

Sustainable Groundwater Utilization – Developments in South Africa

AMCOW Meeting
Kampala, 19-20 October 2006

Illustration of Groundwater Transformation in South Africa

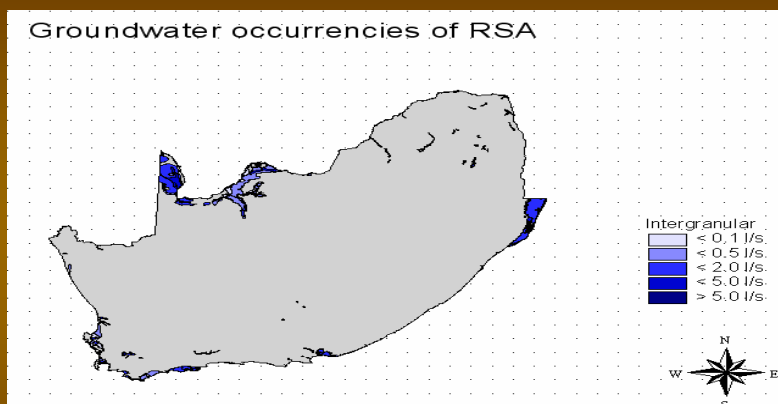
- 1991/93: *Major drought problems in rural areas
– Water tankering
and ad-hoc emergency drilling;
*Strategic importance of groundwater only in
dry, thinly populated Western part
- 2003: *Minister Kasrils invited to give
opening presentation at
Groundwater Day at World Water
Forum in Kyoto

What produced such a change in 10 years?

A Change in Valuing Groundwater

- 1993: Groundwater classified as **"Private water"**
– Little interest by the state;
- 1994: **New government** – provision of basic needs the highest priority
- 1996: **Major community water supply programmes from groundwater**;
Groundwater the **"feminine resource"** (Asmal)
– needing major local attention and care;
- 1998: National Water Act – Groundwater a **"significant resource"**;
- 2003 : Groundwater – our **"Reserve Bank"** (Kasrils).

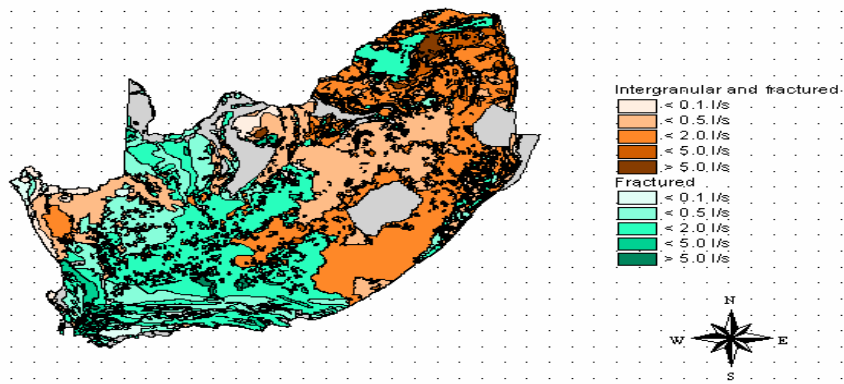
Intergranular Aquifer



- Primary porosity
- Kalahari beds (T), mainly pre-Kalahari valleys
- Narrow alluvium along the rivers (Q)
- Coastal sands (T and Q)
- *** Sandstone and conglomerates of Natal and Western Cape (J and C) – fractured

All Fractured Aquifer

Groundwater occurrences of RSA

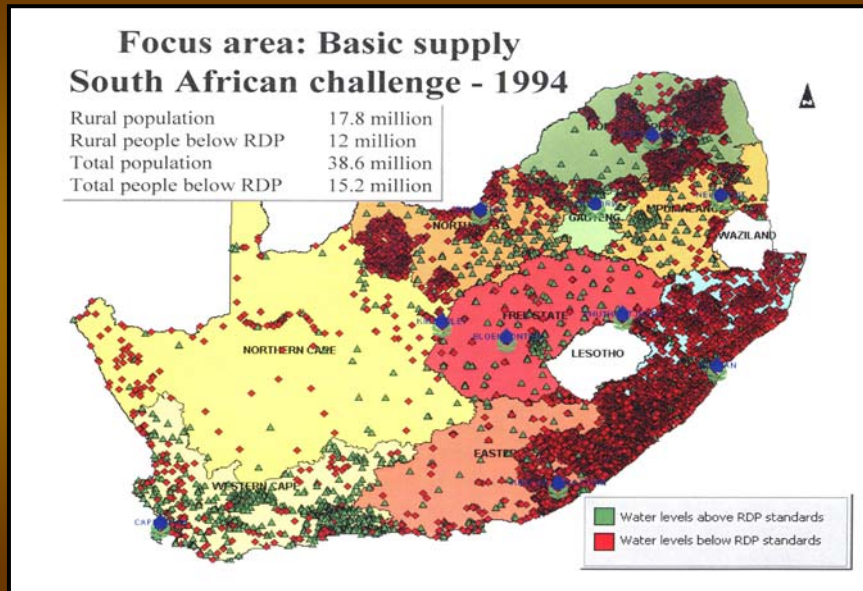


Groundwater Use by Sector (million m³/annum)

Use categories	1986	2000
Urban (including industrial and mining use)	70	80
Rural domestic	120	310
Stock watering	100	110
Irrigation	1 400	1 400
Mining and quarries (dewatering)	100	- ²⁾
Total	1 790	2 090

- 1) Industrial and mining not always included
 2) No figure available

Focus Area: Basic Supply



Community Water Supply from Groundwater in South Africa (2005)

Province	Communities served	Proportion of Total (%)	Comment
KwaZulu/Natal	10073	89	
Eastern Cape	4234	52	No information for 31%
North West	1582	83	
Limpopo	1415	57	Combined Sources for 42%
Northern Cape	150	62	
Free State	92	32	High proportion of Bulk water supply

Groundwater in National Water Act

- Groundwater a significant water resource
- Vision of Integrated Water Resource Management
- Principles of common resource, no ownership, national trusteeship, unity of hydrological cycle, devolution of management

Total Groundwater Use Summary per WMAs (Groundwater Resource Assessment Phase 2)

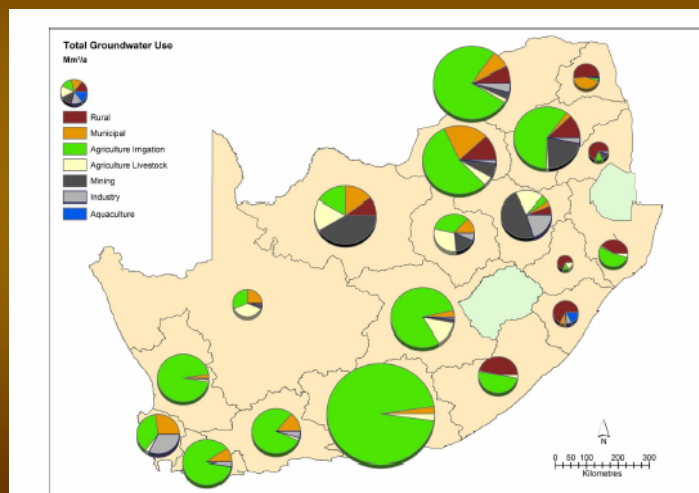
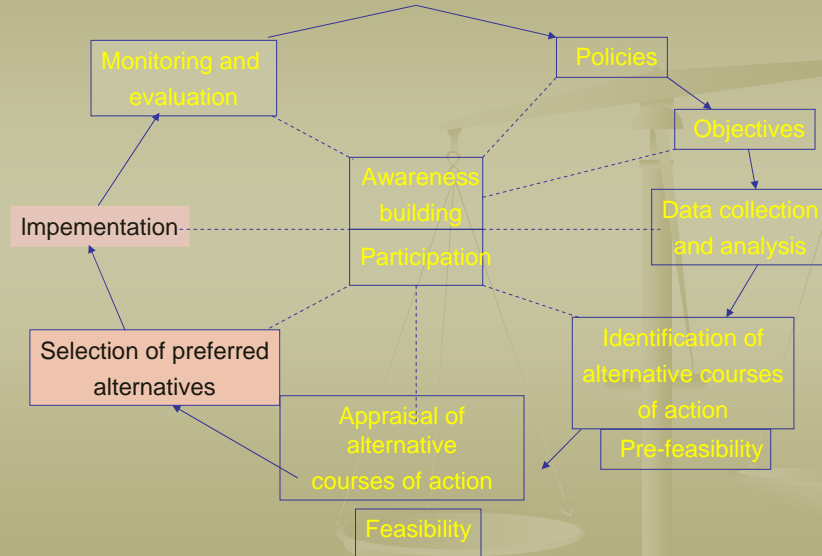
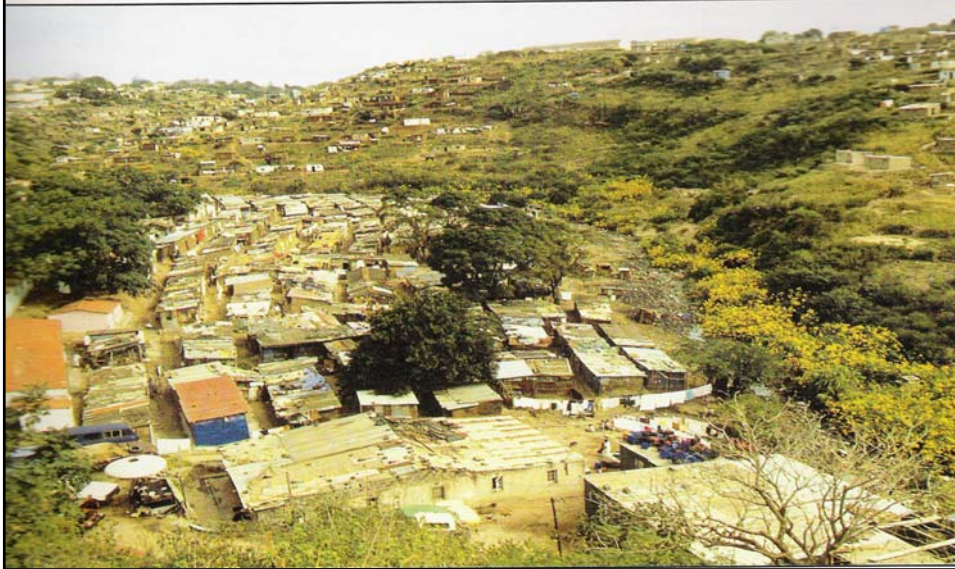


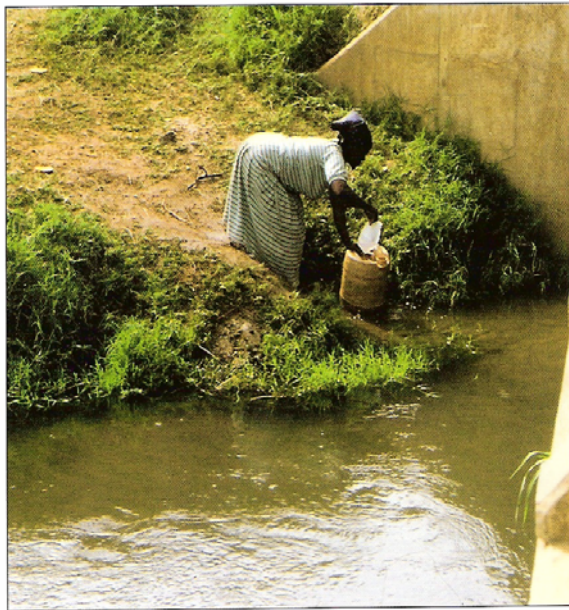
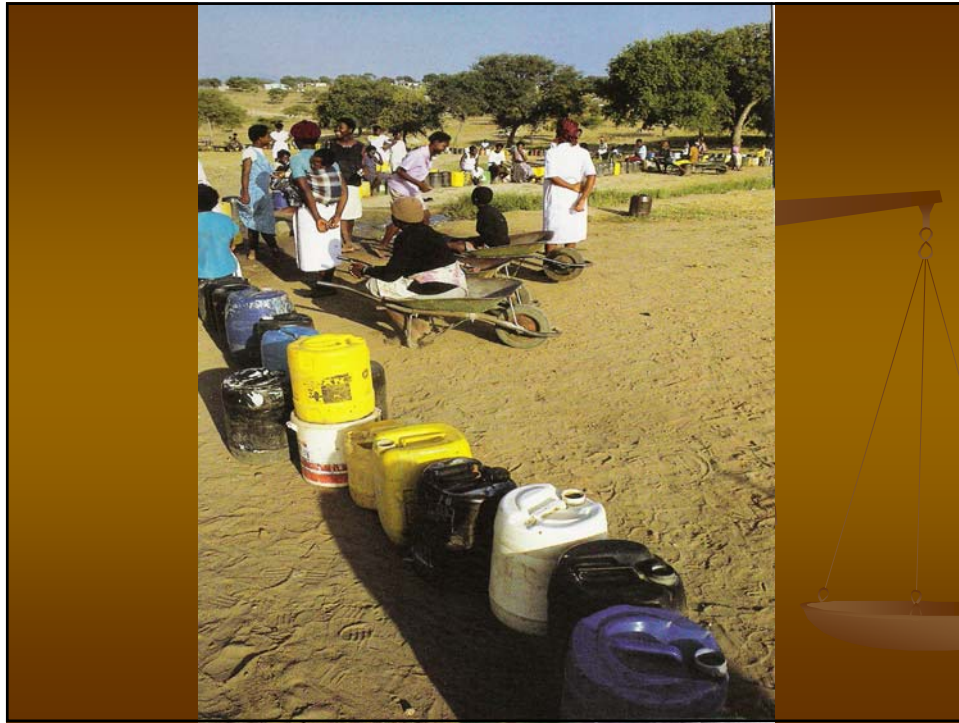
Figure 4. Total Groundwater Use Summary per WMA

Water Supply Project Life Cycle



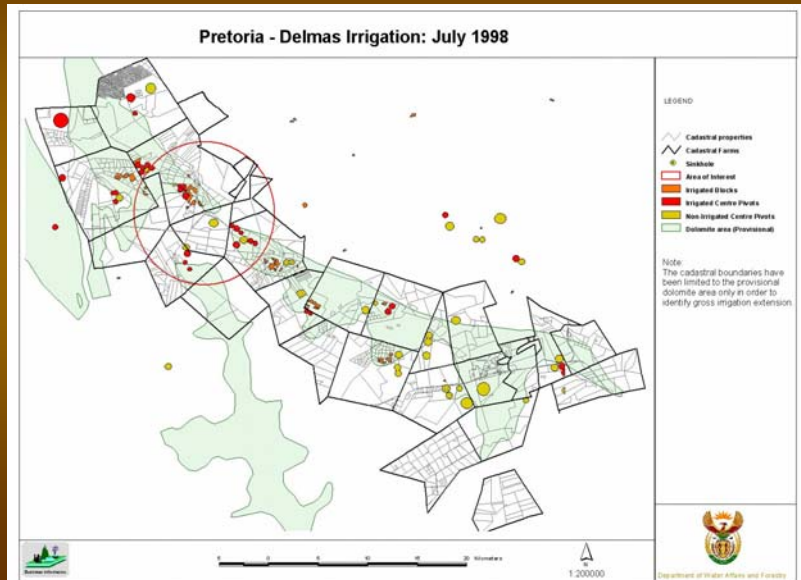
Increased Groundwater Pollution Risk



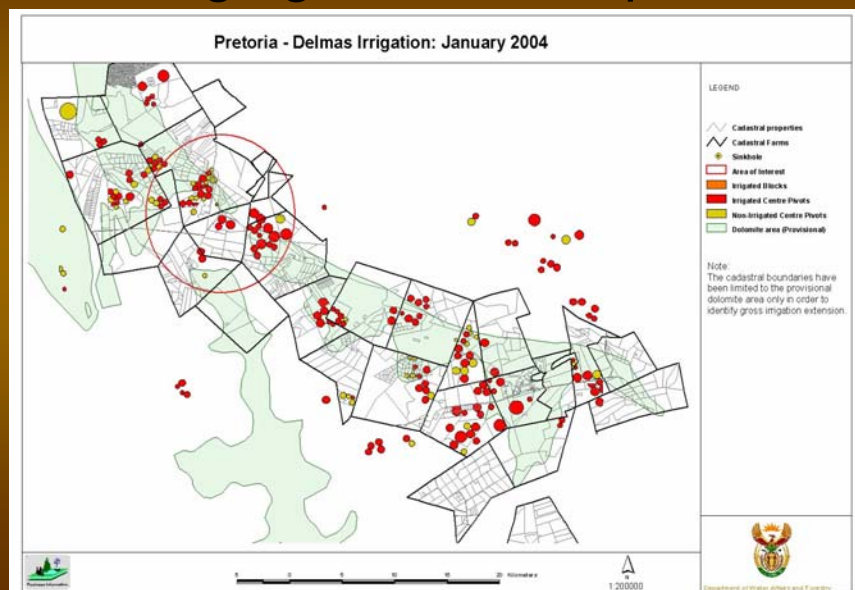


**Cholera
- The
Threat
Is Not
Over**

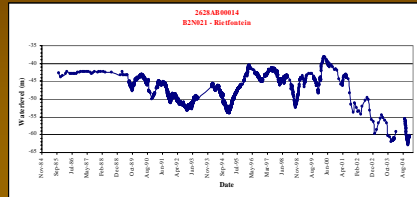
Managing the karst aquifers I



Managing the karst aquifers II



Dramatic results!



Challenge: Groundwater Support to Local Government

- Improved national groundwater data, appropriate municipal groundwater database, borehole/drillers registration.
- Linkages to municipalities (Integrated development plans, water services development plans).
- Consider water resource pre-feasibility plans for each district
- Minimum standards and guidelines for development and operation of public water supplies.

Management needs Measurement

Groundwater: Basic Needs and Livelihoods Approach

- South Africa defined **Basic Need** as 25l/p/d (just household)
- **Livelihoods** approach - for expressed domestic and productive uses
- Water services projects: catalyst of community development
- Approach requires - more flexibility
 - additional skills in project planning + execution
 - CBOs as intermediary
 - new funding approaches
- Positive impact of productive water points (Zambia and Zimbabwe)
- ***Groundwater resource is available - requires better planning, exploration and management.***

Groundwater Implementation Model

- **Centrally-driven models unsustainable** - particularly in rural areas
- **Alternative model**(Example: shallow wells in Maputoland)
 - Different supply options identified
 - Area technicians and support centres
 - Training of local construction / maintenance teams
 - Water committee establishment and agreement on supply option
 - Contribution to construction cost and full responsibility for O+M

Village level pump maintenance



International experience

- UN-affiliated WSS Collaborative Council

- Decentralized, small-scale and technologically appropriate solutions

only practical and affordable way

- UNDP (in evaluation of Decade)

- generally the poor remain unserved
- special effort to reach these and sustain services

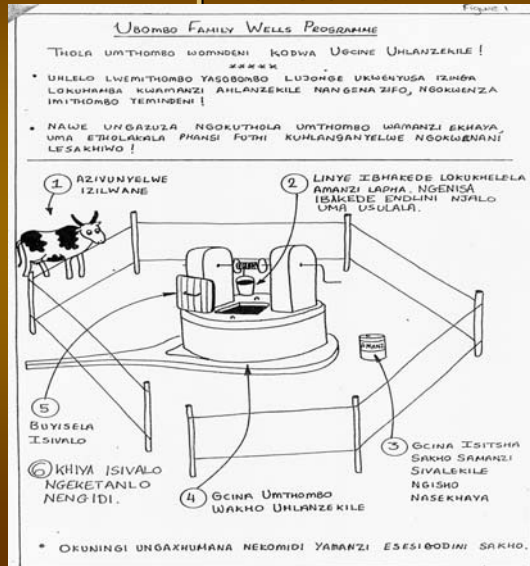
helping them to help themselves

(selecting right technical option is critical)

Protection - Zoning

- Domestic use: most vulnerable to impacts
- Groundwater often sole source
- Zoning as pro-active protection
- Focus on areas around supply sources
(Well Head Protection)
- Implementation by Local Government

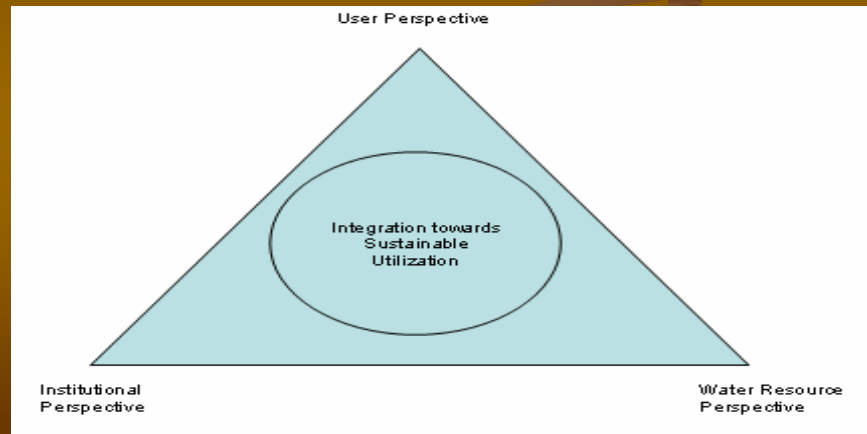
Pro-active groundwater source protection



Water User Associations

- Voluntary institution for members' mutual benefit – but accountable to Minister
- Membership: reflect demographic profile of area
- Management of water resource + infrastructure
 - preventing wastage and unlawful use
 - protection of water resource
 - monitoring of resource
 - water conservation measures (including artificial recharge)
 - extra functions received from CMA's

Perspectives for Sustainable Groundwater Utilization



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