

Environmental and Social Considerations in Detailed Planning Survey
(Technical Cooperation for Development Planning)

1. Full title of the Project

“Project for Enhancement of Flood Control Strategy in Prioritized River Basins”
(hereinafter referred to as “the Project”)

2. Type of the study

Master Plan (Pre-Feasibility Study is scheduled after the completion of the Master Plan)
(hereinafter referred to as “the M/P”)

3. Categorization and its reason

“Category B”

The project is not likely to have significant adverse impact on the environment under the JICA Guidelines for Environmental and Social Considerations (April, 2010), in terms of its sectors, characteristics and areas.

4. Agency or institution responsible for the implementation of the project

Department of Public Works and Highways (DPWH)

5. Outline of the Project

[Objectives]

(1) Expected Goals which will be attained after implementing the Project

1) Impact

Flood control measures in the major and principal river basins are implemented based on M/Ps.

2) Outcome

To update the existing Flood Control M/Ps and conduct Pre-Feasibility Study (Pre-F/S) in the Target River Basins and strengthen the existing Flood Control Management System among the related agencies.

(2) Output

Output-1: Preliminary Flood Risk Assessment on Pasig-Marikina River Basin and Cagayan River Basin

Output-2: Updated M/Ps are formulated to contribute in reducing flood risk in Pasig-Marikina River Basin and Cagayan River Basin

Output-3: Pre-F/S for priority project(s) in Pasig-Marikina River Basin and Cagayan

River Basin

Output-4: Promotion of basin-wide collaboration with concerned agencies and/or local government units through the existing coordinating body

[Justification]

According to the Emergency Event Database, from 1980 to 2022, about 50,000 people were killed, 237.75 million people were affected, and the economic damage was about US\$28.4 billion in the Philippines.

Therefore, it is an extremely important and urgent issue from the viewpoint of the development of Philippine society to promote flood control measures.

Under these circumstances, on July 27, 2021, the Government of the Republic of the Philippines requested Japan to undertake the following projects. Master Plan for flood control and Pre-F/S for the development of priority projects to reduce flood risks in watersheds with high flood disaster potential where population and assets are concentrated. This project is an attempt to respond to this request.

[Location]

Pasig-Marikina River Basin and Cagayan River Basin

[Proposed activities]

The Project will be carried out in the following four (4) stages:

Stage-1: Basic Data Collection (4 months)

Stage-2: Updating of M/P for flood management plan in Pasig-Marikina River Basin and Cagayan River Basin (8 months)

Stage-3-1: Pre-F/S for the priority project(s) (6 months)

Stage-3-2: Utilization of the existing coordinating body in Pasig-Marikina River Basin and Cagayan River Basin to strengthen basin-wide collaborations and/or discussions (6 months, in parallel with Stage 3-1)

[Duration of the Project]

One and a half (1.5) years

6. Description of the project site

6.1 Cagayan River Basin

Cagayan River Basin map is shown in **Fig.1**.

(1) Administration

Region II (Cagayan Valley) and Cordillera Administrative Region (CAR)

CAR requires special attention for its development because many parts of it are home to numerous Indigenous Peoples. Thus, it is directly governed by the central government.

(2) Relationship between flooding and topography

The Cagayan Valley region is located on the northeastern part of Luzon Island. It is bounded by three mountain ranges: the Sierra Madre Mountains on the East, the Cordillera Mountains on the West, and the Caraballo Mountains on the South. The Cagayan River flows mostly north for 350 kilometers approximately. The river's longitudinal gradient is mostly gentle in the mid to lower section therefore the channels are changing their courses frequently in the vast flood plains, 20-30km wide, with sizable sections deforested and covered by farmland. The inhabitants are suffering from severe and frequent floods by heavy rain and typhoon every rainy season.

(3) Biological characteristics

Notable fish species in the Cagayan River system is Ludong (*Cestraeus plicatilis*). They migrate upstream of the river and swim down to the sea for spawning. Other notable fish species are Anguillid glass eels, namely: *A. marmorata*, *A. luzonensis*, and *A. bicolor pacifica*. Weirs and dams may interfere with their migration routes. Catfish are also dominant in the Cagayan River. This specie's living environment may also be disturbed by river revetment works. Information on the biological habitat of the Cagayan River seems to be severely limited and more findings are expected as research progresses.

(4) Socioeconomics

Most of the population centers in the region are located along the Cagayan River, which has a historical background of using the river for transportation and the alluvial plain for agriculture. Although the original town center was located in a flood-free area, settlements spread out radially from the center of town. Particularly along the national highway, the expansion of settlements can be seen.

The agricultural sector in the local economy has decreased significantly, which was

accounting for more than 50% in 2010, but 36.6% in 2015. On the other hand, diversification is increasing with a shift to the service sector. Overall, there has been positive economic growth of about 5%, and the poverty rate has decreased significantly (16% of the total population). The trend of population growth is particularly noticeable in urban areas. The population has grown, totaling 3.45 million in 2015. It represents 3.4% of the country's total population.



Fig.1 Cagayan River Basin

Protected areas and Indigenous Lands are designated in the mountain areas (**Fig.2 & Fig. 3**). There are no protected areas or indigenous land designated in the flood plain where the Cagayan River flows.

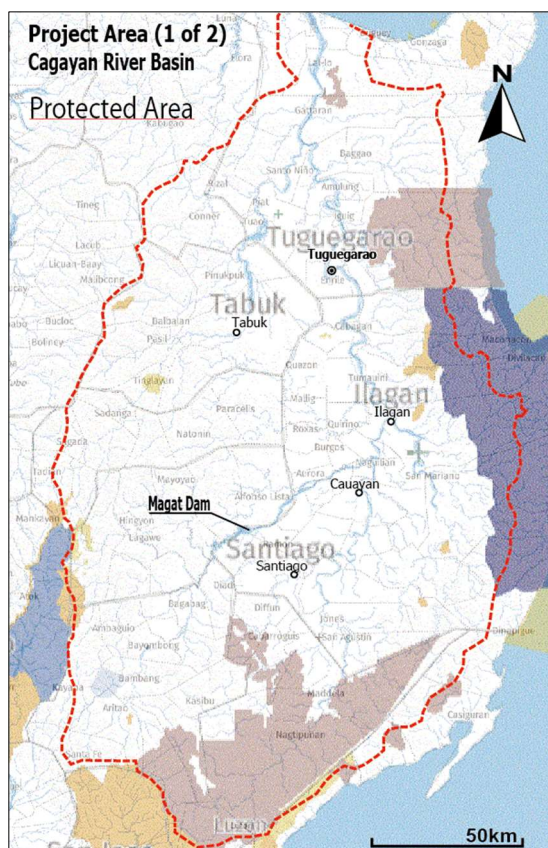


Fig.2 Protected Areas in the Cagayan River basin

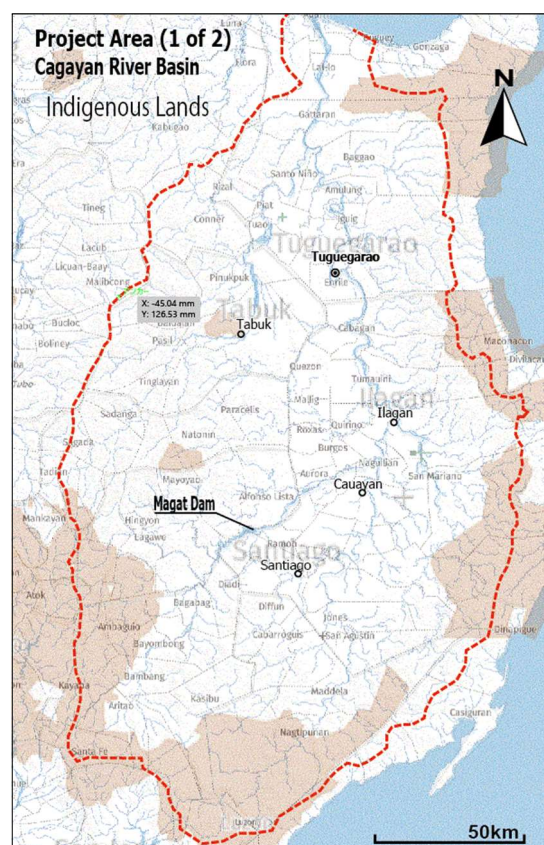


Fig.3 Indigenous Lands in the Cagayan River basin

6.2 Pasig-Marikina River Basin

Pasig-Marikina basin map is shown in **Fig.4**.

(1) Administration

National Capital Region (NCR) and Region IV-A (Calabarzon)

Metropolitan Manila Development Authority (MMDA) is serving as the technical secretariat of NCR. MMDA is responsible for regulation, law enforcement, and urban planning and development of NCR.

(2) Flood and topography

The Pasig-Marikina Basin has a total drainage basin of 714.1 square kilometers. The Marikina River originates from the Sierra Madre Mountains of Rizal Province. Manila, the most downstream area of the basin, is located on a low-lying coastal plain just above sea level and used to be swampland until the Spanish era. As a result, it is inherently prone to flooding due to its topographic feature, combined with seasonal monsoons, tidal

and/or storm surges from typhoons in the region. The Pasig River, which runs through the middle of the city, and the flow sometimes reverses during storm surges, is a major cause of flooding in Manila. Although the city's drainage system has been improving, local rainfall frequently has nowhere to drain, resulting in inland flooding.

(3) Biological characteristics

Due to rapid urbanization, industrialization, and population growth, the Pasig River and Marikina River became heavily polluted and degraded over time. The Pasig River and the Marikina River are officially considered biologically dead, meaning it cannot support aquatic life, due to the extremely low amount of oxygen in the water. This is caused by the dumping of sewage and other pollutants, from residences and factories along the river.

(4) Socioeconomics

[Downstream area]

Since the Pasig and Marikina Rivers are heavily contaminated, they are used for navigation purposes, dumping grounds for domestic and industrial solid waste and wastewater, and the urban riverbanks have been used for areas for ISFs compounds. Although many ISFs were resettled from the danger areas by government programs, many are still remained or coming back from the resettled areas. At the upper reaches of the Marikina River, the Upper Marikina River Basin Protected Landscape covers 261 km² of the river basin.

[Upstream area]

The Dumagat-Remontado indigenous group was granted a Certificate of Ancestral Domain Title (CADT) by National Commission on Indigenous Peoples (NCIP) in the indigenous land area. DENR will not be able to issue ECC in the CADT-granted area. The Dumagat-Remontado indigenous group has a long history and rich distinct culture.

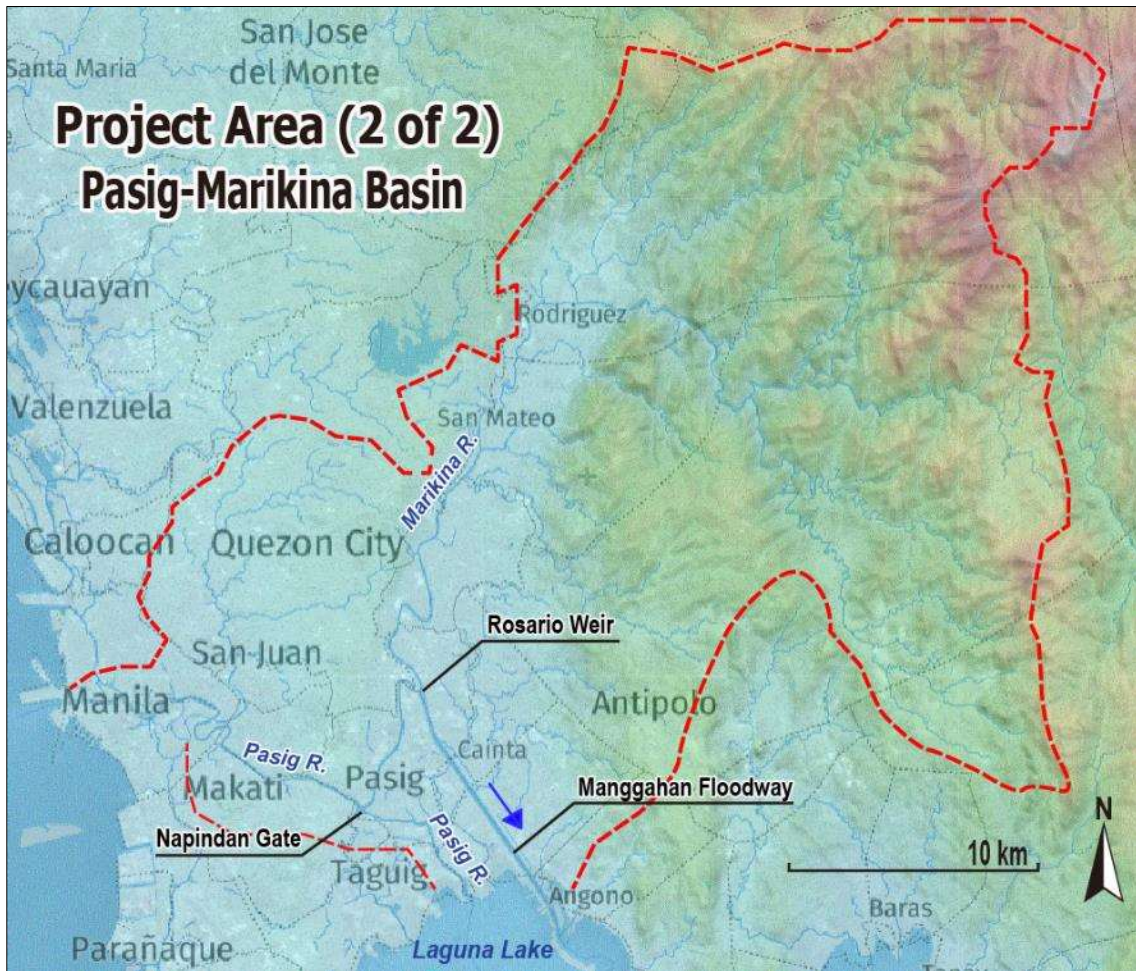


Fig.4 Pasig-Marikina Basin

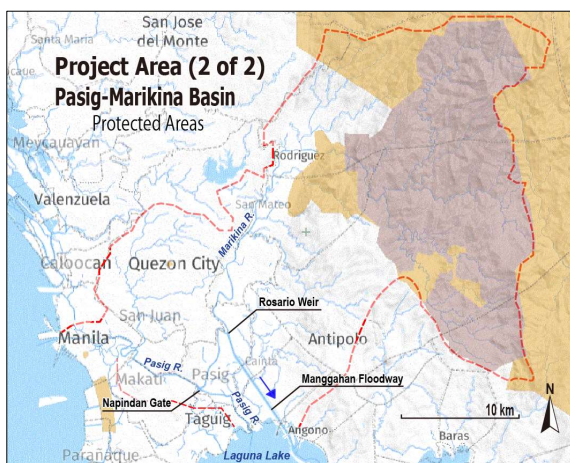


Fig.5 Protected Areas in the Pasig-Marikina Basin

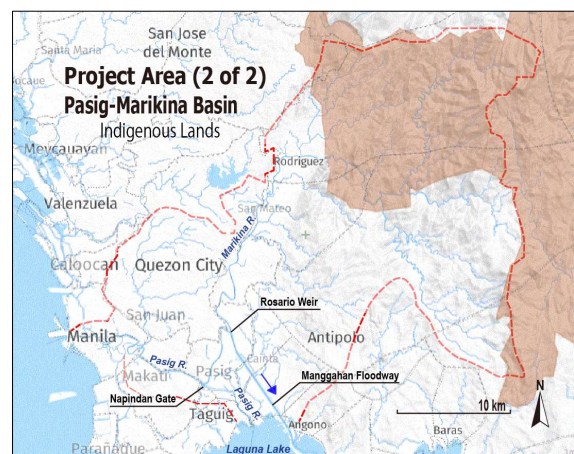


Fig.6 Indigenous Lands in the Pasig-Marikina Basin

7. Legal Framework of Environmental and Social Considerations

7.1 Laws, regulations, and standards related to environmental and social issues

The laws and guidelines applicable to the Project under the Environmental and Social Safeguard System in the Philippines are as follows.

(1) Laws and Regulation

- **PD 1151: Philippine Environmental Policy**
Provided for the adoption of an Environmental Impact Assessment (EIA) for the protection of the Philippine environment.
- **PD 1152: Philippine Environmental Code**
Defined policy goals related to environmental management
- **PD 1586: Philippine EIS System, known as the *Philippine Environmental Impact Statement System* (PEISS)**
PD1586 is the legal basis for the Philippine EIS system, and it stipulates that Department of Natural Resources and Environment (DENR) implementation and approval. It provides for the acquisition and revocation of the Environmental Compliance Certificate (ECC) and the application of penalties.
- **DENR Administrative Order (AO) No. 2003-30**
Implementing Rules and Regulations (IRR) for the PD 1586
- **Proclamation No. 2146 (1981)**
Details of Environmentally Crucial Project (ECP) and Environmentally Crucial Area (ECA) designated by PD1586 are defined. Projects that fall under these categories are reflected in the environmental category classification.
- **DENR Administrative Order No. 2017-15**
Guidelines on Public Participation under the Philippine Environmental Impact Statement (EIS) System

(2) Guidelines for the Procedure

- **DENR MC 05-2014 Revised Guidelines for Coverage Screening and Standardized Requirements Under the PEISS**
The primary procedure for environmental impact assessment in the Philippines is based on these guidelines. Project thresholds for coverage screening and categorization are attached in **ANNEX A**.
- **DPWH Social and Environmental Management System Manual (SEMS)**
First released in 2003, it has been revised in response to amendments to related laws and regulations, with the most recent version published in 2021. The contents of this document include the environmental and social considerations that should be implemented during infrastructure development, such as ECC acquisition, land acquisition, and resettlement, indigenous peoples, gender and development, etc., as a guide to the implementation of projects.

(3) Implementation of ES Safeguards in accordance with the Guidelines

In accordance with **MC 05-2014** and **SEMS guidelines**, the following safeguards should be implemented as the project progresses.

[Environment Clearance Certificate: ECC]

MC 05-2014 requires different types of reports for the application of the ECC/CNC depending on the Category. Categorization of the flood control structure will generally be “Category C,” and it requires Project Description (part I) only. Normally, a Certificate of Non-Coverage (CNC) will be issued for flood control structures except for dam construction. Dams and retarding basins may well be Category A and EIS is required for securing ECC. See **Table-1** below.

Category C is defined as a category for “Environmental Enhancement Projects.” A project intended to directly enhance the quality of the environment or directly address existing environmental problems.

Table-1 Screening matrix for dam construction

Projects/Description	Covered (Required to secure ECC)			Not Covered (May secure CNC)
	Category A (ECP)	Category B (Non-ECP)		Category D
	EIS	EIS	IEE Check List	PD (Part I only)
3. INFRASTRUCTURE PROJECTS				
3.1 Dams, Water Supply and Flood Control Project				
3.1.1 DAMS (including those for irrigation, flood control, water source, and hydropower projects) including run-of-river type	≥ 25 hectares OR ≥ 20 mil. m ³	>5 ha. but <25 ha. OR > 5 mil.m ³ but < 20mil.m ³	≤ 5ha. AND ≤ 5 mil.m ³	None

Annex A, MC 05-201

The category for the project with multiple components shall be determined by the highest category of the component (p.10, MC 05-2014). See the example in **Table-2**. Another way to manage is to secure ECC/CNC for each structure. Good consultations with the responsible EMB office are recommended.

Table-2 Category for a project with multiple components

Component/ Category		Project Category
Component A	Category A	Category A
Component B	Category B	
Component C	Category C	
Component A	Category B	Category B
Component B	Category C	
Component C	Category D	
Component D	Category D	
Component A	Category A	Category A
Component B	Category C	

The PEISS has different application procedures and reviewing bodies depending on the environmental category and locations. The types of documents and responsible offices are summarized in **Table-3**. Exceptions are projects that straddle two regions and facilities classified as Category A, which are reviewed by EMB Central. In the Cagayan Basin, if the facility is located in the Cordillera Administrative Region (CAR), EMB Central will be in charge of this case as well, since CAR is under the direct jurisdiction of the central government.

Table-3 Documents to secure and responsible EMB office by Category

Project Category	Description	Document to Secure	Means of Application	Responsible EMB Office
A	Environmentally Critical Project (ECP)	ECC	Manual	Central Office
B	Non-ECP		Online	Regional Office
C	Environmental enhancement Project	CNC (Certificate of Non-Coverage)	Manual	Regional Office
D	Not covered by PD 1586		Online	Regional Office

EMB MC 05-2014

[Stakeholder Meeting]

Organizing stakeholder meetings became mandatory by DENR Administrative Order No. 2017-15, Guidelines on Public Participation under the Philippine Environmental Impact Statement (EIS) System which stipulates as follows.

As 5.1 The IEC (Information, Education and Communication) shall be conducted in the project area and the area where all project facilities are proposed to be constructed/situated and where all operations are proposed to be undertaken.

The application of safeguard tools of the PEISS to the Project phases is summarized in **Table-4**.

Table-4 Safeguard tools implementation by the project phase

Tools	Master Plan	Pre-Feasibility Study/ Feasibility Study	Detailed Engineering Design	Prior to Commencement of Construction
ECC	Comparison of the degree of impact derived by alternative plans	Initial Environmental Examination	Applying for ECC	Obtaining ECC
ROW/ RAP	Comparison of alternative plans by ROW size, impacts, etc.	Preliminary RAP	Final RAP (to be done one year before the resettlement)	Preparation of ROW
Stakeholder meeting & Information disclosure (AO 15-2017)	—	Group meeting (Sec 5.1, AO 15-2017)	Individual consultation	Individual consultation

7.2 Relative Agencies and Institutions

[EMB as ECC Reviewer]

The reviewing agency for the EIS is determined by the location and category of the flood control facility, as described above. In the Cagayan River Basin, which consists of two regions, CAR and Region 2 (Cagayan Valley), EMB Central or EMB Region 2 is the reviewing agency, while in the Pasig-Marikina Basin, it will be EMB-NCR or CALABARZON (EMB-Region 4A), depending on the location of the facility. For Category-A structures, EMB Central will be in charge of reviewing facilities in any region.

[Project Proponent: DPWH]

DPWH will be responsible for applying for and securing the ECC and will have the ultimate responsibility for ROW acquisition and resettlement in coordination with the NHA & concerned LGUs. Environmental and Social Safeguards Division (ESSD) of DPWH to provide advice and support to the relevant DPWH Regional Offices for appropriate safeguard practices.

[JICA]

JICA is responsible for facility design, provision of quantities, impact estimates, environmental management measures, environmental studies, social surveys, reporting, liaison with the EMB up to ECC release, and preparation of ESS application documents. Although the Master Plan does not involve filing an application with the EMB, it prepares for obtaining an ECC or CNC without any hindrance in the Pre-FS.

8. Provisional Scoping

In the M/P stage, the concept of Strategic Environmental Assessment (SEA) is applied to determine the optimal facilities and their layout. Specifically, the SEA approach comprehensively examines the desirable facilities and their layout for the basin in question, taking into account the environmental and social benefits and losses and their degree, as well as economic efficiency, sustainability, and technological superiority. The following scoping is the first step in the study of study items necessary to avoid or minimize environmental and social impacts.

The list of items in this **Table-5** is taken from the checklist attached to the JICA-GL, which confirms the presence or absence of impacts anticipated in the Project. Items marked with a check mark are items for which further information should be obtained/confirmed in the master plan study and reflected in the M/P study. The M/P is, again, an overall concept for flood management in the basin, and the location and shape of individual flood control structures, as well as their scale and operation, will not be finalized until the M/P is completed.

Table-5 Results of Preliminary Scoping

Field	Timing of impact occurrence		Remarks
	Planning/ Construction Phase	Operation phase	
1. Air quality	✓		<p>Construction phase: Dust is expected to increase at the construction site and along the access road due to the operation of heavy construction equipment and transport vehicles.</p> <p>Operation phase: No major and continuous air pollution is expected from the operation of the flood control facility.</p>
2. Water quality of rivers and lakes	✓	✓	<p>Construction phase:</p> <ul style="list-style-type: none"> - The impact of wastewater from the construction site, heavy machinery, vehicles, and construction facilities will occur if the drainage-related measures that are generally implemented are not taken. - When sediment dredging of the riverbed is conducted, it is anticipated that suspended solids will be discharged downstream at the site. - Seepage from the soil disposal site may contaminate the surrounding water body. <p>Operation phase:</p> <ul style="list-style-type: none"> - If domestic wastewater from the neighborhood flows into a large-scale storage facility such as a regulating reservoir, there is a possibility that the quality of the stagnant water will deteriorate. - When the Project removes accumulated sediments in the dam reservoir to increase the flood capacity of the

Field	Timing of impact occurrence		Remarks
	Planning/ Construction Phase	Operation phase	
			dam, a noticeable load of sediment and suspended solids to the downstream river is expected. - Some fishermen in Laguna Lake are concerned about the inflow of toxic substances into Laguna Lake due to the poor quality of water from the Manggahan Spillway.
3. Solid waste	✓	✓	Construction phase: A large amount of dredged sediment is expected to be generated as a result of river improvement. The dredged sediment may be contaminated by the heavy metals of factory effluent and untreated domestic wastewater, human waste and other wastes from the residences of informal residents. Operation phase: Dredged material is generated to maintain the riverbed. Floodwater through Manggahan floodway may convey large amounts of trash with the silt into Laguna Lake.
4. Soil contamination	✓	✓	Construction/ Operation phase: If appropriate measures are not taken, soil near the soil dumping site of dredged material may become contaminated.
5. Noise and Vibration	✓		Construction phase: Noise from the operation of construction equipment and vehicles is expected. Operation phase: No noise or vibration is expected during the in-service period.
6. Land subsidence			Construction/ Operation phase: Basically, no land subsidence is expected due to the construction and operation of flood control structures.
7. Offensive Odor	✓	✓	Construction phase: If there is excavation or dredging of the riverbed, there will be offensive odors from the dredged material, but the duration of odor damage at the excavation site will be temporary and limited in the particular area. Odor impact by offensive odor may occur at soil dumping sites depending on proximity to residences. Operation phase: Similar damage is expected if the soil dumping site for maintenance dredge material is close to residential areas.
8. Soil erosion/ Sediment accretion	✓	✓	Construction phase: Excavation work occurs during river improvement, dam construction, access road construction, and raw material acquisition. Excess sediment and unstable excavation slopes can cause sediment runoff and erosion, which can accumulate in drainage channels and riverbeds. Operation phase: - When operating a retarding basin, it is common that the bottom sediment to be covered with sediment and silt after the floodwaters are discharged. - When shortcuts are taken in rivers, the bed of the remaining river may become land or swampy as the water body becomes stagnant. - When sediment in a dam reservoir is discharged to

Field	Timing of impact occurrence		Remarks
	Planning/ Construction Phase	Operation phase	
			increase the flood storage capacity of the dam, it is known that discharged silt and sand flow into downstream rivers and will accumulate in the river bed.
9. Protected area	✓	✓	Construction/ Operation phase: Protected areas have been established in the upper reaches of the Cagayan River, Marikina River, and Mindanao River basins. Flood control measures are basically expected to be implemented in the middle and lower reaches of the rivers. However, when considering the construction of dams in the upper reaches of the above rivers, they may fall under protected areas.
10. Ecosystem	✓	✓	Planning phase: The new flood control structures may interfere with the areas with the KBA as well as other ecological importance in a particular region. Construction phase: If turbidity by the construction increases during construction and sediment is deposited downstream, the river ecosystem in downstream will be affected, but it is under the obligation of the contractor and the occurrence of turbidity during construction is not important as a comparison item during SEA studies. Operation phase: - Construction and operation of river crossing structures such as weirs, gates, etc., may disturb the fish migration environment. - When the bypass channel is excavated, the biological habitat of the old river section is expected to change significantly.
11. Hydrology		✓	Construction phase: When river crossing structures are constructed, it is necessary to partially stop the flow of water by means of temporary barriers/temporary drainage channels, etc. The temporary drainage channel is to be constructed within the limits of the construction site, and because the bypass section is short, there will be no change in the discharge rate downstream of the construction site. Operation phase: - It is said that water levels downstream rise rapidly due to flood control measures such as releases from dams during abnormal runoff. - For dams with large reservoirs, the amount of water released downstream may decrease in accordance with the dam operation rules. - If the bypass channel is excavated, flood flows downstream will increase, and the old river reach will be lost. - When the Manggahan floodway is used to temporarily store floodwaters in Laguna Lake, the water level of the lake rises. The area near Los Baños on the southern shore is experiencing abnormal water level rises during typhoons and remains flooded for several months.
12. Valuable topography/ geology	✓	✓	Construction phase: - When constructing a dam, large-scale topographical modification/excavation is required, including for foundation works, spillway, temporary drainage tunnels, quarry, and borrow pit, construction of access roads, and

Field	Timing of impact occurrence		Remarks
	Planning/ Construction Phase	Operation phase	
			<p>establishment of construction material dumping sites.</p> <p>- In the case of river shortcuts, large-scale modification of the flow profile occurs.</p> <p>Operation phase: Deformation of the excavated slope, the rise of groundwater level in the ground upstream of the dam axis, and the generation of new water veins in the ground may occur.</p>
13. Land acquisition/ Involuntary resettlement	✓		<p>Construction phase: Land acquisition and involuntary resettlement may be required for submerged areas due to the construction of retarding basin/reservoirs, river widening, foundations for raising levees, and construction of pump stations, etc.</p> <p>Operation phase: No additional land acquisition or resettlement is expected to occur after the start of service.</p>
14. Poor	✓	✓	<p>Pre-construction: There are many areas in Manila where houses of informal settlers (ISF) are densely located in low-lying areas along the river and may be subject to relocation.</p> <p>Operation phase: The government also provides houses for ISFs to relocate to, but it is known that employment and other problems may arise if the relocation site is set in an out-city resettlement site.</p>
15. Ethnic Minorities and Indigenous Peoples	✓	✓	<p>Construction phase:</p> <p>- There are Certificate of Ancestral Domain Title (CADT) for indigenous peoples in the upstream areas of the target river basins.</p> <p>- There may also be local sacred lands along the river that are of high value to the local people. Therefore, when considering flood countermeasures in upstream areas, it is necessary to conduct a detailed study of the impacts, including interviews with local residents regarding the location in addition to the surrounding access routes and land use conditions.</p> <p>Operation phase: When facilities are installed near Certificate of Ancestral Domain Title (CADT) for indigenous peoples, monitoring is required to understand and improve the occurrence and impact of rising water levels and prolonged flooding.</p>
16. Employment/ Means of livelihood	✓	✓	<p>Construction phase:</p> <p>- Relocated residents may have employment issues at the new location.</p> <p>- The implementation of the project may increase the income of local workers and temporarily improve their livelihoods.</p> <p>Operation phase: Employment issues for relocated residents may continue even after the construction phase.</p>
17. Land use/ Local Resource use	✓	✓	<p>Construction/ Operation phase:</p> <p>- The land use is semi-permanently changed by land acquisition for regulating reservoirs, dam reservoirs, and levee construction/ raising.</p> <p>- If the flood capacity of the Marikina River via the Manggahan spillway is to be held in Laguna Lake, there will be an artificial increase in the water level of Laguna</p>

Field	Timing of impact occurrence		Remarks
	Planning/ Construction Phase	Operation phase	
			Lake to some degree.
18. Water use and Navigation use	✓	✓	<p>Planning/ Construction phase:</p> <ul style="list-style-type: none"> - The amount of irrigation water that can be supplied may be reduced by reserving flood control capacity in agricultural dams. - There is a push to reopen a ferry route to the middle Marikina River, which needs to be coordinated with the landing sites. - The Cagayan River is wide and has few crossing bridges, so ferries are used to travel to the other side of the river. When the flow path is changed due to a shortcut or other reasons, these water and land transports may change significantly. <p>Operation phase: When flood capacities are set for Magat dams, etc., the current agricultural water use may be reduced.</p>
19. Public Infrastructure /Public Services	✓	✓	<p>Construction/ Operation phase: No impact on utilities or public services is anticipated from the flood control structures, but there may be limited access to electricity and water at the relocated sites.</p>
20. Local Community Organizations	✓	✓	<p>Construction phase: If resettlement is needed, some degree of impact on existing resident organizations is anticipated.</p> <p>Operation phase: If there is a community in the resettlement area, the impact of the relocated residents on the local organization is expected.</p>
21. Uneven distribution of social cost and benefits	✓	✓	<p>Construction/ Operation phase:</p> <ul style="list-style-type: none"> - Residents within the proposed retarding basins and dam reservoirs will require the downstream communities to cooperate. - Those that lose land or are forced to relocate due to levee construction may feel a sense of injustice with the remaining residents.
22. Resident/ Institutional Conflicts	✓	✓	<p>Construction phase/ Operation phase: Same as 21</p>
23. Cultural/ Archaeological Heritage	✓		<p>Construction phase: Cultural/archaeologically important sites may be in or in the vicinity of the flood control facility.</p>
24. Landscape	✓	✓	<p>Construction/ Operation phase: Changes in the river landscape by heightening of the levee, changes in the mountain landscape due to the construction of the dam, retarding pond, and road slope of the accompanying access road, etc., and changes in the townscape due to the opening of the shortcut channel are anticipated.</p>
25. Gender and vulnerable groups	✓	✓	<p>Construction phase: Women could be forced to work for low wages or in unsafe working conditions. Socially weak groups of people are known to be more vulnerable to changing circumstances. It is possible that resettlement may make it difficult to secure a source of income.</p> <p>Operation phase: Changes in living arrangements and relocation of housing may increase the burden of household chores (e.g., getting water and food, caring for children, etc.) in which many women are engaged. The construction of flood control facilities may become</p>

Field	Timing of impact occurrence		Remarks
	Planning/ Construction Phase	Operation phase	
			access obstacles, or that isolation from supporters and friends may lead to mental/health problems.
26. Children's Rights			Construction/ Operation phase: No significant negative impacts on children's rights are expected from the project.
27. Infectious disease	✓	✓	Construction phase: There is a possibility that sexually transmitted infections could spread due to the influx of construction workers. In addition, an outbreak of food poisoning due to unsanitary food management in construction workers' quarters may occur. Operation phase: Some flood control measures may increase the period of inundation, resulting in waterborne diseases transmitted by livestock or insects. In past cases of typhoon disasters in the Philippines, infectious disease transmission has been cited as one of the causes of death among residents after flooding.
28. Safety and working environment	✓		Construction phase: The working environment for construction workers can deteriorate without proper management. Operation phase: No work is planned that could negatively impact workers during the operation phase.
29. Accident	✓		Construction phase: Accidents related to civil engineering work may occur without a proper management practice. Operation phase: Flood control facilities are static during operation and no increase in accidents due to facilities is expected.
30. Climate change			Construction phase: It is limited to temporary GHG emissions from the operation of heavy machinery equipment in a limited area. Operation phase: No GHGs are generated except for the temporary operation of the pumping station during use, etc.

9. Result of the consultation with the recipient government

Regarding the treatment of facilities classified as "Category C" in DPWH screening, JICA Team member explained that "there is a possibility of change according to JICA guidelines" and received the following response from Ms. Rosemarie B. Del Rosario, DSD, Division Chief, Environmental and Social Safeguards Division (ESSD), Planning Service, DPWH answered as below.

"The only difference in category classification as a result of screening by the Environmental Management Bureau (EMB) is the difference in obtaining approval from the EMB. DPWH safeguard system will apply to all the Project Affected Persons equally."

Other comments made by the DSD are as follows.

“We (DPWH) understand that the level of safeguards required by the JICA Guidelines is the same as that required by the World Bank. The safeguard measures on the Philippine side are quite generous to those who are subject to involuntary resettlement, and we will work with the Japanese side to gain their understanding at each stage. It is also understood that not all of the current resettlement measures are perfect.”

“It is desirable to make a Pre-RAP that takes into account the impact on residents, etc. at the Pre-Feasibility Stage where clear boundaries have not yet been determined.”

“The consultant commissioned by JICA to prepare the EIA report should also prepare the ECC application documents for consistency.”

10. Terms of Reference for Environmental and Social Considerations

The ESC study will be conducted in the Master Plan Phase, in which a comprehensively superior basin-wide flood control policy and specific facilities will be selected, taking into account environmental and social impacts. In considering the optimal plan, based on the concept of Strategic Environmental Assessment, needs and stakeholders are identified to collect and analyze information that will contribute to the optimal location, size, and design of the flood control structures.

In the Pre-Feasibility Phase, the environmental and social impacts of the structures selected in the Master Plan are assessed, and the proposed measures to manage the environmental and social impacts are returned to the technical team, which also prepares the ECC application and, if necessary, holds Pre-RAP and Stakeholder Meetings with ESSD, if necessary.

The following items are general survey items of JICA for the "Environmental and Social Considerations 'Category-A' Survey" to be conducted in the next phase.

- (1) Examination of the objectives and goals of policies, plans, etc.
- (2) Examination of alternatives to achieve the objectives within various constraints.
- (3) Examination of the contents of policies and plans (development forecasts, lists of measures, routes, maps of future development areas, etc.)

- (4) Scoping (identification of the most important environmental and social issues and their evaluation methods for decision making on policies, plans, programs)
- (5) Confirmation of baseline environmental and social conditions (land use, natural environment, indigenous peoples' living areas, economic and social conditions, etc.)
- (6) Confirmation of the environmental and social consideration systems and organizations of the counterpart country
 - 1) Laws, regulations, standards, etc. related to environmental and social considerations (environmental impact assessment, resettlement, public participation, information disclosure, etc.)
 - 2) Deviation from "JICA Guidelines for Environmental and Social Considerations
 - 3) Outline of relevant organizations
- (7) Expected impacts
- (8) Assessment of impacts and comparison of alternatives (Policy/Plan/Program-level)
- (9) Examination of mitigation measures (avoidance, minimization, compensation)
- (10) Consideration of monitoring methods
- (11) Preparation of scoping results of environmental and social considerations for priority projects (alternatives to be considered and the range of environmental and social impact items that are considered important, as well as proposed forecasting and evaluation methods)
- (12) Assistance in organizing stakeholder meetings (review of the purpose of implementation, participants, consultation methods and contents, etc.)
- (13) Estimation of GHG emissions during the service phase for those direct GHG emissions from individual projects in the program that are 25,000 metric tons or more of carbon dioxide (CO₂) per year.
- (14) Preparation of materials for working group of the Advisory Committee on Environmental and Social Considerations, preparation of preliminary explanatory materials for distribution to committee members, responses to committee members' questions, preparation of committee meeting materials, and other actions.

Table-6 shows the TOR of the results obtained by Preliminary Scoping for items for which the impact is unknown or expected. The TOR is based on the plan proposed by the previous studies, but it is anticipated that new flood control measures will be proposed as the Master Plan progresses. Therefore, the ESC survey's targets and methods should be constantly updated to reflect the engineering team's newest ideas.

Table-6 TOR for IEE in the Master Plan phase

Envt. Field	Survey Item	Survey method
1. Air Quality	(1) Adjacency of the construction site and transportation routes to residential areas and other living environments.	(1) Check the target distance in GIS and, if necessary, verify the living environment in the field.
2. Water Quality of river/ lake	(1) Estimation of future water quality in the retarding pond (in the case of construction of the retarding pond) (2) Estimation of future water quality in Laguna Lake (in case of utilization of Manggahan floodway) (3) Estimation of future water quality in the remaining water body (in case of river shortcut construction) (4) Impact of seepage water from dredged sediment on the water body at the dumping site (5) Deterioration of downstream water quality due to sediment discharge to secure flood capacity in the dam reservoir	(1)(2)(3) Literature survey and/or simple water quality test of water bodies under similar conditions (4) Survey of the status of seepage water from dredged material and treatment methods in the other ongoing projects (5) Analogy of impacts of sediment discharge by literature review in the similar projects
3. Solid waste	(1) Impact during transportation and disposal of dredged soil (in case of dredging work) (2) Impact of solid waste flowing into Laguna Lake with flooding	(1) Survey of similar cases (1) Survey of proposed soil dumping site (1) Land use survey of the surrounding area (1) Estimation of haul route and extension (2) Literature review and conducting interviews with LGUs/fishermen regarding the impact of trash inflow via Manggahan Spillway due to Typhoon Ketsana (Ondoy) in 2009.
4. Soil contamination	(1) Soil pollution by dredged material on soil (in case of dredging work)	(1) Similar case studies (1) Estimating future impacts from surrounding land use
5. Noise and Vibration	(1) Adjacency of the construction site and transportation routes to residential areas and other living environments.	(1) Check the target distance in GIS and, if necessary, verify the living environment in the field.
7. Offensive odor	(1) Impact of dredged soil on the nearby residences (in case of dredging)	(1) Similar case studies (1) Estimating future impacts based on a survey of the distribution of surrounding houses
8. Soil erosion & accretion	(1) Conditions after flood drainage from the retarding basin (2) Remaining river (oxbow lake) conditions after short-cut (3) Silt coverage of the riverbed downstream of the dam by and sediment (in case of sediment discharge from the dam)	(1) (2) Estimate the extent and degree of impact based on similar case studies (3) Estimate the area and degree of impact by examining similar cases (4) Estimate the reduction in sediment discharge from the amount of sand deposited in existing dams

Envt. Field	Survey Item	Survey method
	(4) Riverbank erosion by a decrease in the amount of sediment supply from the upstream	
9. Protected area	(1) Interference with protected areas	(1) Review the geo-cordial relationship between the proposed facility and the area of impact within or on biological reserves, scenic reserves, indigenous peoples' reserves, etc.
10. Ecology	(1) Interference with biologically important areas	(1) In addition to the protected areas mentioned in 9. above, survey biologically important areas to determine if there are other interferences with the important biological importance and to sort out the degree of impact. (1) When planning river crossing structures, estimate the impact on fish migration along the river by literature survey and/or interviews with academics of fish migration in the particular river. (1) Estimate the impact of the river shortcut on the ecosystem of the oxbow lake.
11. Hydrology	(1) Impacts on irrigation by releasing water from dams for securing flood capacity (2) Impact of increase in downstream flow and water level due to river shortcut (3) Impact from the cessation of residual river flow (4) Vulnerability study of communities around Laguna Lake to rising water levels if the Manggahan spillway is used	(1) Existing data survey and interviews (2) Request to the main body of the survey team for the increased flow and its impacted area (3) Survey of current river use in the affected area (4) Estimate the impact of the increase in water level through a literature survey and interviewing research institutes (UPLB), local governments, etc. on the duration of flooding, microtopography such as elevation, actual conditions of flooding, etc. in communities around Laguna Lake such as Los Baños that have flooding damage or long-term waterlogging damage during typhoons. (4) Obtain water levels of water level fluctuations in Laguna Lake from competent agencies.
12. Geography/ Geology	(1) Extent of excavation at the time of new dam construction (2) Impact of excavation on the area subject to river shortcut	(1) Confirm the location and extent of the main body portion of the new dam, the quarry site, the earth dumping site, and the access road, and estimate the slope of the road will interfere with the protected geography or geology, etc. (2) Field survey of areas where excavation for river shortcut will be constructed, and conduct an impact study on areas for the earth dumping sites
13. ROW/ Resettlement	(1) Size of land acquisition and resettlement associated with the implementation of each flood control measure (2) Resettlement measures	(1) Confirmation of DPWH's legal systems and practice for land acquisition and resettlement (1) Based on satellite images, determine the number of houses and the quantity and land type that will be affected by the introduction of the facility to be compared. (1) Based on the satellite images or by field survey, confirm the quantity by type of houses, schools, medical facilities, etc. (1) Confirmation of land use conditions through LGU's land use maps and/or on-site interviews (2) Identify issues in land acquisition and resettlement through case studies

Envt. Field	Survey Item	Survey method
14. Socially weak group	(1) Number of people and households of ISF living in riverine hazardous areas at proposed site (2) The status of ongoing relocation projects in the relevant LGUs	(1) Survey the number of people and households of ISF living in the urban river danger zones and in the lowlands inside and around the periphery of the planned retarding basin and the Mangahan floodway at the relevant LGUs. (2) Interviews with each LGU regarding their relocation projects and processes, and the time schedule of the relocation project
15. Indigenous people	(1) Planned and proposed flood control facilities and the degree of their impact on indigenous peoples	(1) Drop the planned/proposed flood control structure locations into GIS and confirm the geographical locations with the territory of the protected area of indigenous people (2) Conduct a field survey to determine the likely impact of the proposed facility and estimate the degree of impact
16. Employment/livelihood	(1) Changes in employment and means of livelihood in the out-city resettlement areas (2) Current use of the area to be submerged if a dam or retarding basin is constructed and the impact on the affected residents and their employment and means of livelihood (3) Impacts on fisheries if sediment is released from dam reservoirs	(1) Conduct interviews with LGU officials to identify current employment problems and improvement measures (2) Identify the affected areas using GIS and confirm the land use through field surveys. (3) Identify the actual fishing industry in the downstream river and the number of people engaged, and estimate the impact of silt on the fishery based on precedent case
17. Land use/natural resources	(1) Difference between previous use and land use when planned facilities are introduced	(1) Determine the extent of the land use change by drawing the facility boundary in GIS, confirm the current land use at the site, and identify the affected residents and the degree of the impact.
18. Water usage/Navigation	(1) Impact on downstream irrigation of anticipated flood control capacity in agricultural dams (2) Planned ferry landing facilities on the Marikina River and other rivers that may interfere with the raising of the embankment, etc. (3) Impact on planned navigation route obstructed by a planned weir	(1) Identify the amount and timing of irrigation. Then estimate the impact of water reduction and the size of downstream irrigated farmland (2) Obtain the boarding facility's design drawings and the locations (3) Identify the gate operation plan of MCGS and estimate the impact on the navigation
19. Social infrastructure/Social service	(1) Restrictions on the use of electricity and water in case of relocation to an out-city site.	(1) Interviews with LGU with existing relocation sites regarding the current status and estimate the degree of sufficiency of infrastructure for relocated residents.
20. Community organization	(1) Possibility of community survival after collective relocation	(1) Interview LGU about the occurrence of collective relocation (2) Estimate the size and impacts of collective relocation on existing communities
21. Uneven distribution of cost and benefits	(1) Difference in social costs and benefits between upstream and downstream communities, caused by introducing flood control facilities	(1) Comparison of the number of people who suffer social costs and the number of people who benefit and the benefits

Envt. Field	Survey Item	Survey method
		(1) Research improvement that contributes to eliminating the difference between upstream and the downstream communities
22. Conflict among communities	(Same as 22.)	(Same as 22.)
23. Cultural/ archaeological importance	(1) Impacts on cultural and historical heritage sites by flood control facilities and the extent of waterlogging during operation and other interferences	(1) Conduct a literature review and confirm in GIS the location of flood control facilities and their interference with cultural and/or historical heritage site (2) Conduct a field survey of the facilities being considered sacred sites for local residents that are not listed in the literature.
24. Landscape	(1) Valuable landscape changes due to flood control facilities	(1) Identify the location and shape of the facility and how it appears from a tourism perspective
25. Gender and vulnerable groups	(1) Changes in living arrangements and relocation of housing by river improvement works, dm construction, and related infrastructure works.	(1) Interference between the civil engineering works to be implemented and the relevant living area will be confirmed in GIS, and if necessary, an interview survey will be conducted in the field, including the impact on vulnerable groups.
27. Transmission disease	(1) Infectious diseases resulting from the operation and implementation of flood control facilities and measures	(1) Literature review on waterborne diseases caused by flood retention in newly constructed facilities (2) Interviews with medical institutions on the current situation of long-term retention of floodwaters in municipalities around Laguna Lake (Los Baños, etc.).

The tentative implementation schedule of the ESC survey for the Master Plan phase and Pre-feasibility study phases are shown in **Table-7**. The ECC, Pre-RAP, and Stakeholder Meetings will be required as a result of the Master Plan, and the TOR for the Pre-Feasibility Phase will need to be developed during the Master Plan, not at this stage.

Table-7 ESC Implementation Schedule

Team	Work	Month																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Engineering	Data collection																		
	Up-date Master Plan																		
	Pre-Fesibility Study																		
Envt. & Social Consideration	Comparison of alternatives (SEA)																		
	Natural Environment Survey																		
	(Social Environment Survey: Pre-RAP)																		
	(Preparation for ECC application)																		
	(Information Communication Education)																		

11. Other relevant information

(1) Residents in the Manggahan Floodway

The ISFs living in dangerous water areas have been relocated on a large scale under the Oplan LIKAS project based on Memorandum Order No. 57 (2013), but the approach to this project seems to vary considerably from LGU to LGU. The resettlement of ISFs living in the Manggahan floodway (both banks, 5 km or longer in Rizal Province) is essential for the use of the Manggahan floodway.

(2) Indigenous People's Lands

In the upper Marikina watershed area, there are Indigenous Lands that have been granted Certificate of Ancestral Domain Title (CADT). Currently, there is a dam development project (Kaliwa Dam and Laiban Dam) in the Agos River basin in which 80% of the project cost is financed by China, on the east side of the Marikina River basin, which has attracted some media attention due to the opposition of the indigenous people (Dumagat-Remontado) to the development project, involving international NGOs such as Greenpeace. Since the Dumagat-Remontado is also parties to the CADT in the upper Marikina area, the planning of the flood control dam in the CADT should proceed with extreme caution on their rights. In the case of CADT implementation, it is necessary to obtain Certificate Precondition (CP) through Free and Prior Informed Consent (FPIC) in the Philippines and confirm to support for project implementation from indigenous people through JICA GL's FPIC.

(3) Chronic flooding issue in Laguna Lake community

Los Baños is located in the southernmost hinterland of Laguna Lake, which in recent years has experienced events where the water does not recede for several months after a typhoon. Several causes have been pointed out by academics, but the inundation issue remains unresolved. If Laguna Lake is used to temporarily store the floodwaters from the Marikina River, the already socially problematic social issue in Los Baños could be exacerbated. Although flood volume from Manggahan Floodway may not actually be the cause, there may be opposition to flood control measures. Therefore, there is a need to provide solid evidence of the impact of drainage from the Manggahan Floodway from an impartial standpoint.

(4) Land ownership in Manila

Some areas in Manila that have not been developed have the potential to be used as retarding basins. However, it is known that many of the lands are owned by a limited number of private sectors. Therefore, the implementation of the reservoir project depends on the results of ROW negotiations with the landowners. In addition, the lowlands along the river, which appear to be green areas at first glance, are home to many certified residents and ISFs, and therefore need to be thoroughly surveyed and carefully addressed.

(END)