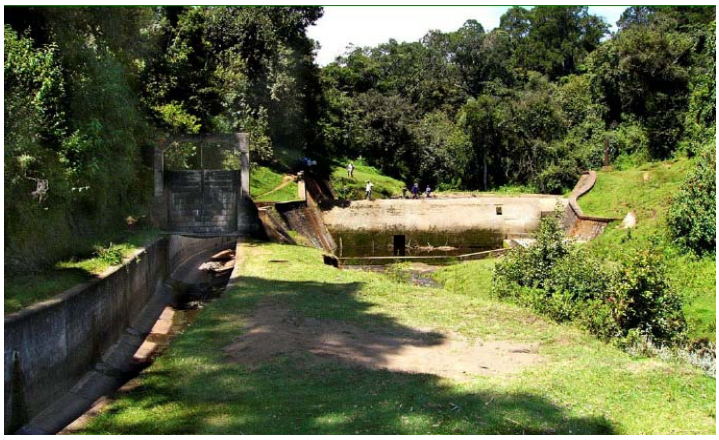
Sasumua Water Treatment Plant

Private payments to local farmers for improved water quality using payments for ecosystem services in Kenya

The Sasumua Water Treatment Plant is an innovative payment for ecosystem services project still in development, which seeks to provide water quality services by paying upstream farmers and pastoralists to change their cultivation practices. Though not yet fully operational, the Sasumua case highlights many strengths of PES, as well as, many of the factors strongly influencing its success.



Sasumua Water Treatment Plant, Kenya. (Photo: World Bank, 2007.)

What is the Problem?

Currently, river degradation occurs upstream from the Sasumua Water Treatment Plant, leading to contamination and siltation which costs approximately $150,000 annually to clear and treat (Pagiola, 2007). The primary causes of this degradation include: 1) cultivation on steep slopes which leads to erosion, sedimentation, and contamination, 2) cultivation on flatter lands with high amounts of fertilizer, and 3) cattle grazing in and around rivers. Other causes, such as urban development, have also been cited as sources of water quality degradation (Ibid). The upstream farmers responsible for this situation range from those producing high-value horticultural crops for Nairobi's urban market, to those working under the “shamba system” (a KiSwahili term for typical smallholder agroforestry systems where farmers are encouraged to cultivate crops on previously clear cut forest land and then replant the forest trees) (Odoul, 1986). Fuelwood collection and livestock grazing also take place in the watershed.

How Will Payments Work?

Rather than continue with expensive “end-of-the-pipe” solutions, the Plant hopes to address the problem of water degradation where it begins, by paying upstream farmers to avoid contamination and other harmful activities in the first place. For this to work, the annual transactions associated with the Sasumua Water Treatment Plant will have to be equivalent to $150,000 worth of services with 100% guarantee of delivery, or $75,000 for 50% guarantee for the plant to be willing to pay the farmers (Pagiola, 2007). According to Stephen Pagiola of the World Bank, the exact details of the payment system are yet to be determined, though they likely will be made on an annual basis. He estimates that the project is a minimum of 18 months away from establishing concrete determinations regarding how much will be offered in payments, to whom, and for what. (Pagiola, personal communication, 2007). However, it is certain that the project will be mediated by The Water Resource Management Authority, Athi River Water Services Board, Nairobi Water Company, and the Nairobi City Council. The World Bank has supported this initiative, as has the World Agroforestry Centre, though exact figures for financial support invested are unavailable.

Currently, a menu of land use practices eligible for payments is being created with estimates of their impact specifically on sedimentation and contamination. Then, expressions of interest will be sought, and from there, arrangements are being made for contracting, monitoring, and payment of participating land users. According to Pagiola, “One of the things we've learned is that you need to first have your technical information lined up. Often, generating the required environmental services will require land use changes in very specific parts of the watershed, for example. Until those critical areas have been identified, it isn't very useful to see whether farmers in general would be willing to participate. Indeed, it may be counterproductive, by raising expectations among many farmers who may not ultimately be invited to participate” (Ibid).

Primarily important in the successful development of this project has been the support from the World Bank and the World Agroforestry Centre, specifically the expertise of Stefano Pagiola. During the initial phases of the project, careful consideration has been given to the technical, socio-political, and institutional dimensions of the environmental problem requiring PES. The physical area under consideration has been clearly delineated, and within this area, the primary causes of the environmental problem have been enumerated. This ensures that the precise causes of the problem are accurately addressed, in turn, ensuring that the payer will receive the services promised, and that the correct providers will be identified to provide the services.

Considerations for Sasumua

An interesting aspect of this project is the fact that providers of the ecosystem service are comprised of farmers from a wide range of socio-economic levels. For example, very poor and relatively wealthy farmers are both in a position to profit from this PES scheme. Therefore, it is important to ensure that payments do not accrue exclusively to the wealthier farmers, since they are likely to be more able to address the contamination and siltation problems. In addition, since poorer farmers involved in "shamba" are potentially less responsible for contamination and siltation than the wealthier farmers, there must be monetary acknowledgement of this fact. In other words, the PES system as it is currently established adheres to the "polluter is paid" principle—the upstream farmers are being compensated to change their polluting ways. However, the PES scheme must ultimately ensure that farmers who were not previously polluting are neither punished for this, nor given perverse incentives to pollute and then abate in the future.

The strong support promised by The Water Resource Management Authority, Athi River Water Services Board, Nairobi Water Company, and Nairobi City Council is promising because it indicates that important power structures are involved in this PES project. However, as mentioned above, it is important that these supporting organizations, as well as the World Bank and World Agroforestry Centre, serve as intermediaries for *all* providers of services, even the poor and disenfranchised "shamba" farmers. Without equity in this power structure, the PES project may not be sustainable.

The Sasumua Water Treatment Plan project is certainly replicable, and the careful groundwork that has been laid by the World Bank and World Agroforestry Centre provides a strong template for replication. However, as is the case with all development work, caution must be taken in applying a successful model from one disparate case to another.

For Additional Information:

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