

An aerial photograph showing a wide river winding through a densely populated urban area. The city is characterized by a high density of buildings with colorful roofs. The river is a prominent feature, flowing from the upper left towards the lower right. In the background, there are green hills under a blue sky with some clouds. The text "Metro Manila Flood Management Project" is overlaid in the center of the image.

Metro Manila Flood Management Project

Flooding - A Particular Challenge in Metro Manila

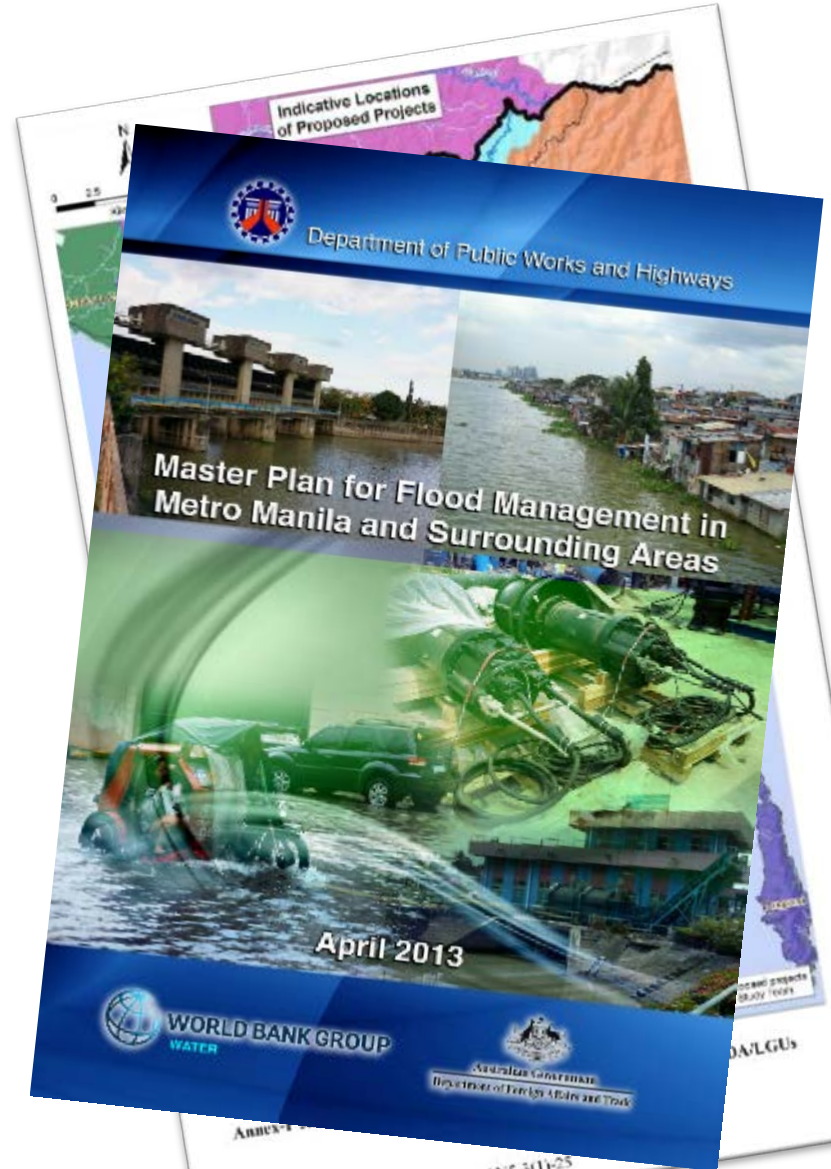
- ▶ In the World Risk Index for 2016, the Philippines ranks third among countries most at risk for disasters (Vanuatu and Tonga).
- ▶ Typhoons and floods are the most devastating in terms of their economic and social impact, accounted for 80 percent of all deaths, 90 percent of the total number of affected people, and 92 percent of the total economic impact (1985 - 2015 data).
- ▶ Metro Manila has not been spared - think Ondoy.
- ▶ Climate change - increased rainfall intensity, sea level rise (subsidence).
- ▶ Metro Manila is one of the most densely populated cities in the world.
- ▶ Flooding is one of the major risks that endangers a large part of the city's population.

Flooding - A Particular Challenge in Metro Manila

- ▶ Risk of flooding concerns especially the poor who live in constant danger, fear for their children's safety, and who's work is affected.
- ▶ There are more than 3 million informal settlers in Metro Manila (about 1 in 4 citizens).
- ▶ The informal settlers' vulnerability to natural disasters, especially floods, is on top of all the other vulnerabilities they have to cope with.
- ▶ Regular risks, such as flooding in urban areas, are considered more negatively by many people than extreme risks that occur very rarely, such as earthquakes.

Metro Manila Flood Management Master Plan

- ▶ Ondoy was an eye-opener.
- ▶ Master Plan prepared by government, with World Bank technical and financial assistance.
- ▶ Approved by NEDA Board on September 4, 2012.
- ▶ Vision for addressing Metro Manila flood problems.
- ▶ proposes a 20-25 year program of priority structural and non-structural measures.
- ▶ Total estimated cost up to Peso 350 billion (\$7 billion).



Main Elements of the Master Plan

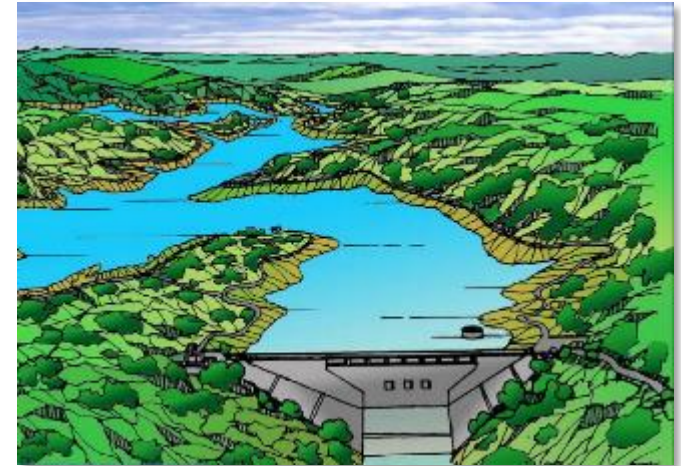
1. **Structural** measures to improve:

- ▶ **urban drainage**
- ▶ flooding from river systems that run through the city
- ▶ long-term flooding in the flood plain of Laguna de Bay

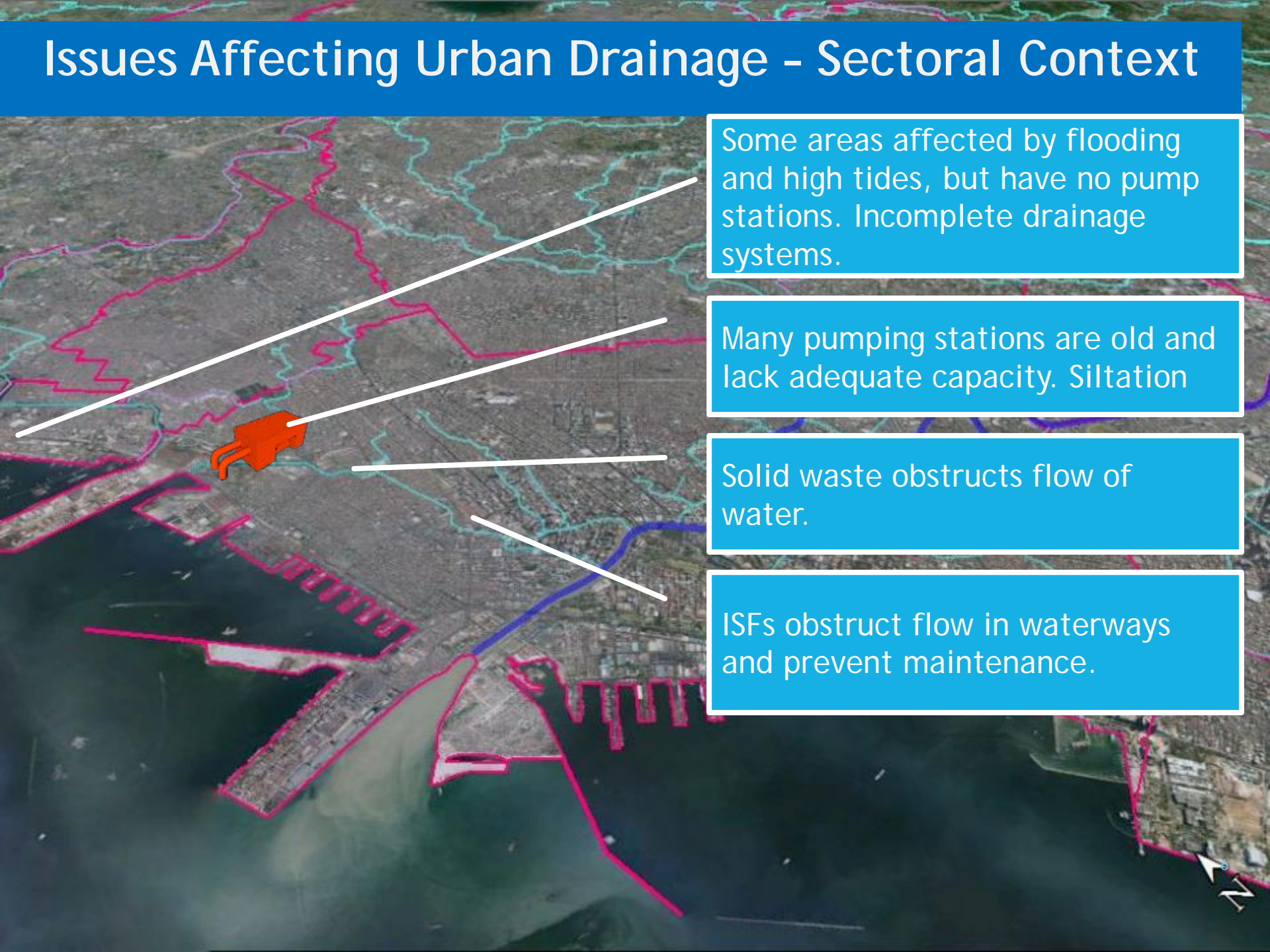
2. **Non-structural** measures:

- ▶ flood forecasting
- ▶ early warning systems
- ▶ community-based flood risk management

3. **Institutional** development.



Issues Affecting Urban Drainage - Sectoral Context



Some areas affected by flooding and high tides, but have no pump stations. Incomplete drainage systems.

Many pumping stations are old and lack adequate capacity. Siltation

Solid waste obstructs flow of water.

ISFs obstruct flow in waterways and prevent maintenance.

MMFMP: Project Components



Modernizing Drainage Areas
(US\$375.2 million)



Minimizing Solid Waste in
Waterways (US\$48 million)



Participatory Housing and
Resettlement (US\$55.76 million)



Project Management and
Coordination (US\$20 million)

1. Modernizing Drainage Areas

- Modernize about 36 **existing pumping stations**, with modern, efficient, high capacity pumps.
- Construct about 20 **new pumping stations** in underserved drainage areas.
- Waterways and drainage channel **dredging and cleaning; possibly extension in some areas.**
- **Increase water retention capacity** within the project drainage areas.
- Provision of specialized modern waterways/drainage channel **maintenance equipment.**



2. Minimizing Solid Waste in Waterways

- Will target pump station catchment areas.
- Will align with LGU programs.
- Provision of supplies and equipment.
- Community engagement programs and IEC campaigns.
- Financial incentives to barangays.
- Solid waste master plan, innovative waste management developments.



3. Participatory Housing & Resettlement

- Prioritize near site, in-city resettlement to minimize socio-economic disruption.
- Participatory approaches (people plans).
- Flexibility in the resettlement options.
- Support to past resettlement.
- Incorporated studies – rental support, affordability, land availability.



Key Risks

1. Institutional Capacity for Implementation.

- Several agencies are involved, but not all have extensive experience with Bank projects.
- Multi-sectoral project across many sites adds to complexity.
- Activities for most of the Project drainage areas have not yet been fully identified and worked out.

Key Risks (Cont'd)

2. Environmental and Social, including Stakeholders.

- Environmental risks relate mostly to dredged material and solid waste.
- High social risks, especially related to resettlement, past and future.
- Targeted support (technical footprint) may create resentment among fellow relocatees in same relocation sites.
- Stakeholders (CSOs) may raise issues related to inadequacies of past government-funded resettlement and fact that additional project support may be needed.
- Land acquisition may be delayed, especially for in-city resettlement. LGUs may be reluctant to provide land.

Processes to mitigate risks

- Institutional capacity needs to be sufficient, which requires additional support from consultants.
- Project will have a comprehensive communication strategy, focusing on detailed and transparent messaging.
- Grievance redress mechanism will use possible complaints as opportunities to improve project implementation.
- Extensive public consultations will take place throughout project implementation.
- There is a long-list of drainage areas, so if LGU delays, project can select another drainage area.
- Rental support included as project activity.
- Clear operational modalities put in place.