Catchment management

Market mechanisms to nudge better management of the world's watersheds

Management of the world's critically important watersheds is usually undertaken through state regulation, or through publicly funded initiatives. Much of the analysis of the effectiveness of watershed management is therefore done through a similar lens. But what about market mechanisms as a way to incentivise good watershed conservation, and repairing of damaged ones? Article by Leonie Joubert.

This was the question posed to resource economist, Prof Edwin Muchapondwa, based at the University of Cape Town's Environmental Policy Research Unit (EPRU), when he was commissioned by the United Nations Environment Programme (UNEP) to lead a global review of the subject. The take-home message of the report: market-based incentives are a good complement to existing approaches to drive watershed management, but will not replace regulation or public funding, and are not a 'panacea'.

"In our review of case studies from around the world, we found that market-based incentives are not a replacement for regulation," explains Prof Muchapondwa. "But we did find that regulation needs to apply to market incentives in order to make them complement the regulatory approach."

They can be an important way to make environmental management more efficient, and can also be a means to raise revenue to assist the state with various levels of implementation, which is critical for either regulatory or market incentives to work in the case of watershed management.

Healthy watersheds are recognised as being critical to the function and wellbeing of communities, societies, and industry. And yet, according to the UNEP report, water that is needed for human consumption, wildlife, industry and recreation are all impacted by activities that occur within the watershed.

Market-based activities – mining, agriculture and agro-forestry, and infrastructure development, for instance – are often drivers of the kind of environmental extraction that erodes these watersheds, the authors note. This is particularly true when the environmental costs are externalised from the pricing of those activities. In spite of this, there is not enough public funding set aside globally to ensure adequate investment in watershed management.

The consequences of degraded watersheds can undermine development agendas, on the other hand.

"(T)he share of water resources protection in the annual average government budget on national water investments during the period 2003 (to) 2011 for 13 pilot countries under the United Nations water country briefs initiative was just 4.5%," states the report, titled *Use of Market-based Incentives in Watershed Management: Driving the Green Economy through involving Communities & the Private Sector*.

Prof Muchapondwa was commissioned to lead the review process owing to his experience in the use of economic incentives, particularly in the arena of natural resources such as wildlife in southern Africa.

The report uses a series of case studies gathered from around the world, in order to draw lessons on the use of market mechanisms in watershed conservation.

"The kind of market mechanisms we looked at include using pricing, market transactions, or other mechanisms typically associated with markets, in the context of managing watersheds," explains Prof Muchapondwa. "We know already that market-based incentives can be used to signal the necessary types of land-use and watershed management practices. These incentives can be positive or negative; they can either provide rewards for 'desired practice', or impose costs for 'undesirable practice'."

The response to incentives can either be through the private sector responding to policy-altered market conditions, or through local and central governments introducing market-based policy instruments, which can be aligned to a state's long-term sustainability goals.

The study reviewed four South African case studies: Anglo American's efforts in eMalahleni, about 140km east of Johannesburg, where acid water from old mines is cleaned up to standards safe for human consumption; South African Breweries' contribution in tackling the availability of water to hop farms located in the Gouritz watershed near Mossed Bay; Sasol's support for sustainable watershed management in Emfuleni in Gauteng; and better water management by irrigation farmers in the Orange-Riet river canal.

"Alone, these case studies don't necessarily tell us much, which is why we don't go into the specifics of the cases in the report," notes Prof Muchapondwa, "but together with the other global cases, they tell a clear message."

Complementing regulation, not replacing it

The report finds that market-based incentives can work effectively to complement traditional government responses to governing watershed management, such as environmental regulations in the form of zoning, permits and quotas, bans, and setting standards. Used together, they can achieve greater conservation and environmental protection for these important parts of a country's water resource management.

In analysing cases from around the world, Prof Muchapondwa and his team found that the most effective use of market incentives were in situations where cases had well defined problems, well-defined rights and responsibilities associated with property arrangements, where there was single and controlled environmental degradation, or where the links between cause and effect were well-established. They can also work well when stakeholders have a shared sense of the value of ecosystem services.

Two key hurdles to the effectiveness of market incentives emerge in the review. In many cases, the benefits of good watershed management – such as flood control and water quality – are enjoyed as a common good by sectors of society that won't need to pay for the benefits. This could undermine the willingness of those who are required to pay for the measures.

A second problem is a situation where an externality, such as a pollution source, is not easily priced by the market without government regulation. "Landholders upstream can affect water quantity and water quality downstream through their decisions on land management practices," states the report, "but they have little incentive to consider those impacts because they are not directly affected."

In light of this, Prof Muchapondwa and his co-authors found that market mechanisms must be designed to compel free-riders to pay for these sorts of environmental damages, which could be funded by the state through a system of taxation.

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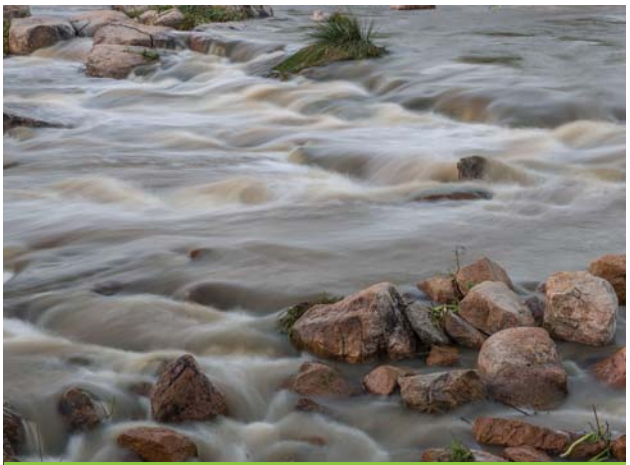

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