Opinion Article

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Argument for a sustainable groundwater management in the upper orange river catchment of South Africa

Opinion

The term sustainability has been over used in scientific community and no particular definition has been accepted of its full meaning. Sustainability can't be measured without human development. Therefore, the best definition of sustainable development is that which lays emphasis on meeting the presents need without compromising the ability to meet the future needs. Scientist in all research spheres knows sustainability matters but disagrees on how to measure it.[1] Reason because resources sustainability is perceived as an elusive concept universally.[2] This brings the question of groundwater sustainability and groundwater development. USGS explanation of "groundwater sustainability as a development and use of groundwater in a manner that can be maintained for an indefinite time without causing unacceptable environmental, economic or social consequences" is a good definition that brings these two concepts together. Sustainable groundwater development is a complex topic for researcher and regulatory agency saddle with groundwater monitoring. Major reason due to the fact that measuring groundwater sustainability has no standard. At global level, measurement of the general sustainability concept is not yet standardised.[2,3] Sustainability reporting tools (SRT) which includes frameworks, standards, rating and indices are all yardsticks employed to measure sustainability on different forum. These SRT tools are what are applied globally and locally by assessors with changing parameters. Groundwater is a renewable resource where its recharge is assured. The Upper Orange River Catchment belongs to the Orange River Water Management Areas which is part of the nine major water management areas (WMA) of South Africa. Groundwater utilisable in the Upper Orange River WMA including Lesotho is 673 million m^3/a.[4] Development of groundwater in the Upper Orange River Catchment has always been on the increase. Groundwater is developed mainly for irrigation and livestock.[4] This is due mainly to the rural nature of the catchment. While groundwater sustainability is always looked at from the aspect of conservation. It is never looked at from the prism of balancing production and economic generation particularly for rural farmers who has limited economic options for survival. Farmers drilled multiple boreholes for irrigation and livestock farming in the Upper Orange Catchment without adequate approval simply because they want more of the same resources we want to conserve in order for them to sustain their productivity and generate incomes, create jobs, raise their living standard and pay more taxes. So it can be argued that they contribute towards a sustainable positive growth in GDP of the country. It is of the view that reaching a sustainable groundwater management cannot be achieved without effective regulation of increasing groundwater development in the catchment. However, these regulations cannot be feasible without first understanding the accurate amount needed by the bulk user the farmer and other smaller users' in the catchment in order to sustain their economic and social survival before we conserve for future purposes considering groundwater is partly a renewable resources. If this is done it will effectively link the practise of sustainability with the theory because there will be balance of economic survival with social and environmental conservation. The South Africa Water Act promulgated in 1998 is one of the best in the world. If strictly followed, it can regulate over exploitation and minimise development. Another option to effectively achieve groundwater sustainability in the catchment is to go the public participation way. Even though the groundwater strategy and catchment management strategies emphasises contribution of independent stakeholders in managing the resources which has not yielded best of results. New strategies should be established targeting and persuading the main user of the resources in the catchment to act with mindset of preserving the resources for future need. This can be achieved through enlightenment and carrying along of the Water Users Associations with scientifically proven data of how much is available (storativity) per sub-catchment, how much goes out (pumping), how much is returning back to the aquifer (recharge), what is the quality of what is available and going back, what is the future trajectory of the present usage habit, how can they assist with monitoring processes by self-reporting of their total usage etc. Using these established routes will assure sustainable groundwater users that are economically and socially viable, while promoting good relationship between users and regulator. This recommendation will as well solve partly the problem due to lack of capacity by the government to monitor and lack of manpower and technical knowhow in the industry which are all major factor affecting an effective sustainable groundwater monitoring.

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Saheed Adeyinka Oke
Department of Civil Engineering, Central University of Technology Free State Bloemfontein, South Africa

Correspondence: Saheed Adeyinka Oke, Department of Civil Engineering, Central University of Technology Free State Bloemfontein, South Africa,
Email Okesaheed@gmail.com, soke@cut.ac.za

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Conflict of Interest

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References

1. Siew R. We know it matters but how do we measure it? World Economic Forum. *World Economic Forum*. 2017.
2. William M Alley, Thomas E Reilly, Lehn Franke O. Sustainability of groundwater resources. US Geological Survey Circular 1186, USA; 1999. p. 1–86.

3. Escrig Olmedo E, Munoz Torres MJ, Fernandez Izquired MA. Socially responsible investing: sustainability indices, ESG rating and information provider agencies. *Int J of Sustainable Economy*. 2010;2(4):442−461.
4. Water Affairs. Groundwater Strategy. Department of Water Affairs Pretoria, South Africa; 2010. p. 1–78.

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