



## **Country Report on Water-Related Disaster in the Philippines**

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### **Background**

The Philippines, composed of about 7,100 islands, is the world's second largest archipelago. The country is vulnerable to almost all types of natural hazards because of its geographical location. It is located within the Circum-Pacific belt of fires and along typhoon path and exposed to natural perils like earthquakes, volcanic eruptions, typhoons and their resultant effects like tsunamis, landslides, floods and flashfloods.

## **THE NATIONAL DISASTER MANAGEMENT SYSTEM OF THE PHILIPPINES**

### **Introduction**

Prior to 1978, there are numerous laws the Philippines had formulated for the protection and welfare of the people. These are the following:

<b>History of Disaster Management in the Philippines</b>		
<b>Year</b>	<b>Legal Instrument</b>	<b>Objective</b>
Commonwealth Era	Executive Order 335	formulate and execute policies and plans for the protection and welfare of the civilian population under extraordinary and emergency conditions.
Japanese Occupation	Executive Order 36	to formulate and execute plans and policies for the protection of civilian population

		during air raids and other national emergencies.
1954 - 1968	Republic Act 1190 .	to provide protection and welfare to the civilian population during war or other national emergencies of equally grave character.
1978	Presidential Decree 1566	to strengthen the Philippine disaster control capability and to establish a community disaster preparedness program nationwide.

In 1978, Presidential Decree (P.D.) 1566 was promulgated that provided the legal basis for disaster response. The Philippine Disaster Management System (PDMS) is carried out at various political subdivisions and administrative regions of the country through the National Disaster Coordinating Council (NDCC). P.D. 1566 also ordered the formulation of the first national disaster plan, completed ten years later in 1988, and was called “The Calamities And Disaster Preparedness Plan” (CDPP) . Despite the Plan’s provision for disaster preparedness, government’s response to hazards has been mostly reactive: relief, resettlement and rehabilitation.

### **Policy Statements and Development Strategies**

Towards the end of 1992, the national government took cognizance of the effects of disasters on the over-all development effort as noted in the following observation made in the National Physical Framework Plan (NPF) of October 1992:

*Disaster preparedness planning and management are inadequately integrated into the over-all planning process. The consideration of natural hazards as constraints to development seems to be weak and inadequate both at the national and local levels due to poor implementation of disaster preparedness measures/policies. In most instances, government appears reactive and not proactive in dealing with hazards faced by the country (p. 49).*

Henceforth, national plans integrated concerns for disaster preparedness. Aside from the NPF, the others are the Medium Term Philippine Development Plan (MTPDP) of December 1992 and the Philippine National Development Plan (PNDP) of May 1998. The significant policy statements and espoused strategies of these plans are the following:

1. The state should give full priority to disaster-preparedness management, hence, agencies involved in the prediction / warning, monitoring and response systems should be adequately supported [ NPFPP, p. 50 ].
2. Programs and projects to respond to prolonged flooding/storm surge, earthquake-induced hazards, volcanic hazards, soil and coastal and river erosion should be developed as part of a multi-hazard mitigation / protection plan [NPFPP, pp 50-52].
3. Sustainable agri-industrial development to ensure environmental soundness and optimum use of the country's resources [MTPDP, pp. 2-1 to 2-19].
4. Preservation of present gains and expansion of access to basic services and development opportunities, particularly for women, children and vulnerable groups [ PNDP, pp. 2-15 to 2-21 ].
5. Poverty alleviation, equity promotion, the development and maintenance of safety nets, and insurance of effective response to natural and man made calamities and disasters [ MTPDP, pp. 3-2 to 3-10 ].
6. Participation of the private sector, the non government organization and people's organizations in activities and decisions that affect them and in the process of governance [ PNDP, pp. 8-16, 8-19, 8-20 ].
7. Government, national and local, is primarily responsible for the disaster management concerns in their respective areas [ MTPDP, pp. 5-8, 5-11 ].

## **Current Disaster Management and Disaster Risk Reduction Initiatives in the Philippines**

### Four – Point Action Plan on Disaster Preparedness

- upgrading the forecasting and warning capability of PAGASA and PHIVOLCS, which are the warning agencies for Met-Hydro and Geological hazards, respectively
- public information campaign on disaster preparedness
- capacity building for local government units in identified vulnerable areas

- mechanisms for government and private sector partnership in relief and rehabilitation
- Hazard and Risk Assessment
- Integrating Disaster Risk Management in National and Local Development Plans
- Disaster Management Training and Contingency Planning
- Community – Based Disaster Management
- Customization of WBI Web-Based Disaster Risk Management Courses
- Enhancement of Emergency Response Capability through Training of First Responders Groups and Development of a National Incident Command System.

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*References:*

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2. *Ms. Enda I. Conda, Civil Defense Officer NDCC, Office of Civil Defense*
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4. *Mr Felino Castro V, Office of Civil Defense, Dept. Of National*

# **WATER RELATED DISASTERS IN THE LAGUNA DE BAY REGION**

## **Background**

The Laguna Lake Development Authority or LLDA was created in 1966 by virtue of Republic Act 4850 as a government-owned corporation, with the mandate to essentially provide the leadership in the environmental management of the Laguna de Bay Region. Quoting from RA 4850, LLDA's task is: "...to promote and accelerate the development and balanced growth of the Laguna de Bay area and the surrounding provinces, cities, and towns with due and adequate provisions for environmental management and control, preservation of the quality of human life and ecological systems, and the prevention of undue ecological disturbances, deterioration, and pollution."

The condition of Laguna De Bay water system (the lake itself and its tributaries) is a well-known issue in the discussion among policy makers who have been tasked to address water pollution problems in the Philippines. Both the citizens of the country as well as the national leaders are aware of the declining state of the quality of the water system, a situation that pushed the issue in the public limelight.

The problems that Laguna de Bay system faces compound with each day as economic growth and population increase, effluents and waste, consequently adding to the degradation of the lake's water quality. Left unaddressed, the water system is expected to gradually die; thus depriving society and the future generation the opportunity to use the lake for recreation and livelihood; and access to safe drinking water.

To prevent the institutional issues that LLDA faces from advancing to a critical stage; and to lessen the impacts of the continuing pressures on the lake system, the Laguna Lake Development Authority sought financial assistance of the World Bank and the Dutch government, to help strengthen LLDA as an institution; and to help the agency map out strategies to efficiently and sustainably manage Laguna de Bay and its tributaries.

## **Flooding**

Flooding in the area under the lake water systems covered by the Laguna de Bay Region include: lakeshore towns of Rizal and Laguna, and the Cities of Marikina, Pasig, and part of Metro Manila. While LLDA governs the lake and its water systems and clings to preserve the multiple uses of the lake, the infrastructures established by the government for flooding mitigation and management are tasked to other agency, specifically the Department of Public Works and Highways (DPWH).

These infrastructures are: Mangahan Floodway, Napindan Hydraulic Control Structure (NHCS), and the North Laguna Lakeshore Urgent Flood Control and Drainage Project. Frequent flooding in Metro Manila is attributed to excessive surface water originating from Marikina River and Laguna Lake that are uncontained by the lack of drainage systems. The Mangahan Floodway was constructed to divert excess water from Marikina River into the lake for temporary storage and gradual release. The floodway was completed in 1988 and divert excess floodwaters into the lake through a nine (9) kilometers long channel.

The City of Marikina in 2003 experienced flooding as a result of water run-off starting from the province of Bulacan when the latter had to release waters from their dams. This huge volume of water released finds its way to the Montalban River down to Nangka River and towards the Marikina River. The Antipolo river likewise contributed to the overflowing of the Marikina river. Floodwaters during these events rise up but gradually subside after 1 or 2 days because of the positive effect of the Manggahan floodway which serves as the temporary reservoir before the water is released to Laguna Lake.

In situations like this, the city government has a working disaster management plan with support from different working committees. To date, the Department of Social Welfare and Development (DSWD) spearheads disaster interventions with active support from the DPWH, the police and the respective barangay disaster coordinating councils. Decision-making for disaster management activities is centralized (within the city government) using efficient systems of communication and public information.

The people residing near the river banks maybe considered vulnerable to flooding incidents and the threat could affect their lives. Other residents, however, are not so much threatened by flowing due to the efficient infrastructure on flood control built by the national/provincial/city governments. In cases when heavy flooding happens which is far from the poblacion, the LGUs can still efficiently respond because disasters like these do not affect the basic services (schools, hospitals, marketplace, power supply, communication facilities, etc.).

The Napindan Hydraulic Control Structure, a project which became operational in 1983, was constructed to prevent backflow of brackish and polluted water from the Pasig River into Laguna Lake. The design of NHCS requires that the gates be closed during the dry period when the Manila Bay tide level is higher than the lake water level. In combination with the Mangahan Floodway, the NHCS was also used to control lake's outflow during extreme weather conditions to prevent flooding in Greater Manila due to overflowing of Pasig River.

The third project is the North Laguna Lakeshore Urgent Flood Control and Drainage Project. Its objective is to mitigate flood damage caused by extreme water stages of Laguna Lake and the inadequate drainage in the area along the northern shores of the lake. The project would comprise lakeshore dikes, improvement of existing channel, and construction of drainage and diversion channels.

All of these mentioned projects are being steered by the DPWH through the Laguna Lake Operation Rule Curve, and they are operating independent of the LLDA. However, the LLDA work toward attaining a balance between flooding concerns and other uses of the lake for a win-win solution. Moreover, LLDA is taking steps and doing the initiative in promoting the use of the decision-support system an operation concept and management control systems for these infrastructures, in collaboration with the various government agencies and private institutions and the stakeholders.

### **Drought / El Nino Phenomenon**

The Laguna Lake area experienced drought when the lake water level is below elevation 10.5 m (i.e., almost equal to the mean sea level of Manila Bay) normally during the summer period. The

effect of drought can be reflected on the other uses of the lake such as power generation, domestic water use and irrigation water for agricultural sectors. The Kalayaan Hydroelectric Power Plant located in Kalayaan, Laguna requires a raw lake water abstraction of 100,000 m<sup>3</sup>/day to generate electricity while Ayala Land Incorporated located in Putatan, Muntinlupa City requires a volume of 300,000 m<sup>3</sup> per month that undergoes treatment for domestic water purposes. Also, majority of shoreland areas around the lake are used for agricultural purposes, which are mainly relying on the lake water for irrigation during the summer months. During this period, the NHCS gates should have been closed to prevent saline water to intrude in the lake, as per the original objective of this structure.

A classic example of such drought event was happened in the year 1998 due to the El Niño phenomenon. An effort to tackle this issue was made by LLDA, in coordination with other agencies, wherein as early as January of that year, the lake water is already at an unusually low elevation, which could drop on the critical level of about 10.37 meters or even lower that could eventually hamper the operation of the Kalayaan Hydroelectric Power Plant if no immediate measures are to be taken. To minimize the drought duration and more or less conserve water and maintain the existing lake level, a reverse mode operation for the NHCS was made by preventing the outflow of the lake during low tide (gates closed) and to allow the entry of saline waters from Manila Bay during high tide (gates are opened). This solution is in contrast with the Laguna Lake Operation Rule Curve but is necessary, due to the economic implications, to ensure continuous operation of the hydroelectric plant, to the detriment of other users like drinking water supply and agricultural users.

### **Human Settlement in flood prone areas**

A land area called “Lupang Arenda” is within the Laguna de Bay Shoreland. Out of the 80 hectares proclaimed area, only 12 hectares is land and the rest is under water for eight months in a year. Under Republic Act 4850 as amended by Presidential Decree 813, this area forms part of the bed of the Laguna de Bay and is considered as an environmentally critical area.

The area was set aside for socialized housing along the lakeshore, in favor of informal settlers along Pasig River and less privileged families of Taytay, Rizal Province. The National Housing Authority was tasked to develop and dispose of the area, while the Department of Environment and



Natural Resources was directed to undertake the boundary, topographic and subdivision survey to facilitate development.

An Inter-Agency Task Force was created to look into any negative impacts of settlement in the shoreland area. The task force is composed of various government agencies like DENR, LLDA, Phillipine National Police, National Housing Authority, Housing and Land Use Regulatory Board and the Province of Rizal. Each agency was given a specific task. The LLDA looks into the adverse impacts related to water quality, peoples health and degradation of the lake's environment.

## **Conclusion**

In general, I can say that the national government has the capacity to provide the resources and services during disasters but it is also very important that the people at all levels have their own forms of interventions for disaster incidents. Involving the community in disaster management expands the expertise of response systems and opens a wide source of resources if and when the need arises.

Creating awareness on disaster management will provide our people the capacity to provide immediate responses to disaster incidents. Cascading the national government' NDCC's skills in doing so will also spread the responsibility among the different councils and community members.

The NGOs and/or the private sector are also indispensable in providing training at the community level which government will not yet be able to fully face. Early warning schemes at the community level are also deemed crucial to disaster preparedness especially in areas where government and scientific means of forecasting are only partially operational, if at all.

