifically, programmatic EIA shall ensure adequate stakeholder participation through democratic, transparent and open, neutral, and timely consultation activities that involve individuals, agencies, organization, disenfranchised groups and people to be affected by transboundary impacts. It also guarantees the consideration of all relevant issues that will improve the plan/project and encourage public support in its implementation. In addition, it also provides for capacity building, IEC, publication of key impacts and other findings of the study, and provision of venue by which stakeholders are able to submit their views, opinions and suggestions on various reports of the project.

Information, Education, Communication, and Advocacy

Various types of IEC materials shall be prepared and shared with stakeholders. All MBSDMP related knowledge products shall be readily available and easily accessed – both in digital and physical form. An online platform and resource center shall be established for stakeholders to access available IEC materials if necessary. These materials will help stakeholders understand their roles, responsibilities, benefits and opportunities to the realization of the MDSDMP. This includes having an audio-visual presentation to promote MBSDMP as a stakeholders’ plan with its consistent engagement with stakeholders. An audio-visual presentation containing the salient features of MBSDMP shall be produced for the purpose of informing the general public. The AVP shall also be used to sustain the engagement and support of the LGUs, NGAs, private sector, local communities, and other key stakeholders in the implementation of MBSDMP.
**SETTING UP AND ENSURING ENABLING ENVIRONMENT**

**EE01 | Establish Institutional Set-Up and Building Capacities for MBSDMP**

For the short-term (2021-2022), the MBTF created under AO 16 shall be the governing body that will oversee the implementation of MBSDMP. This will ensure that the MBSDMP implementation will hit the road running and will build on the initial gains of the MBTF and its implementation of the OPMBCS. Concurrently, efforts to explore the opportunities, such as the establishment of MBDC, to strengthen the MBTF for the long haul shall continue.

**EE02 | Decongest Metro Manila**

Consistent with and to sustain the “Balik Probinsya” Program of the Government, decongesting Metro Manila shall consist of polices and activities to promote movement outwards NCR that will, amongst others, reduce the pressure on Manila Bay. Current efforts that are aligned to this includes the (i) creation and promotion of new growth centers outside NCR, (ii) discussion to transfer Government offices outside Metro Manila, (iii) improvement and integration of mass transport systems (land, sea and air) to interconnect cities to suburbs, and (iv) development of affordable housing stock. Supplementary to this, policies and ordinances shall be formulated and implemented to maximize the benefits of host communities or LGUs from major infrastructure projects.
EE03 | Promote Environmentally Friendly Development

This is to promote environmentally friendly development that will bridge the gap on government policies and standards to safeguard the natural environment from unnecessary conversion of the land. To complement and enable effective implementation and enforcement of the MBSDMP priority measures, comprehensive guidelines and incentive mechanism shall be developed and set in place to promote the welfare of the environment considering climate change through policy reforms such as on (i) Regulating Agricultural Land Conversion, (ii) Passage of National Land Use Act and (iii) Incentivizing “Green” Developments. It will also develop Stream of Regulations (SoRs) for (i) Climate Change Adaptation (CCA) and Disaster Preparedness, and (ii) Climate Change Mitigation through reduction of Greenhouse Gases.

EE04 | Reform and Compliance to Relevant Policies

The existing set of rules and regulations in the Philippines shall be strictly enforced to support the vision of MBSDMP. Appropriate enabling mechanisms shall be set in place to ensure that all LGUs and NGAs shall be able to review, reform, develop and enforce policies within its mandate that are supportive to the successful implementation of MBSDMP measures and PAPs. Actions under Priority Measures indicate various interventions with includes technical assistance to review and recommendation of policy reforms that are essential the goal.
**RPL01 | Expand Coverage for Both Sewerage and Septage Management to Treat Domestic Wastewater**

The Metropolitan Waterworks and Sewerage (MWSS), through its concessionaires Maynilad Water Services Inc. (MWSI) and Manila Water Company Inc. (MWCI), need to achieve its 100% sewerage coverage commitment to MWSS’s coverage area by 2037. Water Districts within the Manila Bay area also need to achieve 100% sanitation services coverage of its respective areas. Outside the concession areas and areas served by water districts, respective LGUs need to cover their respective remaining unserved areas. For coastal cities and municipalities, a sewerage system is a must. Septage system remains viable for other areas and is a stop-gap measure while sewerage coverage is not yet available. For the septage system to be efficient, LGUs need to ensure that septic tanks are properly designed and maintained, and septage services are properly executed and accomplished. The concerned LGUs also need to complement the program of the DOH on Zero Open Defecation and stop direct discharge of untreated effluents to coastal waters and rivers—such as from informal structures along the coast and waterways.

**RPL02 | Improve Compliance With General Effluent Standards by Businesses, Commercial, Institutions, and Industries**

It is the responsibility of the DENR-EMB to monitor and enforce strict compliance of businesses, commercial, institutions, and industries to the General Effluent Standards (GES). To improve compliance to GES, the DENR-EMB needs to provide financial and technical assistance to micro, small, and medium establishments and LGUs in setting up point sources wastewater treatment facilities for micro, small, and medium establishments. A General Effluent Standards Monitoring System (which includes a database on businesses, commercials, institutions, and industries) shall be develop and deploy at DENR-EMB to facilitate monitor compliance of establishments. Efforts on compliance with GES shall be complemented by the respective LGUs’ strict enforcement on GES requirements prior to issuance of business permits for businesses which generate wastewater.

**RPL03 | Control of Off-Shore Water Pollution Sources**

The current monitoring and management of off-shore water pollution by the PPA, PCG, and MARINA needs to be strengthened — particularly on the need of having unified systems and protocols across the three (3) agencies as well as having ample facility to manage off-shore wastes. As such, a Unified Systems for Monitoring and Management of Off-Shore Pollution for PPA, PCG, and MARINA needs to be established and rolled out. To address the gap on off-shore receiving facilities at PPA, Off-shore Receiving Facilities need to be properly designed, constructed, and operated.
RPL04 | Control of Pollution from Urban and Rural Run-Off

Controlling of pollution from urban and rural runoff requires expansive sewer network and treatment facility. The complexity of the sewer network, however, is further magnified by the topography and settlement. An approach to addressing pollution from urban and rural runoff is to reduce pollution load from agriculture and aquaculture industries and to enhance functionalities of wastewater and sewerage treatment plants. The DA, with help from LGUs and private partners, must enforce precision agriculture and aquaculture—a shift to a more environment-friendly practices. Wastewater Treatment Plants (WWTPs) and Sewerage Treatment Plants (STPs) need to be enhanced to include Biological Nutrient Removal.

RPL05 | Increase Public Awareness on Untreated Wastewater and its Negative Effects

The DENR is currently leading efforts on Manila Bay Rehabilitation Program which is being participated by many NGAs as well as LGUs along its coast. These existing efforts of DENR needs to be reinforced and sustained with IEC activities that focus on increasing public awareness on the negative effects of untreated sewage and on strategies to minimize wastewater.

RPL06 | Establish Manila Bay Water Quality Decision Support System

The complexity of the Manila Bay requires a science-based and technology-supported information system for decision making. A Manila Bay Water Quality Decision Support System (DSS) needs to be established at the EMB which needs to be supported by a community of water experts, modelers, and practitioners.

ISWM | Improve Solid Waste Management

Solid waste management needs to be improve to prevent decomposing solid waste and leachate from entering bodies of water that ultimately drains to Manila Bay.
RPL01 | EXPAND COVERAGE FOR BOTH SEWERAGE AND SEPTAGE MANAGEMENT TO TREAT DOMESTIC WASTEWATER

- RPL01 | 01-01 P: Expansion of Sewerage and Sanitation Services under Concession Agreement by Manila Water Company [MWSS]
- RPL01 | 01-02 P: Expansion of Sewerage and Sanitation Services under Concession Agreement by Maynilad Water Services, Inc [MWSS]
- RPL01 | 03-01 P: Various sewerage and septage projects in Manila Bay Coastal LGUs outside of NCR by NG [DPWH]
- RPL01 | 03-02 P: Various sewerage and septage projects in non-Coastal Key Cities outside of NCR by NG [DPWH]
- RPL01 | 04-01 P: Various sewerage and septage projects in Manila Bay Coastal LGUs outside of NCR thru PPP [PLGU]
- RPL01 | 05-04 T: Stop the direct discharge of untreated sewage to coastal waters and rivers from informal structures [LGU]

RPL02 | IMPROVE COMPLIANCE WITH GENERAL EFFLUENT STANDARDS BY BUSINESSES, COMMERCIAL, INSTITUTIONS, AND INDUSTRIES

- RPL02 | 01-01 T: Intensify timely monitoring and enforce strict compliance with General Effluent Standards by businesses, commercial, institutions, and industries [EMB]
- RPL02 | 01-02 P: Wastewater Treatment of Point Sources for Micro, Small, and Medium Establishments Project – Implementation [EMB]
- RPL02 | 01-03 P: Enhancement of Wastewater Treatment Plants (WWTPs) and Sewerage Treatment Plants (STPs) to include Biological Nutrient Removal – Implementation [EMB]
- RPL02 | 02-01 T: Strict compliance of GES Requirements in Issuance and Renewal of Business Permits [LGU]
RPL03 | CONTROL OF OFF-SHORE WATER POLLUTION SOURCES (I.E., PASSENGER AND CARGO VESSELS)

- RPL03 | 01-01 P: Establishment of Unified Systems for Monitoring and Management of Off-shore Pollution by MARINA, PCG, and PPA [PCG]
- RPL03 | 02-01 P: Design and Construction of On-shore Receiving Facilities (for both sewage and solid waste) in PPA Ports in Manila Bay [PPA]
  - RPL03 | 02-01 AP T: Design and Construction of On-shore Receiving Facilities (for both sewage and solid waste) in PPA Ports in Manila Bay - Approval, Budgeting, and Procurement Process [PPA]

RPL04 | CONTROL OF POLLUTION FROM URBAN AND RURAL RUN-OFF

- RPL04 | 01-01 P: Precision Agriculture and Aquaculture [BFAR]
  - Enforce Sustainable Aquaculture Guidelines and Implementation and Regular Monitoring of Code of Good Aquaculture Practices (GAqPs) [BFAR]

RPL05 | INCREASE PUBLIC AWARENESS ON UNTREATED WASTEWATER AND ITS NEGATIVE EFFECTS

  - RPL05 | 01-01 T: IEC Materials and Conduct of massive and extensive IEC on Water, Wastewater, and Water Recycling and Reuse [DENR]

RPL06 | ESTABLISH MANILA BAY WATER QUALITY DECISION SUPPORT SYSTEM

- RPL06 | 01-01 P: Development, Deployment, and Roll-out of Manila Bay Water Quality Decision Support System [EMB]

ISWM | IMPROVE SOLID WASTE MANAGEMENT
**IMPROVE SOLID WASTE MANAGEMENT**

**ISWM01 | Improve Waste Reduction and Segregation**

The problem with solid waste management starts with waste generation and its segregation. The DENR recently launched the “Basura Buster”, a mascot for its nationwide IEC drive on solid waste management. There is also the program on Refill Revolution that aims to reduce waste through reuse of containers. Policy reforms (i.e., single-use plastic, Extended Producers’ Responsibility (EPR)) are also underway to complement SWM efforts. These efforts need to be reinforced and sustained with an extensive and massive IEC initiatives, technical support on IEC and policy reforms. These government efforts are also complemented by the private sector with programs such as the Zero Waste to Nature (ZWTN).

**ISWM02 | Improve Collection, Recycling, and Recovery**

Current waste collection system and practices of LGUs reflect the need for substantial support and assistance in terms of infrastructure (i.e., materials recovery facility), equipment (i.e., garbage truck, trash barge), capacity building (i.e., collection, recovery, recycling), and technical assistance (i.e., studies, policy, design). This can be supported by the DENR-EMB through a program that provides financial assistance or funding mechanisms as well as technical assistance. Incentives for LGUs and recycling industries, and capacity building activities from DENR that are trickled down to the barangay-level will be necessary to improve recycling. Barangay MRFs and provincial transfer stations equipped with secondary sorting are essential at the provincial LGUs to achieve some scale and ensure improved recovery of divertible wastes, and reduced costs for logistics in waste collection and transport. Provincial LGU-led and private sector-led plans on Provincial Transfer Stations (with secondary sorting and additional MRFs) and Large-Scale Composting Facilities are also essential and timely, and will significantly reduce waste going to the sanitary landfills. The requirement for large-scale composting facilities within the Manila Bay Area is apparent, however, a feasibility study (on its viability and location/distribution, per province) is needed. Provincial governments may partner with private sectors in the study, design, construction and operation of composting facilities while provide capacity building to lower LGU levels for programs that will complement the successful operations of the composting facilities.

**ISWM03 | Improved Residual Management**

The population growth and increase in income results in surging waste generation that puts a stress on existing sanitary landfills. The capacity as well as the number of operational sanitary landfills shall be increased. Provincial-scale final waste disposal facilities shall be explored as an option. To reduce residuals and other types of wastes, Waste-to-Energy (WTE) facilities including refuse-derived fuels (RDF), bio-digesters, thermal and non-thermal technologies shall be considered as PPP projects.
**ISWM04 | Sustain and Expand Coverage of Manila Bay Area Clean-up Activities**

Clean-up drives is currently being done throughout the Manila Bay Area, although at varying coverage and intensity across various levels (Metropolitan, Provincial, City/Municipal, and Barangay). This includes the Manila Bay Clean-up Drive led by the DENR and MBTF, and the Weekly Clean-up Drive of the DILG in support to the Manila Bay Clean-up, Rehabilitation, and Preservation Programs. These efforts shall be sustained as well as expanded in terms of coverage area to achieve significant results and complement other actions to reduce and manage solid waste that enters the Manila Bay.

**ISWM05 | Improve Management of Off-Shore Solid Waste**

Besides the wastewater from off-shore sources, (i.e., passenger and cargo vessels), problem on solid waste from off-shore sources remains. The Unified Systems for Monitoring and Management of Off-Shore Pollution for PPA, PCG, and MARINA that need to be established and rolled out shall include monitoring and management of off-shore solid waste. This will be complemented by the off-shore receiving facilities at PPA as mentioned in the RPL03 (Reduce Pollution Load: Control of Off-Shore Water Pollution Sources).
**ISWM01 | IMPROVE WASTE REDUCTION AND SEGREGATION**

- ISWM01 | 01-01 T: Enhanced IEC Program for Waste Reduction, Segregation, Recycling and Recovery [EMB]
- Programs of Private Sector (i.e., Zero Waste to Nature Program) [Private Sector]

**ISWM02 | IMPROVE COLLECTION, RECYCLE, AND RECOVERY**

- ISWM02 | 01-01 P: Improved Solid Waste Collection and Management Project [EMB]
- ISWM02 | 01-02 P: Waste Recycling Incentive Program - Implementation [EMB]
- ISWM02 | 02-01 P: Provincial Transfer Stations with Secondary Sorting and Additional Materials Recovery Facilities in Selected Barangays (Phase 1-Initial Capacities, Phase 2-Expansion) [PLGU]
- ISWM02 | 03-01 P: Construction of 4 Large-Scale Composting Facilities [PLGU]

**ISWM03 | IMPROVED RESIDUAL MANAGEMENT**

- ISWM03 | 01-01 P: Increase Capacities of Disposal Facilities for Solid Wastes of the Metro Manila and the Provinces - Implementation [PLGU]
- ISWM03 | 01-02 P: Waste-to-Energy (WTE) Facilities Project - Implementation [PLGU]
### ISWM04 | SUSTAIN AND EXPAND COVERAGE OF MANILA BAY AREA CLEAN-UP ACTIVITIES

- ISWM04 | 01-01 T: Program for the Manila Bay Clean-up Drive - Regular and Expanded (2024-2040) [DENR]
- ISWM04 | 01-03 P: Sustain and Expand Manila Bay Clean-up Activities [DENR]

### ISWM05 | IMPROVE MANAGEMENT OF OFF-SHORE SOLID WASTE

- RPL03 | 02-01 P: Design and Construction of On-shore Receiving Facilities (for both sewage and solid waste) in PPA Ports in Manila Bay
- RPL03 | 02-01 T: Intensify timely monitoring and enforce strict compliance with laws/policies on off-shore sewerage and solid waste management.
REduce Exposure to Flooding

**REF01 | Establish Manila Bay Area Water Resource and Flood Management Decision Support System**

The MBTF and the DPWH are identified to lead the establishment of a Water resource and Flood management Decision Support System in the Manila Bay Area to strengthen its current capacity for a science based approach concerning sustainable flood protection initiatives and water use. In order to realize this undertaking, the MBTF and DPWH shall conduct a comprehensive assessment of water resources (surface and groundwater); hydrodynamic and hydrological modeling; and assessment of flood protection structures in major river basins draining to Manila Bay which will be the basis of a DSS mechanism to reduce the number of people exposed to coastal flooding.

**REF02 | Establish North Manila Bay Coastal Line Of Defense**

The DPWH is tasked to lead the establishment of the Coastal Line of Defense (CLD) in the Northern part of Manila Bay based on the findings of the preceding action plan (refer REF01). This action is intended to define the new coastline in North Manila Bay where the original coastline has already disappeared due to inundation. Hence, a new coastline shall be determined and established to serve as reference for the design of flood protection measures. The establishment of the new CLD shall be installed through local policy issuance from the concerning LGUs with the assistance of the concerning NGAs that includes the DENR and shall be supported by League of LGUs through its synergistic local initiatives.

**REF03 | Design and Implement Nature-Based Flood Protection Solutions**

The Manila Bay Area Water Resource and Flood Management Decision Support System will be the core of designing and implementing an effective Nature-based flood protection solution in the Manila Bay Area (refer REF01). The DPWH, as the lead agency, will determine strategic and priority locations of Nature-based Coastal and Riverine Flood Protection Project to reduce risks associated with strong tidal movements, storm surge, and tsunami; and facilitate the protection and adaptation of coastal areas and other low-lying areas from rising sea level, congruent to the principles of Restoring Natural habitat.

**REF04 | Undertake Climate Resilient Solutions and Strategies, Sustainable Livelihoods, and Community-Based Relocation for People Exposed to Coastal Flooding**

This specific action plan tasks the National Housing Authority (NHA) to lead the community-based relocation for people exposed to coastal flooding located on the south of the CLD where no feasible flood protection measures may be implemented; these areas are projected to be inundated by 2040 due to land subsidence and sea level rise (Refer to REF02). The relocation activity will be voluntary and undergoes by phases commencing from design and formulation of
guidelines to the actual relocation activities. Alternative option of support through Climate Resilient Solutions and Strategies, and Sustainable Livelihoods will be provided for those who choose to remain.

**REF05 | Minimize Land Subsidence**

Minimizing Land subsidence to reduce risk of exposure to flooding requires decreasing dependence on groundwater extraction in the area. This action plan shall strive to regulate groundwater extraction through policy issuance and exploration alternative sources of water led by the concerned LGUs and the DPWH, respectively. In addition, the full implementation of the Philippine Water Supply and Sanitation Master Plan (PWSSMP) will reinforce the development of alternative sources of water in Manila Bay.

**REF06 | Enhance Disaster Preparedness and Adaptive Capacities of Coastal LGUs and Communities Affected by the Northern Manila Bay Coastal Defense**

The DILG is tasked to enhance the disaster preparedness and adaptive capacities of affected coastal LGUs and communities consistent to its mandate to strengthen the technical, financial, administrative capabilities of local governments (RA 6975 Sec. 5e). To achieve this, the DILG, with support of the Department of Human Settlements and Urban Development (DHSUD) and Climate Change Commission (CCC) shall conduct capacity-building activities on mainstreaming Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) into the CLUP, local development plans, agricultural development plans and other related plans of the LGUs; conduct of Climate and Disaster Risk Assessment; and assist in accessing various sources of funding for CCA and DRR initiatives.

**REF07 | Improve Drainage along Major Rivers Draining to Manila Bay**

The LGUs, consistent to its mandate, is tasked to improve drainage along major rivers draining to Manila Bay. Poor drainage due to congested waterways (e.g. illegal structures built along streambanks) aggravates the inundation of low-lying areas. To improve the drainage along waterways, the LGUs with the support of DPWH shall remove illegal structures built along stream banks. Together with the Food Protection Project (refer REF03); draining of storm and river flows is expected to improve thus reducing the exposure on flooding.

**REF08 Rehabilitate Watershed Areas in Manila Bay Area**

Under the Local Government Code (LGC), certain powers and functions related to environmental management are devolved to local governments. Specifically, the provincial LGUs are authorized to adopt measures and safeguards for the preservation of the natural ecosystem in the province (Sec. 468). The Pampanga River Basin Master Plan that covers the provinces of Nueva Vizcaya, Nueva Ecija, Tarlac, Pampanga, Bulacan, Zambales, and Bataan has just been approved and need to be fully implemented and to rehabilitate degraded watershed areas in Pampanga River Basin.

**RNH | Restore Natural Habitats**
**REF01 | ESTABLISH MANILA BAY AREA WATER RESOURCE AND FLOOD MANAGEMENT DECISION SUPPORT SYSTEM**

- REF01 | 01-01 P: Comprehensive Assessment of Coastal and Riverine Hydrodynamics and Flood Protection Structures in Manila Bay Area Project ['MBDC']
- REF01 | 01-02 P: Refinement/Improvement/Upgrading of Manila Bay Area Water Resource And Flood Management Decision Support System (DSS) ['MBDC']

**REF02 | ESTABLISH OF NORTH MANILA BAY COASTAL LINE OF DEFENSE**

- REF02 | 01-01 P: North of Manila Bay Define Coastal Line of Defense (CLD) Study [DPWH]
- REF02 | 01-01 T: Legislate Manila Bay Define Coastal Line of Defense (CLD) [DPWH]

**REF03 | DESIGN AND IMPLEMENT NATURE BASED FLOOD PROTECTION SOLUTIONS**

- REF03 | 01-01 T: Use of Manila Bay Area Water Resource And Flood Management Decision Support System (DSS) [MBTF, DPWH]
- REF03 | 01-03 P: Nature-based Coastal and Riverine Flood Protection Project [DPWH]

**REF04 | UNDERTAKE CLIMATE RESILIENT SOLUTIONS AND STRATEGIES, SUSTAINABLE LIVELIHOODS, AND COMMUNITY-BASED RELOCATION FOR PEOPLE EXPOSED TO COASTAL FLOODING**

- REF04 | 01-01 P: MB Coastal Area Community-Based Relocation Program - Phase 1 (Design and Formulation) [NHA]
- REF04 | 02-02 P: MB Coastal Area Community-Based Relocation Program - Phase 2 (Implementation) [NHA]
REF05 | MINIMIZE LAND SUBSIDENCE
- REF05 | 01-01 P: Alternative Water Source Project [DPWH or DILG]
  → REF05 | 01-01 T: Full Implementation of Philippine Water Supply and Sanitation Master Plan (PWSSMP) [DPWH or DILG]

REF06 | ENHANCE DISASTER PREPAREDNESS AND ADAPTIVE CAPACITIES OF COASTAL LGUS AND COMMUNITIES AFFECTED BY THE NORTHERN MB COASTAL DEFENSE
- REF06 | 01-01 P: Capacity Building of LGUs for the Preparation and Implementation of DRRMP and LCCAP [DILG]

REF07 | IMPROVE DRAINAGE ALONG MAJOR RIVERS DRAINING TO MANILA BAY
- REF07 | 01-01 P: Clear Obstructions in Waterways Draining to Manila Bay [DPWH]
  → REF07 | 01-01 T: Ensure waterways draining to Manila Bay is free of obstructions [LGU]

REF08 | REHABILITATE WATERSHED AREAS IN THE MANILA BAY AREA
- REF08 | 01-01 P: Pampanga River Basin Watershed Rehabilitation [PLGU]
- REF08 | 02-01 P: Bataan Watershed Rehabilitation [PLGU]
- REF08 | 03-01 P: Cavite Watershed Rehabilitation [PLGU]
- REF08 | 05-01 P: Pasig-Marikina River Basin Watershed Rehabilitation [LGU]

RNH | RESTORE NATURAL HABITATS
RESTORE NATURAL HABITATS

RNH01 | Improve Coastal Resource and Ecological Assessment and Monitoring

The Ecosystems Research and Development Bureau under the Department of Environment and Natural Resources (DENR-ERDB) shall be in charge of improving the coastal resource and ecological assessment and monitoring in Manila Bay. Its database shall be updated by establishing a community-based Coastal Resource and Ecological Assessment and Monitoring Program. The assessment and monitoring activities shall be conducted every 3-5 years, and after every catastrophic event (such as volcanic eruption, lahar flow, and massive riverine flooding). The program shall also include state-of-the-art review to identify data and information gaps on natural habitats and biodiversity in Manila Bay. Capacity building shall be conducted to ensure community participation. Lastly, suitable sites for permanent monitoring stations in Manila Bay shall also be undertaken in the program.

RNH02 | Enforce Local Habitat Protection and Management

The strict enforcement of RA 8550 by the LGUs in partnership with DA-BFAR is essential to increase the coverage of marine protected areas (MPAs) and fish sanctuaries in Manila Bay. In support to this action, technical assistance and capacity building on the management of MPAs shall be provided to the concerned coastal LGUs. The DENR and DILG shall, likewise, be assisted in developing mechanisms to monitor the compliance to local ordinances, and the implementation of strategies for locally managed MPAs by coastal LGUs.
**RNH03 | Update Strict Protection Zone and Fisheries Use Zone in the Manila Bay ICZM Planning Framework**

The ICZM Planning Framework particularly the Strict Protection Zone and the Fisheries Use Zone shall be reviewed and adjusted following the formulation of an inclusive and integrated Coastal and Marine Habitat Spatial Plan (CMHSP). Habitat mapping and data management to identify exact locations of fish refuge and sanctuaries, areas for rehabilitation and protection shall be needed in the preparation of CMHSP. To support this technical assistance shall be provided to BMB-DENR, and guidebooks on the periodic updating the CMHSP shall be developed.

**RNH04 | Restore and Improve Management of Protected Habitats**

The DENR-BMB shall take charge of the restoration and improvement of the management of natural habitats. The Harmonized Conservation Strategy for Natural Resources shall be adopted in the management of critical habitats and MPAs. Manual of Operating Procedures shall be developed and capacity building for concerned LGUs, NGAs and local communities shall be conducted. Periodic monitoring and evaluation of habitat management shall be done every three (3) years.

**RPL | Reduce Pollution Load**

Pollution loading have significant negative impacts on water quality of Manila Bay. To mitigate this, there is a need for projects and activities on reduction and management of pollutants. It will allow natural habitats to thrive and survive as well as contribute to restore natural habitats.

**ISWM | Improve Solid Waste Management**

One of the major causes of natural habitat degradation in Manila Bay is solid waste accumulation coming from residential, commercial and industrial areas within the MBA. Action plan to improve solid waste management are presented in page 59-62.

**BFB | Boost Fish Biomass**

To increase fish biomass in Manila Bay, the concerned coastal LGUs shall be assisted by DA-BFAR in the establishment and proper management of MPAs. Technical assistance, capacity building and other support shall be provided to coastal LGUs.
**RNH01 | IMPROVE COASTAL RESOURCE AND ECOLOGICAL ASSESSMENT AND MONITORING**

- RNH01 | 01-01 P: Strengthening Coastal Resource and Ecological Assessment and Monitoring Project [ERDB]
- RNH01 | 01-02 P: Conduct of Coastal Resource and Ecological Assessment and Monitoring every 5 years (2028, 2033, 2038) [ERDB]

**RNH02 | ENFORCE LOCAL HABITAT PROTECTION AND MANAGEMENT**

- RNH02 | 01-01 PP P: Locally Managed Marine Protected Areas Project - Project Preparation [BFAR]
- RNH02 | 01-02 AP T: Locally Managed Marine Protected Areas Project - Approval, Budgeting, Procurement Process [LGUs]
- RNH02 | 02-01 P: Establishment of Locally Managed Marine Protected Areas (MPAs) as stipulated in RA 8550 [LGU]
- RNH02 | 03-01 T: Monitoring of management and implementation strategies of LGUs on local ordinances [DENR]

**RNH03 | UPDATE STRICT PROTECTION ZONE AND FISHERIES USE ZONE IN THE MANILA BAY ICZM PLANNING FRAMEWORK**

- RNH03 | 01-01 P: Formulation of the Coastal and Marine Habitat Spatial Plan in Manila Bay [BMB]
- RNH03 | 01-02 P: Updating of the Coastal and Marine Habitat Spatial Plan in Manila Bay [BMB]
**RNL04 | RESTORE AND IMPROVE MANAGEMENT OF PROTECTED HABITATS**

- RNL04 | 01-01 P: Harmonized Rehabilitation, Restoration and Management of Protected Habitats [BMB]
- RNL04 | 02-01 T: LGU and Community-based Sustainable Habitat Management [LGU]

**RPL | REDUCE POLLUTION LOAD**

**ISWM | IMPROVE SOLID WASTE MANAGEMENT**

**BFB | BOOST FISH BIOMASS**
**BFB01 | Enforce Fisheries and Coastal Resource Management Plan**

The DA-BFAR together with the coastal LGUs shall prepare Community-Based Fisheries and Coastal Resources Management Plan (FCRMP). Trainings, capacity-building, and technical assistance shall be provided to coastal LGUs in the preparation of the community-based FCRMP which needs to be mainstreamed to the respective CDPs of LGUs. While the LGUs are responsible for the preparation of the FCRMP, the DA-BFAR needs to monitor the compliance of each LGUs as stipulated in RA 8550.

**BFB02 | Establish Unified Rules and Regulations on Fisheries in Manila Bay**

The DA-BFAR shall be responsible for the formulation of Unified Rules and Regulations (URR) for Manila Bay. Technical assistance shall be provided for the formulation of the URR as well as for the review of existing local ordinances on fisheries that are currently being implemented in Manila Bay. To ensure engagement of coastal LGUs in Manila Bay in the formulation of URR, Integrated Fisheries and Aquatic Resources Management Council (FARMC) and inter-LGU and Line Agencies Council shall be formed. For the implementation of the URR, technical assistance shall be provided to conduct review and generate recommendations on policy reforms regarding sustainable fisheries. To adequately address conflicts of local ordinances on fisheries in Manila Bay, the institutionalization of the URR shall be done by DA-BFAR.

**BFB03 | Rebuild Fish Stock**

The DA-BFAR is responsible for the overall management and conservation of fisheries and aquatic resources in the Philippines. The noticeable decrease in fish biomass in Manila Bay due to different factors is being addressed by DA-BFAR through its efforts in rebuilding fish stocks. First thing that needs to be done is to understand the current situation of fisheries in Manila Bay by formulating Fisheries Ecological Assessment and by developing a comprehensive research on biology and ecology of target fish species. To support the existing efforts of DA-BFAR to rebuild fish stock, one of the effective activities is to enforce Seasonal Fishery Closure. To achieve this, trainors’ training and capacity building on enforcement shall be provided. To control illegal fishing activities in Manila Bay, Strategic Fishery Monitoring and Enforcement Project shall be implemented. This will include the development of Vessel Database and Monitoring System and establishment of Observation Posts in Manila Bay. To improve the viability of marginalized fisherfolks amidst the decreasing fish biomass in Manila Bay, Innovative Fisheries and Postharvest Technology development and transfer shall be implemented. In particular the capacity of the fisherfolks to do value addition to their catch through processing into diverse fish products shall be developed. In the long-term coastal LGUs with the assistance of DA-BFAR shall set in place continuing support programs for fisherfolks.
**BFB04 | Sustainable Aquaculture**

One of the primary causes of deteriorating water quality, declining fish health, and heavy metal contamination in Manila Bay is the unsustainable aquaculture practices of some fishponds/aquafarm owners and operators in few LGUs. According to the DA-BFAR, aquafarm and the species nurtured therein around Manila Bay are contaminated with nutrients. To support the efforts of DA-BFAR on sustainable aquaculture, Good Aquaculture Practices (GAqPs) shall be implemented and enforced in coastal LGUs and inland LGUs with aquafarms. Active link between the LGUs and DA-BFAR is needed to ensure that the fishpond/aquafarm owners and operators are following the guidelines on sustainable aquaculture. A system of auditing the performance of LGUs in implementing and monitoring of GAqPs by their constituents shall also be set in place and shall be the responsibility of DA-BFAR.

**RPL | Reduce Pollution Load**

Pollutants or liquid wastes from different human activities is some of the reasons of water quality degradation in Manila Bay. Once the pollution loading in Manila Bay has been reduced, it is expected to help increase the number of fish and fish species being caught in the bay.

**ISWM | Improve Solid Waste Management**

Good management of solid waste will result to a cleaner environment, not only land-based but also on water bodies. Better quality of water bodies draining in Manila Bay is expected to improve situations of fishery in the bay. It is also anticipated to contribute to improve fish biomass in Manila Bay.

**RNH | Restore Natural Habitats**

Restoration of natural habitats by increasing the number of marine protected areas and fish sanctuaries in Manila Bay will eventually affect fish biomass in the bay. The increase in restored marine habitats and the maintenance of existing protected critical habitats is expected to increase fish biomass and other marine life in Manila Bay.
**BFB01 | ENFORCE FISHERIES AND COASTAL RESOURCE MANAGEMENT PLAN**

- BFB01 | 01-01 P: Capacity Building of Coastal LGUs on Community-based Fisheries and Coastal Resource Management Planning [BFAR]
- BFB01 | 01-02 T: Monitor Compliance to Coastal Resource Management Plan by Coastal LGUs [BFAR]
- BFB01 | 02-01 T: Community-based Fisheries and Coastal Resource Management Plan [LGUs]

**BFB02 | ESTABLISH UNIFIED RULES AND REGULATIONS ON FISHERIES IN MANILA BAY**

- BFB02 | 01-01 P: Formulation of a Unified Rules and Regulation on Fisheries in Manila Bay [BFAR]
- BFB02 | 01-02 T: Institutionalize Unified Rules and Regulation on Fisheries in Manila Bay [BFAR]
- BFB02 | 01-03 T: Establishment of Integrated FARMC among the coastal LGUs [BFAR]
- BFB02 | 02-01 T: Establishment of Inter-LGU and Line Agency Council [DILG]

**BFB03 | REBUILD FISH STOCK**

- BFB03 | 01-01 P: Technical Assistance on Sustainable Fisheries [BFAR]
- BFB03 | 01-02 T: Enforce Seasonal Fishery Closure [BFAR]
- BFB03 | 01-03 T: Implement Strategic Fishery Monitoring and Enforcement Activities [BFAR]
- BFB03 | 01-04 P: Strategic Fishery Monitoring and Enforcement Project [BFAR]
- BFB03 | 01-05 P: Improved Fisheries Facilities and Post-Harvest Technologies Project [BFAR]
- BFB03 | 01-06 P: Alternative Livelihood and Support Program for Fisherfolks Project [BFAR]
**BFB04 | SUSTAINABLE AQUACULTURE**

- BF04 01-01 P: Sustainable Aquaculture Project [BFAR]
- BF04 01-01 T: Enforce Sustainable Aquaculture Guidelines [BFAR, LGUs]
- BF04 01-01 T: Implementation and Regular Monitoring of Code of Good Aquaculture Practices (GAqPs) [BFAR, LGUs]

**RPL | REDUCE POLLUTION LOAD**

**ISWM | IMPROVE SOLID WASTE MANAGEMENT**

**RNH | RESTORE NATURAL HABITATS**
PROMOTE RESPONSIBLE AND SUSTAINABLE TOURISM

PRST01 | Strengthen Responsible and Sustainable Local Tourism Planning

Recognizing the socio-economic benefits from tourism, the Department of Tourism (DOT) consistent to its mandate shall provide technical assistance to LGUs to formulate local tourism development plans, tourism management action plans, and beach management plans consistent to the National Tourism Development Plan which the LGU shall implement, monitor and enforce to strengthen responsible and sustainable local tourism practices. This action plan is also expected to contribute significantly in restoring the natural habitats of Manila bay by encouraging sustainable tourism development in the area.

PRST02 | Improve Tourism Modalities in Manila Bay Area

Improving the tourism modalities in the Manila Bay area requires a mixture of approach that includes capacity building, training, and IEC campaign to promote its diverse ecological and cultural attractions and its allied services which will be helmed by the DOT. To further augment the action plan, policy reforms shall be made to facilitate the effective, coherent and coordinated approach to Sustainable Tourism by all concerning stakeholders.

PRST03 | Development of Manila Bay Ecological Park and Eco-Museum

This action plan shall design, develop, and construct of an Ecological Park and Eco Museum within the Manila Bay coastal area, that will serve as core zones of urban nature and multi-use recreational open space to appreciate the value of Manila Bay as a protected natural resource. The project will entail phases of technical assistance from feasibility to construction phase, and recognition of the roles of various sectors including LGUs and private sector in the management and development of the Manila Bay Ecological Park and Eco-Museum.
**RNH | Restore Natural Habitats**

**REF | Reduce Exposure to Flooding**

**RPL | Reduce Pollution Load**

**ISWM | Improve Solid Waste Management**

**BFB | Boost Fish Biomass**

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**PRST01 | STRENGTHEN RESPONSIBLE AND SUSTAINABLE LOCAL TOURISM PLANNING**

- PRS01 | 01-02 P: Development of Provincial and City/Municipal Tourism Development Plans [DOT]
- PRS01 | 01-02 T: Monitor Enforcement of Provincial and City/Municipal Tourism Development Plans [DOT]

**PRST02 | IMPROVE TOURISM MODALITIES IN MANILA BAY AREA**

- PRS02 | 01-01 P: Manila Bay Area Tourism Project [DOT]
- PRS02 | 01-02 T: Implement and Enforce Tourism-Related Policies [LGU]

**PRST03 | DEVELOPMENT OF MANILA BAY ECOLOGICAL PARK AND ECO-MUSEUM**

- PRS03 | 01-01 PP P: Manila Bay Ecological Park(s) and Eco-Museum(s) Project [DOT]

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**RNH | RESTORE NATURAL HABITATS**

**REF | REDUCE EXPOSURE TO FLOODING**

**RPL | REDUCE POLLUTION LOAD**

**ISWM | IMPROVE SOLID WASTE MANAGEMENT**

**BFB | BOOST FISH BIOMASS**
The Action Plan of the MBSDMP spreads across a 20-year timeline and is available in Annex 2 Table of Pages 77 to 80 tabulates and summarizes in broad strokes project, activities, programs, and actions to be done but key actions against short term (2021-2022), medium term (2023-2030), and long term (2031-2040). A bar chart that shows the timeline of actions and responses over the 20-year period is provided in pages 81 to 82. Details of the bar chart the tables mentioned above are provided in Annex 3 (PAPs Profile) and Annex 4 (MBSDMP PAPs).
<table>
<thead>
<tr>
<th>Short Term (2021-2022)</th>
<th>Medium Term (2023-2030)</th>
<th>Long Term (2031-2040)</th>
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<tbody>
<tr>
<td>Endorsement, approval, and enforcement of ICZM Planning Framework</td>
<td>Update of ICZM Planning Framework</td>
<td>Construction of various sewerage, septage, treatment plants, off-shore waste receiving facilities projects as well as for MB water quality DSS, unified protocols, GES</td>
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<tr>
<td>MBTF to strictly enforce adherence of all LGUs, NGAs, and private sector to the ICZM Framework</td>
<td></td>
<td>Construction of various sewerage and septage projects to expand coverage</td>
</tr>
<tr>
<td>▪ FS preparation, approval, budgeting, and pre-implementation of various sewerage, septage, treatment plants, off-shore waste receiving facilities projects as well as for MB water quality DSS, unified protocols, GES</td>
<td>▪ Construction of various Provincial Transfer Stations with Secondary Sorting and Additional MRF, Large-Scale Composting Facilities, SLFs, and WTE projects, improvement of programs for Waste Collection and Recycling Incentive, and SWM policy reforms including support to NSWMC</td>
<td>▪ Construction/expansion of various Provincial Transfer Stations with Secondary Sorting and Additional MRF, Large-Scale Composting Facilities, SLFs, and WTE projects</td>
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<tr>
<td>▪ Continue sewerage and septage projects to expand coverage by MWCI, MWSI.</td>
<td>▪ Construction of various Provincial Transfer Stations with Secondary Sorting and Additional MRF, Large-Scale Composting Facilities, SLFs, and WTE projects</td>
<td>▪ Implementation of programs for improvement of Waste Collection and Waste Recycling Incentive</td>
</tr>
<tr>
<td>▪ Stop the direct discharge of untreated sewage to coastal waters and rivers</td>
<td>▪ FS preparation, approval, budgeting, and implementation of assessment of hydrodynamics and flood protection structures, capacity building for LGUs in DRRMP and LCCAP, and clearing of waterways.</td>
<td>▪ Ensure waterways draining to Manila Bay is free of obstructions</td>
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<tr>
<td>▪ Sustain Sustainable Sanitation Program by DOH</td>
<td>▪ FS preparation, approval, budgeting, and implementation of CLD Study and Legislation, community-based relocation program, nature-based flood protection programs</td>
<td>▪ Nature-based Coastal and Riverine Flood Protection Project</td>
</tr>
<tr>
<td>▪ Conduct massive IEC on Water, Wastewater, and Water Recycling and Reuse</td>
<td>▪ ▪ FS preparation, approval, budgeting, and implementation of CLD Study and Legislation, community-based relocation program, nature-based flood protection programs</td>
<td>▪ Sustain community-based relocation and alternative water source projects</td>
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<tr>
<td>▪ ▪ Continue sewerage and septage projects to expand coverage by MWCI, MWSI.</td>
<td>▪ ▪ ▪ ▪ Nature-based Coastal and Riverine Flood Protection Project</td>
<td>▪ Alternative Water Source Project</td>
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<tr>
<td>▪ ▪ ▪ ▪ Stop the direct discharge of untreated sewage to coastal waters and rivers</td>
<td>▪ ▪ ▪ ▪ ▪ Nature-based Coastal and Riverine Flood Protection Project</td>
<td>▪ Use of DSS</td>
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<td>4 Pillars of MBSDMP</td>
<td>Key Actions</td>
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</tr>
<tr>
<td>---------------------</td>
<td>-------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Priority Measures (con’t)</td>
<td>Restore Natural Habitats</td>
<td>FS preparation, approval, budgeting, pre-coastal Manila Bay; coastal resource and ecological assessment and monitoring; and Coastal and Marine Habitat Spatial Plan in Manila Bay</td>
</tr>
<tr>
<td></td>
<td>Boost Fish Biomass</td>
<td>▪ FS preparation, approval, budgeting, and pre-implementation of Locally Managed Marine Protected Areas Project</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Community Boost Fish Biomass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ FS preparation, approval, budgeting, pre-Fisheries including support in establishment of FARMCs; Sustainable Fisheries on 12 Priority Fish Species (Phase 1 and 2), and Strategic Fishery, construction of fisheries and post-facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Institutionize Unified Rules and Regulation on Fisheries in Manila Bay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Establishment of Integrated FARMC and Inter-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Preliminary Findings: Sustainable Fisheries on 6 Priority Fish Species (Phase 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Project Preparation, budgeting, pre-gram for Fisherfolks Project,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Entrace of Sustainable Aquaculture and Good Practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Promote Responsible and Strategic Tourism</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ FS preparation, approval, budgeting, pre-implementation of Manila Bay Ecological Parks And Eco-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Local Ecological Parks And Eco-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Monitoring, Enforcement and Updating (every 5 Years) of Local Tourism Development Plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Implementation/enforcement, review and update of tourism</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Enabling Environment</td>
</tr>
<tr>
<td>Enabling Environment</td>
<td>Institutional Set-up</td>
<td>▪</td>
</tr>
<tr>
<td></td>
<td>Decongest Metro Manila</td>
<td>▪</td>
</tr>
<tr>
<td></td>
<td>Environmentally Friendly Development</td>
<td>▪</td>
</tr>
<tr>
<td></td>
<td>Refine and Compliance to Relevant Policies</td>
<td>▪</td>
</tr>
<tr>
<td>Stakeholder Engagement</td>
<td></td>
<td>▪</td>
</tr>
<tr>
<td></td>
<td>Information, Education, Communication, and Advocacy</td>
<td>▪</td>
</tr>
</tbody>
</table>
### Short Term (2020-2022)
- FS preparation, approval, budgeting, and pre-implementation of Locally Managed Marine Protected Areas Project
- Establish and maintain Locally Managed Marine Protected Areas Project
- Establish and maintain Locally Managed Marine Protected Areas Project
- LGU and Community-based Sustainable Habitat Management
- Rehabilitation, Restoration and Management of Protected Habitats
- Monitoring of implementation of local ordinances by coastal LGUs
- Sustain Coastal Resource and Ecological Assessment and Monitoring
- Establish Institutional Set-up for Medium to Long Term Timeframe
- Commence capacity building
- Sustained “Balik Probinsya” Program
- Update/formulate and enforce related ordinances and policies
- Update/formulate and enforce related ordinances and policies to promote environmentally friendly development
- Enforce Programmatic EIA
- Information, Education, Communication, and Advocacy

### Medium Term (2023-2030)
- FS preparation, approval, budgeting, pre-implementation and implementation of Coastal and Marine Habitat Spatial Plan in Manila Bay
- Establish and maintain Locally Managed Marine Protected Areas Project
- LGU and Community-based Sustainable Habitat Management
- Rehabilitation, Restoration and Management of Protected Habitats
- Monitoring of implementation of local ordinances by coastal LGUs
- Sustain Coastal Resource and Ecological Assessment and Monitoring
- Review and update Unified Rules and Regulation on Fisheries in Manila Bay
- Development of Provincial and City/Municipal Tourism Development Plans, and Manila Bay Area Tourism Project
- Review and update Unified Rules and Regulation on Fisheries in Manila Bay
- Development of Manila Bay Ecological Parks and Eco-Museums Project
- Enforcement of seasonal fishery closure
- Establishment and implementation of strategic fishery monitoring and enforcement
- Institutionalize Unified Rules and Regulation on Fisheries in Manila Bay
- Establishment of Integrated FARMC and Inter-LGU and Line Agency Council
- Preliminary Findings: Sustainable Fisheries on 6 Priority Fish Species (Phase 1)
- Enforcement of seasonal fishery closure
- Establishment and implementation of strategic fishery monitoring and enforcement
- Project Preparation, budgeting, pre-implementation and implementation of programs for Alternative Livelihood and Support Program for Fisherfolks Project, Capacity Building, Formulation, and Compliance Monitoring of Coastal LGUs on Community-based Fisheries and Coastal Resource Management Planning
- Enforcement of Sustainable Aquaculture and Good Practices

### Long Term (2031-2040)
- Development of Provincial and City/Municipal Tourism Development Plans, and Manila Bay Area Tourism Project
- Development of Manila Bay Ecological Parks and Eco-Museums Project
- Local Ecological Parks And Eco-Museums Project in Manila Bay Area
- Monitoring, Enforcement and Updating (every 5 Years) of Local Tourism Development Plans
- Implementation/enforcement, review and update of tourism-related policies
- Enforce Programmatic EIA
- Information, Education, Communication, and Advocacy
<table>
<thead>
<tr>
<th>REF01</th>
<th>Establish Manila Bay Area Water Resource and Flood Management Decision Support System</th>
</tr>
</thead>
<tbody>
<tr>
<td>REF02</td>
<td>Establish North Manila Bay Coastal Line Of Defense</td>
</tr>
<tr>
<td>REF03</td>
<td>Design and Implement Nature-Based Flood Protection Solutions</td>
</tr>
<tr>
<td>REF04</td>
<td>Undertake Climate Resilient Solutions and Strategies, Sustainable Livelihoods, and Community-Based Relocation for People</td>
</tr>
</tbody>
</table>

**REF05: Minimize Land Subsidence**

<table>
<thead>
<tr>
<th>REF06</th>
<th>Enhance Disaster Preparedness and Adaptive Capacities of Coastal LGUs and Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>REF07</td>
<td>Improve Drainage along Major Rivers Draining to Manila Bay</td>
</tr>
<tr>
<td>REF08</td>
<td>Rehabilitate Watershed Areas in Manila Bay Area</td>
</tr>
<tr>
<td>RNH01</td>
<td>Improve Coastal Resource and Ecological Assessment and Monitoring</td>
</tr>
<tr>
<td>RNH02</td>
<td>Enforce Local Habitat Protection and Management</td>
</tr>
<tr>
<td>RNH03</td>
<td>Update Strict Protection Zone and Fisheries Use Zone in the Manila Bay ICZM Planning Framework</td>
</tr>
<tr>
<td>RNH04</td>
<td>Restore and Improve Management of Protected Habitats</td>
</tr>
<tr>
<td>BFB01</td>
<td>Improve and Enforce Fisheries and Coastal Resource Management Planning</td>
</tr>
<tr>
<td>BFB02</td>
<td>Establish Unified Rules and Regulations on Fisheries in Manila Bay</td>
</tr>
<tr>
<td>BFB03</td>
<td>Rebuild Fish Stock</td>
</tr>
<tr>
<td>BFB04</td>
<td>Sustainable Aquaculture</td>
</tr>
</tbody>
</table>

**PRST01 | Strengthen Responsible and Sustainable Local Tourism Planning**

**PRST02 | Improve Tourism Modalities in Manila Bay Area**

**PRST03 | Promote Ecological Parks and Eco-Museums**

Sustain stakeholder engagement and participation thru information, education, communication, and advocacy; Enforce Programmatic "Balik Probinsya"; Promote Environmentally Friendly Development; Policies Reforms
Based Relocation for People Exposed to Coastal Flooding

Priority Measures - PAPs Implementation
Priority Measures - FS, DED, Approval, Pre-Implementation, O&M

ICZM Planning Framework
Enabling Environment
Stakeholder Engagement

Legend
INVESTMENT PLAN

INVESTMENT PLANNING

The Investment Planning report of the Manila Bay Sustainable Development Masterplan (MBSDMP) for the period of 2020-2040 contains the list of proposed priority Program, Projects, and Activities (PAPs) to be implemented by the National Government Agencies (NGAs), Financial Institutions, Local Government Units (LGUs) and other government offices and instrumentalities, including State Universities and Colleges (SUCs). These priority PAPs are aimed at contributing to the achievement of the project’s vision of a Sustainable and Resilient Manila Bay.

For the period of 2020-2040, the highlights of the MBSDMP Investment Planning is estimated to value at Php 389,003 Billion with 187 number of priority programs and projects. These PAPs may be implemented through possible various sources, namely: National and Local Government co-financing, or separate budget from each level of government, Public-Private Partnership (PPP) scheme, Corporate budgets, and Official Development Assistance (ODA).

With the full implementation of the Mandanas Ruling in 2022 in view, the proposed PAPs (for consultation/validation) were initially developed that reduces role of NG in implementing local development programs and decreases fiscal capacity to support LGUs. It may be noted, however, that some PAPs are still best executed by concerned Line Agencies as the Executing Agencies.

BY MEASURE

The Reduce Pollution Load measure has the largest share among the themes amounting to the estimated total investment targets for 2021-2040 at Php 310.45 Billion (80%). This is followed by the Reduce Exposure to Flooding with Php 40.79 Billion (10%), then Promote Responsible and Sustainable Tourism with Php13.17 Billion (3%). Investment by period taper overtime with period 2021-2025 getting the biggest share of Php141.15 Billion (36%), then down to Php19.67 (5%) in years 2036-2040. The number of PAPs by theme and its corresponding total investment targets can be found in Table below.

Table 3: Investment Cost per Measure.

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>No. of PAPs</th>
<th>% PAPs to Total</th>
<th>2021-2025</th>
<th>2026-2030</th>
<th>2031-2035</th>
<th>2036-2040</th>
<th>Total</th>
<th>% to Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce Pollution Load (RPL)</td>
<td>27</td>
<td>14%</td>
<td>118,616</td>
<td>98,614</td>
<td>81,814</td>
<td>11,410</td>
<td>310,445</td>
<td>80%</td>
</tr>
<tr>
<td>Improve Solid Waste Management (ISWM)</td>
<td>22</td>
<td>12%</td>
<td>5,790</td>
<td>321</td>
<td>5,179</td>
<td>100</td>
<td>11,390</td>
<td>3%</td>
</tr>
<tr>
<td>Reduce Exposure to Flooding (REF)</td>
<td>48</td>
<td>26%</td>
<td>3,480</td>
<td>18,730</td>
<td>13,838</td>
<td>4,738</td>
<td>40,786</td>
<td>10%</td>
</tr>
<tr>
<td>Restore Natural Habitats (RNH)</td>
<td>66</td>
<td>35%</td>
<td>189</td>
<td>1,489</td>
<td>2,308</td>
<td>3,410</td>
<td>7,396</td>
<td>2%</td>
</tr>
<tr>
<td>Boost Fish Biomass (BFB)</td>
<td>15</td>
<td>8%</td>
<td>5,686</td>
<td>76</td>
<td>28</td>
<td>18</td>
<td>5,808</td>
<td>1%</td>
</tr>
<tr>
<td>Promote Responsible and Sustainable Tourism (PRST)</td>
<td>9</td>
<td>5%</td>
<td>7,393</td>
<td>5,752</td>
<td>14</td>
<td>10</td>
<td>13,169</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>187</td>
<td>100%</td>
<td>141,154</td>
<td>124,982</td>
<td>103,181</td>
<td>19,686</td>
<td>389,003</td>
<td>100%</td>
</tr>
</tbody>
</table>

% of Yearly Investment Requirement to Total

- 36% 32% 27% 5% 100%
BY IMPLEMENTING AGENCIES

The top three implementing actors in terms of total investment targets over the 2021-2040 are the Department of Environment and Natural Resources (including all bureaus and attached agencies) with the highest total investment targets amounting to Php135.94 Billion (35%), followed by the two big Metro Manila water concessionaires Manila Water and Maynilad amounting to Php74.90 Billion (20%), and by Local Government Units (Provincial to City/Municipal, to barangay levels) with Php60.32 Billion (15%). Listed in Table below are the different agencies/entities with their respective total investment targets for 2021-2040.

Table 4. Investment Cost per Implementing Agency.

<table>
<thead>
<tr>
<th>Implementing Agency/Entity</th>
<th>Reduce Pollution Load (RPL)</th>
<th>Improve Solid Waste Management (ISWM)</th>
<th>Reduce Exposure to Flooding (REF)</th>
<th>Restore Natural Habitats (RNH)</th>
<th>Boost Fish Biomass (BFB)</th>
<th>Promote Responsible and Sustainable Tourism (PRST)</th>
<th>Grand Total</th>
<th>% to Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barangay LGUs</td>
<td>-</td>
<td>262</td>
<td>18</td>
<td>5,174</td>
<td>-</td>
<td>-</td>
<td>5,454</td>
<td>1%</td>
</tr>
<tr>
<td>DA-BFAR, MBTF, Coastal LGUs</td>
<td>40</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>213</td>
<td>-</td>
<td>253</td>
<td>0%</td>
</tr>
<tr>
<td>DA-BFAR, FRMD, DA-ATI</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>444</td>
<td>-</td>
<td>444</td>
<td>0%</td>
</tr>
<tr>
<td>DENR-EMB, NSWMC, DENR-BMB, DENR-ERDB</td>
<td>135,194</td>
<td>210</td>
<td>-</td>
<td>540</td>
<td>-</td>
<td>-</td>
<td>135,944</td>
<td>35%</td>
</tr>
<tr>
<td>DILG, DHSUD, and CCC</td>
<td>-</td>
<td>-</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>16</td>
<td>0%</td>
</tr>
<tr>
<td>DPWH</td>
<td>24,950</td>
<td>-</td>
<td>345</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>25,295</td>
<td>6%</td>
</tr>
<tr>
<td>Landbank, DBP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>32</td>
<td>-</td>
<td>32</td>
<td>0%</td>
</tr>
<tr>
<td>PLGUs, LGUs, BLGUs</td>
<td>25,150</td>
<td>860</td>
<td>1,675</td>
<td>1,679</td>
<td>-</td>
<td>3,044</td>
<td>33,122</td>
<td>8%</td>
</tr>
<tr>
<td>PLGUs, FARMC, MMDA, concerned NGOs</td>
<td>-</td>
<td>12</td>
<td>21,727</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>21,739</td>
<td>6%</td>
</tr>
<tr>
<td>Manila Water Company</td>
<td>37,450</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>37,450</td>
<td>10%</td>
</tr>
<tr>
<td>Maynilad Water Services, Inc.</td>
<td>37,450</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>37,450</td>
<td>10%</td>
</tr>
<tr>
<td>PCG, PPA, MARINA</td>
<td>60</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>60</td>
<td>0%</td>
</tr>
<tr>
<td>DENR-EMB, LGU</td>
<td>25,158</td>
<td>36</td>
<td>-</td>
<td>5,120</td>
<td>10,010</td>
<td>-</td>
<td>40,324</td>
<td>10%</td>
</tr>
<tr>
<td>Private Sector</td>
<td>-</td>
<td>10,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>65</td>
<td>10,065</td>
<td>3%</td>
</tr>
<tr>
<td>TIEZA</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>50</td>
<td>50</td>
<td>0%</td>
</tr>
<tr>
<td>Water Districts</td>
<td>24,950</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>24,950</td>
<td>6%</td>
</tr>
<tr>
<td>Other Water Service Providers, LGUs</td>
<td>-</td>
<td>17,005</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17,005</td>
<td>4%</td>
</tr>
<tr>
<td>(Blank)</td>
<td>52</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>62</td>
<td>0%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>310,454</td>
<td>11,390</td>
<td>40,786</td>
<td>7,393</td>
<td>5,808</td>
<td>13,169</td>
<td>389,003</td>
<td>100%</td>
</tr>
</tbody>
</table>

% to Total

80% 3% 10% 2% 1% 3% 100%
BY MODE OF IMPLEMENTATION

The MBSDMP has 187 projects spread across different government entities for implementation. The implementing government agencies/entities will be in-charge of preparing the feasibility studies, identifying the source of funds, securing the appropriate approvals, procuring the project, awarding and implementing the project/s. As such, the agency/entity will be signing the relevant contracts on behalf of the government.

Table 5. Number of PAPs by Mode of Implementation.

<table>
<thead>
<tr>
<th>Measures</th>
<th>GFI</th>
<th>GOCC</th>
<th>LGU</th>
<th>NG-GAA</th>
<th>ODA</th>
<th>Others (TIEZA, GFI)</th>
<th>PLGU</th>
<th>Private Sector</th>
<th>For Verification</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPL</td>
<td>-</td>
<td>5</td>
<td>3</td>
<td>12</td>
<td>1</td>
<td>-</td>
<td>5</td>
<td>1</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>ISWM</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>2</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>REF</td>
<td>-</td>
<td>-</td>
<td>33</td>
<td>10</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>RNH</td>
<td>-</td>
<td>-</td>
<td>58</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>BFB</td>
<td>1</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>2</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>PRST</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>5</td>
<td>96</td>
<td>52</td>
<td>2</td>
<td>1</td>
<td>18</td>
<td>9</td>
<td>187</td>
<td></td>
</tr>
<tr>
<td>% Total</td>
<td>1%</td>
<td>3%</td>
<td>51%</td>
<td>28%</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
<td>10%</td>
<td>5%</td>
<td></td>
</tr>
</tbody>
</table>

BY SOURCE OF FUNDS

This masterplan made some preliminary assumptions with regards to possible sources of the PhP389.003 Billion needed for the identified PAPs. On the basis of the assumptions used, it is projected that 48% or PhP186.96 Billion will be provided by the National Government (NG), 23% or PhP90.55 Billion from the private sector through PPP contracts, 2% of PhP6.84 Billion from the LGUs and 11% or PhP42.95 Billion from GOCC’s. Please note that these sources of funds may differ upon completion of the Pre-FS, FS and/or business case studies as well as the approved scheme of the executing agency and the appropriate approving body.

Table 6. Investment Requirements by Source of Funds.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Corporate Budget</th>
<th>LGU</th>
<th>Local Revenue, IRA</th>
<th>NG</th>
<th>NG-LGU (Cost sharing)</th>
<th>Private Sector</th>
<th>For Verification</th>
<th>Grand Total</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPL</td>
<td>42,950</td>
<td>-</td>
<td>57,050</td>
<td>135,327</td>
<td>-</td>
<td>74,900</td>
<td>227</td>
<td>310,454</td>
<td>80%</td>
</tr>
<tr>
<td>ISWM</td>
<td>-</td>
<td>-</td>
<td>860</td>
<td>1,246</td>
<td>150</td>
<td>5,600</td>
<td>3,534</td>
<td>11,390</td>
<td>3%</td>
</tr>
<tr>
<td>REF</td>
<td>-</td>
<td>18</td>
<td>-</td>
<td>40,173</td>
<td>-</td>
<td>595</td>
<td>40,786</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>RNH</td>
<td>-</td>
<td>6,763</td>
<td>-</td>
<td>203</td>
<td>-</td>
<td>-</td>
<td>427</td>
<td>7,393</td>
<td>2%</td>
</tr>
<tr>
<td>BFB</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5,808</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5,808</td>
<td>1%</td>
</tr>
<tr>
<td>PRST</td>
<td>-</td>
<td>65</td>
<td>-</td>
<td>3,034</td>
<td>-</td>
<td>-</td>
<td>10,050</td>
<td>13,169</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>42,950</td>
<td>6,846</td>
<td>57,910</td>
<td>186,961</td>
<td>150</td>
<td>90,550</td>
<td>4,348</td>
<td>389,003</td>
<td>100%</td>
</tr>
<tr>
<td>% Total</td>
<td>11%</td>
<td>2%</td>
<td>15%</td>
<td>48%</td>
<td>0%</td>
<td>23%</td>
<td>1%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

INNOVATIVE FINANCING

To complement existing financing instruments, innovative financing is also considered in the MBSDMP—such as extending support to farmers and fisherfolks, for engaging in micro, small and medium enterprises (MSMEs). This includes packaging of complementing PAPs that is attractive to and supported by financing institutes while providing better premium to the Executing and Implementing Agencies as well as the projects beneficiaries.

Some of the listed PAPs (for validation) identified Government Financial Institutions (GFIs), including the Land Bank of the Philippines (LBP) and the Development Bank of the Philippines
BY SPATIAL COVERAGE

PAPs proposed to be implemented for the whole Manila Bay Area, including coastal LGUs, account for the highest financial investments amounting to PhP 192.05 Billion (49%). The PAPs that will be undertaken within the coverage of all LGUs in the study area (Region 3, Region 4A and NCR) come in second with PhP70.15 Billion (18%) followed by investments on Eastern and Western Metro Manila and its environs, with 10% each of share in the total investment requirements.

Table 7. Percent Share of Investment by Spatial Coverage.

<table>
<thead>
<tr>
<th>Spatial Coverage</th>
<th>No. of PAPs</th>
<th>Total Investment Target for 2021-2040 (in PhP Million)</th>
<th>Percentage Share from Total Investment Requirements (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communities below Coastal Line of Defence</td>
<td>2</td>
<td>21,727</td>
<td>6</td>
</tr>
<tr>
<td>Coverage of Water Districts</td>
<td>4</td>
<td>29,650</td>
<td>8</td>
</tr>
<tr>
<td>Eastern Metro Manila and part of Rizal</td>
<td>1</td>
<td>37,450</td>
<td>10</td>
</tr>
<tr>
<td>Western Metro Manila and Cavite</td>
<td>1</td>
<td>37,450</td>
<td>10</td>
</tr>
<tr>
<td>River Basins, Watersheds, and Manila Bay</td>
<td>6</td>
<td>330</td>
<td>&lt;0</td>
</tr>
<tr>
<td>Ports in Manila Bay Catchment under PPA</td>
<td>1</td>
<td>200</td>
<td>&lt;0</td>
</tr>
<tr>
<td>Manila Bay (including Coastal LGUs)</td>
<td>122</td>
<td>192,046</td>
<td>49</td>
</tr>
<tr>
<td>LGUs</td>
<td>9</td>
<td>70,150</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>389,003</td>
<td>100</td>
</tr>
</tbody>
</table>

BY STATUS

About 89% of the PAPs identified in the MBSDMP still need to be validated or consulted with stakeholders. Although these have already been presented in various workshops and technical committee meetings, ensuring the ownership of identified Executing and Implementing Agencies to the projects is deemed important, and these verifications will be continued as the Investment Plan is further developed. Meanwhile, there are 19 PAPs that are currently on-going as part of the regular tasks of the responsible agency, some of which are policy reforms, improvements in the monitoring system, and expansion of infrastructure coverage.

Table 8. PAPs per Measure and Present Status.

<table>
<thead>
<tr>
<th>Measures</th>
<th>New</th>
<th>On-going</th>
<th>See RNH</th>
<th>For Consultation/ Validation</th>
<th>Total</th>
<th>Percentage Share from Total Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPL</td>
<td>-</td>
<td>11</td>
<td>-</td>
<td>16</td>
<td>27</td>
<td>14</td>
</tr>
<tr>
<td>ISWM</td>
<td>-</td>
<td>6</td>
<td>2</td>
<td>19</td>
<td>27</td>
<td>14</td>
</tr>
<tr>
<td>REF</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>47</td>
<td>49</td>
<td>25</td>
</tr>
<tr>
<td>RNH</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>70</td>
<td>70</td>
<td>36</td>
</tr>
<tr>
<td>BFB</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>PRST</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>6</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>19</td>
<td>3</td>
<td>171</td>
<td>193</td>
<td>-</td>
</tr>
<tr>
<td>% Total</td>
<td>0</td>
<td>10</td>
<td>2</td>
<td>89</td>
<td>-</td>
<td>100</td>
</tr>
</tbody>
</table>

(DBP), to provide accessible financing packages. During the succeeding PAPs Validation, this will be further improved and fine-tuned, such accessing GFI financing packages through its Go Green Inclusive Financing Program, Sustainable Livelihood Program and Farm Tourism Financing Program, among others.

The MBDC is also envisioned to be able to facilitate the provision of support for access to longer-credit programs specifically aimed for priority PAPs specified in the MBSDMP Investment Report.
COMMUNICATION STRATEGY

LONG-TERM PERSPECTIVE

The overall vision of the Manila Bay Sustainable Development Master Plan remains to be the realization of a sustainable, resilient, and beautiful Manila Bay for all Filipinos to enjoy.¹

The communication strategy and plan support the overall intent of the MBSDMP to promote a strategic, coherent, climate-risk informed, and sustainable Manila Bay development that addresses root causes and drivers of current systemic problems and enhance the well-being of people who are affected by the Manila Bay development that will also align with the Manila Bay Task Force communication engagement plan.

The communication strategy and plan seek to inform, influence and educate, and inspire/mobilize all relevant Manila Bay stakeholders towards individual and collective actions that are evidence-based, community-generated and owned, environmentally-responsible, inclusive, and synergistically contributing to the realization of the vision of the MBSDMP that is subset of the overall (seven) Key Results Areas of the MBTF.

The overall strategic key message is proposed to be: Rehabilitating Manila Bay is common responsibility and investment for a commonly owned sustainable, resilient and beautiful Manila Bay.

INSTITUTIONAL CONTEXT/ARRANGEMENTS

INSTITUTIONAL SET-UP AND CAPACITY BUILDING FOR MBSDMP IMPLEMENTATION

It is proposed that in the interim period (2020-2022), the MBTF will be responsible for the roll-out and implementation of the MBSDMP. The details of the communication strategy, engagement plan and personnel requirements, roles and responsibilities during this period will be as planned/envisioned by the MBTF.

During this period, it is incumbent upon the MBTF to act on the appropriate communication requirements of the various priority action plans including the preparation of relevant IEC materials/products for broad public education, targeted stakeholder messaging and engagement, training and capacity building, and priming an effective, efficient, and accountable collaborative and inclusive decision and coordination mechanisms across key stakeholders, especially local government units.
STAKEHOLDER ENGAGEMENT
Stakeholder engagement will be a constant, continuing important task of the MBTF (in the short-term) and the eventual Manila Bay entity (in the long-term). Relevant IEC products to support continuing stakeholder engagement will be ensured.

INSTITUTIONAL SET-UP (THE LONG-TERM PERSPECTIVE)
The institutional requirements for the MBSDMP is a formal body with clear mandates to oversee the sustainable development of Manila Bay which meets all the key institutional requirements to deliver a comprehensive, integrated, sustainable and responsive Manila Bay development within the next 20 years.

The envisioned “Manila Bay Development Commission” mandate and functions, (i.e., ensure integration, complementation and consistency of all development plans and efforts; provide focused, integrated, science-based, and timely response with relevant agencies and local government units; ensure stakeholder engagement and participation in the whole process towards building sustainability efforts and investments, and monitoring and evaluation of results) require a robust and communication infrastructure and resources.

The “Manila Bay Development Commission” will therefore have a dedicated communication unit led by a senior communication person working with an in-house communication team. An important element of the communication infrastructure is the designation of lead communication persons in key local government units that will constitute an inclusive, agile and effective information, consultation and decision platform on communication issues.

OPERATIONAL PERSPECTIVE – BUILDING STAKEHOLDER OWNERSHIP AND COMMITMENT ON THE PRIORITY ACTION PLAN AND INVESTMENT REPORT
Background and objectives. The finalization of the Action Plan + Investment Report requires a final round of robust stakeholder engagement, especially local government units. The objectives of the next round of stakeholder engagement are:

- Reinforce the message regarding the nature of the Manila Bay Sustainable Development Master Plan strategic and operational planning process that is holistic, multi-dimensional, participatory and multi-stakeholder, inclusive and coherent, and adaptive, with a premium to multi-stakeholder negotiation and strategy – the legitimacy of the planning process
- Inform and educate individual and clusters of stakeholders, including local government units and informal settler communities/organizations, of the genesis (locally-generated, based on local recommendations and existing priorities) and import of the priority action plans (how these collectively contribute to the overall goals/key results of Manila Bay development) – building on and synergistic local initiatives
- Inspire and mobilize stakeholders to imagine and develop creative and innovative propositions for their responsible and effective role in Manila Bay development as their contribution to the collective challenge for Manila Bay development especially in a context significantly impacted by the COVID-19 crisis. – role and agency of stakeholders in the realization of Manila Bay development results

Communication tasks embedded in a number of priority action plans. A good number of priority action plans indicate communication requirements that will need to be addressed in a holistic manner (via MBTF in the short term and the “Manila Bay Development Commission” in the long term).²

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¹ This statement of the vision incorporates elements from the Manila Bay Task Force Communication Engagement Plan.
² For instance, “development of IEC materials and conduct of massive IEC on water, wastewater and water recycling and reuse”[RPL05/01-02P]; “capacity building of LGUs on community-based fisheries and coastal resource management planning” [BFB01/01-01P]; “establishment of inter-LGU and line agency council” [BFB02/02-01T]
The threat of the coronavirus disease (COVID-19) and outcomes brought about by the pandemic impelled the Philippine Government to start planning forward while taking measures to control the spread of the disease. In May 2020, two (2) documents were issued by the Inter-Agency Task Force Technical Working Group for Anticipatory and Forward Planning and by the Department of Budget and Management (DBM):

- We Recover As One, and
- Budget Priorities Framework for the Preparation of the FY 2021 Agency Budget Proposals.

The Manila Bay Sustainable Development Master Plan, being the overarching plan to guide all related development activities for the next decade in Manila Bay Area will support the government’s streamlined strategies for urgent recovery of the country. This chapter emphasizes the alignment of the MBDSMP to the IATF-DBM anticipatory and forward plans, and how MBDSMP will contribute to the country’s recovery programs.

ALIGNMENT OF THE MBSDMP

REDUCE POLLUTION LOAD

Enhanced implementation on policies regulating pollution loading in the water bodies is necessary to cope up with the pandemic. Several researches by environmental scientists warns the possible untreated wastewater contamination of the virus causing COVID-19.

To answer this, the IATF requires legislative support to its Priority Policies and Strategies in preparation of the country’s new normal with the aim of achieving better management of pollution load. This includes the creation of an Independent Economic or Financial Regulator for Water Supply and Sanitation to harmonize the regulatory practices, processes, fees, and standards on water supply and sanitation. IATF also demands a policy review on existing environment-related laws such as RA Nos. 9003, 9275, 8749, and 6969 to provide higher penalties and stringent administrative measures to maintain vigilance against future environmental offenses or non-compliance committed by small to large industries. The MBDSMP program, Reduce Pollution Load (RPL) will promote the implementation of the mentioned amendments on legislation in the communities and industries in the Manila Bay Area.

The bigger role the LGUs have to play in wastewater management also becomes more crucial, as functions and responsibilities of NGAs are devolved to their counterpart agencies at the local level, in some degree reaching down to the barangays. This emphasizes the need for more and improved capacity development programs for local leaderships and
technical persons. Aside from these strategies, the goals and PAPs of MBSDMP in general are supportive of the proposed strategies of IATF. The strategies and PAPs of MBSDMP to reduce pollution load are supportive to the similar pursuit of reducing pollution stipulated on the Environment and Natural Resources, Agriculture and Fishery, Governance, and Trade and Industry sections of the recovery plans. The MBSDMP PAPs can work in conjunction with or as support to the IATF proposed strategies, to improve the performance and achieved results of the IATF.

**IMPROVE SOLID WASTE MANAGEMENT**

Ensuring public health amidst and after the pandemic requires necessary calibrations of solid waste management protocols and implementation. One specific problem being raised recently to the authorities is the disposal of face masks and other disposable PPEs (Personal Protective Equipment). This is the most common solid waste generated by the surge of masks usage, and answering this problem is vital in ensuring public health particularly due to the possible environmental contamination it might cause. But face masks and PPEs are not the only hazardous wastes of great concern during this pandemic. Various hazardous hospital wastes are being generated, all of which demands proper treatment and disposal which will be answered by IATF programs such as ensuring compliance to hazardous waste handling, improvement of barangay and LGU level disposal system, and possible amendments on existing waste management policies. The MBSDMP action plans on Improve Solid Waste Management (ISWM) can help integrate localized approach of waste management to implement these IATF programs.

Stricter implementation of hazardous waste disposal and handling as proposed by IATF will be supported by the ISWM programs on solid waste in the community level. Programs under ISWM tackling the proper disposal of solid waste can be refined to emphasize the segregation of hazardous to non-hazardous waste. The ISWM will also promote the institutional and technical support to local waste management boards, these are also the same board that will implement heightened
hazardous waste management protocols mentioned by the IATF.

REDUCE EXPOSURE TO FLOODING
As cited in the IATF Action Plan, there is an ongoing comprehensive water resource assessment in groundwater critical areas and major river basins to analyze currently available and potential groundwater sources to ensure sustainability of the country’s water supply. The PAP on the conduct of Comprehensive Assessment of Coastal and Riverine Hydrodynamics and Flood Protection Structures and Development of Decision-Support System Project is aligned to the IATF Action Plan of promoting the sustainability of water supply in the country.

The PAP on the Development of Alternative Water Sources is also consistent with the IATF’s water conservation and efficiency measures e.g. establishment of rainwater harvesting, water reuse and recycling, upgrading/retrofitting of water supply systems, excess floodwater storage, among others (page 76 of the We Recover As One strategy paper) which can also minimize land subsidence especially in areas with already depressed groundwater reserves. The capacity building of LGUs for the preparation and implementation of DRRMP and LCCAP and Watershed Rehabilitation initiatives have both explicitly define its similarities in both action plans, with the former on strengthening capacities of LGUs as first responders and front liners, and the latter on highlighting the importance of forest protection, reforestation, and watershed management activities, especially in critical watersheds, in addressing the increase need for water due to the pandemic aside from reducing flooding disaster risk.

RESTORE NATURAL HABITATS
Environmental destruction, either through deforestation, land use change and agricultural intensification, has made pandemics more likely to occur and less manageable (Everard et al. 2020). As such, the IATF strongly pushes for the implementation of national programs on the protection of Philippine ecosystems. The MBSDMP program on Restoration of Natural Habitat (RNH) directly responds to the IATF’s recommendation of habitat protection and restoration in the Manila Bay Area, covering regions that are highly affected by the pandemic. Indicated on the said program under the MBSDMP are action plans involving comprehensive biotic assessment, enforcing of local natural habitat protection and restoration, and improvement of management of protected areas.

The current pandemic highlighted the potential danger caused by human-induced stresses on ecosystems. Prevention of possible pandemics requires a more comprehensive understanding of our environment and an even stricter implementation of policies regulating the usage of our natural resources. In this case, the Manila Bay Sustainable Development Masterplan will be in congruence with the IATF recommendatory national programs on the protection of Philippine ecosystems.

The implementation of ICZM Framework to serve as the overarching guide to all types of development activities within the bay and along the coastal areas will minimize disturbance of the natural habitats. These are in line with the IATF’s call to protect all ecosystems in the country to minimize destabilization that can trigger outbreaks of pests and diseases. In particular, it is worth noting that the empowerment and engagement of the LGUs, local communities and other local stakeholders in the implementation of the PAPs on RNH can promote the sustainable use of Manila Bay coastal and marine resources and ultimately strengthen the resilience and stability of natural ecosystems.

BOOST FISH BIOMASS
To adapt to the new normal, the recovery plan of IATF focuses on safe, healthy, nutritious, and accessible food supply. In line with this, the government must ramp up assistance to farmers and fisherfolks including the provision of more sustainable farming technologies,
equipment and facilities to improve production. These sectors are critical in the new normal, strengthening the base of the supply chain and boosting local economy, particularly in the most vulnerable sector of society. It is imperative however, that the government ensures the safety of food and agricultural food products supplied in the market by doing regular sanitations of wet market, fish ports, fish landings and other similar establishments that process these food products. As such, supporting research and development to ensure the safe delivery of food products is also recommended.

In line with this, the MBSDMP recommends actions to enhance fishery management and sustainable aquaculture production in Manila Bay. PAPs focused on the establishment and/or rehabilitation of fishery facilities in coastal LGUs in Manila Bay can be prioritized together with the implementation of sustainable aquaculture. Improving fisheries facilities, especially storage facilities, will also be critical during this quarantine period, where public transportation remains limited. Good aquaculture practices will not only be beneficial during this pandemic, but also in the long run. Through sustainable aquaculture, aqua farm/ fishponds will produce high quality and safe products with minimal contaminants released in the bay, supporting the conservation of wild fish habitats in the bay. The implementation of MBSDMP will thus enhance the supply chain for farm and fishery products. Furthermore, by developing fishery centers per coastal municipality facilitates the transport and distribution of products indirectly supporting the decongestion of Metro Manila.

PROMOTE RESPONSIBLE AND SUSTAINABLE TOURISM

The PAPs on the development of Provincial and City/Municipal Tourism Development Plans and its implementation are aligned to the objective of IATF to safeguard the health and security of all tourism personnel and visitors. The Manila Bay Area Sustainable Tourism Projects including the construction of the Manila Bay Ecological Park(s) and Eco-Museum(s) Project are expected to have multiplier effect on other industries. This supports the IATF’s emphasis on construction of buildings to augment capacity of the health care system; and construction activities under the Build, Build, Build Program to kickstart the economy.

INSTITUTIONAL SET-UP

Similar to the Manila Bay Task Force, the Inter-Agency Task Force-Technical Working Group (TWG) for Anticipatory and Forward Planning (AFP) to be chaired by NEDA is created to address urgent concerns that are environment-related.

The Institutional Set-Up arrangement in MBSDMP contains proposed institutional requirements for a formal body with clear mandates to oversee the sustainable development of Manila Bay while meeting all the key institutional requirements to deliver a comprehensive, integrated, sustainable and responsive Manila Bay development within the next 10-15 years. This formal body is called “Manila Bay Development Commission” in the report in the meantime.

Institutional set-up for both Manila Bay Task Force and IATF-AFP is inter-agency in nature as it requires efforts and information from various agencies, disciplines, expertise, and sectors of the society. Both inter-agency task forces need to address challenging and inter-related concerns that affect the environment, health, economy, transportation, solid waste, addressing concerns of ISFs/urban poor, tourism, among others. The alignment of MBSDMP to the IATF recovery plan are seen in the congruence of MBDC mandates to IATF-AFP’s objectives, which are as follows:

- IATF 1st objective: To reduce uncertainty by making information available to answer some of the pressing questions of various stakeholders
  - Mandate of MBDC: Ensure stakeholder engagement and participation in the whole process towards building sustainability of efforts and investments.
- IATF 2nd objective: To recommend programs and strategies to mitigate the losses experienced by consumers and businesses.
  - MBSDMP is designed for collaborative and participatory implementation
MBSDMP CONTRIBUTION TO THE IATF RECOVERY PLAN

Discussed in this section are the particular PAPs per measure that are expected to have high contribution to the achievement of the objectives of IATF COVID-19 recovery plans. Prioritization of PAPs were based on the following criteria that the government is currently using in identifying priority programs:

- Available fiscal space for FY 2022 and beyond;
- Project readiness (e.g. availability of project site, completed feasibility study, and necessary approval from appropriate bodies), as well as the implementation capacity of line agencies;
- Contribution to socioeconomic development and jobs impact of projects;
- Social acceptability and environmental soundness of projects; and
- Inclusion of health and digital economy projects to address emerging needs from COVID-19.

REDUCE POLLUTION LOAD

The new normal will practice handwashing and sanitation in households, public places, and workplaces, therefore increasing demand for water supply. A higher demand for water supply will subsequently translate to higher consumption and production of sewage, especially domestic wastewater. There is greater government support to be handed to manufacturing industries, MSMEs, and the agricultural production sectors, mostly in the form of more financial assistance, easy access to unhindered transportation, and fast processing of permits and transactions. The PAPs of MBSDMP concerning the intensified monitoring and enforcement of compliance of commercial, institutional, and industrial entities to Clean Water Act, and strengthening capacity of MSMEs to comply with the same law, will contribute positively to IATF priority strategies and policies for the new normal. A shift towards fresh and natural agricultural produce for healthier, more balanced diets following the pandemic will result to proliferation of urban gardening initiatives and backyard planting. Training and IEC programs
**IMPROVE SOLID WASTE MANAGEMENT**

With NCR, Region 4A and Region 3 still registering a high number of active COVID-19 cases, increased generation of hazardous wastes is expected to continue. Even prior to the pandemic however, various efforts to ensure compliance of these regions within the Manila Bay Area in waste management protocols were being implemented by respective LGUs and communities. These existing programs will be augmented by the ISWM as it seeks to enhance the capacities of LGUs in terms of waste disposal, along with programs and policies to reduce waste generation. These programs under ISWM can be further refined to give particularity to hazardous wastes generated in the communities. Synchronous implementation of ISWM program to lessen solid waste for best practices in agriculture and aquaculture that ensure organically grown and propagated produce, and therefore reduce reliance to pollutant-laden chemical inputs, are more needed right now.

### IATF Recovery Programs for the Environment

**MBSDMP PAPs on Reduce Pollution Load (RPL)**

<table>
<thead>
<tr>
<th>PAPs Title</th>
<th>Expected Contribution to IATF Strategies</th>
<th>Justification of Expected Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPL01</td>
<td>01-01 P</td>
<td><strong>High</strong></td>
</tr>
<tr>
<td>Expansion of Sewerage and Sanitation Services under Concession Agreement by Manila Water Company</td>
<td>These RPL PAPs will ensure that the coverage of sanitation system within the MBA. LGUs can use these PAPs in determining the necessary feasibility studies, and other policy gaps that needs to be addressed to improve the pollution load treatment on their respective areas.</td>
<td></td>
</tr>
<tr>
<td>RPL01</td>
<td>01-02</td>
<td><strong>High</strong></td>
</tr>
<tr>
<td>Sewerage and Sanitation Services under Concession Agreement by Maynilad Water Services, Inc (Maynilad)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RPL01</td>
<td>02-01 P</td>
<td><strong>High</strong></td>
</tr>
<tr>
<td>Various Sewerage and Septage Projects in Manila Bay Coastal LGUs outside of NCR by Water Districts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Create an integrated knowledge management system for more transparent and better access to information on healthcare wastes (e.g., use of geo-informatics)**

<table>
<thead>
<tr>
<th>PAPs Title</th>
<th>Expected Contribution to IATF Strategies</th>
<th>Justification of Expected Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPL02</td>
<td>01-04</td>
<td><strong>High</strong></td>
</tr>
</tbody>
</table>

**MBSDMP PAPs on Improve Solid Waste Management (ISWM)**

<table>
<thead>
<tr>
<th>PAPs Title</th>
<th>Expected Contribution to IATF Strategies</th>
<th>Justification of Expected Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISWM02</td>
<td>02-01 P</td>
<td><strong>High</strong></td>
</tr>
<tr>
<td>Provincial Transfer Stations with Secondary Sorting and Additional Materials Recovery Facilities in Selected Barangays (Phase 1-Initial Capacities, Phase 2-Expansion)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISWM03</td>
<td>01-01 P</td>
<td><strong>High</strong></td>
</tr>
<tr>
<td>Increase Capacities of Disposal Facilities for Solid Wastes of the Metro Manila and the Provinces</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
generation in barangay, improvement of MRF in both barangay and LGU level and the IATF program on proper disposal of hazardous waste in the community is highly suggested to be done to prevent hazardous waste mixing with other waste. This programs will not be successful if communities are not aware of the protocols to be placed and the dangers of hazardous wastes, thus the ISWM programs involving IEC on barangay-level will be of great usage to re-echo IATF programs to the communities during this pandemic and even on the country’s recovery phase.

ISWM program also include the increase of capacities and facilities in waste collection, efficient sorting and transport of waste, and centralized disposal. MBSDMP aims to achieve these through necessary policy reviews, and infrastructural investment and stakeholder participation. This ISWM programs can be further refined to include the IATF’s aim to increase treatment, storage and disposal (TSD) facilities, may it be from the local government and private institutions, particularly hospitals.

<table>
<thead>
<tr>
<th>IATF Recovery Programs for the Environment</th>
<th>MBSDMP PAPs on Reduce Exposure to Flooding (REF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAPs Title</td>
<td>Expected Contribution to IATF Strategies</td>
</tr>
<tr>
<td>High</td>
<td>Justification of Expected Contribution</td>
</tr>
<tr>
<td>Ongoing comprehensive water resource</td>
<td>REF01</td>
</tr>
<tr>
<td>assessment in groundwater critical areas</td>
<td>Comprehensive Assessment of Coastal and Riverine Hydrodynamics and Flood Protection Structures in Manila Bay Area and Development of Decision-Support System Project</td>
</tr>
<tr>
<td>and major river basins</td>
<td>REF01</td>
</tr>
<tr>
<td>Implement water conservation and</td>
<td>Refinement/Improvement/Upgrading of Manila Bay Area Water Resource and Flood Management Decision Support System Project</td>
</tr>
<tr>
<td>efficiency measures (e.g. establishment</td>
<td>REF05</td>
</tr>
<tr>
<td>of rainwater harvesting, water reuse and</td>
<td>Capacity-Building of LGUs for the Preparation and Implementation of DRRMMP and LCCAP</td>
</tr>
<tr>
<td>recycling, upgrading/retrofitting of</td>
<td>REF06</td>
</tr>
<tr>
<td>water supply system, excess floodwater</td>
<td>Capacity-Building of LGUs for the Preparation and Implementation of DRRMMP and LCCAP</td>
</tr>
<tr>
<td>storage, among others)</td>
<td>REF08</td>
</tr>
<tr>
<td>Strengthen capacities of LGUs, starting</td>
<td>Pampanga River Basin Watershed Rehabilitation</td>
</tr>
<tr>
<td>at the barangay level as first responders</td>
<td>REF08</td>
</tr>
<tr>
<td>and frontline service delivery units</td>
<td>Watershed Rehabilitation of Bataan, Cavite, and Pasig-Marikina River Basin</td>
</tr>
<tr>
<td>(page 52)</td>
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<tr>
<td>Strengthen implementation of forest</td>
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<tr>
<td>protection, reforestation, and watershed</td>
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<tr>
<td>management activities, especially in</td>
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<td>critical watersheds (page 61)</td>
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RESTORE NATURAL HABITATS

The Manila Bay Area is known to host wildlife that are susceptible to zoonotic (animal-to-human) infections. It hosts habitats within natural migratory bird routes wherein locals from the communities surrounding the bay are also residing or holding economic activities such as agriculture and fisheries. The inland portion of the bay, where mangroves are thriving are also known areas where bats (the animal group where COVID-19 is believed to come from) are abundant. This scenario, despite proving the coexistence of humans and wildlife, can also lead to possible threats if proper management protocols were not in place. This dilemma will be answered by the MBSDMP actions plans. The MBSDMP plans to make a comprehensive and regular biodiversity assessment and monitoring across the Manila Bay Area. These ecosystem- and organismic-level biotic assessment will be the primary dataset needed for researches on early detection of viral strains existing in nature and its relationship to other organisms and the environment, as indicated on the IATF priority recovery programs. These assessments will also be essential in the proposed IATF project on researching naturally occurring compounds that may be of great pharmaceutical use in searching the cure for COVID-19.

Strict enforcement of wildlife trade indicated on the IATF’s 2021 programs will also be translated by the RNH program of MBSDMP. Capacity building activities by government agencies such as DENR-ERDB and DENR-BMB on protected area management will be given to LGUs and community organization to enforce preservation of natural habitats. This program will be essential in prevention of illegal wildlife trade. This will also promote responsible utilization of our ecosystems since there are possible surge of demand for medicinal plants and wood products, as foreseen by the IATF.

Aside from the abovementioned PAPs, the overall restoration of natural habitats of Manila Bay can contribute to local development as well as to the improvement of local economy that will result to more resilient and adaptive to natural and human induced hazards, including health and disaster risks.

REDUCE EXPOSURE TO FLOODING

Certain initiatives under the MBSDMP has direct contribution to address the pandemic. Initiatives on both action plans are mutually reinforcing to address adequacy of water supply in the country while reducing exposure to flooding particularly in the Manila Bay Area. The Manila Bay Coastal Area Community-Based Relocation Program under MBSDMP even without direct complimenting activities under IATF can serve a pilot program to redesign and explore the inclusion of an open or public space, which may be used for isolation and/or quarantine or other similar purposes, in the design of socialized housing and resettlement packages. The Capacity-Building of LGUs for the Preparation and Implementation of DRRMP and LCCAP can also serve as an entry point to include pandemic preparedness and response in local disaster risk reduction and management plans, and initiate the formulation of a national preparedness and response framework for disease outbreaks and pandemics.

The PAPs indicated on REF emphasizing the need to conduct study to utilize and capture rivers discharges as domestic water supply by directly passing through treatment plants. It may also include diverting of the flood waters into an impounding reservoir or retention basin and maybe use as water supply to address the higher water demand under the pandemic scenario. Through this, well drilling maybe minimized and ultimately eliminated to avoid ground subsidence.

Clearing of waterways by dredging, thereby improving the flow of water especially during rainy season. Dredged materials may be used as embankment along riverbanks as flood control measures and may serve as foundation in constructing roadway on top of it, that leads to main thoroughfares. Dredged material may also be used for reclamation for low-lying areas which will serve as resettlement areas for those that will be displaced.
<table>
<thead>
<tr>
<th>IATF Recovery Programs for the Environment</th>
<th>MBSDMP PAPs on Restore Natural Habitats (RNH)</th>
<th>Expected Contribution to IATF Strategies</th>
<th>Justification of Expected Contribution</th>
</tr>
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<tbody>
<tr>
<td>Establish additional wildlife sanctuaries for rescued wildlife with trained wildlife caretakers on proper handling protocols</td>
<td>RNH02</td>
<td>01-03 P Locally Managed Marine Protected Areas Project</td>
<td>High</td>
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<tr>
<td>Implement a comprehensive bioprospecting and biotechnology program to facilitate discovery and development of novel compounds and derivatives for pharmaceutical purposes</td>
<td>RNH01</td>
<td>01-01 P Strengthening Coastal Resource and Ecological Assessment and Monitoring Project</td>
<td>High</td>
</tr>
<tr>
<td>Conduct R&amp;D programs on:</td>
<td>RNH01</td>
<td>01-02 P Resources and Ecological Monitoring Program (2025, 2030, 2035, 2040)</td>
<td>High</td>
</tr>
<tr>
<td>Early detection and rapid response to manage new viruses and other organisms, and its relationship to the environment.</td>
<td>RNH01</td>
<td>01-01 P Strengthening Coastal Resource and Ecological Assessment and Monitoring Project</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>RNH01</td>
<td>01-02 P Resources and Ecological Monitoring Program (2025, 2030, 2035, 2040)</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>RNH03</td>
<td>01-01 P Formulation of the Coastal and Marine Habitat Spatial Plan in Manila Bay</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>RNH03</td>
<td>01-02 P Updating of the Coastal and Marine Habitat Spatial Plan in Manila Bay (2025, 2030, 2035, 2040)</td>
<td>High</td>
</tr>
<tr>
<td>Forest protection, reforestation, watershed rehabilitation and management activities especially in critical watersheds</td>
<td>RNH04</td>
<td>01-01 P Harmonized Rehabilitation, Restoration and Management of Protected Habitats Program</td>
<td>High</td>
</tr>
<tr>
<td>Provide additional budget support for digital technologies or computer applications for forest management (surveying, mapping, and planning), including its knowledge management systems</td>
<td>RNH03</td>
<td>01-02 P Updating of the Coastal and Marine Habitat Spatial Plan in Manila Bay (2025, 2030, 2035, 2040)</td>
<td>High</td>
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</table>
**BOOST FISH BIOMASS**

In terms of agriculture and fisheries, the IATF We Recover as One focuses on the accessibility, affordability, of safe and nutritious food. It is assumed that with the new normal, it is expected to increase demands in modern agricultural machineries and equipment in agriculture and fishery sector, this is to lessen movement of people. There will also be a need for innovative technologies and for rehabilitation of existing fishery facilities even without the pandemic and the new normal. One of the identified measures to address issues in the fisheries sector in Manila Bay is to boost fish biomass. This measure includes establishment of post-harvest facilities and other innovative technologies that will be available and will be useful for the fishing communities in Manila Bay. This will contribute and will support efforts on having better quality of fishery products as well as increase fish catch.

The new normal will also bring people to a healthier diet choice. Safe and nutritious foods will be much in demand. Research and developments on fisheries management will help aquafarm/fishpond owners around Manila Bay improve their practices on aquafarming which will lead to better water quality of rivers and other water bodies draining to the bay. Development of guidelines, policy reforms and studies on sustainable fisheries such as good aquaculture practices will be part of measure to improved the fishery sector in Manila Bay. This will also decrease contaminants on water and expected to give safer and better quality fish products from Manila Bay.

Better fish catch will also enhance local employment and livelihood that can upgrade local economy and will contribute to more economically progressive communities.

**PROMOTE RESPONSIBLE AND SUSTAINABLE TOURISM**

The list of PAPs to promote responsible and sustainable tourism has certain facets to supplement the current effort of IATF to address the ongoing pandemic. The Development of Provincial and City/Municipal Tourism Development Plans shall include additional provision or section to address the ongoing pandemic or future outbreaks to ensure continuity of public services under those circumstances. Consistent with the preceding activity, the developed plans shall also undergo strict implementation and monitoring to ensure health and safety for employees and visitors of all tourism enterprises. The improved tourism-related policies shall focus on amending the National Accreditation Standards for all tourism enterprises (primary and secondary tourism enterprises) to include additional measures related to sanitation, disinfection, promotion of proper hygiene, and responsible information sharing. Trainings under the Manila Bay Area Sustainable Tourism Project shall direct its focus on sanitation standards and incident command protocol, including protocols and coordination with appropriate government agencies while social distancing and ban on crowded gatherings is still on effect.

In general, the contribution of tourism PAPs of MBSDMP will be more on the local development, employment and livelihood generation that will translate to more resilient and adaptive communities having better access to basic services and to safer housing which can lead to less exposure to disaster and health risks.
Similar to the Manila Bay Task Force, the IATF-AFP to be chaired by NEDA is created to address urgent concerns that are environment-related. The Institutional Set-up arrangement in MBSDMP contains proposed institutional requirements for a formal body with clear mandates to oversee the sustainable development of Manila Bay while meeting all the key institutional requirements to deliver a comprehensive, integrated, sustainable and responsive Manila Bay development within the next 10-15 years.

This formal body is called “Manila Bay Development Commission (MBDC)” in the report for the meantime. Institutional set-up for both MBTF and IATF-AFP is inter-agency in nature as it requires efforts and information from various agencies, disciplines, expertise, and sectors of the society. Both inter-agency task forces need to address challenging and inter-related concerns that affect the environment, health, economy, transportation, solid waste, addressing concerns of ISFs/urban poor, tourism, among others.

The alignment of MBSDMP to the IATF recovery plan are seen in the congruence of MBDC mandates to IATF-AFP’s objectives, which are as follows:

- IATF employs a whole of nation/whole society approach in the Anticipatory and Forward Planning for the recovery from the pandemic. Therefore, success of the plan requires cooperation of business and the public to make the governments’ recovery actions work (response, mitigation, transition to new normal). This three-pronged strategy needs to be cascaded to the regions, even down to the local development councils, but properly nuanced to consider regional and local conditions.

- Included in the MBSDMP are MBDC functions that can help in translating the IATF’s recovery plans to different level of governance. These functions include coordination with different national and local government agencies, CSOs, Academe, and private sector to assure full implementation of all MBSDMP measures, programs, projects, and activities. The
<table>
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<tr>
<th>IATF Recovery Plans Objective</th>
<th>Corresponding MBDC Mandates</th>
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<tr>
<td>IATF 1st objective: To reduce uncertainty by making information available to answer some of the pressing questions of various stakeholders</td>
<td>Mandate of MBDC: Ensure stakeholder engagement and participation in the whole process towards building sustainability of efforts and investments.</td>
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<tr>
<td>IATF 2nd objective: To recommend programs and strategies to mitigate the losses experienced by consumers and businesses.</td>
<td>MBSDMP has been collaborating with various stakeholders which include local government units, national government agencies and private sector entities to stimulate and effect synergy and integration to all plans, policies, and programs as well as across stakeholders of MBA.</td>
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<tr>
<td>IATF 3rd objective: To recommend policies and programs to adapt to a “new normal” state of economic activities</td>
<td>The MBDC is a government agency committed to undertake policy advocacy, oversee Manila Bay-related efforts, employ science-based information in decision making, and safeguard inclusive and meaningful participation of all stakeholders towards achieving Manila Bay 2040 while contributing to AmBisyon Natin 2040.</td>
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**MBDC** can also generate and provide information from the communities that may be essential to IATF in designing appropriate recovery programs and projects.