POLICY BRIEF

October 2024
The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

PROMOTING THE ADAPTIVE CAPACITY OF RURAL COMMUNITIES TO CLIMATE CHANGE THROUGH HOLISTIC CATCHMENT MANAGEMENT: A CASE STUDY OF GROUNDWATER DEPENDENT COMMUNITIES IN TWO CATCHMENTS "SPRING 4 LIFE (UMTHOMBO WEMPILO)"

South Africa's water reticulation services backlogs spells gloom for rural communities who are served mainly by municipalities that lack the revenue base and capacity to service the water needs of these communities due to their spatial incongruity. This leads to a significant dependence on groundwater, which is increasingly susceptible to climatic and non-climatic changes. A stakeholder-oriented catchment management approach of groundwater in rural communities is thus proffered.

Background

The vitality of groundwater as a critical resource in rural communities stems from the inherent challenges municipalities face in providing adequate water needs to these communities. The most notable of these challenges are most rural communities' spatial inequalities and the rural municipalities' financial constraints. The sustainability of groundwater as a rural livelihood resource is threatened by climate change resulting in more extended recovery periods. Non-climatic factors like population growth and land use change also affect water security in these communities.

This project, funded by the Water Research Commission, sought to understand the capacity of rural communities dependent on groundwater to adapt to the impacts of climate change on spring water supply, through an understanding of holistic catchment management. The approach intentionally linked ecosystems to people's livelihoods and well-being, relying heavily on stakeholder engagement and participation to understand the range of demands and pressures on natural resources. To capture the ideals of the work, "Spring 4 Life (uMthombo wempilo)" was adopted as the project's tagline.

Policy context

Chapter 7 of the National Water Act (Act 36 of 1998), as part of decentralising water management, makes provision for establishing Catchment Management Agencies (CMAs). These are legislated structures aimed at delegating water resource management to the regional or catchment level and involving local communities through Catchment Management Strategies developed within the framework of the National Water Resource Strategy established in chapter 2 of the same Act. On the other hand, district municipalities are designated Water Service Authorities in terms of the Water Services Act (Act108 of 1997), and are mandated to provide water and sanitation services according to national standards and norms. This work could have a positive impact on the incorporation of spring protection measures into Catchment Management Strategies (CMSs) and municipal Integrated Development Plans (IDPs), where appropriate.

Methodology

The research project utilised data from focus group discussions, questionnaires, interviews and feedback from key stakeholders. Geospatial and non-geospatial information relating to the location, type and condition of springs and the household population dependent on such springs was obtained from hydrocensus databases maintained by NGOs and municipalities. Furthermore, and crucially, a stakeholder mapping exercise was undertaken to develop a visual representation and understanding of the stakeholders, their interests and influence in the management of springs. Interactive group sessions were also used to obtain information regarding the social cultural behaviours and beliefs of affected rural communities relating to groundwater use attitudes and practices.

Benefits of the new framework

A catchment-based approach to groundwater management ensures that sustained groundwater management is viewed as part of an integrated socio-ecological system to address water security challenges in rural areas. Adopting an integrated catchment management approach to invasive alien plant clearing, grazing practices, and waste management can improve groundwater quality and quantity. This will involve working with the community to develop sustainable land-use practices that protect groundwater resources.

The framework, with the local municipality as the focal point, links ecosystems to people's livelihoods and well-being, relying heavily on stakeholder engagement and participation to understand the range of society's demands and pressures on natural resources at catchment level.

Case study

The study sites were on communal land tenure areas under the Okhahlamba Local Municipality in KwaZulu-Natal, and Matatiele Local Municipality in the Eastern Cape, and involved interaction with the rural communities at the foothills of the Drakensberg Mountain.

The study focused on assessing and improving the condition of commonly used springs in two selected study areas, the uMzimvubu and Thukela catchments. The research showed correlations among the attributes relating to the spring location, type and nature, the springs' condition, and how many households depend on springs for water supply. The research also drew on collaborative and learning-based engagements with key actors on responsive decision-making regarding the ability of communities to adapt to the effects of climate change on groundwater.

Stakeholder engagement workshops identified poor grazing practices, increase in invasive alien plants, and solid waste disposal around the springs as critical issues that need urgent attention. Between the two study sites, the research showed that the highest incidence of unacceptable water quality was linked to unprotected springs in the uMzimvubu Catchment. However, because spring use transcends the practical aspects of water provision for activities such as household use, the socio-cultural contribution of springs to rural communities should be considered in spring protection programs. African indigenous knowledge and belief systems on environmental sustainability could be revitalised and used broadly in environmental conservation and spring protection, significantly improving the efficacy of such efforts.

Key message from the study

The recently concluded research on groundwater use in rural South Africa identified six broad themes for improving the quality and availability of groundwater resources:

- The need for formalised rural groundwater governance through incorporating spring protection plans into municipal Integrated Development Plans (IDPs) to enable representative participation of ward committees.
- The importance of recognising traditional leaders and civic structures in groundwater management and supporting NGOs involved in spring protection and awareness programs.
- The need for capacity-building and awareness-raising at the community as well as local and district municipality levels.
- The need for more research to determine spring water's microbiological and chemical quality.
- The need for consideration of the socio-cultural benefits of springs when designing spring protection programs.
- Adopting an integrated catchment management approach to improve groundwater quality and quantity.

For more information:

Loza, L; Chueu, K; Cindi, D; Gola, N.P.; Mubangizi, BC and Ntshotsho, P. 2023. Promoting the adaptive capacity of rural communities to climate change through holistic catchment management: a case study of groundwater dependent communities in two catchments. **WRC Project Number C2021/22-00618**

Ethical statement:

This research received ethical clearance from the University of KwaZulu-Natal's Ethics Committee. Protocol Number: HSSREC/00003527/2021