

**PROJECT INFORMATION DOCUMENT (PID)**  
**APPRAISAL STAGE**

Report No.: PIDA72805

<b>Project Name</b>	Metro Manila Flood Management Project (P153814)
<b>Region</b>	EAST ASIA AND PACIFIC
<b>Country</b>	Philippines
<b>Financing Instrument</b>	Investment Project Financing
<b>Project ID</b>	P153814
<b>Borrower(s)</b>	Republic of the Philippines
<b>Implementing Agency</b>	Department of Environment and Natural Resources, Metro Manila Development Authority
<b>Environmental Category</b>	A-Full Assessment
<b>Date PID Prepared/Updated</b>	22-May-2017
<b>Date PID Approved/Disclosed</b>	23-May-2017
<b>Estimated Date of Board Approval</b>	05-Jul-2017
<b>Appraisal Review Decision (from Decision Note)</b>	
<b>Other Decision</b>	

## I. Project Context

### Country Context

The geographic location of the Philippines makes it prone to typhoons. The number and intensity of typhoons seems to be increasing, with resulting larger damages to properties, infrastructure, and agriculture. The country was visited by 94 destructive typhoons in 2011-2015, 9.3 percent more than the number of typhoons in 2006-2010, with almost triple the cumulative cost of damages. The increased typhoon activity is also resulting in more frequent and increasingly devastating floods in recent years, not only as a result of climate change, but also caused in part by human activities such as deforestation and rapid urbanization. The Philippines is expected to be among the countries that will suffer long-term and repetitive damage from extreme weather patterns brought about by climate change. Lack of inclusive growth negatively affects the ability of a large part of the population to deal with natural disasters.

Strong growth in Metro Manila attracts an increasing number of migrants from rural areas in search of better jobs. As the city fails to keep up with the fast pace of urbanization and with typically low paying jobs for migrants, they are unable to afford decent housing and often end up as informal settler families (ISF) living in danger zones. Typhoons and flooding, housing, and poverty are inextricably linked. Worsening flood events, caused by climate change, exacerbate shelter deprivation and lack of decent shelter increases vulnerability to flooding. Typhoons could render thousands homeless at once, and conversely, lack of strong shelter in safe locations exposes people to flooding. The poor are most

vulnerable, not only because of their exposure in high-risk locations and the low quality of their houses, but also because of their low adaptive capacity. Poor families are less able to prepare against floods compared to better-off families. The livelihoods of many poor people is also affected by flood events, as many depend on the streets for their daily income and when streets are flooded, they cannot ply their trade.

### **Sectoral and Institutional Context**

**Flood Management.** Many areas in Metro Manila are low-lying and designated as flood prone, with insufficient protection against frequent inundation as natural drainage is often restricted during rainfall events by high river and sea water levels. About 80 percent (1,700 mm) of the annual rainfall occurs during the typhoon season from June through October, when rain can be particularly intensive. As a result, flooding is a recurrent problem in Metro Manila that causes flooding of roads, affecting traffic and movement of people, and flooding in houses and buildings. Urban drainage relies mostly on a combination of drainage channels, waterways, and pumping stations.

After Ondoy, a devastating typhoon that hit Metro Manila on September 26, 2009, the Government, with technical and financial support of the World Bank, prepared a Flood Management Master Plan for Metro Manila and Surrounding Areas (Master Plan). The Master Plan, approved by the National Economic and Development Authority (NEDA) Board on September 4, 2012, proposes a set of priority structural and non-structural measures to provide sustainable flood management and safely control major flood events in Metro Manila. The total estimated cost for the implementation of the Master Plan is up to PhP 352 billion (about US\$7 billion) over a 20-25 year period. The main elements of the Master Plan are: (a) structural measures to reduce flooding from river systems that run through the city, including, as a priority measure, a high dam in the upper Marikina River catchment area to reduce the peak river flows entering the city during typhoon and other extreme rainfall events; (b) structural measures to eliminate long-term flooding in the flood plain of Laguna de Bay, including land raising or another similar development, to protect the population living along the shore against high water levels in the lake; (c) structural measures to improve urban drainage (to be addressed under the proposed Project); (d) non-structural measures such as flood forecasting and early warning systems and community-based flood risk management; and (e) recommendations for an improved institutional structure to deal with flood management in an integrated manner. In order to improve the overall flood management conditions in Metro Manila, all interventions under the above-referenced elements (a) to (e) have to be implemented. However, each structural element has unique solutions that are not directly linked to other elements and can be implemented independently from each other.

For the purpose of the Project, the institutional structure for project implementation and subsequent management of the infrastructure is in place. The Department of Public Works and Highways (DPWH) is mandated to undertake country-wide planning, design, construction, and maintenance of infrastructure, such as national roads and bridges, flood control systems, water resources projects, and other public works. Historically, DPWH was responsible for the design, construction, and management of large pumping stations in Metro Manila. On July 9, 2002, a Memorandum of Agreement (MoA) was entered into by and between DPWH and the Metropolitan Manila Development Authority (MMDA) to turn over to MMDA all functions and responsibilities for flood control in Metro Manila. However, even with the MoA in place, DPWH, through its Flood Control Management Cluster (FCMC), continues to support urban drainage developments in Metro Manila through the design and construction of pumping stations and the dredging of major rivers and waterways. The Flood Control and Sewerage Management Office (FCSMO) of MMDA is responsible for the operation and maintenance (O&M) of some 57 pumping stations, located throughout Metro Manila. These 57 pumping stations serve a total area of around 9,000 hectares (about 14 percent of the total area of Metro Manila) with an estimated population of over 2.4 million people as of 2015. Proper

O&M becomes increasingly more difficult as most of the pumping stations and appurtenant infrastructure were constructed several decades ago, starting in the seventies, and are not functioning anymore up to design capacity. In addition, because of the expansion of Metro Manila, there are many low-lying areas that are not served by pumped drainage systems, which can lead to long-lasting flooding at times when water levels in receiving water bodies are high. After extensive discussions among MMDA, DPWH, local government units (LGU), and other government agencies, 139 drainage areas, including most of the existing pumped drainage systems, have been identified for a long-list of priority intervention areas. Given limitations of the project funding, it is estimated that about 56 areas can be covered under the Project (36 existing and 20 new sites).

**Solid Waste Management.** Metro Manila generates about 9,200 tons of waste per day. The Ecological Solid Waste Management Act of 2000 (Republic Act, RA 9003) mandates barangays (lowest elected political units in the Philippines) to ensure waste segregation and undertake basic waste collection, while LGUs are responsible for larger-scale collection, transfer, and final disposal of solid waste at designated landfill facilities. Most LGUs contract out collection and disposal of solid waste. The collection efficiency in Metro Manila is estimated at 80 percent, while the remaining 20 percent are either burned in backyards, left on the streets, or disposed into waterways. Individual and collective community behavior is a central factor contributing to weak solid waste management practices. The large volume and difficulties with collection and disposal of solid waste from densely populated areas are important concerns for flood management in Metro Manila. When solid waste collection is difficult, such as in many cramped informal settlements, nearby water bodies such as creeks and rivers become convenient dumping grounds. Much of the waste in waterways ultimately hampers water flow and discharge during the rainy season that in turn contributes to flooding. Solid waste that accumulates at pumping stations compromises the integrity of the pumping mechanisms, one of the reasons why many pumping stations in Metro Manila are functioning below their rated capacity. Most of the solid waste accumulating at pumping stations is residual (rather than recyclable) and collection and disposal is the responsibility of MMDA. From records of actual collection of waste at pumping stations by MMDA it is estimated that every year about 17,000 m<sup>3</sup> of solid waste (about 5,000 tons) ends up at the trash racks of the major pumping stations.

**ISFs and Relocation Efforts.** While accurate numbers are difficult to discern, National Housing Authority (NHA) estimates that there are about 600,000 ISFs in Metro Manila or almost 2.8 million people. Informal settlements are characterized by lack of security of tenure, poor living conditions, and often high exposure to natural disasters, especially flooding. Many ISFs live along and even over drainage channels and waterways that connect to pumping stations, impeding the flow of water and making access to waterways for maintenance difficult if not impossible.

Over the years, the Government has implemented a number of housing programs for the ISFs. Approaches have evolved from centrally-administered government-led approaches to more decentralized participatory ones. Past efforts to address ISF resettlement in Metro Manila, which have mainly been off-city, have been subject to criticism, mostly for lack of consideration for adverse socio-economic impacts on the affected households, such as loss of economic livelihood opportunities, lack of adequate access to basic services, and disruption of social networks. Due to absence of opportunities for livelihood restoration and/or mismatch between skills and job opportunities, ISFs resettled to off-city sites often experience a sharp decline in incomes and many decide to migrate back to the informal settlements in Metro Manila. During the past years, the Government has accelerated the provision of shelter, particularly for low-income groups and the urban poor. It launched in 2011 the Oplan Likas Program: Lipat para Iwas Kalamidad At Sakit (Operational Plan: Evacuation to Prevent Calamity and Sickness). The program aimed to relocate about 104,000 ISFs out of danger areas, including waterways, and allocated PhP 50 billion (approximately US\$1.05 billion) over five

years from 2011 to 2016 to finance land acquisition and housing construction costs. Taking global and national best practices into account, Oplan Likas advocated for in-city relocation within the vicinity of ISFs' livelihoods, leaving off-city relocation as a last resort. Yet, due to lack of affordability, land constraints, and institutional challenges, among other factors, about 67 percent of the resettlement under Oplan Likas undertaken by NHA has been off-city. The current government has allocated PhP 1.8 billion in the 2017 budget to address service delivery gaps in 18 off-city resettlement sites. The amount includes budgets for livelihood programs, health, education, solid waste management, and community infrastructure. Concerned agencies are currently working on the finalization of their programs, projects and activities for the said fund.

## II. Proposed Development Objective(s)

The project development objective is to improve flood management in selected areas of Metro Manila.

## III. Project Description

### Component Name

#### 1. Modernization of Drainage Areas

#### Comments (optional)

The Project will construct an estimated 20 new and modernize an estimated 36 existing pumping stations and appurtenant infrastructure, such as trash racks and flood gates. The component will also finance dredging, including accumulated sediments and solid waste, and improvements to waterways and drainage channels. The component will provide specialized modern waterways maintenance equipment, such as floating dozers and remote controlled cleaners for closed drains and interceptors, to enable DPWH and MMDA to carry out emergency cleaning operations. Modern equipment for removal of water hyacinth will be introduced as well. A program of increasing the water retention capacity within the project drainage areas will be developed and implemented, where suitable.

### Component Name

#### 2. Minimizing Solid Waste in Waterways

#### Comments (optional)

The component will carry out neighborhood-level activities, in the vicinity of the pumping stations and waterways and drainage channels targeted under Component 1 of the Project, through improved solid waste collection services, community mobilization and awareness creation, incentives-based improved waste collection with independently verified results, and neighborhood upgrading such as beautifying waterways and easements to reinforce the incentive not to indiscriminately dispose of waste into waterways. The component will support MMDA with a large-scale metro-wide information, education and communication campaign; the development and installation of an integrated management information system (MIS); and preparation of a solid waste master plan for Metro Manila.

### Component Name

#### 3. Participatory Housing and Resettlement

#### Comments (optional)

There will be resettlement from an estimated 16 drainage areas, where ISFs would obstruct the proper O&M of the improved or new infrastructure. The magnitude of PAPs to be resettled is expected to be around 2,500 households. The component will carry out a program of activities to provide PAPs with access to better housing and basic services and building stronger community organizations. This includes land acquisition, site development, housing construction, rental support for transition period of up to 24 months, and livelihood assistance programs.

### Component Name

#### 4. Project Management and Coordination

##### Comments (optional)

The component will provide support for the operation of the Project Management Offices (PMO) in DPWH and MMDA with respect to the management and coordination of their respective parts of the Project, including in each case: (i) payment of incremental operating costs; (ii) provision of office equipment and materials; (iii) provision of training and carrying out of knowledge sharing and peer-to-peer learning activities; (iv) provision of technical assistance in engineering, monitoring and evaluation for the Project, and design of activities for the implementation of the Project; and (v) managing a grievance redress mechanism.

#### IV. Financing (in USD Million)

Total Project Cost:	500.00	Total Bank Financing:	207.63
Financing Gap:	0.00		
<b>Financing Source</b>			<b>Amount</b>
Borrower			84.74
International Bank for Reconstruction and Development			207.63
Asian Infrastructure Investment Bank			207.63
Total			500.00

#### V. Implementation

The main responsibilities for the day-to-day implementation of the components are as follows: component 1 – DPWH, in close cooperation with MMDA; component 2 – MMDA, in close cooperation and with support of LGUs and barangays; component 3 – DPWH for the preparation of RAP or DDR, to be implemented by either NHA or Social Housing Finance Corporation (SHFC), in close collaboration with MMDA, relevant LGUs, and the Housing and Urban Development Coordination Council (HUDCC) to act as the oversight agency for the key shelter agencies; and component 4 – DPWH and MMDA. DPWH and MMDA will manage the loan funds and have procurement responsibilities.

The project is following a program approach and a number of drainage areas will be selected during each of the first three project years, based on a set of technical, economic, and social criteria. This has preliminary been done for the 56 schemes that were identified as priority, but the selection will be confirmed during project implementation and there is sufficient flexibility to include other schemes if these are deemed to be of higher priority at the time of applying the selection process. Following the final selection of a drainage area into the project, surveys, investigations, and mapping will take place, under the leadership of DPWH, but with full involvement of MMDA, NHA or SHFC, HUDCC, LGU, and others, as needed. Based on the identified needs, the required interventions will be determined in line with the overall scope of each of the components. Interventions will vary from drainage area to drainage area. The various components are integrated and work towards a long-term solution for flooding in the project's drainage areas, but this does not mean that all components will be implemented in all drainage areas. For example, if in a particular drainage area there is no need to relocate people, component 3 will not be part of the detailed interventions for such drainage area. A feasibility report will be prepared that describes the surveys, investigations, and mapping, the proposed interventions, safeguards requirements, and initial estimates of costs and benefits. It will be sent to

NEDA and the management of the agencies that were involved in the preparation, as well as the Bank for its confirmation that the proposals are consistent with the overall objective and scope of the Project. Once such confirmation is provided by the Bank detailed design and implementation of the proposed interventions will start. The interventions will be designed by the relevant agency, as needed with support of consultants, and implemented through a number of contract packages that will be competitively procured. In drainage areas with past or future resettlement, the Bank will have to review and clear the safeguards documents before implementation starts.

## VI. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04	X	
Forests OP/BP 4.36		X
Pest Management OP 4.09		X
Physical Cultural Resources OP/BP 4.11	X	
Indigenous Peoples OP/BP 4.10		X
Involuntary Resettlement OP/BP 4.12	X	
Safety of Dams OP/BP 4.37		X
Projects on International Waterways OP/BP 7.50		X
Projects in Disputed Areas OP/BP 7.60		X

## VII. Contact point

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