

Water market institutions in Colorado with possible lessons for South Africa*

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Abstract

State provision of water is subsidised in both South Africa and Colorado and some costs are recovered through rates. Irrigation water in South Africa is not volumetrically priced and little scarcity value is attached to water. However, administrative pricing of water at opportunity costs is unlikely to be successful as opportunity cost varies according to location, reliability, season, use and quality. In a water market, water is not priced by administrators but the market attaches an opportunity cost price to water and thus promotes the highest valued use of the water. This is the case in Colorado. In Colorado an active market for the usufructuary rights of water has developed while water itself remains public property (as is the case in South Africa). The transfer time of Colorado Big Thompson (C-BT) water is short while transaction cost is small. There are two reasons why agricultural water markets do not release water in South Africa. The first is that the only water trades that have taken place are between non-users (sleepers) of water and intensive users. The second reason is that transferring diverted use of water in agriculture does not attach a price (opportunity cost) to the use of water (consumptive use). Administrative volumetric pricing of diverted use of water will also not promote water savings in agriculture for the same reason. Environmental issues (instream uses, quality, recreation) have become more prominent in the Western USA. Although water trades from down- to up-stream may reduce instream flow and harm the environment, the more usual trades are in the opposite direction and are likely to benefit the environment. Institutions need to be created in South Africa, within the parameters of the Water Act, to facilitate trade while providing protection to the environment. The new South African Water Act gives prominence to third-party (environment and human needs) issues, and protects third-parties more than is true in the USA.

Introduction

The SA government has passed a new water bill in 1998 (Act 36 of 1998) which provides the constitutional framework for water markets in South Africa. These reforms have changed the institutions that define rights, exposure to rights of others, privileges and responsibilities. Under the Act, basic human needs and environmental sustainability will be guaranteed as a right. Other important issues relate to equity and the use of water as a scarce resource by the agricultural sector. These issues are not always mutually exclusive and water markets and water institutions may be used to promote economic and socially desirable objectives.

These marketing institutions may not arise endogenously. Indeed, a puzzle in institutional economics is that many societies often fail to adopt the institutional structures of the more successful ones (Greif, 1998). Nobel laureate Coase (1998) asserts that institutions govern the performance of a country; in institutional economics the concern is not about prices but about incentives and the 'rules of the game' that will yield socially desirable outcomes.

Although technical water research has received high priority in the past in South Africa, little is known about the impact of alternative water economic policies. South African water markets, along with those of Australia and the Eastern USA, are based largely on riparian ownership and are not as fully developed as those in the Western USA. Due to the scarcity of water in the Western USA, water markets have a long history of experience and date back to a case by the Colorado Supreme Court in 1882 (Howe, 1997).

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The purpose in this research is to study the experience of successes and unresolved challenges of Western water markets, and to draw from this possible lessons for South Africa. The Northern Colorado Water Conservancy District (NCWCD) was chosen as this market has been mentioned by several (Livingston, 1995; Cummings and Nercissiantz, 1992) as an ideal water market. This paper draws on institutional economics and is of an interdisciplinary nature.

Future expected water scarcity in South Africa can be tackled by building more dams (supply side approach) or the more economic efficient use (demand side approach) of water. The latter approach is followed in this paper. A main focus in the research is on sustainable use which requires attention to the environment and water quality.

Evaluation of principles

Water market doctrines

Water rights are generally based on one of three systems: public allocation, prior (appropriative) rights and riparian rights. Public allocation involves administered distribution of water.

Prior water rights as practised in the Western USA are established by actual use and a distinction is made between senior rights and junior rights. According to the priority system, rights first established are senior and must first be satisfied. The priority date, diversionary entitlement, point of diversion, and place and purpose of use delimit appropriative water rights (Huffaker and Whittlesey, 1995). The water rights institution provide certainty in supply as senior (prior) rights are fulfilled before junior rights.

Riparian rights link ownership, or reasonable use, of water to ownership of adjacent lands while rights are a percentage of water available for irrigation. This structure of water rights spreads the risk of variability equally among share holders.

The riparian doctrine only recognises rights of riparian landowners while the rights of other potential users are not protected by