


Post Doctoral Research Fellowship

Research Group Workshop, 15 to 16 August 2012
DUT, Steve Biko Campus

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**SURFACE RAW WATER PRICING MODEL
FOR SOUTH AFRICA:
VAAL AND UMGENI BASINS CASE STUDY**

Ramogale Sekwele

Legislative Mandate

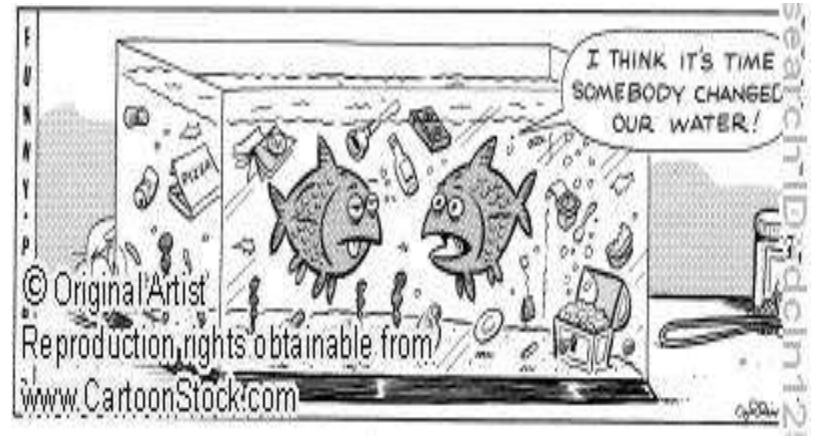
- The Constitution of South Africa
 - Section 24a
- National Water Act
 - Chapter 5 Part 1, Section 56(1)
- Water Services Act
 - Section 4.5
- Water Research Act
 - Section 11
- White Paper on National Water Policy
 - Section 6.5.3

Study Objectives

- The main aim is to develop a water quality based model for pricing surface raw water
- Specific Objectives:
 - To conduct an in-depth analysis of components that determine annual price of raw water for domestic, agricultural and industrial use
 - To develop a surface raw water pricing model for South Africa

Current Strategy

- **Social equity**
 - linked to financial assistance & redress
- **Ecological Sustainability**
 - the reserve, resource protection
- **Financial Sustainability**
 - operation, maintenance, refurbishment, etc. of infrastructure
- **Economic efficiency**
 - water scarcity value & redirect of low-value uses to high-value activities



Current DWA Reviews

- PERR
- WDCCS
- Legislative review
- Institutional Realignment
- Business re-engineering process



**Is Change an Opportunity
or
a Problem ?**

Why water pricing

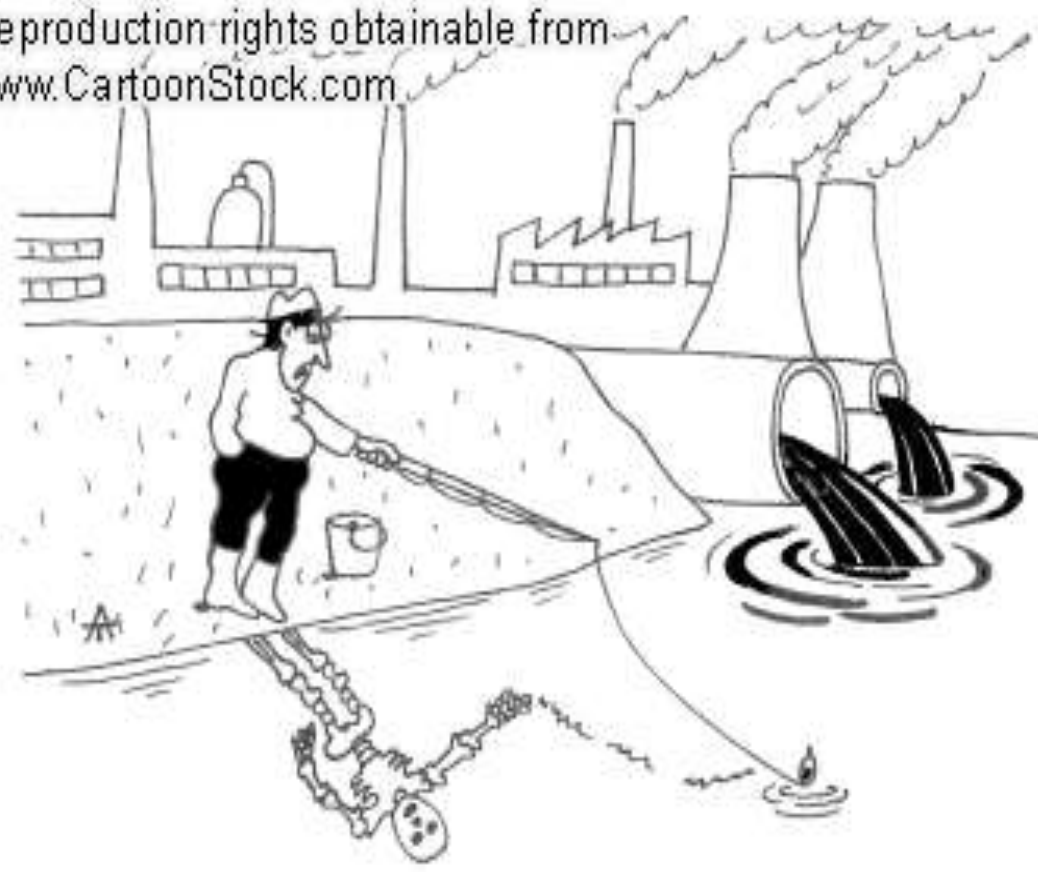
- Legislative mandates for the state
- Good policies on pricing of water
- Cost reflective tariffs for the entire water value chain
- Funding for infrastructure development, operations and maintenance
- Equitable and effective allocation of water
- Providing for differential rates for WDCS
- National fiscal resources distributed by Treasury

Water quality attributes

- The WSA under Section 10.2.a.iii
 - recognises tariffs setting on the basis of different geographic areas, taking into account, among other factors, socio-economic and physical attributes.
 - previous studies (Dzwairo, 2011) noted that water quality attributes have not been factored in pricing using the WQI.
 - it is to this effect that an assessment of cost reflective measure of water quality based approach in pricing is critical.
 - simply to compensate for the costs of treating raw water to portable state.
- Waste Discharge Charge System
- User pay principles



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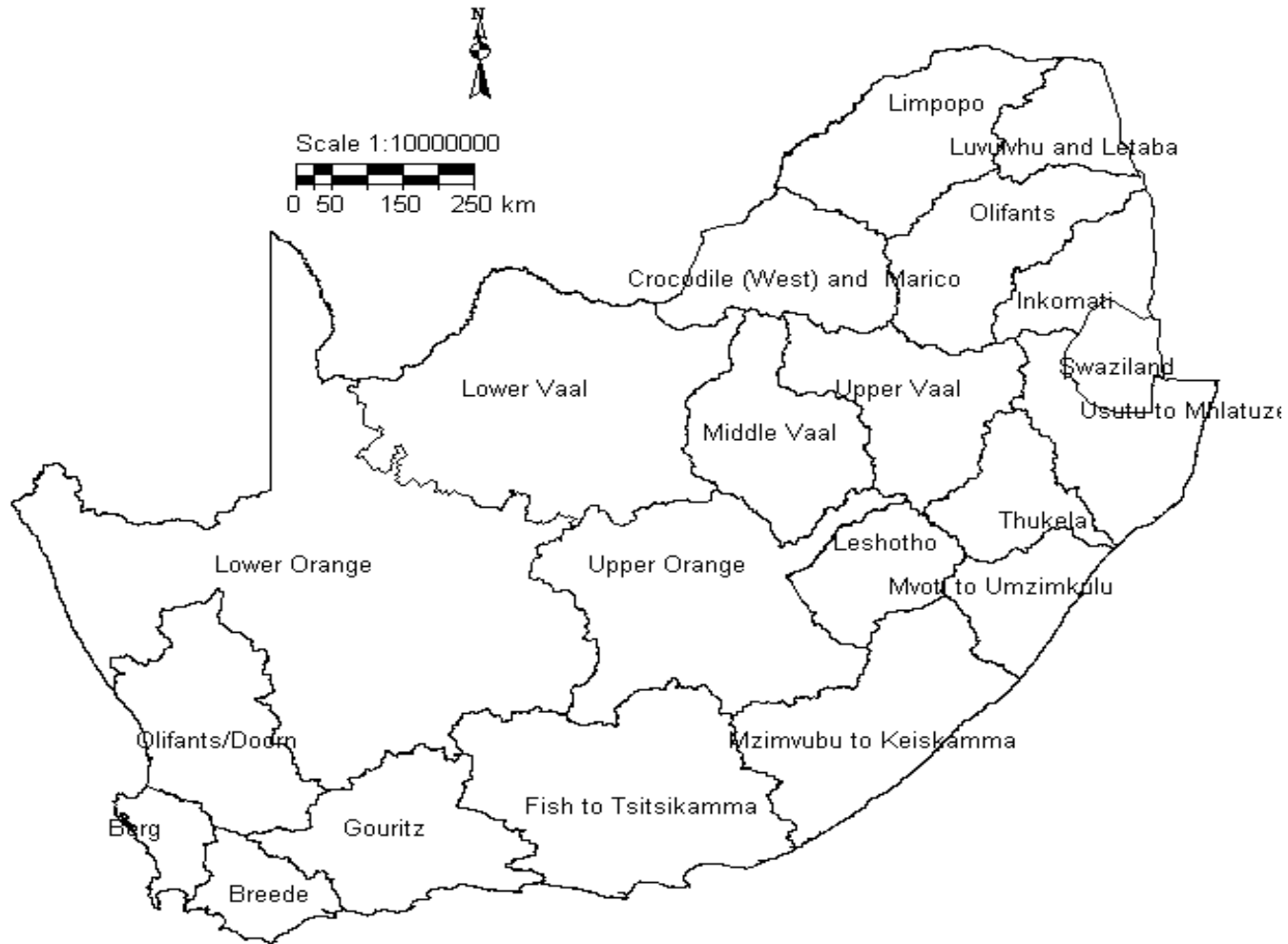


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Study Area

- Two case studies selected
 - Upper & Middle Vaal WMAs
 - Umgeni River basin
- Previous studies done in the areas/information available
- The SAICE 2011 report that the two basins may have water restrictions in the next decade
- Model can be customised nationally

Study Area



Methods

- Previous study points from Dzwauro (2011)
- Parameters to be used will depend on treatment costs
- Several treatment costs will be assessed
- Such treatment costs will then be categorised to form basis for model
- Evolutionary algorithms will model treatment cost data
- The model can then be adapted for use in other areas nationally
- Recommendations will be made to DWA and Water Sector for consideration of approach in the next review process

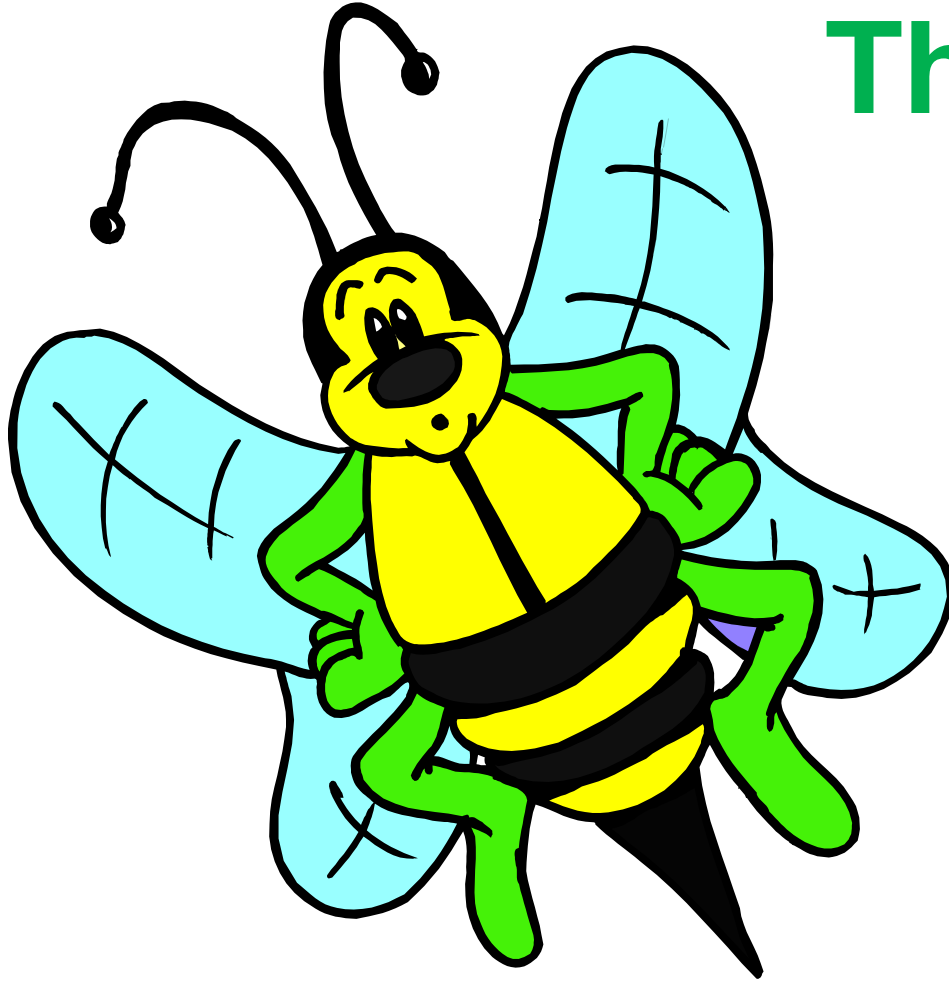
Table 1 Project Budget

Budget

Disbursements	Year 1 Costs (R)	Year 2 Costs (R)	Year 3 Costs (R)	Year 4 Costs (R)	TOTAL Costs (R)
*Academic					
Application	300	300	300	300	1200
Tuition/registration	20 000	3000	3000	3000	29 000
Handling	200	200	200	200	800
Participation/Operational					
Transport	1000	4000	4000	1000	10 000
Running costs	1000	2000	2000	2000	7000
Subsistence	500	500	1000	2000	4000
Equipments					
Software requirement	5000	0	5000	0	10 000
Maps, data, printing, journal and book articles	1000	2000	1000	3000	7000
National/international conferences					
Meetings/seminars workshops	1000	2000	3000	5000	11 000
Local conference presentations	1000	1000	3000	5000	10 000
International conference presentations	0	0	0	30 000	30 000
TOTAL	31 000	15 000	22 500	51 500	120 000

Anticipated Recommendations

- National roll out of the water quality based/consideration on water pricing
- Recommendations to the DWA and water sector on the next Pricing Strategy Review
- Continued adaptation depending on changes of water quality & treatment costs
- Benefit water sector on self regulation and data provision by WSA



Thank you