



Supported by the International Institute for Environment and Development (IIED)
and the World Bank, Bank-Netherlands Watershed Partnership Program

Review: *Identifying watershed services: “Pay your money, take your chances”*

In theory, healthy watersheds provide valuable services, by filtering pollutants and regulating the flow of water and sediment. In practice, it is very difficult to identify and quantify the benefits they actually provide to real people in real places. Defining watershed services is not simply a question of more and better science so we can “get the prices right.” Whenever there are competing demands for a limited resource, it will soon be degraded or depleted in the absence of a set of rules that are both accepted and enforced. Given that rules have a cost, their mere existence may indicate that people value a resource and believe that a service is being provided.

Establishing payment arrangements for watershed services is essentially a process of designing new rules of interaction between farmers and users of the services. The case of payments made by New York City to upstream landowners to cover conservation costs is well known because it enabled the city to avoid the much higher cost of building a filtration plant - at least for now. But the payments also signal a fundamental change in the rules of the game for managing water resources, as limits are reached to increasing the supply of water simply by obtaining it from cleaner and more distant sources, and as control of land uses on individual plots was found to be ineffective.

The negotiation process that led to the 1998 New York City watershed agreement began in 1990, in response to conflict with upstate communities over proposed new land use restrictions intended to protect the New York City water supply. Key to the acceptance of new upstream land use restrictions was not only a payment arrangement, but a concession by the city that it would only acquire land from willing sellers at fair market values. In effect, this increased the rights of upstream landowners, thereby making it possible for them to negotiate a more equitable exchange.

A separate agreement was also reached with farmers, that their participation in the development of farm management plans and adoption of their specified conservation practices would be voluntary, and that the program would be managed by the farmers themselves. All regulations were suspended except for one that restricts willful pollution. However, this agreement was conditional upon participation of 85% of farms within 5 years, and upon achieving goals for protection of the entire landscape rather than for individual farms. Al Appleton from the Regional Plan Association, and former Commissioner of the New York City Department of Environmental Protection, says that reaching just this agreement with farmers took a year, but the requirement was met and non-point source pollution went down.

Given the complex characteristics of natural resources and their variability compared with other kinds of commodities, scientific information should play a key role in the development of rules that are appropriate to the context. It should also provide a basis for monitoring over time, to determine whether objectives are actually being achieved and thereby, increase buyer confidence and willingness to pay. However, even in New York City, this has not been easy. Asked about the relationship between pollution source reductions and New York City water quality Appleton provided a good *rule-of-thumb*: “Pay your money, take your chances.”

For further information

References and further reading:

Regarding the New York City Watershed Agreement:

The remarks of Al Appleton were made in a session on *Ecosystems for Sale in an Unequal World*, which was part of the Global Synthesis Workshop on Markets, business and the environment - Strengthening corporate social responsibility, law and policy, held at the IUCN World Conservation Forum, Bangkok Thailand, 18-20 November 2004. [Meeting summary and draft report](#).

Galusha, D. 1999. *Liquid Assets: A history of New York City's water system*. Fleischmanns, N.Y. Purple Mountain Press

National Research Council 2000. [Watershed Management for Potable Water Supply: Assessing the New York City Strategy](#). National Academy Press, Washington DC

Pires, M. 2004. Watershed Protection for a world city: the case of New York. *Land Use Policy* 21, pp. 161-175

Pfeffer, M.J., L. Wagenet, J.M. Stycos, J.Sydenstricker, C. Meola. 2002. [Value Conflict and Land Use Planning: An Example at the Rural/Urban Interface](#). Paper presented at the Northeast Regional Center for Rural Development Research Workshop on Land Use Problems and Conflicts, Orlando Florida, February 21, 2002.

Platt, R. H., P. K. Barten, and M. J. Pfeffer, 2000. [A Full Clean Glass? Managing New York City's Water Supply](#) *Environment* 42(5): 8-20.

For more general discussion of developing and changing the “rules of the game” in the broader context of water resource management, and case studies from other parts of the world see:

Guillet, D.W. 1992, *Covering Ground: Communal Water Management and the State in the Peruvian Highlands*. Ann Arbor. University of Michigan Press.

Meinzen-Dick, R.S. and Appasamy P.P. 2002. [Urbanization and Intersectoral Competition for Water](#). In *Finding the Source: The Linkages between Population and Water*. Environmental Change and Security Project. Washington, D.C. Woodrow Wilson International Center for Scholars.

Turton, A. and Henwood R. eds. 2002. [Hydropolitics in the Developing World: A Southern African Perspective](#). African Water Issues Research Unit, Pretoria South Africa. (available on-line)

Ostrom, E. 1990. *The Evolution of Institutions for Collective Action*. Cambridge University Press.

[The Digital Library of the Commons](#) – a gateway to international literature on the commons.

For more on the use of science to support learning and adaptive approaches to the management of water resources and river basins see:

National Research Council 2004. [Adaptive Management for Water Resources Project Planning](#). Washington DC, National Academy Press

Walters, C. 1997. [Challenges in adaptive management of riparian and coastal ecosystems](#). Conservation Ecology [online]1(2): 1.

And, available from, [Flowsonline](#):

A Knowledge and Assessment Guide to Support the Development of Payment Arrangements for Watershed Ecosystem Services (PWES). (2004). Prepared by Sylvia S. Tognetti, Guillermo F. Mendoza, Bruce Aylward, Douglas Southgate & Luis Garcia, for the World Bank Environment Department with support from the Bank-Netherlands Watershed Partnership Program, Washington, DC.

Feedback and Commentary

If you have a favorite rule-of-thumb, or other comments, please send them to comments@flowsonline.net. Below are comments received in response to the last bulletin.

Regarding recommended topics for inclusion:

...I would have added a fourth major challenge, and that is how best to scale payments to performance. It sounds a great idea in principle but it may be difficult to implement in practice. Some 'buyers' may be reluctant to be seen to be penalizing a community or group for a reduction in performance, especially where the cause of the reduction in quality or amount of output may not be obviously due to any default on the part of those managing the catchment (or where the balance of responsibility is at least contested). Moreover, given that PES are payments being made to induce land-users to give up a preferred form of land use in favor of land-use practices that, in purely household production terms, provide less than the practices they are having to forego, the level of such scaled payments may be difficult to determine. Yet, if the payments are not scaled, how does one create and maintain a feedback between practice and performance?

Another challenge concerns the issue of equity: should everyone in a catchment receive equal payment, or should those who live in and whose land-use practices affect the functioning of the hydrological control zones in the catchment receive larger payment, in recognition of their greater potential to affect the quantity and quality of water coming out of a catchment? There are strong arguments for and against either way. I look forward to seeing these issues debated at some stage (always assuming that they are real issues rather than a product of my limited understanding, which is quite possible).

From Peter Frost – CIFOR

I am reminded of a principle that is ascribed to Hegel, that every theory simultaneously reveals, distorts and conceals. Maybe we should keep in mind a parallel principle for policy instruments: each one is subject to use (correct), misuse (incompetence) and abuse (malevolence or diversion). Any discussion of the design of policy instruments should be organized around that principle. It already happens in connection with taxes and fiscal instruments in general, since it is universally assumed that they are launched into a highly reactive and sophisticated environment.

From Jerry Ravetz - UK:

General comments:

Watershed services are provided by upstreamers for downstreamers (to put it very simple). That is a well known situation: One part of society providing benefits for other parts of society. Payments for these services must depend on who constitutes "the other part of society" or beneficiaries. If they are easily identifiable (such as visitors to protected areas or single users through hunting leases a.o.) one can charge for the use directly. But more often the beneficiaries are "all people" or "most people": e.g. beneficiaries of security against external or internal enemies (army and police), general environmental protection, clean air and water, etc.

These cases are most often cared for through taxation and consequential income distribution. I think that payments for watershed services mostly fall in this category. In other words general taxation for nature protection supplemented with taxation of water usage (for irrigation and/or drinking) plowed back to the upstream farmers and other land users.

From: Anders Erik Billeschou - AEB Consult, Denmark

Resources

New publications:

ASB Open Science Meeting on Tropical Forests and Water, December 8 2004, hosted by CIFOR, Bogor Indonesia. [Presentations:](#) [Meeting summary:](#)

Pagiola, S., von Ritter, K. and Bishop J. 2004. [Assessing the Economic Value of Ecosystem Conservation](#). The World Bank Environment Department in collaboration with The Nature Conservancy and IUCN—The World Conservation Union. Environment Department Paper No. 101. Washington, DC

Red Latinoamericana de Cooperación Técnica en Manejo de Cuencas Hidrográficas (REDLACH), [Revista Electrónica](#)

[RUPES Newsletter](#) (Rewarding Upland Poor for Environmental Services), produced twice a year (in August and December).

Winrock International. 2004. [Financial Incentives to Communities for Stewardship of Environmental Studies: Feasibility Study](#).

[Corrected link](#) for papers from the Agriculture Ecosystems and Environment Special Issue on *Environmental Services and Land use Change: Bridging the Gap between Policy and Research in Southeast Asia*, edited by Tom Tomich, Meine van Noordwijk and David Thomas

Announcements:

A National Conference on *Rewards for Environmental Services*, is being coordinated by RUPES, to highlight and share lessons learned from the sites and to inform policy dialogue. It is scheduled to take place in Jakarta Indonesia, February 14-15, 2005, and will be co-hosted by LP3ES/IIED, WWF Indonesia, National Government Units and Ford Foundation in Indonesia. It is being held back-to-back with the below mentioned carbon workshop organized by CIFOR. For more

information, please contact RUPES Program [rupes@cgiar.org]. Website:
<http://www.worldagroforestrycentre.org/sea/Networks/RUPES>

Workshop on Carbon Sequestration and Sustainable Livelihoods facilitated by CIFOR with support from CIDA will be taken place on February 16-17 2005, CIFOR Campus, Bogor, Indonesia. The workshop will provide opportunity to interact with those who have experiences in implementing similar projects where payments of carbon credits have been demonstrated. Contact person: Dr. Daniel Murdiyarso [d.murdiyarso@cgiar.org]. Website: [http:// www.cifor.cgiar.org](http://www.cifor.cgiar.org)

See the [Conservation Finance Alliance Website](#) for information about funding opportunities from the UNEP Division of the Global Environment Facility for projects related to Payments for Environmental Services.

About the Flows Bulletin

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The Flows Bulletin is a forum for multiple perspectives, and does not necessarily represent the views of the sponsoring organizations.

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