

**GROUNDWATER FOR DEVELOPMENT  
IN SOUTHERN AFRICA  
--- AN IWRM PERSPECTIVE**

**Presentation at the IWRM Conference, Cape Town  
10-12 March 2008**

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# The Water Burden?

A street scene in Luanda, Aug 11, 2004



# Groundwater in Africa: The Challenge

- Its strategic role is still poorly understood
- Poor understanding and mismanagement are the norm rather than the exception
- This is becoming a serious threat to meeting the MDGs on water
- Turning around the situation will require strategic action at national, regional and international level



# The Question for Today

- **Poor groundwater utilization and management**
  - resulting from a hidden and poorly understood resource ?  
or
  - from an inappropriate or poorly understood IWRM approach ? or
  - other reasons ?
- **Outline of paper**
  - an assessment of GW resource management in Southern Africa
  - an analysis of the management failings in IWRM terms
  - a possible new way forward



# Groundwater in IWRM

The well-known IWRM definition of the Global Water Partnership addresses coordinated development and management of a number of areas, which could all be seen from a groundwater perspective:

- The natural and human resource system interaction
- Management in areas:
  - Surface and groundwater
  - Land and water
  - Freshwater and coastal zone
  - Quantity and quality in water resources management
- Upstream and downstream water-related interests
- Mainstreaming of water resources in socio-economic activities
- Cross-sectoral integration in national policy development
- Macro-economic effects of water development



# Approach for an Assessment of Groundwater Management Status in SADC

- IWRM toolbox of GWP as framework:
  - - Enabling environment
  - - Institutional development
  - - Management instruments
- International 'best practice' for each toolbox element;
- SADC as context;
- Africa as focus;
- Assessment of SADC groundwater management status within above framework and context.



# Highest Regional Goals

Overarching goal of **SADC**

‘Regional Integration and **Poverty Eradication**’

## **Africa** Water Vision

‘An Africa where there is an equitable and sustainable use and management of **water resources for poverty alleviation**, socio-economic development, regional cooperation and the environment.



# Poverty Situation in Southern Africa

- **70%** of the population living below the international poverty line of US\$2 a day;
- **40%** living in extreme poverty (less than US\$1 a day)
- Food and nutrition security remain one of the most fundamental challenges for human welfare and for economic growth, with **34%** of the population of the sub-region being undernourished.
- By 2003 10 million people had already lost their lives to HIV/AIDS and the prevalence among the ages 15-49 ranges between **20 and 40%** in some of the countries.

(Economic Commission for Africa, 2006)



# The Water and Poverty Link

- The poverty situation in the region is largely reflected in the **low levels of income** and **high levels of human deprivation**. The **greatest deprivation** is mainly in the area of **low access to safe drinking water and child malnutrition**
- The problem of poverty as reflected in poor access to water and malnutrition has been **further aggravated by the drought situation** that has hit the region as manifested in the current food crisis. Currently about 14 million people are threatened with starvation in the region.

SADC (2006)



# Groundwater Dependence in SADC

Member State	Rural	Urban	Agriculture	Industry	Overall
Namibia	***	***	***	***	***
Botswana	***	**	***	***	***
Zimbabwe	***	**	***	**	***
South Africa	***	**	**	**	**
Tanzania	***	**	**	*	**
Malawi	***	*	**	*	**
Swaziland	***	*	**	*	**
Mauritius	**	**	**	**	**
Mozambique	**	**	*	*	**
Zambia	**	**	*	**	**
Angola	**	**	**	*	**
Seychelles	**	**	*	*	*
Lesotho	**	**	*	*	*
D R Congo	*	*	*	*	*

Scale \*\*\* major, \*\* moderate, \* minor

*Adjusted from WCS & BGS (2003)*

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# Key Observations from 'Desk-top' Scoping Study

- There appears to be **awareness** at decision-making level about the importance of groundwater, but this is **not adequately reflected in policies and practices**;
- There appears to be **legislation** catering for groundwater in place, but **often very old and without any harmonization across the region**;
- **Investment in groundwater**, relative to its potential to address national objectives, is **limited and this is still offset by pollution and ineffective maintenance**, making a large proportion of water points inoperative;
- **Critical shortcomings** appear to be in the **organizational framework** and the **building of institutional capacity** for groundwater;

The above is reflected in a **completely inadequate monitoring and assessment of groundwater resources** and a resulting **poor attention to groundwater planning at all levels.**

# Advocacy by Groundwater Science Community

- Appropriate monitoring, assessment, data banks, information sharing etc.;
- Groundwater institutional capacity building

Essential,  
but can be expected to be neglected  
until there is **proper valuation** of groundwater as a resource and proper resulting **integration into a national development and IWRM framework**

# Appropriate Valuation of Water Resources

- Many past failures in WRM resulting from:
  - - water viewed as free good or
  - - its full value is not recognized
- To extract maximum value from available WR
  - - need to change perceptions about water values
- Appropriate valuation of a WR
  - - an essential precursor to its sustainable management



# Appropriate Valuation of Groundwater

## ■ On the one hand

- - widespread informal use of groundwater
- - it can significantly contribute to alleviation of poverty and community vulnerability;

## ■ On the other hand

- - attitude towards groundwater often not positive among many decision-makers and even technical cadres (WCS & BGS, 2003)
- - a neglect of the potential use as a valued alternative to surface water, and also
- - a neglect of the protection of existing GW resources (Molapo & Puyoo, 2002)



# Groundwater and Rural Poverty

- Access to groundwater is **perhaps the most critical factor enabling many rural populations to maintain sustainable livelihoods.**
- - reduces the risks poor farmers face
- - has major health benefits.
- Overall, by enabling individuals to accumulate reserves, access to **groundwater enables rural populations to reduce their vulnerability, not just to drought, but to the full range of economic and social hazards that generate much rural poverty**  
(Burke and Moench, 2000).



# Groundwater and Rural Water Supply – the actual situation

- The **lack of reliable and timely information** on the status of rural water supplies, fundamental to any form of groundwater drought planning and mitigation. has been a **serious constraint on sector planning and management** (WCS & BGS, 2003).
- While **groundwater's role in rural water supply**, in particular during droughts, **is growing**, this is offset by **ineffective maintenance**, making a large proportion of water points inoperative even during normal (non-drought periods) (WCS and BGS, 2003).
- A **lack of macro planning for groundwater** prevails, as most of the programmes are undertaken on an ad-hoc or crisis response basis. This is **one of the most problematic areas in relation to groundwater development**. (SADC-WSCU, 2001a).



Developing A Water and Livelihoods  
planning process within rural villages  
Sandspruit Catchment –South Africa

- **Productive water needs of poor rural communities** are considered **in catchment water accounting** (justified against more powerful sectors);
- Collective analysis provides a **basis for more integrated and holistic planning and implementation of water management and development for a village**;
- Next step is to become **part of ward-level planning**, and so **part of Integrated Development Plans** of local government;
- **Resource conservation** and rehabilitation is tackled at a watershed scale **within a CMA framework**.

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# Appropriate Financing

- water as a *resource* to be developed and managed for the benefit of all its functions and users and
- water as a *service*, to be provided to its many users after abstraction from the resource.

**Both** aspects **need financing**, and both are **currently deficient** (Camdessus, 2003).

# Appropriate financing of groundwater resource management and services

## Major hurdles in financing many small groundwater schemes

- - limited accountability and initial cost recovery, compared to large schemes where national governments are ultimately accountable.

## The particular challenge is **not so much a groundwater issue**

- - but the problem of financing in the rural sector and scattered communities.

## Recommendations from the Financing Water Infrastructure Study (Camdessus, 2003)

- Central governments will have to give **high priority to the water sector** and **address** grassroots problems **through** decentralization;
- **Much greater and ordered involvement of small local entrepreneurs** should be achieved;
- The role for **service-orientated NGOs** in water services should be supported and enhanced;
- **Micro-credit schemes** should be widely supported;  
(Note: solutions are being explored all over the world and in related sectors, which need to be evaluated and pilot-tested in Africa).
- **Local capacity should be pro-actively built** (organizing, financial and technical)

**Imagine this was all said about groundwater**



# Growth of Appropriate Technology Concept in 60s

- Decentralized, small-scale and technologically appropriate solutions
  - *only practical and affordable way*

**(UN-affiliated WSS Collaborative Council)**
- No purely technological solution to problems of poverty and underdevelopment. **Technology only yields full benefits when used within a framework of social development and strengthened organisation.**
  - **Compatible with social environment;**
  - **Intensive use of local labour and inputs;**
  - **Readily operated, maintained and repaired locally;**
  - **Replicable in numerous units.**

**Development Southern Africa (1985)**



# Conclusions

Widespread problems with regard to unsustainable utilization and management of groundwater resources (in Southern Africa) are not necessarily the result of:

- The unique and hidden nature of groundwater; or
- Inappropriate or poorly understood IWRM approaches.

Before the situation can improve, there must be:

- An appropriate valuation of groundwater resources at key decision-making levels; followed by
- A mainstreaming of groundwater as a resource in all WRM institutions and processes, within a national development framework.
- A political buy-in or intervention may speed up the process

