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Why Watershed-Based Water Management Makes Sense

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The issue

The alarming increase in the scarcity of water in various parts of the world has focused global attention on the need for a stronger and more appropriate water resource management solution.

With about 166 million people in 18 countries suffering from water scarcity and about 270 million in 11 countries having "water stresses" conditions (World Bank 2002), it becomes imperative for nations to come up with more focused and direct measures that would address and stem this resource scarcity.

In this regard, how is the water situation, in particular,

in the Philippines currently being addressed? Is it enough? What possible other solution(s) may be adopted?

This *Policy Notes* looks into these concerns and presents a more encompassing approach to address them, i.e., through the adoption of a watershed-based water management approach.

The Philippine water situation: how it is currently being addressed

The current state of water resources in the Philippines and their growing scarcity against a rapidly rising population are causes for much concern among development planners and policymakers. The situation is not expected to improve either unless efforts—both on the demand and supply sides of management—to really attend to it squarely are exerted.

Not that nothing has been or is being done. But it seems that it is not enough.

On the demand side, for instance, not much attention has been given to possible solutions such as the consideration of a pricing policy or scheme that reflects the opportunity costs of the competing uses of water and, more re-

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cently, the environmental costs of resource extraction and consumption.

The imposition of a correct water price is expected to send correct signals/incentives that would alter consumer's behavior towards the consumption and extraction of water. It would, however, mean that prices of water might have to increase from its current subsidized level. Expectedly, of course, this may lead to strong resistance since water is viewed more as a social rather than an economic good.

Water is also viewed as a free good—having come from nature and perceived to be free for everybody to extract—or a public/open-access good. This characteristic makes it difficult to define property rights over water resources. As such, the solution calls for a clear allocation of water use rights to competing uses and user groups, which may be transferable and fully enforced and protected by law.

Meanwhile, on the supply side, efforts have always been focused on engineering solutions to improve access to water, largely in terms of investment in water infrastructures. This kind of solution implicitly assumes that the supply of water is limitless and all that is necessary is to make it more accessible to users. This assumption, however, has long been challenged since many of the natural resource systems that support water supply have already been degraded while others remain under serious threat. There is now a growing recognition that the infrastructure that provides water supply for whatever uses must be supplemented by efforts to repair and/or protect the ecosystems that support said infrastructure.

And yet, the efforts to manage the water resources and their ecosystems and watersheds are considered weak on account of the presence of several agencies dealing with water resources, water quality, watershed resources, irrigation, energy/hydropower, domestic water supply and other water-related concerns. Since these agencies belong to different executive departments, the coordination of activities on issues that affect one another is not easy. And while an interagency partnership (the Presidential Task Force on Water) was created to come up with a consolidated action, said body was not given sufficient resources and mandate

for it to make a difference. Furthermore, the Task Force was created at the national level and so, it is not surprising that the discussions have remained at the policy level. The implementation aspect where it matters most was not realized. *What could have made more sense was to translate such an interagency collaboration at the level where concrete actions can be carried out. To this end, the logical planning unit is at the watershed level.*

Watershed as the planning unit for water management

But what exactly constitutes a watershed? How is it defined? And why is it critical to use it as the planning unit?

A watershed, also termed as catchment, refers to an area that supplies water by surface or subsurface flow to a given drainage system, be it a stream, river or lake. The watershed is thus viewed both as a water supply and distribution system, with finite water resources made available to various users (for primary production, domestic and industrial consumption, transportation, or power generation).

Tesoro (1999), in his study, estimated the country's watershed resources to be 21 million hectares of land, representing 70 percent of the country's land area. Of the 21 million, 75 percent (15.88 hectares) are forestlands. The forest vegetation thus plays an important role in the capture, storage and transport of precipitation that falls in a watershed. Any alteration in these processes, by way of changes in land uses within the forestlands, will alter water quality wherein a reduction of the filtering process and increased runoff of water and sediment can occur (Waterlines 2001). Concerns for water quality therefore often translate to forest protection efforts.

But in addition to water, numerous forest products like timber, forage, fuel wood, agri-silvicultural crops, rattan, wildlife, and other minor forest/plant products may also be derived from the watersheds, making the area vulnerable to human encroachment. Thus, the forestland itself is continuously being transformed to agricultural lands and the unregulated removal of forest cover and land conversion bring about watershed degradation, a situation that is now considered as very severe and widespread in the Philippines.

The situation then leads to soil erosion. The latest data indicate that the total soil loss each year in the country is estimated to be 74.5 million tons (DENR 1992). Francisco (1996) estimates it to be even higher at 80.6 million tons. The eroded soil often end up as sediments that fill up important water reservoirs and water bodies, thereby causing water pollution.

Based on the above, a major justification therefore for undertaking land-based resource management and water resource development using the watershed approach is the ecological linkage between the upstream land uses and downstream water conditions. In particular, land use transformations in upstream areas have impacts on downstream communities, directly or indirectly, through the effects on productivity and other conditions of lowland ecosystems.

Taking the watershed as the planning unit will also make it possible for planners to analyze the various sources of stressors to the water quality problem observed in the water body where the watershed drains. With more information, planners can establish a hierarchy of pollution sources as well as identify the contributions of various land uses to water quality conditions.

At the same time, it is easier to identify the relevant stakeholders who have common concerns on the watershed situations. This would facilitate better coordination among the agencies and organizations involved. There is also room for data sharing and pooling of resources among the stakeholders bound by a common ecological goal and resource base given by the watershed.

Finally, it is better to implement and monitor various interventions like the restoration and protection of headwaters to improve water quality as well as economic instruments like water pricing, effluent discharge fee and others in a well-defined ecological unit such as the watershed.

In sum, the watershed approach is seen as necessary if water quality problems from all sources, especially anthropogenic activities, are to be addressed. The same approach is important in addressing land use degradation in the upper watersheds.

Making it work: elements of an effective watershed-based water management strategy

While the Department of Environment and Natural Resources (DENR) recognizes the need to adopt the watershed as the relevant planning unit for the country's forest resources, it has yet to fully adopt and institutionalize said approach.

In order to make this happen, there are a number of certain salient elements and/or factors that need to be considered and adopted.

* **Appropriate funding support.** Foremost is for the DENR to have a watershed management program with appropriate funding support from the national government. Unless this funding appropriation is made possible in order to boost capacity and capability at the DENR at all levels, such approach will not succeed.

* **Interagency collaboration.** Concern for water resources cuts across several agencies, thus calling for integrated actions and programs, particularly as they concern the sources of water and water quality conditions. One agency that should be equally concerned, along with the DENR, on the use of the watershed approach is the National Water Resources Board (NWRB). With NWRB's transfer to the DENR expected to happen in the near future, the two agencies' concerns on water quality can now be closely linked with watershed conditions in a more integrated fashion.

* **Strong LGU support and leadership.** The case of the Maasin watershed in Iloilo demonstrates that a number of forces is important in managing a watershed resource. Strong LGU support is the pivotal element to this reality. Such support was institutionalized in the Maasin case through provincial legislations, the creation of the Watershed Council and the Barangay Information Centers, all of which have been crucial in sustaining the efforts initiated, mostly with external funding, for watershed management in Maasin. The LGU support was further manifested through a resolution during the First National Conference on Watershed Management held in Davao City in 2001. This example provides an opening to push for this approach on a wider

scale since the LGUs now have an appreciation of the merits of watershed management planning.

* **Clearcut legislative action.** At the same time, there is need to have a legal basis similar to the Clean Water Act of the United States which explicitly mandates that water pollution be addressed with the watershed as the basic planning unit. This need, though recognized, is not explicit in the present Philippine Clean Water Act of 2001. What is needed is a stronger political commitment for the development of a more systematic approach of improving water resource management in the country just as it is currently being done in other countries like the US and some Latin American and Caribbean countries.

* **Sustained Information, Education and Communication (IEC) campaign.** The significance of IEC activities to increase the understanding and appreciation of the stakeholders on the importance of the watershed approach cannot be overemphasized. Only when the stakeholders themselves have a full appreciation of why this approach is important can a more sustained support to this be realized. An institution similar to the Watershed Academy in the US is one way of promoting this approach on a bigger scale and sustained basis. Through this kind of Academy, the LGUs, along with representatives from the various agencies and other stakeholders, can learn how to manage water and natural resources, with the watershed as the planning unit.

Admittedly, one needs to invest in substantial data collection and monitoring activities but the stakeholders' involvement, particularly the local communities', in the long run is the one that will ultimately make the system manageable. Information is particularly critical in establishing downstream-upstream linkages, especially in large watersheds. Assistance for gathering information, bringing parties together and enforcement is often necessary.

* **Revenue generation for watershed protection and management.** Finally, various ways to raise revenues to finance watershed protection and management activities must be explored. This is because national appropriation is not likely to sustain watershed management initiatives due to economic difficulties faced by many nations. The collection

of fees for the use of the environment is supported by the NIPAs Act for Protected Areas in the country and the LGC. However, a stronger law that establishes the rationale and basis of the collection of said fees for the use/extraction of watershed resources and that earmarks them for watershed management efforts is still needed. 

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