Flows
News on Payments for Watershed Services
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Review: Forests and Water: communicating complexity and shaping policy

Whether or not the absence of trees causes flooding or water shortages, is a question that persists perhaps because it produces overly generalized answers that fit easily into existing preconceptions. It also fits easily into policy frameworks and stories that paint the world in black and white. Depending on the latest scientific publication, newspaper headlines can proclaim trees to be a menace that is advancing the desert – or failing to regulate floods. But single scientific studies generally only address fragments of a larger puzzle, and few if any experts endorse the one-size-fits all approach that the media implies (Nambiar 2006).

These kinds of generalizations also support rigid land use policies, and conveniently eliminate nuances that can be better addressed with a more flexible place-based approach which is necessary to manage an ecosystem. The tremendous interest in payments for watershed services is driven in part by the popular appeal of this generalized model, in which the flow of water that links upstream practices to downstream consequences also provides scientific justification for a market-based approach to conservation. As an added benefit, payments for watershed services would also contribute to poverty alleviation in marginal upper watershed areas. In practice, there are often trade-offs between meeting these diverse objectives, and implementation is never as elegant as the model.

A set of ICRAF (2006) policy briefs that synthesize two decades of research in this field, assert that what matters is not the presence or absence of trees but the types of tree and where they are located. Also of importance, is what happens to land after forests are removed (Bruijnzeel, 2007). These factors all have implications for the amount of water trees consume, and the extent to which they control erosion. It is also important to keep in mind the pathways of water and sediment flow, some of which have created today's fertile land. Rivers may be muddy because of landslides, erosion of banks during peak flows, or sediment from roads and paths – rather than due to open fields.

Mosaics of mixed land use – combining forestry, agroforestry and upland cropping – are typical of traditional upper watershed systems and can support denser populations than forested areas. However, they generally don't fit into the discrete classifications found in land use policies, in which land is designated for either forested or agricultural use. As a result, farmers are often excluded from access to traditionally used land areas causing conflict with states.

Controversies about forest and water relationships are deeply rooted, going back at least as far as the late 1800s during the promotion of settlement to the arid American west. Following what had been a wet period, Ferdinand Hayden claimed that, if trees were planted across the Great Plains, "aridity would give way to well-watered fertility" and rain would follow the plow (Worster, 2001). Based on the results of an extensive survey, John Wesley Powell doubted these claims in his prophetic 1878 *Report on the Lands of the Arid Region of the United States* He had, however, observed an association between increased streamflow and upland deforestation, which became a justification for more centralized authority over land use and resource management (Worster 2001). Eventually this resulted in policies of state control over forests to assure the steady flow of water for irrigation and other downstream uses, and for efficient management of timber resources (Hays 1959). It also reinforced existing European land use policies rooted in the feudal period,

and became a model for colonial and exclusionary resource management and state ownership of forests elsewhere in the world (Fay and Michon, 2003).

Under this historical context, scientists can no longer play the role of disinterested bystanders. Instead, they need to engage interactively with the public and be aware of the potential uses of their findings in the policy arena. According to Jasanoff (2007), interactive engagement by scientists can help the public think critically about science and bring a healthy skepticism to its claims – instead of accepting it as an arbitrary set of well-established facts. As with climate change, greater public appreciation of the scientific process can help reduce manipulation of the facts in the policy arena, where science is often cited as justification for arbitrary or delayed decisions.

Given the inherent uncertainties of watershed processes – particularly in the context of highly diverse upland environments, participatory processes are essential for assessing the science and establishing policy-relevant facts. Place-based assessments can also support more nuanced messages that enable mutual learning and more flexible approaches to management. As a more interactive approach to communication, this mutual learning can help broaden the frame of reference for decision-making and enable consideration of trade-offs between the various kinds of ecosystem services and the multiple ways they support human well-being.

Note: in the spirit of interactive communication recommended above, Flows can now also be accessed on the Flows blog, where you can directly enter comments.

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