

## **Local Initiatives in Water Quality Management Programs in the Philippines: Policy Issues and Challenges**

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### **Abstract**

The future quality of water is one of the most pressing environmental problems in most Asian developing countries, like Philippines. With urbanization, water governance has to cope with increasing demands for steady supply and access to potable water, both for the immediate and long term. National institutions usually manage water supply/quality and sanitation. However, local governments still lack the ability to ensure efficient and sustained delivery of basic water services. Thus, some institutional development interventions among local governments were initiated to monitor, improve and sustain water quality and conservation for domestic, industrial, agricultural and other uses. Strengthening the local government's mechanism is important for integrating efforts, coordinating and managing integrated water resources and related water operations in the area and driving the different sectors involved to treat water resource in an integrated manner. Such initiatives hopes to shift from fragmented to integrated local water agenda and action, to be catalyzed by an integrated management scheme at the local government level. Specific targets for capacity-building are the strategic planning and development of the local government and the public utilities sector that manages the water treatment facility. This paper presents case studies on water quality management programs and intervention reforms for sustainability.

Keywords: index of drinking water adequacy, local initiatives, water environment, water quality management programs

### **Introduction**

In response to the growing problem in water quality, the Philippine government enacted the Clean Water Act (CWA) in 2004 and its Implementing Rules and Regulations (IRR) the year after. Praised for its innovations in water quality management, the Act and its IRR require integrated approach, stronger collaboration among stakeholders, and promotion of co-ownership of the water bodies. From 2001 to present, the Department of Environment and Natural Resources-Environmental Management Bureau (DENR-EMB) through its regional offices have monitored 238 water bodies either for classification or for regular water quality monitoring. Depending on the regions' resources, monitoring for these water bodies is done monthly or quarterly. In ADB's publication "Asian Water Development Outlook 2007" or AWDO 2007, the ADB warned that water availability in the Philippines could be "unsatisfactory" in eight of its 19 major river basins and in most major cities before 2025 (ADB, 2007). The ability of groundwater to meet future water demand has been projected to be limited, amounting to only 20 percent of the total water requirement in the country's nine main urban centers by 2025. This development review study is focused on qualitative data, through interviews and observations, and quantitative data, where cause and effect is sought

to produce generalizations on policy issues and challenges. Some case studies on local governance initiatives on water quality management program (WQMP) and intervention reforms, as well as best practices and lessons learned on WQMP are presented and discussed in the succeeding sections.

### **Water Quality Management Programs (WQMP)**

Philippine water quality is assessed based on the set beneficial use as defined in the DENR Administrative Order (DAO) 34, Series of 1990. Under this DAO, there are 33 parameters that define the desired water quality per water body classification. Accordingly, a water body must meet all the criteria of each applicable parameter 100 percent of the time to maintain its designated classification. In the absence of a water quality index, an interim methodology based on compliance to DAO 90-34 water quality criteria is used for all surface waters. Parameters monitored include: (a) dissolved oxygen (DO), biochemical oxygen demand (BOD), total suspended solids (TSS), total dissolved solids (TDS), and heavy metals for inland surface waters; (b) fecal coliform, nitrates, and salinity (chloride content) for groundwater as defined in the Philippine National Standards for Drinking Water; (c) DO, coliform, and heavy metals for coastal and marine waters; and (d) biological parameters such as phytoplankton, zooplankton, and benthos were monitored in selected water bodies. On legal and policy aspects on water quality management, the Philippines has an extensive water and water-related legislation and regulations that provide the legal bases for programs on water quality management. From 2001 to 2005, one major legislation on water quality management was passed. This was RA 9275, otherwise known as the Philippine Clean Water Act (CWA) and signed into law on March 22, 2004. Water quality management in the Philippines is spearheaded by the EMB of DENR. In support to the DENR's mandate, other government agencies, financing institutions, and donor agencies have also implemented programs and activities on water quality management. The Philippines is a recipient of official development assistance for water quality management. Its main donors are: the government of Japan through the JICA and JBIC, ADB, USAID, United Nations system, and the WB. Grants have been provided by bilateral agencies as environmental assistance, while loans to finance investments in environment projects have been provided by ADB, JBIC, and WB.

### **Best Practices and Lessons Learned in WQMP**

This section presents best practices and lessons learned in water quality management, including waste minimization efforts that could be adopted by others. This process will not only give credit to those "good performers", but will also allow others to duplicate the documented "best practice in water quality management." In addition, this section showcases efforts of government agencies, private sectors, business or industry associations, LGUs, civil society, communities, academes and others (Fruh,2003).

River Water Quality Management - Initiated as part of the USAID project on Sustainable Agriculture and Natural Resources Management, the Philippine Water Watch (PWW) capacitated local farmers in understanding and performing water quality monitoring that was focused on drinking water quality and its impact to public health (World Bank, 2003). Moreover, local farmers developed the capacity to address problems on bacterial contamination, soil erosion, and sedimentation. A successful technology transfer was demonstrated through exchanges in technology adoption. For instance, after the PWW volunteers used the *Easygel* rapid method for *E. coli* testing, it was adopted by the AWW. In

the same manner, methods for TSS and stream discharge sampling that were initially used in the Philippines. The PWW program resulted to the formation of three active groups in Mindanao and Bohol. Together, they have collected thousands of stream water samples. This multi-year information documents a clear gradient of declining water quality across four sub-watersheds of the *Manupali* River, which is related to human population, deforestation, and agricultural development. Drinking water supplies have been identified as contaminated, and public health risks have been minimized through remediation. PWW volunteers have been active in educating their neighbors in water issues by giving presentations at village meetings and in schools. The pioneering effort of the PWW has attracted local and national attention, with great potential to impact water policy. The data and the process of community-based water quality monitoring have been incorporated into the Natural Resource Management Plan of the Municipality of Lantapan, Bukidnon. The local government of the Province of Sarangani initiated a similar water quality monitoring program in their region. Moreover, the PWW data were used by the Philippine Institute for Development Studies to advise Congress on the value of community-based water monitoring during the formulation of the CWA.

Lake Water Quality Management - Laguna Lake is one of Southeast Asia's largest inland water bodies. Since its establishment in 1966 through RA 4850, the LLDA has been protecting and preserving the quality of the Lake as well as the 21 river systems that flow into it. The holistic and integrated approach that LLDA is implementing not only reduces pollution draining into the lake and improves lake water quality but also becomes the benchmark in water quality management. Some of the best practices that LLDA carries out include: (a) *Controlling point source of pollution through the EUFS* – A market-based instrument that encourages companies to invest in and operate pollution prevention/abatement systems within their establishment. Applying the “Polluter Pay Principle”, the system provides direct accountability for damage inflicted to the Lake. Since the implementation of EUFS in 1997, the LLDA observed decreasing annual BOD loadings from 5,402 MT in 1997 to 193 MT in 2004 (Figure 21) generated by 222 firms; (b) *Cleaning up river system by creating additional livelihood* – Tagged as ‘Environmental Army’, this group convenes monthly to haul out wastes from various rivers in the Lake's basin. Once biodegradable river wastes are collected, these are fed into drum kilns, until they are carbonized and later pulverized. The carbon particles are then mixed with a binder and pressed into their final shape and form. After which, these are dried, packed, and sold for PhP15/pack of 25 pieces. The briquette-shaped charcoal is more solid and slower to burn than the flake-shaped charcoal being sold commercially. It provides livelihood to poor fisherfolk and creates opportunities for small business enterprises around the Laguna Lake Region, in the provinces of Rizal and Laguna, and in Metro Manila. Though the project offers a host of environmental benefits and provides livelihood opportunities for the marginalized sectors, marketability of the briquettes has become a stumbling block for the project's sustainability. Local acceptability and finding potential investors are some of the issues that have to be solved. However, despite the set-back in the marketability of the converted wastes, the environmental army initiative on river clean-up has created an advocacy among the communities to take active roles in river/lake rehabilitation.

Public-Private Sectors' Collaboration to Promote CP – Promotion and adoption of CP is one key strategy that is strengthened under the CWA to prevent point sources of pollution. Inter-agency collaboration has demonstrated success in transforming the paradigm of industries to focus on an integrated, preventive environmental strategy to processes, products, and services to increase efficiency and reduce risks to humans and the environment. A successful collaboration was illustrated by the Metro Cebu Environmental Initiatives Council (MCEIC)

and its partner agencies and industries in Region 7. To give due recognition, a MOA was signed in April 2004 by the MCEIC, Pollution Control Association of the Philippine, Inc. Region 7, Cebu Chamber of Commerce and Industry, Inc., and the DENR-Region 7. Signatories of the MOA agreed that companies that document and submit their CP practices be given due recognition. A total of 21 firms submitted their CP program documentation and were then reduced to 10, following this set of criteria: (a) Innovativeness of CP Technique Used; (b) Pollution/Waste Reduction Attained; (c) Cost Savings Result; (d) Increase in Production Efficiency; (e) Proper Resource Use/Management. These firms were given “Award for Outstanding Cleaner Production Practices” in June 2005. As an added incentive, Region 7 granted the awardees environmental permits with five-year continuous validity.

Pilot and Demonstration of Water Actions (PDA) - This PDA strengthened the Baguio City government's mechanisms for coordinating and managing water resources. Baguio City in Northern Luzon, located 1500 meters above sea level, is home to 250,000 people (ADB, 2007). Tourists by the thousands drive to this mountain resort every year, adding to the city's problem of short freshwater supply. This proposed PDA will focus its institutional development interventions in Baguio City, Philippines. The city faces problems with unaccounted for water aggravated by the growth of small-scale water suppliers and settlements along watershed areas and presence of minerals that affect water quality. Attempts at charting directions and investments to efficiently manage the water resources in Baguio City have been initiated. In the regional and provincial plan documents, the role of Baguio City is to protect and preserve watersheds within its territorial jurisdiction. In a separate report containing the urban plan for Baguio, water issues were sketched under the infrastructure component that tackled water supply, surface water sewerage, sanitation and sewage disposal. This PDA hopes to enable Baguio city to shift from fragmented to integrated local water agenda and action, to be catalyzed by an integrated management scheme at the local government level. Specific targets for capacity-building are the city planning and development office as a coordinating and management office of the city government, and the public utilities sector office that manages the water treatment facility. The expected results of this PDA are as follows:

(a) an Integrated Medium-Term Local Water Operational Plan and Investment Priorities of Baguio City; (b) a Cost-Recovery/Sustainability Plan for the City's Water Treatment Facility; (c) information and Communication Materials that Capture the Lessons Learned from the Project. This PDA assisted in the formation and design of a multi-sectoral, multi-functional, and multi-lateral City Water Governance Committee (CWGC) for better and sustainable water governance in Baguio City; and encouraged the participation of local governments and national agencies in a seminar to disseminate lessons learned from Baguio City's experience. One of the main purposes of the *AWDO 2007* is to focus the attention of national leaders and key decision makers on the need to increase investments in the water sector if the MDG targets are to be achieved by 2015. Although some countries have made good progress, others need to make dramatic improvements as can be seen from Table 1. Nearly half of the targets for 11 of the countries in the table will not be met by 2015. Simply providing access does not necessarily mean all problems are solved and all benefits are received. For example, an improved water supply must also provide good quality water delivered at the tap, and improved sanitation must include effective waste disposal and wastewater treatment (ADB, 2007).

Table 1. Progress in Achieving MDG Targets, and IDWA values.

Country	Urban water (%)	Rural water (%)	Urban sanitation (%)	Rural sanitation (%)	IDWA value
Bangladesh	82	72	51	35	37
Cambodia	64	35	53	8	19
PRC	93	67	69	28	61
Fiji	43	51	87	55	n/a
India	95	83	59	22	60
Indonesia	87	69	73	40	59
Kazakhstan	97	73	87	52	74
Pakistan	96	89	92	41	39
Philippines	87	82	80	59	80
Samoa	90	87	100	100	n/a
Sri Lanka	98	74	98	89	51
Viet Nam	99	80	92	50	76

  

Key	Target already met	On track for 2015	Off-track — expected to hit target after 2015	Off-track and regressing
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IDWA = index of drinking water adequacy; MDG = Millennium Development Goal  
 Coverage figures from published WHO/UNICEF data for 2004. Although not the latest data available from individual countries, which may use different definitions and are likely to be overoptimistic in their assessments, they provide consistency in performance comparisons. For Cambodia, definitions of improved facilities and urban/rural areas were changed after 1990, so MDG target progress from 1990 to 2004 is not directly comparable.

(Source: ADB, 2007; Annex 1)

### Food and Water Quality Management Programs at MMSU

Various academic institutions are actively pursuing studies on water quality management. Their activities range from regular water quality monitoring to special studies on analytical method formulation and/or validation and testing of substances to assess impacts on water pollution and food product development to help local entrepreneurs. A GPS-guided survey for about 250 food processors in Ilocos Norte were conducted by MMSU researchers to assess their food processing and explore to improve their food products packaging and development for food safety, use of clean water and enhanced their income (MMSU, 2007). At MMSU, initiative is being done to conduct current good manufacturing practices (cGMP) on food and water resources for crop production, dormitories, faculty houses and water refilling projects for MMSU and for food processors of vinegar/wine, local sausage and other local food products in the community. Moreover, WQMP is also being instituted in the university to provide clean water for the community and for food processing. A water refilling station is now being established as well as a mobile food and water packaging toll facility to help small entrepreneurs in the rural areas to process their food products with clean water for food product development and drinking water, for cGMP. As a continuing effort of the university, a team is assigned to monitor the water and food quality in the community, as well as promoting water conservation techniques such as rainwater harvesting, growing drought resistant crops and soil and water conservation measures.

The implementation of the Philippine Clean Water Act of 2004 by the DENR, other national government agencies, LGUs, private sector, civil society, and other concerned entities require appropriate planning processes, regulations, capital investments, and resources. It is evident that more actions and resources are needed to build on existing water quality management

programs. Due recognition should be made on the interrelationships and collaboration among agencies and stakeholders responsible in addressing water quality problems. The framework should pave the foundation for a cohesive direction, involving stakeholder participation towards the implementation of various water quality management strategies. The active involvement and participation of stakeholders should be enhanced in implementing water quality management programs. It should promote a sustainable proactive approach to managing water quality particularly at the local level. Successful water quality management requires a strong community-based effort with diverse stakeholder involvement, good partnership building with consensus, and effective and collaborative decision making on best management practices. The challenge is to internalize the message that water is an important resource and that everyone has to play a role in the conservation and management of our water resources.

### **Conclusion**

Major water quality challenges that the country needed to improve the quality of its surface, ground, and coastal waters. The government should pursue aggressive strategic plans to address the seemingly decreasing trend of the quality of our water bodies. This implies safe drinking and bathing waters and water bodies that foster production of our aquatic resources. The active involvement and participation of stakeholders should be enhanced in implementing water quality management programs. It should promote a sustainable proactive approach to managing water quality particularly at the local level. Successful water quality management requires a strong community-based effort with diverse stakeholder involvement, good partnership building with consensus, and effective and collaborative decision making on best management practices. The challenge is to internalize the message that water is an important resource and that everyone has to play a role in the conservation and management of our water resources.

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