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Extended Abstracts

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Groundwater quality sustainability

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Economic tools to protect groundwater

title: **The use of economic tools to protect groundwater in South Africa**

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Protection of groundwater is one the more difficult activities to promote as it has no visible outcomes and will compete for the same human and financial resources as housing, roads and education projects with visible and almost immediate return on investment. Part of this problem is that municipal managers do not realize the value of the groundwater, know how to protect it or what the benefit would be if they do protect it. These questions must be addressed if we ever hope to have resources allocated for the protection of groundwater sources. Economic tools can be used to promote the value of groundwater and justify the cost of protection.

The value of groundwater is evaluated here as a natural and renewable resource by its role: (a) As human right contributing basic needs to improve security of life, health, and safety; (b) As a resource providing value through abstraction for domestic, agriculture, or industrial use and emergency preparedness; (c) As a contributor to surface water resources, used to generate economic value; (d) Contributing to the environment we live in through insitu value creating land stability, supporting terrestrial and aquatic ecosystems as well as cultural and recreational opportunities; (e) As carrier of contaminants to constitute a risk pathway.

The typhoid outbreak in Delmas, South Africa in 2005 can be regarded as an example of failure to protect a groundwater resource and is evaluated by comparing the costs associated with the incident and the cost to protect the groundwater source. Total economic cost due to the contaminated drinking water is estimated at R7 million, while the estimated cost to protect and manage the resource would have been about R3 million. The total economic benefit of protecting the resource was found to be significantly less than the total economic cost incurred due to the failure to protect.



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