

Designing a Payment for Ecosystem Services Scheme for the Sardukhola Watershed in Nepal

To improve the quality of water supplied to the city of Dharan in Nepal, local institutions can work together to develop and implement a Payment for Ecosystems Services (PES) scheme to reimburse farmers in the Sardukhola watershed for improved natural resource management. Water users in Dharan are willing to contribute some USD 118,000 per year, to reduce water-pollution and increase dry season water availability. Farmers in the watershed are willing to undertake the necessary work if they are appropriately compensated. Such a scheme will augment government services and needs to be backed up by a national PES policy.



Approach

A SANDEE and ICIMOD team worked with municipal water users and farmers to look at both the causes of water supply problems in Dharan and at the feasibility of using a PES scheme to resolve them. In a PES setup consumers of ecosystem services pay service providers to undertake environmentally friendly activities that can help maintain these services.

Background

The Sardukhola watershed is located in eastern Nepal. It provides water for Dharan, a city of approximately 150,000 people. However, the water supply to the municipality is insufficient for residents' needs. The water is also polluted and the cause of many serious health problems. The Sardukhola watershed is affected by landslides, deforestation, forest degradation, and soil erosion problems that are caused, in part, by unsustainable grazing. The challenges faced in this area are repeated across the Himalayas. Currently, more than 50% of Nepal's population does not have access to piped tap water within the home. Around 16,000 people die every year from waterborne diseases and other causes linked to poor water quality.

SANDEE

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A Choice Experiment was used to get a clear understanding of those aspects of water supply that water users want improved and to assess how much they would be willing to pay for improvements. Upstream households were also interviewed to understand what support they would require to participate in a watershed management programme.

Results

Upstream activities such as open defecation and chemical fertilizer use affect water quality in Dharan. Soil erosion caused by poor management of upstream areas also contributes to water scarcity and quality. Thus, Dharan's water supply could be improved through the construction of sanitary toilets, reduction in open grazing, a decrease in chemical fertilizer use and the development of infrastructure to reduce landslides and soil erosion.

Upstream farmers unanimously stated that they were willing to construct toilets, regularize grazing and reduce the use of chemical fertilizer and pesticides in farmland close to water sources, if funding is available to support these changes.

The average household in Dharan is willing to make an annual payment of NPR 270 to obtain water that is drinkable after filtering. This willingness to pay would provide NPR 8 million a year for water quality improvements. This, in turn, would provide enough money for the construction of all necessary pit or proper toilets in the watershed and would provide on-going funding for grazing regularization, erosion control and forest improvement. It would also provide funds to establish, operate and monitor the effectiveness of a PES programme.

Recommendations

Implementing a PES mechanism requires a credible institutional set-up. The study recommends that three local institutions (the Dharan Drinking Water Board, the Sardukhola Watershed Protection Committee and the Sardukhola Upstream Committee) could work together to manage and implement a PES-based fund that could finance the work needed to improve the quality of Dharan's water supply.

Government support and clearance for the proposed institutional arrangement is also vital. Thus, there is an urgent need for a national PES policy.

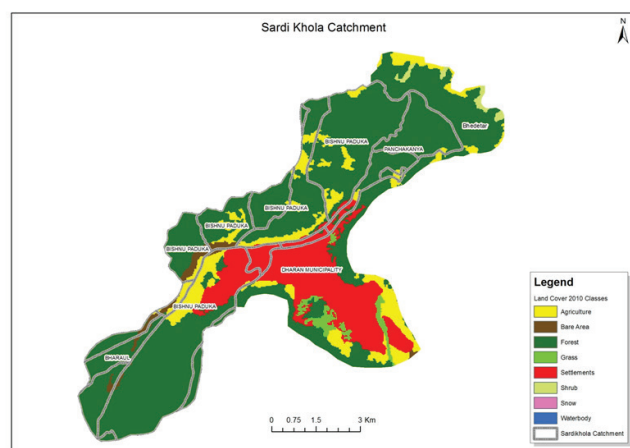


Figure 1: Study Area

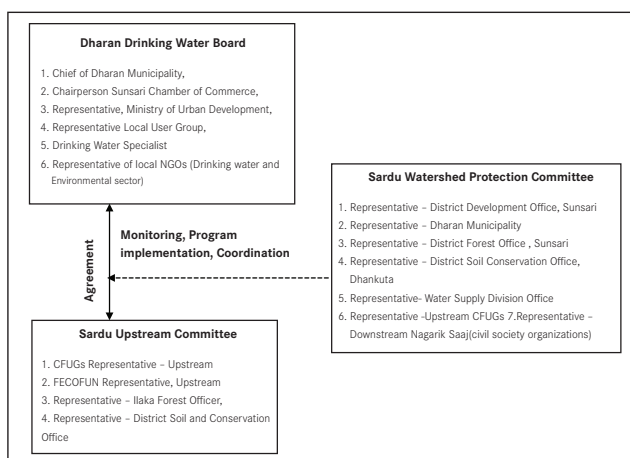


Figure 2: Proposed Institutional Set-up for PES Scheme in Sardukhola Sub-watershed