

# Valuing groundwater: A practical approach for integrating groundwater economic values into decision making – A case study in Namibia, Southern Africa

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## Abstract

Groundwater provides a range of services to people in Southern Africa; however, the benefits provided by these services are often not fully appreciated and factored into decisions about groundwater management and use. After outlining briefly the importance of groundwater in the region and the pressures facing groundwater, this paper discusses how economic valuation can help improve its management. The main focus of the paper is the presentation of the practical 5-step economic valuation methodology that has been developed as part of the Southern African Development Community (SADC) Groundwater and Drought Management Project. This methodology can be generally applied to groundwater management issues across the SADC region. The methodology is based upon an ecosystem services approach which considers all the potential services that groundwater provides, which can result in improvements in human welfare. These services include provisioning services such as water for domestic use, agriculture and industry; regulating services such as the recharge of surface waters and carbon storage benefits; and cultural services such as the tourism associated with wildlife at groundwater-fed watering holes. The methodology incorporates a 2-tiered valuation approach. The Tier 1 valuation is based on market pricing and value-transfer approaches and can provide an initial view of the economic value of a resource in a particular use. A value-transfer tool has been developed, which allows the user to select from a menu of the currently available transfer values for use in an assessment. A Tier 2 valuation requires more detailed primary studies and may be required following a Tier 1 assessment where more certainty in decision-making is required. The methodology has been tested at 4 pilot sites in the region. An example of the application of the SADC groundwater-valuation methodology in Namibia is presented in this paper. The paper concludes with recommendations for the development of groundwater valuation in the region. Emphasis is placed on training, the commissioning of more groundwater-valuation studies and the need for more scientific research to facilitate the valuation of groundwater-regulating services.

**Keywords:** economic value, groundwater, ecosystem services, SADC