

WATER MANAGEMENT AND CLIMATE CHANGE

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When I was in the elementary grades, our notebooks were emblazoned with the words “Knowledge is Power.” Simply I understood, then, that being a well informed individual, through the educational process, one obtains the power to perform responsible tasks or to lead others. Now, what puzzles me is that in spite of all information presently available, people are seemingly still powerless to act upon the serious threat of climate change to our water security. In spite that we say, **Water is life!** Truly, without adequate water necessary for human and animal life, agriculture, industry and the ecosystems, we will cease to exist.

In their August 12, 2010 syndicated commentary on scarcity of drinking water, Vinod Thomas and Ronald Parker, consultants of World Bank wrote: “The task of providing decent water where needed is becoming increasingly difficult all across the world. Countries have in recent decades been making investments in infrastructure designed to alleviate water shortages. But the response has for the most part overlooked the problem posed by the deteriorating state of aquatic resources. If, the growing water crisis is to be effectively addressed, actions will need to link water use with environmental care.”

Added to that vexing problem is the fact, that water is the primary medium which climate change has impact, on people, ecosystems and economies. Then, we have a compounded challenge to maintain a sustainable existence. Water is both the key part of the problem and yet an import part of the solution. “So water resources must be managed, and water used, in a manner that reflects water’s variability, uncertainty, scarcity and abundance. That management has to reflect the interconnectedness between its users at different scales locally, regionally and globally.”

To really comprehend this conundrum, the full understanding of the water cycle is very crucial. Many would claim that they know the water cycle. Yes, but, perhaps for most, only through diagrams, not the intimate awareness of its natural mechanics, how a slight twitch in the precarious balance of the elements in the cycle can affect all life on earth.

Global warming is with us and its consequent climate changes are increasingly evident the world over. The effects of climate change are multifarious, depending on many regional and situation variables. What local common effects of climate changes occurring, these we have to prioritize since we cannot provide a blanket response for all.

Actually, two alternatives are open to us. First, is the mitigation of greenhouse gas emissions to help reduce the effects of global warming. This is not likely an immediate concern for us. The carbon footprint of the Philippines is minimal. But, this is not to say, that we should not contribute to its mitigation. Our concern should focus more on adaptation to climate change, particularly, on how it impacts on water and its resources. As an archipelagic country, we are very vulnerable to the vagaries of weather patterns causing in an unexpected places and time, either, more rainfall or drought, scarcity of water necessary for health and productive life, as well as, for the needs of agriculture, industry and ecological biodiversity. Identifying priorities to abate water vulnerabilities in local situations is crucial, for planning and implementing adequate adaptation measures.

In their commentary on scarcity of drinking water, Thomas and Parker continue, “Even with priorities known, it has been difficult to translate them into action. When the key players sit down to bargain about allocation of water, the environment gets short shrift. Seldom is the support for rescuing a falling aquifer if water can still be extracted, or for restoring the protective wetlands, or for keeping enough water flowing through a river so that wildlife can survive and saline intrusion is prevented.”

It is important to have a holistic view about managing water. The integrated water resources management (IWRM) concept, an approach to water management, can provide guidance and directions for action. In its practical scope it covers all types of inter-related freshwater bodies both surface and ground water; consider all aspects of water quantity and quality, multi-sector participative water resources development in relation to multi-interest utilization of water resources – health and sanitation, agriculture, industry, urban development, hydropower, inland fisheries, transportation, recreation and environmental needs.

The attributes that favour IWRM approach in water management are: First, it integrates the activities of a range of sectors that use, impact, or impacted by water, thus, ensuring the activities in one sector, do not undermine those of another. Second, it recognizes that effective institutions will be needed to manage the trade-offs between different activities and interests.

The on-ground strategic approach to water management is through the “river basin” concept, not essentially different from the “watershed” or “catchment” approaches, terms used earlier referring to a unit area for managing water. The “river basin” approach appears to be more picturesque. A river basin, as watershed or catchment, can be small as a local stream, or can be extremely large as the Amazon or the Mekong, is conceived as more than the body of flowing water that people usually see. It is an entire system that includes all the tributaries – mountain

springs, upland and inland creeks, brooks and streams – that feed water into the main body of the river all the way to the lower wetlands, deltas and coastlands.

The flow, besides coming from springs, also depends on rainwater that trickles from the slopes of the mountains and collects in the gullies below, into the tributaries. Thus, to maintain freshwater biodiversity, as a living river should have, it is necessary to manage the physical processes in rivers properly. The condition of the flow of the riparian land, and the health of its vegetation and forest cover, has critical influence on those processes function. The flow is the key to manage appropriately the river basin, for it plays the important role in shaping the river ecosystem. In recent parlance, this view of water management is termed the “ridge to reef” approach.

With the view to climate change adaptation, the focus could be on doable immediate interventions following the river basin approach. Accordingly, we have first to rehabilitate degraded riparian lands by proper reforestation and greening. Riparian lands are – “any land which adjoins, directly influences, or is influenced by a body of water.” It must be noted that “there is no single law of nature that defines the width of the riparian land or, of buffer strips within riparian land as these are largely management decisions.” In the country, the DENR has regulations on this matter with regards to upland, midstream, and downriver riparian land.

Second is reforestation, yet this must be done not just anywhere, but on slopes that have been degraded to minimize soil erosion and, above all, around the large perimeter of upland riparian land of springs, creeks, and brooks to prevent soil erosion streaming to assure clear water flow. It is also very important for upland farmers to strictly implement the technology of agro-forestry and contribute to the maintenance of riparian land.

And third, installing gabions along tributaries with flash flood flow; construction of water impounding system in certain areas to which large volume of river flow can be temporarily diverted, stored, and used during ensuing dry spells. Of course, with careful planning large dams with storage capacity e.g. of 200 days responding to the length of the dry season can be constructed. Yet, this should be done without prejudice to the primal purpose of maintaining, as best as possible, the characteristic flow actually needed for the ecological health of the waterway.

The objective of all that, is adapting to the local effects of climate change with such measures as restoring or maintaining a healthy river basin system assuring the quantity and quality of water needed for all interests and uses through integrated water resources management.

Examples of interventions according to the River Basin concept which the Cebu Uniting for Sustainable Water (CUSW) has been undertaking in the past 10 years:

➤ **Institutionalizing the Cebu City Rivers Revitalizing Council –**

Since 2002, CUSW has been urging the Cebu City government to institutionalize with adequate fund support what has remained just an ordinance to create a Cebu City Rivers Council. Cebu's five main rivers, the Guadalupe River being the larger system, are practically "dead". They are highly polluted with all manner of effluents and solids – oil, chemicals, human waste, garbage, plus presence of squatters.

Through the years many efforts of river clean up have been undertaken by civic groups, together with student volunteers, and some barangay residents. By experience, we know that for the most part, this exercise is only good for picture ops.

We hope that with the present LGU leadership, we can really have an institutionalized mechanism to undertake and supervise e.g. the compliance of the need for a viable riparian land protected and conserved. At the uplands, from the bank of the waterway this shall be 40 meters, twenty meters, wide depending on the situation of the area. Within the inner-city, this means the strict implementation of the 3-meter easement from river banks, which unfortunately is grossly violated all over. That is only one, there are many more like clearing the rivers of solid waste and polluted waste water effluents, etc.

Of course, the main concern is how flooding can be abated. This, however, needs really the concerted efforts from all groups of citizens to engage in synergistic cooperative action.

➤ **Buhisan Watershed and Dam Rehabilitation –**

A consortium consisting of PBSP, MEPZA locators, PEZA - Mactan, Business Environment Cluster, CUSW and MCWD work on this project to revitalize the Buhisan water resource area.

The Buhisan watershed has an area of about 620 hectares. It supports the surface water flow to the dam built around 1911 by American engineers to supply safe water to Cebu City to forestall the threat a cholera epidemic. It's now part of the MCWD surface water source. It has an original supply capacity of 10,000 cm per day. Through the years, due to the lack of consistent protection and conservation of the watershed, the nine hectare impounding pond has narrowed down to about two hectares during regular summer because of heavy siltation. Now, it can sustain to supply only about 2,000 cm per day during wet season. The increasing soil erosion from the slopes lacking adequate forest cover, aggravated through tree poaching by charcoal makers, need immediate attention. Moreover, certain spots were reforested mono-

culturally with exotic tree species. These did not favour lush undergrowth which should help prevent rapid soil erosion. A component of community organizing and plan for alternative livelihood to charcoal makers living around are part of the program to achieved environmental sustainability the protected area.

➤ Sustainability Forum's Project on Mananga River Basin -

The **Sustainability Forum** is a recent regrouping in Cebu of development NGOs, private sector and environmentalist organizations, including Churches' related groups.

Two major groups have been formed, one for South Cebu and another for Central Cebu. The Central Cebu group choose to focus initially on the Mananga River Basin, one of the three principal branches of the river systems constituting the Central Cebu Protected Landscape – the Lusaran, Kotkot, and Mananga river basins.

In general the **Sustainability Forum** cluster which will focus on the Mananga River Basin will endeavour to undertake the following:

- Encourage river basin system-wide partnership for planning, management and operation between government, non-government organizations, the private sector and civil society;
- Develop local framework for water management for local application in institutional and legal frameworks allowing the participation of civil society in decision-making;
- Protect the key eco-systems, such as upper watershed forests, wetlands and coastal zones that are critical to maintain water quantity and quality;
- Implement environmental flow of the river basin where a specific amount of water is allocated to ensure ecosystem functions, such as flood prevention, maintenance of living organisms and water purification;
- Implement action plans in the river system to prevent and treat pollution from agriculture, industry, and cities;
- Get clear commitment from all stakeholders – government and civil society – in making water management sustainable.

Conclusion – In adapting to climate change through water management: *“There are really only three types of people: those who make things happen, those who watch things happen, and those who say, ‘What happened?’”* – Ann Landers

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