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# **ADDRESSING FRESH WATER CONFLICTS: THE LLDA EXPERIENCE IN LAGUNA DE BAY'<sup>1</sup>**

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## **I. INTRODUCTION**

Laguna de Bay is one of the most important natural resource base being the largest inland body of water in the Philippines, and the 18<sup>th</sup> Living Lake of the world. Together with its 380,000-hectare watershed, it is the focal point of national development efforts not only in the agriculture and fishery, water supply and energy sectors, but in the regional development program as well. This is primarily due to its strategic location and economic and environmental significance, but also its vast development potentials due to its multiple uses. Yet, while the importance of the lake and its watershed are widely recognized, these natural resources have become consistently the site of many policy and institutional conflicts that threaten the sustainability of these resources to perform environmental functions and provide products and services for present and future generations of stakeholders.

By looking at the experiences of the Laguna Lake Development Authority (LLDA) on conflict resolution measures given the complexities in the management of Laguna de Bay and its watershed, this paper will attempt to answer the following questions on natural resource-based conflicts (NRC): (i) What are the conflicts and where do they occur? (ii) What are the tools/measures applied to address the conflicts, what works and what does not work? What are the lessons learned? (iii) What are the conflict trends? (iv) What are the next steps needed by what agencies to address the NRC?

## **II. THE CONFLICTS AND THEIR CONTEXT**

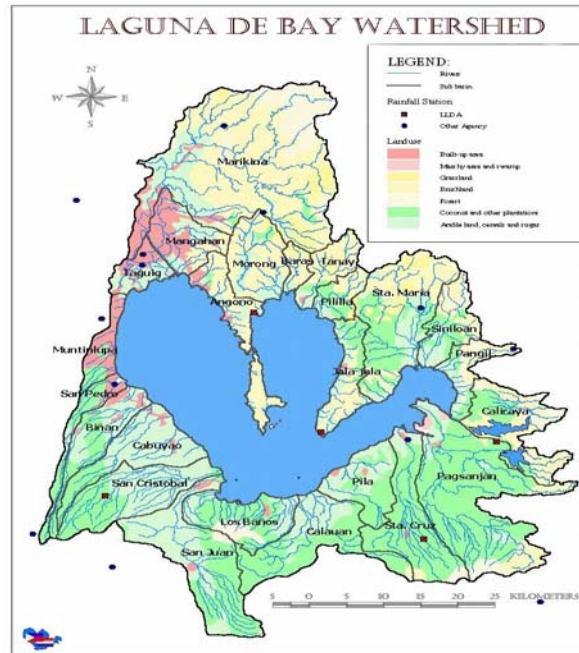
### **2.1 Laguna de Bay and Its Watershed**

Laguna de Bay is a very vital resource. With a total surface area of approximately 900km<sup>2</sup>, it is the largest inland body of water in the country and one of the largest in Southeast Asia. The watershed area is 2920 km<sup>2</sup>, which is approximately 1.3% of the country's land area of 300,000 km<sup>2</sup> and is referred to as the Laguna de Bay Region. It encompasses the whole provinces of Rizal and Laguna, portions of the provinces of Cavite, Batangas and Quezon and nine out of 11 municipalities and cities of Metro Manila. It is host to a total of 66 Local Government Units consisting of five municipalities, 10 cities and five provinces) and home to over 10 million Filipinos.

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## Map of Laguna de Bay



The lake itself supports a host of beneficial uses including fisheries. Thousands of fishermen and their families depend on this lake for livelihood and a thriving fishpen industry in the lake contributes approximately 80,000 metric tons of fish annually to the fish supply of Metro Manila and nearby provinces. The water resources of the lake as well as the rivers that drain into it also provide a range of beneficial uses including irrigation, power generation, industrial cooling, recreation, domestic water supply, and a navigational lane to a thriving water transport industry that serves the lakeshore communities. Laguna de Bay is currently the focus of technical studies as a raw water source to supply the drinking water of Metro Manilans and residents of adjoining provinces in the immediate future.

More than 100 rivers and streams flow into its drainage area, which is divided into 24 sub-basins. The Lake's only outlet, Napindan Channel, controls the flow to the 27-km. Pasig River that discharges into the Manila Bay. During conditions when the lake level is lower than Manila Bay and when there is sufficient tidal fluctuation that could push the entry of saltwater into the lake, Pasig River becomes a tributary. Thus, during backflow of the Pasig River, Laguna de Bay becomes a brackish water lake. The extent of saline water intrusion depends on the duration of the backflow and the prevailing climatic condition. The normal chloride concentration ranges from 250 to 350 mg/L but could reach to 4,000 mg/L at sustained backflow of the Pasig River. The fishermen and aquaculture operators favor this phenomenon because higher salinity improves the transparency of the lake by the flocculating effect of saline water on the suspended colloidal particles in the water column. Subsequently, abundance of phytoplankton followed. The Napindan Hydraulic Control Structure, built at the confluence of Pasig and Marikina Rivers and Napindan Channel, and operated by the Department of Public Works and Highways, controls the flow of water into and from Laguna de Bay. In 2003, the operation and control of the NHCS was turned over to the Metro Manila Development Authority.

Over the recent decades, uncontrolled population growth, deforestation, land conversion, intense fisheries, rapid and industrialization and urbanization have produced massive changes in the Laguna de Bay and its watershed. The resulting problems relate to solid waste management, sanitation and public health, congestion of shoreland areas, rapid siltation and sedimentation, unmitigated input of domestic, agricultural and industrial wastes, flood problems and loss of biodiversity, all contributing to decline in water quality. At present,

domestic sources of pollution contribute almost 70% to the total organic loading into the lake, industrial sources 10%, agriculture 12% and forest/others. The task of turning the tide of environmental degradation and protecting and conserving the lake and its watershed calls for immediate, decisive and unified action.

## **2.2 Institutional and Legal Context**

The management and control over the Laguna de Bay Region is vested in the Laguna Lake Development Authority (LLDA) pursuant to Republic Act 4850 as amended. Because of its unique legal and institutional framework, the LLDA exercises policy and planning, regulatory and developmental functions. The all-encompassing powers of the LLDA are shown in its authority to pass, approve, or disapprove all plans, programs, and projects proposed by all LGUs and public and private corporations. It also has exclusive jurisdiction to issue permits and collect fees for the use of the lake water and discharge of wastewater meeting the standards. The LLDA has the authority to earmark revenues generated for its environmental and developmental projects/ activities.

The LLDA is a self-sustaining organization. Its operation is financed through income from regulatory fees and fines, laboratory services, resource user's fee (aquaculture operation and water abstraction), and from its corporate investments and marketable securities.

In 1993, the LLDA was placed under the administrative supervision of the Department of Environment and Natural Resources (DENR) through Executive Order 149. As such, it maintains its separate policy-making functions through the Board of Directors. The LLDA acts and decides upon policy matters; not all are necessarily elevated to the DENR Secretary for final approval, since the Secretary is a member of the LLDA Board.

As part of its coordinative functions, LLDA deals with 66 LGUs from provincial, municipal/city levels, over 30 water-related agencies, government-owned and controlled corporations and institutions, two (2) regional environment and natural resources offices of the DENR. Each of these players have their own respective mandates and functions as well as programs and projects in or affecting the Laguna de Bay and its watershed. This is discussed in detail in the succeeding sections.

## **2.3 Institutional Issues in Lake Management**

Laguna de Bay remains as the only lake in the Philippines that is managed by a special Chartered agency of the Philippine Government. Although LLDA is mandated by law to perform its function as a basin-wide authority, it does not have control over all projects affecting the lake and its region, due to overlapping areas of jurisdiction with other government agencies which exercise their respective mandates in the region on policy and planning, regulation and infrastructure development. Each of these stakeholders, agencies/institutions has its own agenda, separately formulated and separately implemented policies, mandates and programs to meet relatively narrow, sectoral or stand-alone goals.

By virtue of Republic Act 7160 or the Local Government Code of 1991, the Local Government Units also exercise their mandate on environmental protection and management. The existence of many players, majority of which are government institutions, has led to conflicts among institutional mandates and functions and inconsistent policies, plans and programs for the management of the Laguna de Bay Region, among others.

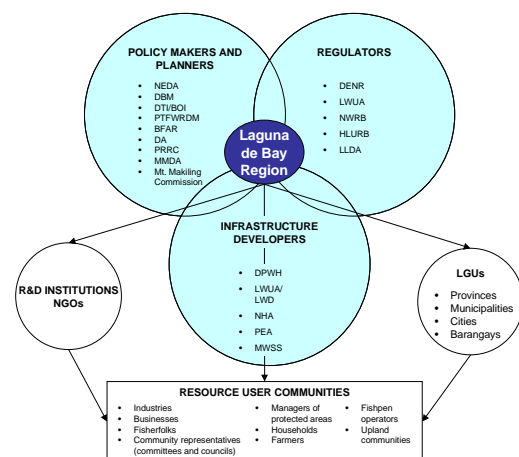
Thus, the current institutional arrangement in the management of the Laguna de Bay watershed is characterized by a lack of a coherent and harmonized relationship between and amongst the key stakeholders that has created barriers to its effective management.

### III. OVERVIEW OF LAGUNA DE BAY STAKEHOLDERS

This section presents the evolution of the stakeholders environment, their characteristics, motives and evolution.

Stakeholders of the Laguna de Bay watershed are grouped into the following categories: (i) regulators; (ii) policy makers, planners and coordinators; (iii) developers (land and water) including those into infrastructure development and provision of basic services; (iv) research and development institutions; (v) resource users' (vi) local government units and (vii) informal stakeholders (Figure 6). Those stakeholders who belong to the last category may also fall into resource users group.

#### Stakeholders of Laguna de Bay Watershed



The following table shows the existing and potential areas of conflict between and among stakeholders' categories, as well as the responses, which have been established, or in the pipeline.

#### Stakeholders of Laguna de Bay, areas of conflict and response

Stakeholders' Category	Areas of /conflict	Response
Regulators	Coordination, development, monitoring, enforcement of land use plans, issuance of permits/clearance, standard setting, policy development on resource pricing and allocation, market-based instruments	Rationalizing the mandates/functions, Streamlining of their functions, procedures and requirements (e.g., one-stop-processing of permits), policy and program coordination
Policy makers, planners and coordinators	Inconsistencies in policy setting, and planning; lack of coordination; sectoral policy development approaches result in inconsistencies/contradictions/overlapping; lack of clear responsibility for formulating and implementing commonly acted policy	Institutionalize micro-watershed, participative environmental action planning at the LGU/agency level
Infrastructure developers	Uncoordinated infrastructure development planning by national/regional agencies in	Creation of enabling environment for private

	relation to LLDA; inconsistency of infrastructure projects with the strategic policy direction for the management of the lake as set out in the Master Plan; limited public investments in environmental infrastructures	sector participation with government as facilitator and catalyst
Research and development institutions	Lack of proper coordination with LLDA; dissemination of research outputs is limited	LLDA as clearing house to coordinate & integrated R & D activities to (i) ensure focused research agenda centered around priority research areas, (ii) minimize duplications and maximize outputs; dissemination of outputs to the widest audience/users as possible
Resource Users/ communities	In addition to using the resources of the lake and the watershed for common good (fisheries, irrigation, drinking water, navigation, recreation, etc.), the lake has served as recipient of waste.	Strengthening regulation, monitoring and enforcement; expansion of MBIs, enhanced IEC activities; application of user fee to households;
Local Government Units (LGUs)	Sometimes conflict with LLDA responsibilities in the management and maintenance of ecological balance within their territorial jurisdiction	Co-management of the watershed with LGUs and communities of stakeholders

It is significant to note that among the Resource Users/ Communities, there are important players who have evolved borne out of the development challenges and issues in the lake watershed. These are:

- Formally organized and unorganized fishermen and farmers;
- Laguna de Bay fishpen operators' association;
- Informal stakeholders including informal settlers (or squatters), poachers of fishpens;
- Indigenous peoples (IPs) such as the Dumagats and Remontados of the Tanay micro-watershed; and
- Non-governmental organizations in support of urban poor issues, IP concerns, gender issues.

Except for the IPs for whose welfare and interest the National Commission on Indigenous Peoples (NICP) was created, there are limited literatures/ documentations on these informal resource users' groups. In the recent times, the organization of the informal settlers' group has been hastened by controversial government projects in the Laguna de Bay area.

The Institutional Re-engineering Studies undertaken for the LLDA by Tetra Tech EM Inc. and PNB Capital and Investment Corporation under the World Bank/Japan PHRD funded project came out with a detailed analysis of root causes of conflicts in the Laguna de Bay Region and are presented in the succeeding sections.

#### **IV. LAKE AND WATERSHED RESOURCES USE AND ALLOCATION CONFLICTS**

The unique characteristics of the lake water resources subject it to institutional and sectoral conflicts of interests. These are:

- ✓ **Common property characteristics/ open access approach:** the lake can be used simultaneously by different users and no individual or group can claim exclusive use/control over the resource, otherwise it would lead to deterioration.
- ✓ **Complex dynamics:** Lakes function also as natural regulators of extreme hydrologic occurrences such as floods and droughts, and serve as habitats for aquatic flora and fauna
- ✓ **Diversity of uses:** Multiplicity of uses and complex inter-relationships of the quality and quantity depended uses of the lake waters;
- ✓ **Indivisibility of outputs:** The production of goods and services from the lake resources may result in collective benefits and costs which could not be broken down into units that could be withheld from those who are not willing to pay, or delivered only those who pay. Likewise, there are benefits that can be enjoyed even by consumers who are not willing to pay for the cost of goods and services.
- ✓ **Externalities in the production processes.** The resource attributes possess physical interdependencies that generate social problems in resource utilization. A certain form of resource use creates spillover effects, called externalities, on other uses. Then, there are the efficiency and equity issues related

In view of these characteristics, Laguna de Bay and similar water bodies demand a particular management approach.

#### 4.1 Conflict among institutions

The existing institutional arrangements in the Laguna de Bay Region are complex. There is no coherent and integrated environmental or development governance system, which led to a series of separately formulated and separately implemented policies, mandates, and programs each striving to meet the relatively narrow and stand-alone goals. Such arrangement have been inefficient in: (1) creating a widely accepted common objective over the management of the natural resources of the Lake and its watershed; (2) balancing the different political, economic, and social interests; and (3) focusing the government, private sector, and citizen resources on the management of this ecosystem. The factors causing and exacerbating the institutional inefficiency as detailed above may be summarized as:

- The fragmented and often conflicting policies in environmental and natural resources management of the Lake and its watershed;
- Limited capacities in environmental management particularly at LGUs;
- Exhausted administrative and civil service and a weak political will in central and regional environmental agencies that prevent these agencies from expeditiously addressing the conflicting institutional arrangements in the region;
- Slow devolution of responsibilities and resources from central agencies to LGUs and inadequate effort to strengthen the governance and the capabilities of LGUs to assume a greater responsibility in fulfilling their mandates;
- Lack of, or at best, narrow opportunities for community and private sector participation in the management and sustainable use of the natural resources in the region.

The LLDA re-engineering study also came out with the observation that limited overlapping of mandates and responsibilities is often not a hindrance. The conflict arises when the objectives of the policies and laws creating those mandates contradict. Further, the conflicts become deeper when the resource base in question is delicate and has limited carrying capacity to satisfy all the mandates.

## **4.2 Conflict among users**

Over 10 million people live and work in the lake watershed. They are the users of the invaluable resources in the Laguna de Bay Region. They include the residents in the watershed communities, the farmers and fishermen thriving on the lake water resources and shoreland, and businesses and industries. In addition to uses that serve common good purposes, e.g., irrigation, drinking water, fisheries, recreation and navigation, the lake in recent decades has served a most controversial purpose, as a receptacle of waste.

Apart from the mix of water and land uses practiced in the watershed, the lake's proximity to the Metro Manila has caused rapid and uncontrolled expansion of industrial, commercial and residential areas. The trends of land use distribution is likely to shift strongly towards development.

The conflicts in water quality and quantity-dependent uses and sectoral conflicts of interests are exacerbated by the confusing and fragmented institutional arrangements and lack of a common set of policy objectives around which the stakeholders' support could be rallied. Furthermore, the existing institutional arrangements are inefficient to resolve the conflicts. These wide ranging conflicts may be grouped into institutional and uses/users-related.

Almost all the previous studies about Laguna de Bay highlight the conflict among the various users, infrastructure developers, and regulators and policy makers. Most of the current and foreseen problems in the management of the Lake and its watershed are attributed to these conflicts. A set of case studies exists that clearly reflect the root causes of conflicts among the lake users. Among these cases, the following are representatives of the conflict issues:

- Water quality improvement programs and other government projects aimed directed towards this goal are confronted with increasing salinity and contamination from the Pasig River that will also make the lake water unsuitable for agriculture. Pollution from industries, household waste, and transportation within the lake also threatens the agricultural enterprises. While LLDA has strict regulations against point sources of water pollution such industrial and commercial establishments and housing subdivisions, the lake's role as a waste receptacle is not likely to decrease.
- The Napindan Hydraulic Control Structure (NHCS) has been the source of conflict between the Department of Public Works and Highways (DPWH) and the fishing community. Because of the clamor of small fishermen and aquaculture operators, government has set aside the purpose of the NHCS to regulate backflow from the Pasig River. According to the fishing and aquaculture sector, they need the brackish water for the productivity of the aquatic resources of the Lake. The role of the lake as a buffer against flooding along the Marikina and Pasig Rivers has exacerbated the conflicts due to the impact of a flooded lake on farms, fishpens, and lakeshore development.
- Use of the lake by fishpen owners constitutes another level of conflict with small fishermen, as well as other users. This case study is discussed in Section 7.4 of this paper. From 38 hectares in 1970s, fishpens grew to more than 30,000 hectares in 1983, seriously reducing the areas for open fishing and impeding navigation. To reduce the adverse impact of fishpen on fish production, LLDA implemented a

zoning plan that reduced the fishpen areas to 10,000 hectares and fish cage areas to 5,000 hectares. Still the fishermen, fishpen operators, the Bureau of Fisheries and Aquatic Resources, and LLDA continue to argue the optimum size, ideal location, and the socio-economic benefits of these structures. Compounding the problem is the weak enforcement of fisheries Laws on the fishing boat registration, illegal fishing, and the role of LGUs in the enforcement of these laws.

- With the approval by the NEDA/Investment Coordinating Council of the 400 MLD Water Supply Project of the MWSS, the lake's potential as a key source of drinking water will not be far. The use of the lake as a source of drinking water supply will challenge all other uses of the lake.
- Soil erosion and sedimentation in the lake is exacerbated by quarry operations around the lake and in its watershed and potentially contributes considerably to the water pollution of the lake. Currently, the Mines and Geosciences Bureau (MGB), an office under the DENR, regulates quarries over 5 hectares while the Provincial Governors control the smaller quarries. The authorities for permitting, clearance, and enforcement among DENR, LGUs, and LLDA have not been streamlined. In addition, there are illegal small-scale mining operations in the region.
- Informal settlers now make up a large portion of the population in the region. They typically cluster in the flood and pollution-prone locations such as shorelands, river banks, embankments, and other areas subject to severe flooding. Most of these areas are in fact the environmentally sensitive areas. The solid waste generated by this ever-growing sector are carried by the rivers to the lake.
- Efforts to protect the lake as primarily a protected area have given way in favor of unavoidable demand for water and fish. However, a small-scale tourism industry still manages to survive in spite of the lake traffic. Tourists visit historical sites and take boat rides to remote eco-tourism pockets where swimming is considered safe.

## **V. COSTS ATTRIBUTED TO NATURAL RESOURCE CONFLICTS**

While Laguna de Bay is the largest and most vital water resource in the Philippines, it is a finite resource to satisfy the competing demands and interests of those sectors/users who draw upon its limited resources. While quantification of the costs to society of NRC in Laguna de Bay may not be readily available, this section attempts to provide a qualitative description of the environmental costs attributed to NRC.

Over exploitation and poor management endanger natural resources in most of the region, causing serious threats to food security and better quality of life for millions of stakeholders whose livelihood is intertwined in the lake water and watershed resources. Increasing environmental deterioration is manifested in poor public health and sanitation.

Intensified economic activities resulting in increased industrialization and urbanization and population growth mostly in Metro Manila and along the shoreland of the lake, have exacerbated environmental deterioration. While poverty may not necessarily be the cause of this, it has also exacerbated environmental degradation. A significant pressure on the water quality of the lake and its tributaries is the discharge of domestic and industrial wastewater, especially in the western bay. This accounts for nearly 70% of the organic pollution loading into the lake. This is also strongly linked to the problem of solid waste manifested by the indiscriminate dumping of garbage and existence of illegal open dumpsites oftentimes along the lakeshore. Uncontrolled human settlements along riverbanks and shoreland areas is

causing severe stress on the lake environment. Garbage dumping is a major cause of water pollution.

Rapid denudation of forests and land conversion aggravate the problem of siltation and lake sedimentation. The lake has been shallower from an average depth of 3 meters in the 1970s to the current average of 2.5 meters. Flash floods and mud slides have been frequent in recent times resulting to loss of lives and properties.

Open access approach (open fishing, waste discharge especially by domestic sources including households, water abstraction) lack of economic or resource pricing mechanisms have limited the effectiveness of LLDA programs.

## VI. A FRAMEWORK TOWARDS A LAGUNA DE BAY STAKEHOLDERS' CONVERGENCE POLICY

In 1996 through the academic work of the writer, an action plan and project (APP) was completed that paved the way for instituting the concept and process of stakeholders' convergence in Laguna de Bay. The Project "A Framework Towards Operationalizing a Stakeholders' Convergence Policy in Laguna de Bay" validated a means for clarifying values and roles under a convergence framework, identified and described the elements of an optimum institutional mechanism for participative management of the natural resources in Laguna de Bay. "Convergency Policy" is defined as a common framework among all key actors in the management partnership for the Laguna de Bay resources whereby implementation shall go beyond the limits of individual agency capabilities and sectoral interests through multi-sectoral, multi-level and inter-agency mechanisms, structures, resources and norms (1996 Nepomuceno).

### Framework Towards Laguna de Bay Stakeholders Convergence Policy



These elements are as follows:

- 1) Borne out of the stakeholders' voluntarism and willingness to participate;
- 2) Based on the principles of co-ownership/partnership in the management of the resource and integrated lake management;

- 3) Synergy of roles, resources, capabilities, services and interventions towards sustainable development of natural resources;
- 4) Accountability and sense of responsibility for performance of assigned roles/functions and delivery of committed resources/services; and
- 5) Resource value-stakeholders' role complementation

The APP concluded that a "collegial body" with specific set of elements may likely be the best institutional mechanism for stakeholders' convergence towards effective management of Laguna de Bay and that the following elements are essential to achieve convergence:

- ✓ Common understanding and appreciation of the value of the lake as a life-sustaining ecosystem;
- ✓ Catalytic role of LLDA;
- ✓ Role clarification and willingness to participate;
- ✓ Role acceptance and effective performance of accepted roles;
- ✓ Capabilities and motivation of stakeholders.

This Stakeholders' Convergency Policy formed the basic framework for LLDA's watershed co-management approaches and NRC tools/measures.

## **VII. CONFLICT RESOLUTION STRATEGIES, MEASURES AND TOOLS**

This Section describes some of the tools, strategies and measures applied by LLDA in addressing and/or mitigating conflicts over the use and allocation of natural resources and conflicts among the key players in the management and development of the lake and its watershed.

### **7.1 Stakeholders Analysis**

Stakeholders analysis is an important tool of the LLDA in establishing NRC measures. Through stakeholders analysis, groups and organizations with strong interest in the participative management of Laguna de Bay are identified and analyzed. It entails a process whereby: (i) the motivations and beliefs of the stakeholders on the participative management of the lake and its watershed and on other policy issues are validated; (ii) the stakeholders' resources, capabilities and capacities to participate, real and mobilizable, for or against, are assessed; (iii) the immediate or long-term effect of the policy on the stakeholders' groups/organizations; (iv) groups/organizations' positions are summarized; (v) a force field map and stakeholders analysis table are prepared; and (vi) assessment is verified with key informants.

Stakeholders analysis is a continuing process due to the dynamics among the stakeholders as well as the dynamic character of the lake environment. The important information generated from the process serve as the basis for formulation of appropriate conflict resolution measures and strategies, as well as strategic actions by LLDA and among stakeholders.

### **7.2 Institutional and Administrative Measures**

Depending on the nature and scale, a conflict situation needs to be properly resolved before efficient and sustainable use and allocation of resources can be appropriately considered. Among the different ways to resolve conflicts is through institutional dimensions and administrative processes, an example of which is the institutionalization of the re-engineered LLDA.

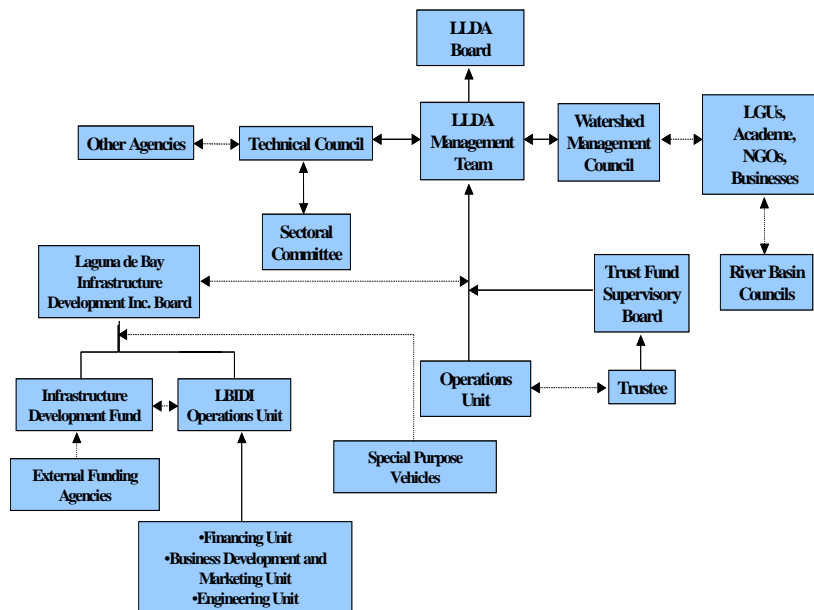
## Re-engineering the LLDA

Since the creation of the LLDA in 1966, new tasks and demands have emerged. It must now confront new challenges such as a rapidly growing demand for lake water to serve the needs of an expanding metropolis and lakeshore towns. It needs to properly coordinate infrastructure development and regulate the multiplicity of resource uses by various sectors. In addition, it has to facilitate interaction among various stakeholders, among which there are conflicting interests amidst alarming threats on the sustainability of the lake.

As early as 1983, the LLDA was authorized through Executive Order 927, to undertake a thorough corporate reorganization. Likewise, the Laguna de Bay Master Plan calls for the institutional and organizational reforms in the LLDA.

In the year 2000-2001, the Re-engineering study for the LLDA was conducted through a grant from the World Bank. It is a self-directed effort of the Authority to transform itself into an expanded and effective organization in order to fully discharge its mandated powers and functions. Its purpose is to develop the most appropriate institutional model and the associated planning and policy framework to enable LLDA to become an effective development authority while maintaining its regulatory mandate. This calls for re-structuring the LLDA organization and staffing, streamlining its functions and building political and social acceptability especially among its stakeholders. An integrated water resources management and development institutional model was recommended (Figure 10). This was also the optimal option acceptable to all the stakeholders given the challenges in the Laguna de Bay Region.

### The LLDA Institutional Re-engineering Model



The primary mandate of the re-engineered LLDA will be policy making, planning and implementing an integrated water resources management and development for the lake and its river systems. The scope includes the overall management of Laguna de Bay and its river tributaries, shorelands and aquatic resources and expanding it to include groundwater in the future. Included in this scope is raw water pricing development and implementation, environmental infrastructure development and coordination of land use planning in collaboration with LGUs. The level of autonomy will expand from its current status as a Government Owned and Controlled Corporation (GOCC) relying solely on operating revenues to

an investment-oriented development organization. The LLDA becomes the apex body in the Laguna de Bay Region with the responsibility for coordinating integrated watershed management and development program.

In this model, the LLDA Board remains as the policy-making body of the Authority. In order to make the decision-making process more inclusive, two advisory groups shall support the Board: the Technical Council and the Watershed Management Council. The Technical Council will serve as a permanent advisory council to LLDA for making policy for resolving issues related to institutional arrangements in the Laguna de Bay Region including harmonization and resolution of conflicting and overlapping functions, activities, policies and plans that exist or arise between and among the LLDA and other government agencies and GOCCs in the region.

The Watershed Management Council will be a multi-sectoral advisory council to support policy and planning activities in the lake watershed among the sectors with stakes in the region. The Council will serve as a convergence point for the review and balancing of sectoral policies and programs that have implications on watershed resources.

### **7.3 Alternative Dispute Resolution (ADR) Through the Public Hearing Committee**

The Authority has sole and exclusive jurisdiction over water pollution cases, fishpen/fishcage cases and shoreland cases within the territorial jurisdiction of the LLDA. The exercise of quasi-judicial powers of the LLDA is lodged with the Public Hearing Committee pursuant to Board Resolution No. 192 Approving the Revised Rules, Regulations and Procedures Implementing R.A. 4850 as Amended. The PHC is designated by the General Manager of LLDA and any decision, order or resolution must be concurred by the majority member of the Committee and duly approved by the General Manager.

The proceedings of the PHC are administrative in character without necessarily adhering to or following the technical rules of procedure and evidence. In most cases the PHC serves as a forum for alternative dispute resolution with due regard given to the merits of each cases and compliance with the substantial requirements of due process. Multiplicity of actions are discouraged and all issues pertinent or matters relevant to a pending case are resolved therein as much as practicable. Use and application of new procedural methodologies in hastening resolution of cases and issues may be adopted provided that, the constitutional requirements for administrative due process shall be substantially met.

The role of the LLDA Public Hearing Committee as a ADR mechanism works best in cases of complaints between sources of pollution versus affected stakeholders, as in the case of fishkills, oil spills, and other similar occurrences in the lake. The LLDA as a third party-convenor has recognized some of its alternative modes of settling disputes between polluters and affected users of the lake waters:

- ✓ Convening – organizing disputants for resolution, settlement of claims or counterclaims for damages, etc.;
- ✓ Fact-finding – establishing the facts/circumstances behind the incidences/occurrence of accidents, pollutant spills, etc.
- ✓ Arbitration – hearing the disputes and rendering a decision;
- ✓ Consensus-building – making a group decision;
- ✓ Mediation – entering acceptance to assist contending parties to voluntarily reach their own mutually acceptable settlement of the issue in dispute

In all such cases, the LLDA acts as an impartial and neutral third party to facilitate decision making by the contending parties to voluntarily reach mutually acceptable dispute settlement, having in mind the best interest and welfare of the LLDA as a regulator.

## **7.4 Laguna de Bay Zoning and Management Plan (ZOMAP)**

### **The fishpen controversy**

The commercialization of aquaculture operations in Laguna de Bay brought about many conflicts which have taught the LLDA many lessons in conflict resolution through policy-making and program implementation. The discussion below is based on the analysis presented in Pacardo et al. (1988).

The fishpen technology was introduced in the lake in the early seventies with a noble objective of improving the lives of small fishermen. However, it lured moneyed businessmen because of government's inability to promptly implement the necessary financial assistance program to help fishermen to construct and operate their own fishpen enclosures. The LLDA failed to set policies to protect the scheme and the lake from speculators, until late 1970s when through the assistance of the Asian Development Bank and Organization of Petroleum Exporting Countries (OPEC), the LLDA implemented the Laguna de Bay Fishpen Development Project. It was

The returns from the industry was so impressive such that many politicians, military and police generals and big time capitalists entered the fishpen business. While providing steady supply of fish in Metro and the rest of the region, the fishpen industry in the lake also provided a steady source of revenue for the Authority through the collection of fishpen fees. While the policies have been drawn, the policy-makers underestimated the complexity and difficulty of coordinating and implementing the policies. Soon illegal operation and expansion of fishpens went uncontrolled to the detriment of marginal fishermen who relied mostly on open water fishing. In 1983, the conflict was already in a critical situation that led to loss of lives and properties.

The fishpen controversy raised two essential issues in resource management: (1) the level of "efficiency" in developing and using the resources of the lake; and (2) the issue of "equity" among those who receive the benefit and those who pay for the consequences of environmental actions (as cited: Francisco, 1985). The proliferation of fishpens also took its toll on the lake. Fish production in the lake was negatively affected and fish harvest declined. The livelihood of marginal fishermen was severely affected.

The fishpen controversy caught national attention in 1983. The President of the Philippines issued instructions to demolish illegal fishpens and rationalize the use of the lake. In 1983 the first Zoning and Management Plan of Laguna de Bay was formulated but the implementation failed due to non-cooperation of the fishpen operators and the intervention of the local officials. In 1996, the ZOMAP was revised through a highly participative consultative process. A more systematic implementation scheme was developed and implemented. Approval by and authorization from the President to implement the 1996 ZOMAP was given to the LLDA through E.O. 349.

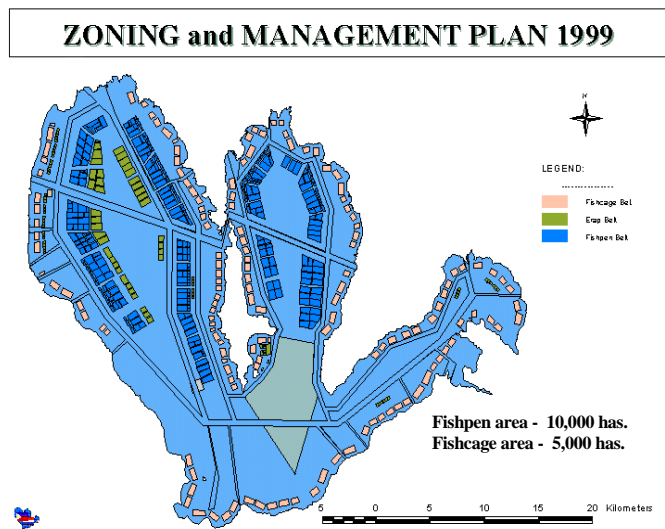
Under the 1996 ZOMAP, a definite area with specified size is allotted to each fishpen and fishcage operator to prevent expansion (Santos-Borja 1997). The strong political will of the General Manager at that time and the implementing unit were the key to the successful implementation of the revised ZOMAP by the LLDA.

### **The Laguna de Bay ZOMAP**

Regulation of aquaculture operation is based on the Zoning and Management Plan (ZOMAP) of the lake, which by far is considered as the most feasible management system for the equitable

allocation of the lake's fishery resource. Fishpen belts and fish cage belts were delineated in specified location in the lake, with a total area of 100 km<sup>2</sup> and 50 km<sup>2</sup>, respectively (Figure 8). The area allocation was determined through the estimated carrying capacity of the lake for aquaculture, which was based on the long-term primary productivity data from different locations in Laguna de Bay (Centeno et al. 1987). Limits were set on the maximum area that can be occupied for fishpen operation, i.e. 0.05 km<sup>2</sup> for a corporation, .01 km<sup>2</sup> for a cooperative and 0.005 km<sup>2</sup> for an individual owner. The maximum area for fish cage is .001 km<sup>2</sup>. A permit is issued annually in which the fishpen owner pays P6,000.00 per hectare (.001 km<sup>2</sup>) and a fishcage owner pays P4,200.00 per hectare. Vacant areas within the fishpen belt is awarded to an operator by bidding. The fish cages are still on the process of being transferred to the fish cage belt.

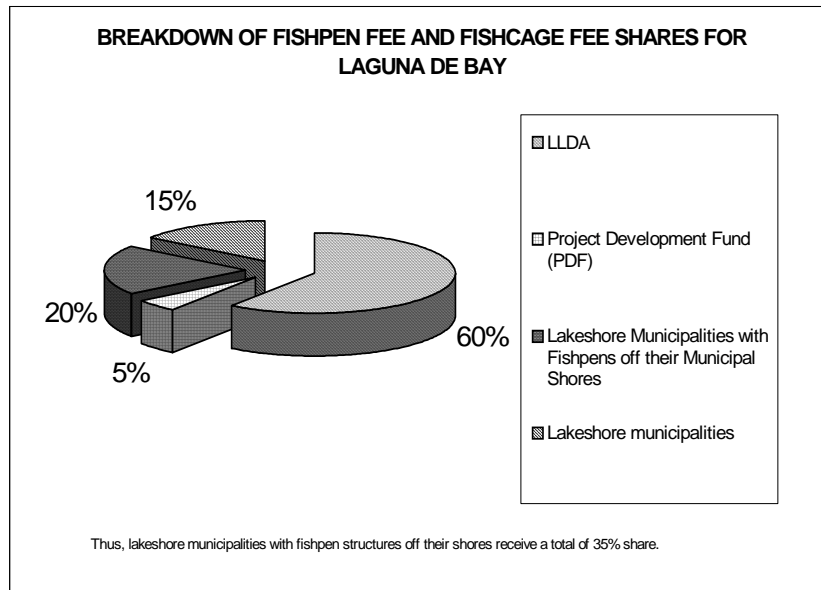
### Zoning and Management Plan (ZOMAP) of Laguna de Bay



### Sharing of Fishpen Fees

To distribute the benefits from fishery to the LGUs, the fishpen fee collected by the LLDA is shared in the following scheme: from 1983 to May 1996 at 20% to the lakeshore LGUs, 5% to the Project Development Fund (PDF) and 75% to the LLDA; from June 1996 to present at 35% to the lakeshore LGUs, 5% to the PDF and 60% to the LLDA (Board Resolution No. 15, Series of 1996 dated June 27, 1996). Currently, from a fishpen fee per hectare of P6000.00 (US\$120.00), every lakeshore municipality receives a share of 15% and an additional 20 % if there are fish pens off their shore (Figure 9). The LLDA specifies that their share should be used to finance environmental projects.

## Sharing scheme for fishpen and fishcage fee



As early as 1986 under Board Resolution No. PCLL-20, Series of 1986, the guidelines on the release and utilization of the fishpen fee shares of lakeshore LGUs had been defined and established. The release of the fund shall be only based on the cost estimate of LGU-proposed programs, projects or activities related to environment, livelihood, river embankment and flood protection works, watershed development and the like for review/approval by the LLDA. The LGUs are required to render a quarterly accounting of the funds indicating the nature of disbursements, its balances and the physical accomplishments. Such report is prerequisite to the release of additional and succeeding municipal fishpen fee shares. However, during June 1996 deliberation on the modified sharing of fishpen fees, the Board of Directors, three of whom are local government officials (Governors of Rizal and Laguna and the President of the League of Mayors), waived the requirements for the release /use of fishpen fee shares as they were perceived as cumbersome, hence making the funds inaccessible to the LGUs. Nowadays, the only requirement imposed by the LLDA is the official request of the LGUs.

Lately, the PDF is where the LLDA shall source fifty percent (50%) of the LGU equity to the financing to be provided for implementation of their selected environmental and micro-watershed improvement projects under the Laguna de Bay Institutional Strengthening and Community Participation (LISCOP) Project. This is one of the incentives being provided to LGUs to participate in the implementation of the LISCOP Project. This is discussed more in Section 7.4.

Later, the LLDA organized fishermen group and deputized them as wardens to augment the limited manpower to monitor the lake. Later the Fisheries and Aquatic Resource Management Councils were formed and became one of the partners of the LLDA in resource management. The control of the fishpen areas through the ZOMAP has proven to be a continuing challenge to LLDA. With every change in management, there seems to be a corresponding demand to increase the fishpen area so that certain people can be given the chance to do business in the lake. The sustained vigilance of fishermen and the fishpen operators themselves is encouraged because if the capacity of the lake to sustain fisheries is exceeded, they will be the first to be affected.

## **7.5 Formation of the River Basin Councils/Foundation under the River Rehabilitation Program**

In 1996, the LLDA started a River Rehabilitation Program for the rivers and streams flowing through the 24 sub-basins or micro-watershed of the Laguna de Bay basin. This program has evolved from a mere physical clean-up of rivers to a more comprehensive and sustainable approach by encouraging broad multi-sectoral involvement and support. Various stakeholders within each sub-basin such as local government officials, academic institutions, industrial and commercial establishments, religious groups, NGO's, PO's (people's organization) civic organizations, homeowners, etc. were organized to a River Rehabilitation and Protection Council (RRPC). A systematic approach is being followed by the Council which includes (a) mapping the watershed, (b) comprehensive survey of the river system and its watershed, (c) development of a vision for a healthy river system and watershed and (d) based on this vision, formulate a River Rehabilitation and Protection Plan for the river in focus.

River clean-up campaigns are also being sustained and this involves the physical clean-up of rivers. The LLDA has organized the *Hukbong Pangkapaligiran* or "Environmental Army," a volunteer organization consisting mainly of fisherfolk and farmers, to lead the activity. The men and women of the Environmental Army are exemplars of volunteerism who play a vital role in raising environmental awareness and heightening motivation among various sectors to be involved in the rehabilitation effort. The program was so successful that led the LLDA to institutionalize the RRPC. A seed money of P50,000 or a little under US \$1000.00 was given as seed money to support their activity or their registration as a foundation.

The involvement of the industrial sector in the RRPC has narrowed the gap between them and the community especially those who has a preconceived idea that industrial establishments pollute the environment. Most of the successful and active RRPCs are those with active members from this sector, whose representatives are often elected to higher position in the council.

All the RRPC were federated on June 26, 2001 to serve as an umbrella organization of the River Councils around the Laguna de Bay Region. The members elected the first set of officers among themselves. A conference of the RRPC/F is held every year where each council or foundation present their accomplishments and update the other councils or foundations on their present projects and future plans and programs. Likewise it serve as an occasion for enriching their knowledge through lectures by invited resource person on matters concerning solid and liquid waste management, waste exchange, and other topics of interest and concern geared towards enhancing the capabilities of the members to perform their tasks.

## **7.6 The Fisheries and Aquatic Resource Management Councils (FARMCs)**

In 1995 the President of the Philippines issued Executive Order 240 "Creating the Fisheries and Aquatic Resources Management Councils in Barangays, Cities, and Municipalities and their composition and functions." This is in accordance with the policy of the Philippine Government to ensure that the active and extensive participation of people directly affected will be engaged in the management and control over fisheries and aquatic resources. The law also called for the empowerment of the subsistence fisherfolk through meaningful participation in the management, development and protection of fisheries and aquatic resources for sustainable productivity. Republic Act 8550 known as the Fisheries Code of 1998 further strengthened the important role of the FARMC by prescribing the composition of the FARMC and defining the responsibility of concerned government agencies in ensuring that the functions of the FARMC are recognized and institutionalized. The FARMC is composed of representatives from the Department of Agriculture, LGU, NGO, and fisherfolks including women and representative

from the youth sector. LGU representation is important to ensure that the plans and programs will be prioritized and incorporated in the municipal or city development plan.

While the Executive Order is directed to the Department of Agriculture (DA), the task of institutionalizing and sustaining the FARMCs has been devolved to LLDA through a Memorandum of Agreement in recognition of the exclusive mandate of the LLDA in the Laguna de Bay Region.

Even before the passage of these laws, the LLDA had already established strong linkage with fishermen organization. In addition, the Authority has provided financial and technical assistance in their operation. Support given so far was financing for their training as *Bantay Lawa* (Lake Guard) and deputation of qualified fishermen as Fish Warden in coordination with the Bureau of Fisheries and Aquatic Resources. Funds to implement clean-up activities in the lake and in the surveillance of illegal fishing activities have been provided from the Project Development Fund of the LLDA (Section 8.4).

## **7.7 Shoreland management**

In spite of LLDA's assertiveness in the field of regulation, it was not able to exercise on time its critical mandate on the 140 km<sup>2</sup> shoreland area. Due to the thirty years gap from the enactment of the LLDA charter to the time that the LLDA was able to take action on the shoreland, people claimed and are still claiming the shoreland for socio-economic benefits. By the time that the necessary action took off the ground, the LLDA was and is still is, faced with the following problems: reclamation of shoreland areas, construction of illegal structures, dumping of solid wastes and spoils from construction work. Informal settlers have also found it convenient to settle in the shore land where all their wastes can be conveniently thrown into the lake. This is where the big problem lies since it would be very difficult to uproot the informal settlers.

The delayed action also made it difficult for people, specially the Local Government Units, to understand why that part of the lake within their municipality which remains dry at certain times of the year, are not under their jurisdiction. In spite of the dissemination of the Laguna de Bay Shoreland Policy, LGUs still continue giving permits for the use of the shoreland, which by law, is the sole responsibility of the LLDA.

The interpretation of other government agencies of what is the shoreland differs from the prescription of the LLDA. By law, the shore land is a public land. However, other agencies of the government in charge of land management, surveys and land titling classify these areas along the shore land as alienable and disposable lands in spite of the fact that DENR Administrative Order No. 97-95, Series of 1995 has been approved to prevent such situation from happening. Resolving these issues requires concerted action and political will by the key decision makers of the agencies involved.

In 1999, the LLDA Board allowed the qualified individuals or people's association to lease a portion of the shoreland areas pursuant to the allowable use as long as the area is still untitled and not covered by any government development plans, programs and projects.

The LLDA's shoreland regulation is a very glaring example of a case wherein development projects/activities have overtaken regulation and control. A lot of people, including the Local Government Units have already put their stake in these areas. After the delineation of the shore land areas and the inventory of its status, there is a need to review the policy on the use of the shoreland and revise the existing rules, not in a way to adopt the existing situation but more so, to adapt the rules without compromising the objective of protecting the shoreland and the lake from further deterioration.

## **7.8 Laguna de Bay Institutional Strengthening and Community Participation (LISCOP) Project**

Committed to continually espouse the sustainable development of the Laguna de Bay basin, the LLDA developed the LISCOP Project. To be implemented over a five year period, the project will be financed out of loan proceeds from the World Bank and an equivalent grant from the Netherlands Government. With the proposed initiative, the LLDA hopes to be able to fully optimize the level of interaction of the environmental, economic, and institutional dimensions of resource use and management, through a combination the following strategic interventions, which also form the integral components of the LISCOP. These are a) co-managed investments for watershed development (component 1); and b) strengthening institutions and instruments (component 2).

Specifically, under the LISCOP, the LLDA will be restructured and strengthened to establish it as an effective watershed management agency in planning, regulatory actions, and enforcement as well as facilitating investments in environmental infrastructure. Regulatory incentives will be improved and combined with strengthening the capacity of watershed users. River Councils and communities will be engaged in implementing interventions through a fund that provides financing to supporting small-scale investments for improving environmental quality at the micro-watershed level. A full scale follow-on investment project is also planned. This would seek to improve the environmental quality of the Laguna de Bay watershed to enable the sustainable and equitable use of resources to different users. The end-goal is to secure sustainability in effective basin water resources management, institutional building, and poverty alleviation in the area.

As part of the incentives package to encourage LGUs to invest in environmental sub-projects and take a loan for their implementation, LLDA has come up with a package of incentives that consists of capacity building activities, sourcing of 50% of the equity requirement for sub-project financing from the Project Development Fund of LLDA, support to LGUs on construction supervision and monitoring.

### **Laguna de Bay Watershed Environmental Action Planning (LEAP)**

Since 1966, the LLDA has established multi-stakeholder River Council in each of the 24 sub-basins of the lake watershed. These groups provide a structure under which the capability and role of stakeholders in watershed protection is being built. Until recently, there has been insufficient coordination and cooperation between the LLDA and Local Government Units (LGUs) in developing and implementing sound environmental planning. Identified constraints include lack of institutional structures/capacities through which micro-watershed level environmental issues beyond the political boundaries of single LGUs can be fully addressed and limited participation of stakeholders at micro-watershed level environmental planning and implementation. Recognizing the strong need to integrate micro-watershed environmental action planning into the local development planning at the LGU level, the LLDA initiated the Laguna de Bay Environmental Action Planning (LEAP) under the Laguna de Bay Institutional Strengthening and Community Participation (LISCOP) Project. The overall objectives of the project is to improve environmental quality and ensure that effective development and environmental governance towards sustainability of the lake and watershed resources. One of the innovative features of LISCOP design is a demand-driven, participative and structured way of identifying the priority interventions that will address the most pressing issues in a given micro-watershed of Laguna de Bay. The LEAP process is designed to empower local communities to collectively identify, plan and implement priority projects and capacity LGUs and River Councils to actively pursue environmental agenda in their respective micro-watershed, thereby translating into operational terms the “co-management” approach over the environmental resources in the lake watershed. With the use of LLDA’s Decision Support

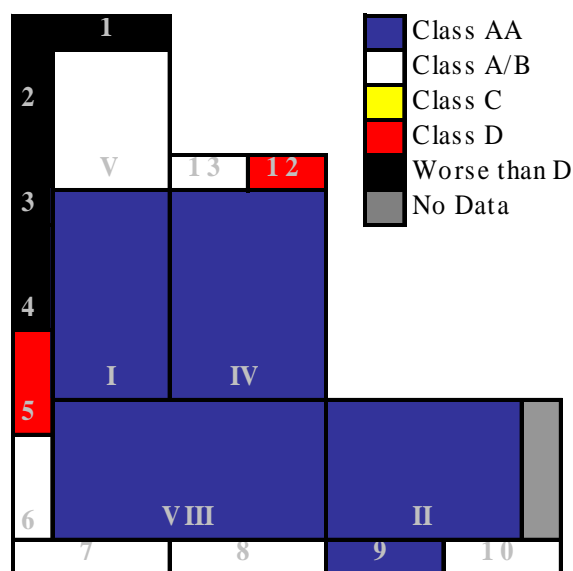
System that includes modeling tools, it has greatly improved/modernized its monitoring, data management and decision making, thus supporting watershed-wide/ micro-watershed-level planning and implementation.

### 7.9 Developing and Sharing Knowledge

From the 1974 and 1978 comprehensive water quality assessments of Laguna de Bay, the water quality of the lake and the tributary rivers was reported on a monthly, quarterly and annual basis with very little efforts on assessment that would guide management on planning and decision-making. Likewise, most of these reports are only for office use. As more students and researchers became interested in the lake, the demand for water quality data also increased. In 1986, the LLDA started its publication of the annual water quality of the lake and the tributary rivers. A few years after, the publication improved through the addition of more parameters and a written report per parameter. The assessment of water quality is always based on compliance with the National Criteria (DENR-DAO 34) for Class C water (suited for fishery). A comprehensive ecological assessment of the lake has not yet been published by the LLDA.

Through the Sustainable Development of the Laguna de Bay Environment Project, funded by the Royal Netherlands Government from 2000-2003, the water quality data were extracted and transformed into different sets of information that were used in the development of a Decision Support System for Laguna de Bay. Training of personnel in hydrology, ecological and water quality modeling and GIS was vigorously pursued with the vision of making LLDA a respectable center of information on the lake. One of the outcomes of this project is the presentation of water quality data in a simple schematic diagram that can be easily understood by non-technical people. It was inspired by the work of a famous Dutch painter, Piet Mondriaan whose simple lines and colors were adopted to present technical information to an easily understandable format. By looking at colors, people would know the current state of the lake and the tributary rivers. The Water Mondriaan as it is now called is posted in the LLDA website (Figure \_\_).

**The Water Mondriaan**



This has somehow addressed the clamor among fish operators in the lake for information on the condition of the lake that could help them in making crucial business decision. A more aggressive approach in disseminating water quality and other information is coming out soon.

## VIII. LESSONS LEARNED

Conflicts over the use of natural resources in the lake and its watershed have grown rapidly. These conflicts have intensified as stakeholders have become more aware of the benefits of the functions and services derived from these natural resources especially during these times of economic crisis, but at the same time, more stakeholders recognize the need to ensure protection and conservation of the environment for future generations.

Therefore, the lessons learned from the experience of the LLDA on NRC approaches and strategies, measures and tools will contribute not only to knowledge and information building, but more importantly to the identification of priority actions to effectively address natural resource-based conflicts in the Philippines.

### 8.1 Chartered central authority and judicial actions support NRC

Its distinct institutional form and enabling environment place the LLDA in the best position to resolve NRC in the Laguna de Bay area. A single agency with comprehensive and exclusive mandate over the lake and the entire watershed that combines coordinating, developmental and regulatory functions is “probably the best instance ... outside the governmental structure” for the sustainable management of the lake in general, and conflict mediation/resolution in particular. Such is one of the conclusions from the Experience and Lessons Learned Sharing Workshop: Towards a Lake Basin Management Initiative covering GEF and non-GEF Lake Basin Management Project organized in 2003 by the ILEC Foundation and World Bank.

Executive Order 927 in 1983 granted the LLDA exclusive authority to issue permits for the enjoyment of fishery privileges, specifically in the operation of fish cage and fish pen. This was challenged in court by certain lakeshore LGUs and some fish pen operators. They invoked the provisions of Republic Act 7160 or the Local Government Code of 1991, which has granted the municipalities the exclusive authority to grant fishery privileges to erect fish corrals, among others, within their municipal waters. The case reached up to the Supreme Court of the Philippines, which ruled in favor of the Laguna Lake Development Authority December 8, 1995. The decision written by Justice R. Hermosissima, Jr. on reflected the “oneness” of the lake ecosystem and the only way to ensure its sustainability is through an integrated management approach, thus:

***“Laguna de Bay therefore cannot be subjected to fragmented concepts of management policies where lakeshore local government units exercise exclusive dominion over specific portions of the lake water. The garbage thrown or sewage discharged into the lake, abstraction of water therefrom or construction of fish pens by enclosing its certain area, affect not only that specific portion but the entire 900 km<sup>2</sup> of lakewater. The implementation of a cohesive and integrated lake water resource management policy, therefore, is necessary to conserve, protect and sustainably developed Laguna de Bay.”***

The Supreme Court in the cases of Portland Concrete Phils. versus LLDA and Midland Steel versus LLDA on December 7, 1998 and January 26, 1998, respectively, upheld the mandate of

the LLDA on environmental regulation that authorizes the LLDA to issue cease and desist orders for violation of its pollution control rules and regulations. The court affirmed LLDA's action as a "practical matter of procedure under the circumstances of the case, and is a proper exercise of its power and authority under its charter and its amendatory laws." Again, this case further strengthened the regulatory role of the LLDA in the region and served to reinforce its role as a facilitator, mediator and negotiator towards conflict resolution .

## **8.2 Politics in NRC**

The policy-making power of the LLDA is vested upon its Board of Directors. Of its ten members, two (2) are ex-officio representatives from the National Economic and Development Authority (NEDA) and the Department of Trade and Industry (DTI), four (4) are elective officials, namely the Governors of the Rizal and Laguna Provinces, and the Presidents of the Mayors' League of Rizal and Laguna; four (4) are Presidential appointees such as the General Manager of LLDA, the Chairman of the Metropolitan Manila Development Authority, representative of the Office of the President, and the representative of Private Investors. The latter is supposed to be chosen from among the private stockholders of the LLDA, but most often is chosen by the President of the Philippines. Furthermore, the Board Chairperson who should be elected from amongst the members of the Board, is almost always designated by the Philippine President. Relevant sectors and lake users have no direct representation in the Board, hence the creation of the Technical and Watershed Management Councils (discussed in Section 7.2).

The Board composition as stated above indicates how politics could create conflicts and at the same time influence policy decision-making process at the Board level. To cite a specific example, the Office of the President issued Executive Order No. 75 on March 4, 2002 to create a Board of Advisors for the LLDA consisting of three (3) fisher folk representatives from the Laguna de Bay, supposedly to broaden the participation of various resource users in the management of the lake. A proposal to amend this executive issuance was submitted to the LLDA Board of Directors recognizing other sectors, aside from fishery, whose concerns and interests should be represented in the policy decision-making process. Unfortunately, the LLDA Board decided to defer submission of the proposed amendment in deference to the President, at the expense of balancing the sectoral interests in the discussion of policy matters at the Board level.

In addition, national, regional and local level representations in the policy-making Board of LLDA play an effective mediator role in resource use conflicts, although they are stakeholders themselves, and to complicate matters some of them have business interests using the lake resources, and have direct interests in conflict situations.

The frequent changes in the General Managership of the Authority, in addition to the presence of political appointees in the LLDA Board who also sit at the pleasure of the President, have resulted in shifting of policy and program directions, thus creating conflicts and posing serious implications to the sustainability of the development efforts in lake resources management (Nepomuceno 1996). Appointment of a professional LLDA General Manager whose tenure is dependent on performance has been the clamor of the stakeholders including the workforce of the Authority.

Strong political will and political leadership are vital ingredients to successful outcome of conflict resolution and mediation. To build political support, will and commitment to the success of NRC, experience of the LLDA emphasizes the importance of actively and purposely seeking to identify and promote the role of "champions" in fostering and sustaining political commitment to lake and watershed management and NRC measures. Leaders should have a strong orientation towards resource conservation and preservation of lake environment. The fact that majority of the members of the LLDA Board and the General Manager himself are

appointed by the President renders the decision-making process vulnerable to conflicts due to political interventions, sectoral biases, etc.

### **8.3 Institutionalization of a Re-engineered LLDA**

Sometimes conflicts on resource use and allocation could be very persistent if there is fragmented, piecemeal and/or sectoral approaches. A resource management system and institutional arrangement that can lead to successful resolution of conflicts is integrated water resources management (IWRM).

The reorganization of the LLDA is proceeding based on the institutional model which builds on a fully integrated water resources management and development institution. One of its strengths is the proposed wider representation and participation of the stakeholders through the Technical Council and the Watershed Management Council. The model was adopted by its Board of Directors on 25 January 2001 through Board Resolution No. 157, Series of 2001.

Although the LLDA reorganization is still a long way to go, it has already been operating under an integrated management framework. A framework that is focused on integrated water resources management is a basic element of the reorganization due to a number of factors: strategic location and economic-environmental significance of Laguna de Bay, multiple use of the lake water and watershed resources; and inefficiency of the institutional arrangements, thus benefiting conflict resolution/mediation.

### **8.4 Revenue sharing as leverage for NRC**

The Authority collected PhP21.752 million and P50.736 million in fishpen fees during 2001 and 2002, respectively. Thirty five percent (35%) of this revenue collection was disbursed to LGUs for environmental and other projects.

That project development and implementation funds, and for that matter environmental funds, can be effective mechanism for channeling corporate revenues to help address environmental problems, has been demonstrated by LLDA through its Project Development Fund. This Fund has allowed the LLDA to provide financial resources for implementation of environmental and social development projects and activities at the LGU level. If not for the fact that some of the releases out of the PDF to LGUs go to their General Fund, which can be used for maintenance and other operating expenses rather than implementation of concrete projects on the ground, the PDF could provide much-needed financial resources when government financing may be too limited or unavailable.

Notwithstanding this issue, the sharing of fishpen fee collection with the LGUs almost always gives the LLDA a wider leverage in bringing conflict resolution towards successful outcome.

### **8.5 Financing co-managed investments in watershed development**

Based on the experience of LLDA, it is not enough that partnerships with stakeholders and community networking, such as the River Councils (RCs) and the Federation of RCs, are established, it is also critical for LLDA to capacitate them under a watershed co-management framework. Hence, the LLDA took it upon itself to initiate support through the World Bank/Netherlands-assisted LISCOP Project, the implementation of demand-driven interventions at the micro-watershed/LGU level designed to contribute to improving environmental quality of Laguna de Bay and its watershed. From the selection and prioritization of the micro-watershed projects, the process is stepwise, participative and demand-driven.

All these efforts are designed to build mutual trust by upgrading the capacities and resources of stakeholders who take the driver seat in planning, developing, implementing, operating and maintaining their own environmental improvement projects.

## **8.6 Sharing of Scientific Knowledge and Information**

LLDA has realized the importance of scientific data and availability of management and technical tools in lake management as basis for well-informed decisions and productive conflict resolution measures.

Sharing of information and knowledge on the lake, its functioning, the water resources demand and supply is vital towards mutually identifying the conflict dimensions and scales and how to address them productively. Efforts to resolve conflicts based on inaccurate, outdated, incomplete information would likely lead to unsuccessful results. Mutual sharing of information as a precursor to the efforts would like give way to longer term resolution of conflicts.

## **8.7 Community Networking and Co-Management for Lake Watershed Development**

With a wide area of jurisdiction and limited staff to carry out effectively its mandate, the LLDA has long acknowledged that partnership is a key element in managing the resources of the lake and resolving conflicts (Santos-Borja 2002). The formation of strategic alliance with the Local government units, people's organizations and non-government organizations is needed to gain wide support in the implementation of its policies, plans and programs and in the implementation of its rules and regulations within the region.

The shifting of management orientation towards stakeholders as co-managers of the lake water resources augurs well for value reorientation (common value and shared vision) and sense of ownership, as a prerequisite to the desired lake ecosystem orientation among stakeholders. The shift in the lake management paradigm is clearly indicated from the experience with the River Rehabilitation and Protection Councils, the Fisheries and Aquatic Resource Management Councils, and the tripartite partnership CLEAR among others.

## **8.8 Lessons learned from program implementation**

### **8.8.1 "READY, FIRE, AIM" Approach**

The LLDA's experience in the implementation of not only its market-based instruments, such as the EUFS, but also of its conflict resolution strategies and measures, taught two important lessons: (i) start simple and build experience; and (ii) the battle cry should be **"READY, FIRE, AIM"** rather than **"READY, AIM, FIRE"** (Nepomuceno, 2001). Thus, it is better to start simple, just fine tune as experience builds up.

### **8.8.2 Conflicts as a consequence of delayed actions: the need for proactive management**

Due to imperfect knowledge, limited resources, lack of political will and slavery to established norms and procedures, conflicts which could reach crisis proportion due to uncontrolled development and unsustainable use/allocation of resources almost always overtake actions/regulation. While it is widely accepted that prevention is better than control, proactive management is rarely seen and operationalized. Hence, opportunities for institutional and management changes arise out of conflicts and/or crisis. Positively translated, conflicts/crisis

also pose as opportunities and challenges to properly re-direct resource utilization and allocation by application of scientific knowledge and information.

## **IX. CONCLUSION AND RECOMMENDATIONS**

This Section draws important conclusions from the lessons learned and from there takes a look into the future of NRC resolution and mediation. The aim is to answer the question: What do these lessons learned have to identifying and formulating strategic actions and next action steps towards addressing NRC in the Philippines?

### **Some important conclusions**

Outlined hereunder are some selected conclusions from the lessons learned, some unique to Laguna de Bay while others are common in other natural resources in the Philippines, in the context of freshwater use and allocation and watershed management conflicts.

- Central authority for lake and watershed management with strong policy and regulatory roles are generally more successful in conflict resolution/mediation than those with coordinating roles only;
- Political will and commitment among agency heads, and the extremely important role of political leaders and “champions” in NRC;
- Knowledge and information become meaningful in NRC resolution when it is shared with and understood by stakeholders; Sharing of information is vital towards mutually identifying the conflict dimensions and scales and how to address them productively;
- Effective NRC resolution is not afraid to take action. While it is important to have scientific, accurate and complete information, it is impossible to have a full and clear view of the future consequences of a management action. A more practical approach is to initiate prompt actions knowing fully well that improvement and corrective steps are feasible with practice and experience;
- Science-based, well-informed decision is vital because it can be corrected and improved with scientific reasoning and factual analysis.
- Based upon awareness and common understanding of the significance of the natural resources, secure the trust and confidence among stakeholders under mutually reinforcing environment of lake/watershed co-management supported by sharing of resources and capabilities;

### **Recommendations**

From these conclusions, the following recommendations for strategic actions and next steps to address NRC in the country are presented for consideration:

- Get started no matter how simple, build experience and fine tune later (starting promptly is better than later, don't let crisis, irreversible loss, environmental disaster overtake you);
- Build partnerships and constituencies for NRC management and develop change agents by intensifying awareness raising and information sharing, as well as building a common understanding of and value attached to the resource;
- Build capacity to leverage external support and access resources;
- Seek out political leaders and/or champions of natural resource management reforms in different sectors of society;
- Advocate and support participation of stakeholders in the change process;
- When faced with a conflict or crisis situation over access to or allocation of resources that is causing political bottlenecks or hardening of positions

- between/among opposing parties, strike and promote a win-win solution that will give each opposing party a reason to agree;
- Practice pro-activity and be creative backed by scientific information (remember there are technologies that can change the ways by which resources can be managed and benefits equitably shared; policy, administrative and legal changes, such as tradable rights, resource pricing, user charges, etc.); and
  - Create funding mechanism and revenue sharing schemes including new ways for performance-based sharing of benefits from resource uses among stakeholders.

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