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Research article

Policy Analysis and Prospects for Conservation and Management of Layawan River System, Northern Mindanao, Philippines

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Abstract

LayawanRiver was declared as the cleanest and greenest river in the Philippines. However, due to unregulated anthropogenic activities, this prestige is at stake and unsustained. Hence, this study was conducted to assess the policies implemented for the sustainable management of Layawan River through household survey, key informant interviews and focused group discussion to all stakeholders. Results showed weak implementation of laws, rules and regulations both in national and local levels. Lack of alternative livelihood was also observed as the main reason of a deteriorating condition of the resources within the river system. This could be a result of inadequate actions of the involved stakeholders that might serve as partners of the government towards protection of the resource. Exercising of indigenous rights among the indigenous communities as the guardian of the river was seen to be promising. Likewise, massive information and education on the significance of environmental protection and conservation of the river and enforcement of laws are highly recommended for the sustainability of Layawanriver. **Copyright © AJSSAL, all rights reserved.**

Keywords: policy measures, conservation initiatives, Philippine legislation, Layawan River

INTRODUCTION

LayawanRiver is one of the two major rivers of Mt. Malindang located in the municipality of Oroquieta, Misamis Occidental (Gorospe-Villarino, et. al. 2006 and Bacaltos, et. al. 2006).Its headwater is located in Barangay Sebucal, a remote area of Oroquieta City located at the crater valley of Mt. Malindang, with elevation ranging from 700-1,400 meters above sea level (masl). (Bacaltos, et. al. 2006).Water from Layawan watershed is mainly used for

domestic and agricultural activities among the 33 barangays covered and serves 158 hectares of ricefield (Bongcayao, et. al. 2015). Comprehensive studies had been conducted in Layawan River and its coastal areas in the early 2000s as part of the biodiversity conservation initiatives. Water quality and quantity and riparian biodiversity assessment of Layawanriver by Gorospe-Villarino, et. al.(2006)and assessment of its headwaters by Hansel, et. al. (2006) indicated a relatively healthy state of the river, and diverse species of flora (105species of trees and about 111 of shrubs, herbs and weeds) and fauna (60 bird species, 12 species of mammals, 17 reptile species and 13 fish species) in the riparian areas. However, over the years, the watershed has been exposed to destructive activities such as illegal logging, encroachment, and timber poachingand water quality was observed to be problematic particularly in the midland and lowland portion of the watershed which poses a huge threat to the residents of Oroquieta City as primary dependents of the water for various socio-economic uses (Calderon, et al 2012).

With the absence of local ordinance, the river was protected and preserved by the indigenous people(Subanen community) living along the river. With their protection, the river garnered its name as the cleanest river in the Philippines (Bongcayao, et. al. 2015 and Bacaltos, et. al. 2006) which may imply good management (Bacaltos, et. al. 2006). But in the recent years, with the enactment of laws to protect the river ecosystems, degraded ecosystems were evident. Bulk of wastes was drained directly and indirectly into the river (Bongcayao, et.al. 2015) and destructive activities were operating in the area (Calderon, et.al. 2012). Thus, this study was conducted to assess the policies implemented for the protection of LayawanRiver and the awareness of the community on these policies. Results of this study would significantly help stakeholders to enhance efforts for the protection and conservation of the resources within the river system.

METHODS

Data gathering employed household interviews through survey questionnaires, key informant interviews and focused group discussions. Available secondary data were obtained from the City Planning and Development Office, City Environment and Natural Resources Office, Barangay Profile and from other reliable sources to identifythe number of policies and conservation efforts being implemented inLayawanRiver. Purposive sampling was carried out wherein representatives from various stakeholders were chosen as respondents in the survey.Respondents included representative from upland, midland and lowland areas of the river. Likewise,barangay officials whose residence were besides the Layawan River, selected residents who are knowledgeable about the river, local government unit particularly the environment officer and the indigenous people (Subanen) were also interviewed.

RESULTS AND DISCUSSION

A number of laws and policies were enacted for the protection of the water resources of the Philippines which was thoroughly discussed in Green Peace (2007).Laws pertaining to water use and managementand water quality control are described below (Table 1).

Table 1. Laws and policies pertaining water use and management and quality control (Green Peace, 2007).

Laws	Description
Republic Act No. 8041, National Water Crisis Act of 1995	• Addresses the issues of water supply, privatization of state-run water facilities, protection and conservation of watersheds and the waste and pilferage of water
Republic Act No. 198, Creation of Provincial Water Utilities (1973)	• Authorizes the creation of local water districts to operate and administer water supply and wastewater disposal systems in the provincial areas

Presidential Decree No. 1586, Environmental Impact Statement System (1978)	• Mandates the conduct of environmental impact assessment studies for all investments undertaken by the government and private sector
Presidential Decree No. 424	• Creation of the National Water Resource Council
Republic Act No. 7160, Local Government Code	• Devolves enforcement of laws on sanitation to LGUs and the provision of basic services such as water supply, sanitation and flood control
R.A. No. 9275, Clean Water Act (2004)	• Provides for a program and regulations for the abatement and management of water pollution from point and non-point sources • Introduces market-based instruments (MBIs) such as the wastewater charge system that imposes fees based on the volume of effluents discharged • Strengthens enforcement by providing stiffer penalties for violations of standards • The permitting system has been modified to accommodate the fee system based on amount of pollution discharged
Commonwealth Act 383, Anti-Dumping Law (1938)	• Prohibits dumping of refuse, waste matter or other
Presidential Decree 984, Pollution Control Law (1976)	• Provides guidelines for the control of water pollution from industrial sources and sets penalties for violations, also requires all polluters to secure permits
Republic Act No. 9003, Ecological Solid Waste Management Act of 2000	• Calls for the institutionalization of a national program that will manage the transfer, transport, processing, and disposal of solid waste in the country • Sec. 40 sets the criteria for siting landfills to ensure that their operation do not affect aquifers, groundwater reservoirs or watersheds.
Republic Act 6969, Toxic Substances & Hazardous & Nuclear Wastes Control Act	• Mandates the control and management of the import, manufacturing, processing, distribution, use, transport, storage, treatment, and disposal of toxic substances and hazardous and nuclear wastes
DENR Administrative Order No. 90-34, Revised Water Usage and Classification / Water Quality Criteria	• Section 68 defines classification of water bodies according to their best usage; • Section 69 identifies the different parameters and criteria for water quality required for each type of classification
DENR Administrative Order No. 90-35, Revised Effluent Regulations of 1990	• Prescribes the standards for discharge of effluents to the different classifications of water bodies
DENR Administrative Order No. 94-26A, Philippine National Standards for Drinking Water	• Provides the different parameters and value for drinking water quality • Defines guidelines for assessing water quality for drinking water
Presidential Decree No. 856, Sanitation Code of the Philippines	• Covers solid and liquid waste disposal • Prescribes standards for sewage collection and refuse and excreta disposal

	• Assigns to cities and municipalities the responsibilities to provide for efficient and proper disposal, and to handle nuisance and offensive trades and occupations
DENR Administrative Order No. 97-39, Chemical Control Order for Mercury and Mercury Compounds	• Regulates the importation, manufacture, distribution and use of mercury and mercury compounds and the storage, transport, and disposal of their wastes
DENR Administrative Order No. 2000-18, Chemical Control Order for Cyanide and Cyanide Compounds	• Identifies requirements and procedures pertaining to the importation, manufacture, distribution, and use of cyanide and cyanide compounds and the storage, transport and disposal of their wastes
DENR Administrative Order No. 98-58, Priority Chemical List	• Identifies existing and new chemicals that the DENR has determined to potentially pose unreasonable risk to public health, workplace, and the environment. • Requires all manufacturers, distributors, users, and importers of chemicals included in the PCL to submit bi-annual reports

These policies and laws provide regulations of the activities affecting the integrity of the water resource, and mandates as conservativeeffortsfor sustainability of the resources.These were also implemented together with the ratified policies and laws for the sustainable use and protection of the forest and the watershed by the Local Government unit in Oroquieta City to protect LayawanRiver and its watershed. When LayawanRiver was declared as the greenest and cleanest rivers in the Philippines, respondents pointed out that no policies and local ordinances were implemented during that time. The presence of the Subanen people (known as the river dwellers), people living near the river who are very dependent on the services of the river and its riparian areas for survival, had maintained the integrity of the river and its watershed for a long period of time. Thus during the survey, they expressed that they no longer need numerous number of laws to push them to protect the river because they considered the river as sacred and their source of life. The river is their place for bathing, washing of clothes, source of water and source of food thus protection of the river is a must for them. Domestic effluents are generated from activities such as bathing, laundry, cleaning, cooking, washing, and other kitchen activities contains a large amount of organic waste with suspended solids and coliforms (PEM 2003 cited in Green Peace 2007). Moreover, though results of Gorospe-Villarino, et.al (2006) study showed a healthy condition of the river, coliform counts in the river were seen to be high signifying a contamination in river. Thus increased settlers would imply high domestic effluents thus contaminating and polluting the river.Therefore regulations of the activities, like the swidden farming practiced by the Subanen community, are very crucial. Eighty percent of the Mt. Malindang Protected Area's population are Subanens or with Subanen lineage, but the proportion of immigrant settlers is increasing (Roxas and Visser, 2006).

The deteriorating condition of the river was primarily due to the increasing settlers along the river consequently putting a great pressure to the resource, conflict of interests and differed perspectives on the use of the river.Other problems discussed during the survey were timber poaching in the watershed, unsustainable farming system (slash and burn and farming in unsuitable areas), proliferation of resorts, extraction of sand and gravel and dumping of either liquid or solid wastes directly into the river.Based on PEM 2003 and EMB 2001-2005 Status Report, Domestic wastewater is one of the major point sources of pollution affecting the quality of the water resources (Green Peace, 2007) and study of Bongcayaoet. al. (2015) indicated that liquid wastes were significantly contributing water pollution to Layawan River system.Secondary data sources from the city/municipality revealed that Oroquieta does not have existing treatment plants; hence wastewater is discharged to the Layawanriver without appropriate treatment (Villarino-Gorospe, et. al. 2006).

The declaration of Mt. Malindang as a natural park limits the source of livelihood of the Subanen and the establishments of river resorts were seen by some as hindrance of their lives.Awareness on the laws was seen to be high but lack of alternative livelihooddrove them to do unsustainable activities to support their family and children's education, and the essence of the protection and conservation were not internalized and understood by some.

Rules and regulations of the activities identified by the respondents as the causes of the deterioration of the Layawanriver has been stipulated in the environmental laws mentioned above. Therefore, weak implementation of laws and lack of alternative livelihood are the main problems, causing to the deteriorating condition of the resource. These problems had already been identified by the previous studies wherein recommendations were given to solve these problems. However, over a decade, the same problems were still present in the area which signifiesinsufficient on the government'sactions towards protecting the resource. The strength of implementation might have not kept up with the growing population.Final Program Performance Report on Ecosystem Based Approach to Biodiversity Conservation in the Philippines by WorldFish, World Agroforestry Centre, and SEARCA 2013 identifiedgaps in policy that need to be addressed in order to create an enabling environment to help protect and conserveMt. Malindang Range Natural Park as protected area. The following gaps were identified: (1) National policies related to the management of the environment have not been translated into local ordinances. Despite the local government code of 1991 (RA 7160) stipulates that the LGUs have a prominent role in managing the natural resources within their jurisdiction. Specifically, there are no local policies supporting the implementation of the following: R.A. 9304 (establishing Mt. Malindang Range Natural Park as protected area), and R.A. 7586 (NIPAS act) R.A. 8371 (IPRA), E.O. 26 (National Greening Program), Cave Act (R.A. 9072), E.O. 263 (Community-based Forest Management).(2) Budget allocation for the environment is either low or absent at the level of the LGU. Protection of Mt. Malindang would denote protection of the major rivers draining from the mountain.Due to the rapid degradation of watersheds in the past, watershed management policies have been mainly regulatory rather than developmental. With the renewed recognition given to watershed management in recent years particularly in relation to water crisis, climate change and sustainable development, it is high time to reexamine these policies in the light of current issues and concerns confronting watershed management in the country (Javier, 1999).

CONCLUSIONS AND RECOMMENDATION

Protection of the Subanen community of LayawanRiver had conserved the integrity of the river. However, increasing settlers of non-native communities, weak implementation of laws and lack of alternative livelihood slowly degrading the LayawanRiver thus, the following are highly recommended:

- The Subanen traditional leaders living within the vicinity of Layawan River together with the different stakeholders in the area should formulate policies thereby regulating the utilization of resources emanating from Layawan River.
- The traditional leaders of the tribe should strictly implement the regulation of the entry of the migrant settlers in the area.
- The Subanen tribal leaders must strictly enforce its customary laws in preserving and protecting the Layawan River, particularly the enforcement of some important provisions cited by virtue of RA 8371 or the Indigenous peoples Rights Act of 1997 and other environmental laws;
- The local government units must also initiate its efforts through convergence mechanism with the different stakeholders for the formulation of local policies/ ordinances for Layawan River protection and preservation program.
- The concerned national and local government agencies must strongly monitor and implements all environmental laws and the filing of appropriate charges either criminal or administrative to any persons, corporations, institutions violating such laws.

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