

Integrated river mgt ‘a must’ for sustainable devt

By **Jonathan L. Mayuga**

MARCH 5, 2017



In Photo: A fisherman tends to his fish cage in Abra River in Barangay Guinabang, Santiago, Ilocos Sur.

First of Two Parts

The government is pushing for integrated river management and development of the country’s major rivers to protect the country’s freshwater resources, and develop the country’s economic potential vis-à-vis the challenge posed by human pressure and changing climate.

In 2012 the Department of Environment and Natural Resources (DENR), through the River Basin Control Office (RBCO), developed master plans for each of the 18 major river basins in the country, including the Abra River Basin.

The lead government agency for the integrated planning, management, rehabilitation and development of the country's river basin, RBCO commissioned Berkman International Inc. to conduct a comprehensive study and craft the Integrated River Basin Management and Development Master Plan for the Abra River Basin.

Berkman completed the master plan for the Abra River Basin in 2014, highlighting the importance of implementing an integrated river-management plan to ensure sustainable development within the river basin. It took into account the existing conditions, various land and water uses, and potential impacts of present and future human activities and impacts of climate change.

Food, water source

Encompassing a total area of 4,923 square kilometers, covering the provinces of Benguet, Abra, Ilocos Sur and Mountain Province, the Abra River Basin is one of the country's major sources of food and water in Luzon.

According to RBCO, the Abra Watershed provides a life-support system within the river-basin region's 519 barangays in 52 provinces. Around 78.41 percent of land within the river-basin is classified as forest land, while the remaining 21.59 percent are alienable and disposable land.

The country's sixth-largest river in terms of watershed size, the Abra River has a length of 178 km from its source in the vicinity of Mount Data in Benguet province.

Around 20,320 hectares of land within the Abra River Basin are rice paddies, while another 5,119 hectares are dedicated for corn production.

A vast tract of land covering a total of 1,981 hectares are planted to vegetable during the wet season and 847 hectares are dedicated to root crops.

Diversified ecosystem

The Abra River Basin is home to a diverse species of fish and other fish species, and is key to the survival of a diverse plant and animal wildlife that thrive within the forests.

Some of the animal species that thrive within the river basin are carpa, milkfish, crabs, damselflies, diving beetle, dragonflies, eel, fish-flies, frogs, goby, leech, may-flies, shrimp, stone-flies, tilapia, turtle and water scavenger.

Species of trees that thrive in the area

include *abutra*, *agakong*, *agoho*, *bagras*, *bangkal*, *bayog*, *bignai*, *gmelina*, *yena me*, *isis* and *pitogo*.

Within the river basin are the four protected areas of Mount Data National Park, Tirad Pass National Park, Bessang Pass Natural Monument and the Northern Luzon Heroes Hill National Park.

These protected areas are vastly unexplored.

Experts have recently come up with a report about unique species of rodents—cloud rats—that are endemic to particular rats atop the mountain, despite the decades of abuse in the area.

Environmental degradation

According to RCBO, the Abra River Basin is “a biodiversified ecosystem with water quality once capable of supporting diverse aquatic species, which served as life sources for communities along the river’s routes”.

Mining, human pressure brought about by population growth, urbanization and technology advancement contributed to the pollution of the river, “upsetting the ecological balance within the river system and its surroundings”.

It added that the deforestation of the pine forests upland—owing to slash-and-burn farming method or cultivation system, logging of timber for fuel, housing, furniture-making and tunnel shoring in mining areas—had caused soil erosion and river siltation.

In addition, chemical pesticides, herbicides and fertilizers used by farmers might have aggravated the poisoning of the river.

A study said, “The array of human activities overloaded the amount of materials and changed the nature of contaminants entering into the river, thus impairing its natural mechanism for self-purification.”

“The assimilating and sustaining capacity of the river today shows signs of stressful conditions,” it said.

Biodiversity conservation

Director Theresa Mundita S. Lim of the Biodiversity Management Bureau (BMB) of the Department of Environment and natural Resources (DENR) said it is important to protect the Abra River Basin.

“If you protect the river basin itself as a source of water and food, you are protecting the ecosystem that is important to the survival of the species in those parks,” Lim said.

She said any development plan in the area should integrate and take into consideration the protected areas.

Lim noted the Mount Data National Park is home to unique species of cloud rats, which is on Mount Data. On the other hand, the Tirad Pass National Park, she said, is known as staging and nesting ground of assorted bird species, including migratory birds. Protecting these areas, Lim said, will help stop biodiversity loss of tree and plant species, as well.

Water uses

Citing records from the National Water Resources Board (NWRB), agriculture is the most dominant water-related sector in Abra province.

Out of 130 NWRB-registered water users, only seven are for domestic, one for industrial and one for power. The total potential irrigable area in Abra is 25,665 hectares, or only about 6 percent of its 397,555 hectares of land area. According to the NWRB, as of the end of 2012, approximately 16,297 hectares, or 63 percent, of the potential irrigable area have already been developed for irrigation. In total, 343 are registered water users in the basin, with 129 located in Abra province and 84, 86 and 44 in Benguet, Mountain province and Ilocos Sur, respectively.

Of the 343 water users, 47, or 14 percent, are intended for domestic supply, 3 percent for power and 3 percent for industrial purposes.

Eighty percent of water use is intended for irrigation. Most of the power users are in the upper watershed areas in the provinces of Benguet and Mountain provinces, while Ilocos Sur has the most number of users for domestic purposes.

Renewable energy

THE Abra River is a potential source of renewable energy, as well. Citing previous studies conducted by National Power Corp. (NPC), National Electrification Administration (NEA) and other agencies, the Master Plan for Abra River Basin said approximately 220 hydropower potential sites are in Luzon, and 17 of these sites are in Abra.

The total power potential of Abra province is estimated to be 465 megawatts.

NPC and NEA studies on the potential of a hydropower project for Abra River indicate a comparable assessment of the alternative schemes that are prioritized according to an economic indicator, in most cases the benefit and their corresponding generation cost.

For large hydropower project, the site is in the Binongan River, a river named after a barangay in the municipality of Tineg, Abra province, Barangay Supo in the municipality of Luba and in the municipality of Bakun in the Benguet province.

Threatened water resources

According to the master plan, the coastal resources in the Abra River Basin are limited to those found in the coastlines of Caoayan, Santa and Vigan City of Ilocos Sur.

Inland aquatic resources, on the other hand, are those found along the Tineg River and Abra River.

The sustainable use of inland and coastal resources in the Abra River Basin is severely affected by pollution caused by mine tailings, indiscriminate dumping of household waste in the river or its banks, overfishing and use of small-sized nets.

As coastal areas are also tapped as tourism and possible industrial areas, the planners of the master plan for the river basin warned against more intensive development that will ultimately destroy the marine habitat and productivity at coastal areas, “if proper protection measures and coastal management” are not observed in the affected areas. The planners also said brackish and freshwater wetlands scattered around the province must be preserved to maintain a well-balanced productive aquamarine ecology.

However, due to urbanization and intensified industrialization, these areas are converted to other land uses and are being polluted from natural and man-made sources.

It was observed that fishing activities along the rivers are constrained by pollution owing to mine tailings, and industrial and tourism development in some portion of protected areas.

Like in other areas, the cropping activities and settlements along buffer zones are blamed for the pollution in the rivers, apparently, because of laxity in implementing environmental laws and regulations, ignorance and poverty, and absence of land-use plans of local government units. *To be concluded*

Image Credits: **Mau Victa**

<http://www.businessmirror.com.ph/integrated-river-mgt-a-must-for-sustainable-devt/>

Abra River Basin: Integrated river management ‘a must’ for sustainable development

By **Jonathan L. Mayuga** | Business Mirror


MARCH 12, 2017

Conclusion

Water-resource management To prevent the further deterioration of the Abra River and the potential water-supply shortage in the future, the master plan came up with recommendations underscoring economic value in all its uses—promoting coordinated development and management of water, land and related resources within the Abra River Basin—without compromising the sustainability of vital ecosystems.

Major projects include the expansion of total irrigated area to cover 10,000 of potential irrigable area, identification of 200 units of Small Water Impounding Projects and Small Farm Reservoir, and hydropower development, mapping and feasibility studies of groundwater utilization for domestic and industrial use, agricultural intensification, diversification and extension.

To mitigate the extent of flooding and its damages to agriculture and infrastructure and to optimize water-resources development, the government needs at least P6.67 billion to implement various projects spread in a span of 15 years.



Structural measures include construction of multipurpose dams, riverbank protection, irrigation projects, hydropower development and other infrastructure that would cost P5.97 billion, while nonstructural measures, such as feasibility studies, institutional development, research development and extension, advocacy and public awareness campaign would require around P700 million.

Watershed management

The master plan also recommended to follow traditional and nontraditional forest-rehabilitation strategies, including reforestation, assisted natural regeneration, agroforestry, forest plantation and, if feasible, industrial tree plantations anchored on the National Greening Program (NGP).



Current policy and strategy in implementing the NGP is anchored on community-based forest management to ensure ownership of the projects and involvement of various stakeholders.

The proposed watershed and environment programs and projects include NGP, Protection of Remaining Forest Stands, Private Sector Participation in Industrial Tree Plantations, Piloting the Philippine National Reducing Emissions from Deforestation and Forest Degradation plus Strategy, Introduction of Renewable Energy Systems, Rewarding the Upland Poor for Environmental Services and various livelihood projects for upland communities.

The planners also recommended the conduct of research and feasibility studies of Basin Sediment Transport Modeling, Soil Erosion Modeling, Research and Development on Soil and Water Management, Biodiversity and Water Quality Monitoring.

These 15-year activities need a budget of P805 million.

Climate change, reduction of disaster risk

To address the impact of climate change and reduce the risk of disaster, proposed intervention includes structural and nonstructural programs and projects, including setting up of green infrastructure, facilities and equipment to directly regulate climate change-related hazards, such as typhoons, floods, landslides and erosion, and drought.

Structural programs or projects, which include construction of new and rehabilitation of old flood-control and slope-protection structures, setting up of automatic weather stations and search and rescue and evacuation facilities, will cost around P6.21 billion.

On the other hand, nonstructural programs and projects, which would cost around P760 million, include the establishment of science and technology-based technologies, information and decision-support systems to avoid the adverse effects of climate-change hazards and risks.

These include establishment of early warning systems; information, education and communication on cropping calendars; drought-tolerant crops and forest species; tropical fruits and bamboo for windbreaks; vegetative intervention for erosion control; water-harvesting technologies; and geohazard mapping to be integrated into the comprehensive land-use plans (CLUPs).

Poor implementation

According to Donna M. Gordove, deputy executive director of the Department of Environment and Natural Resources-River Basin Control Office (DENR-RBCO), the master plans for the 18 major rivers remain unimplemented. On a scale of 0 to 10, she said the implementation is only about 2.

Gordove said the master plan for the 18 major rivers is already integrated in the various programs, such as the NGP.

Gordove added out of the 14 completed master plans, 11 have already been approved by the Regional Development Councils (RDCs). But the master plans for Abra River Basin and the Apayao-Abulog and Ilog-Silabangan, remain to be approved by their respective RDC.

She admitted big infrastructure projects are not implemented because “[they] should be adopted by the Neda [National Economic and Development Authority] for inclusion in the Philippine Development Plans and funding,” Gordove said. Small projects, like irrigation and water impounding, integrate the recommendations in the master plans, she said.

Promotion

“We do advocacy work among concerned government agencies. Through the River Basin Organization (RBO), there has to be a consensus for its implementation,” she said. RBOs are composed of representatives from various stakeholders, including concerned national government agencies, LGUs, community-based groups, academe and faith-based groups.

“We cannot enforce or dictate the adoption or implementation of the master plans. That is why we are pushing for the creation of [RBOs] to lobby for its adoption and implementation,” Gordove said.

Gordove said only through an act of Congress or a presidential decree that master plans can be enforced by the DENR-RBCO or any agency tasked to implement them. Gordove said RBO members also talk how to strengthen the master plans, citing the Central Cebu River Basin Management Council, which “drafted an executive order and asked Presidential Assistant for Visayas Secretary [Michael] Dino for endorsement.” There were also efforts to consult congressmen, who had filed bills in the House of Representatives, she said.

Gordove said the best way for the master plans to be integrated is through the LGUs.

“By integrating some of these plans in the [CLUPs] and development agenda, there is hope that the master plans will be implemented because infrastructure projects recommended in them entail huge costs unlike bioengineering proposals,” she said.

For the Abra River Basin, the master planners recommended the creation of a multistakeholder council called the Abra River Basin Management Council. It shall serve as an apex body that will advocate and serve as guardian, planner, development facilitator and coordinator for the implementation of various programs and projects to sustain growth and development through the integrated river-basin management approach.

According to Gordove, the adoption of the master plans will not only ensure the protection and conservation of the country’s ecosystem and watersheds, but will also spur economic activities that will boost and ensure sustainable growth and development in various parts of the country.

<http://www.businessmirror.com.ph/abra-river-basin-integrated-river-management-a-must-for-sustainable-development/>