science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

National Research Foundation

SAASTA

South African Agency for Science and Technology Advancement

University of the Western Cape

Project Leader: Prof Jaqui Goldin

Academic Disciplines: Anthropology, water sciences, hydrology, research methodology

Project Description

This research endeavour that takes place in Hout Catchment in the Limpopo Province, an area where 74% of people depend on groundwater and in some municipalities, 100% of residents depend on water from their wells. The project seeks to address the mismanagement of ground water resources that could potentially lead to adverse impact effects on ecosystems, water access, human health and agricultural production. Groundwater resources are vulnerable to depletion and degradation if not protected and exploited sustainably, which requires knowledge of the human interaction with the groundwater resources and potential adverse impacts.

Project Description Continued

The project employs a citizen science approach whereby the lay person trained to act as 'citizen scientists' participate in the research process of designing the research, collecting and analysing data and results leading to finding solutions to the problems. Through such projects, the University of the Western Cape has developed and adapted CS for integrated surface-groundwater systems, enhancing data collection, empowering groundwater users (e.g. community) in co-managing their resources as well as raising awareness and insights into best management practice.

Benefit to the Community

- **Empowerment of Citizen Scientists:**
  - Engaging actively in 'science.'
  - Sharing well data through smartphones on a website.
  - Data available for policymakers, planners, government, and researchers.
- **Transformation from Passive to Active Engagement:**
  - Community members actively participating in science.
  - Gaining knowledge about groundwater and water 'facts.'
  - Acquiring 'invisible' gains: dignity, pride, hope, and trust.
- **Strengthening Community Bonds:**
  - Creating a sense of belonging to a larger geographical area (the Hout Catchment).
  - Enhancing the value of community cohesion.

Benefit to the Community Continues

- **Becoming Water Literate and Resource Custodians:**
  - Citizen scientists equipped with valuable 'facts.'
  - Better equipped to protect the groundwater resource.
  - Significant impact in curbing well vandalism in Africa.
- **Global Recognition and Pride:**
  - Promoted during the Berlin Science Week Falling Walls Summit.
  - Citizen scientists proud of their contributions.
  - Eager to expand the project following the implementation plan.
- **Empowering the Youth:**
  - Youth Development Programme fostering water literacy.
  - Young people becoming water ambassadors for the future.

Impact Statement

- **Groundwater visibility and management:**
  - Historically invisible and challenging to manage.
  - Importance of measurement for effective management.
  - Community members becoming water literate to understand underground water value.
- **Highlighting hidden 'treasure':**
  - High percentage of wells vandalized in Africa.
  - New knowledge emphasizes the importance of protecting underground water.
  - Ordinary citizens becoming custodians with 'diamonds on the soles of their feet.'
- **Invisible treasures:**
  - Residents gain facts about invisible rivers and attributes like dignity, pride, hope, and trust.

Impact Statement

- **Global recognition:**
  - Diamonds on the Soles of their Feet project ranked in top three out of 189 projects from 80 countries.
  - Awareness of 30% of water on the planet being invisible (underground).
  - Over 74% of rural areas heavily rely on groundwater.
- **Impact on young people:**
  - Youth Empowerment Program (YEP) critical for creating young water resource custodians.
  - Fostering water literacy and future water preservation ambassadors among the youth.

Project Team Roles and Responsibilities

Jacqueline Goldin

Lead Researcher

Thokozani Kanyerere

Co-investigator

Innocent Muchingami

Principal researcher

Paschal Amaechi

Researcher

Project Team Roles and Responsibilities

Murendeni Mavhungu

Researcher

Lorret Chauke

Junior Researcher

Helga Humbelani

Junior Researcher

Lumadi Muvhusi

Researcher

Project Team Roles and Responsibilities

Kgaugelo Yulander Letsoalo

Researcher

David Manemela

Small scale farmer

Aldrin Lawrence

Small scale farmer

Joyce Robertson

Educator