

# A review of the modelling of water values in different use sectors in South Africa

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## Abstract

In this article several economic studies undertaken to assist with the implementation of the National Water Act (NWA) No. 36 of 1998 are reviewed. In these studies the following procedures were applied to model water use: operational research, econometric analysis, input/output analysis, willingness to pay and the conceptual framework of water markets. Main use sectors are agriculture, forestry, municipalities (domestic consumption) and the environment. Water values estimated in the studies differ significantly between sectors, as well as between and within catchment areas. Most of the studies focused on irrigated agriculture as an important use sector in terms of water volumes, food production and capital investment. Input/output analysis indicates that South African agriculture is a less productive user of water in terms of gross income generated per unit of water. Evidence suggests that industrial and domestic use place a high value on assurance of supply of current water consumption levels. In contrast, agriculture requires large volumes of water for food production in response to market demand. The average value product of water is much higher for industry than agriculture, but the marginal value products appear similar in both sectors. From this it is concluded that water-use rights will in future be transferred from agriculture to industry but there is no urgency at present. As water is transferred in future from agriculture to domestic use and industrial use, the value (rents) now attached to land will transfer to water and real water prices will accordingly increase. The transfer of rents from land to water should not affect the value of farms. The expected significant increase in real water prices in a water market will provide further incentives for its conservation. The purpose in this review paper that covers a wide range of topics is to provide information to policy decision-makers on the economics of water management in South Africa.

**Keywords:** use sectors, modelling research, water values, market transactions, water prices