



Environmental health and transboundary water quality in South Africa's Vaal River: towards assessment hermeneutics

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Introduction

- August 2011 Parliamentary portfolio committee informed SA's river water dangerous to drink
- Many streams experience serious faecal pollution, eutrophication, high salinity, high toxicity and acid mine drainage
- Causes: rapid development, population growth, urbanisation and integrating comprehensive water resource management systems, especially at local governance level.
- Water research specialists urged authorities to establish more data collecting points and deal with it as a matter of urgency
- Voices also for TD science
- Fezile Dabi District Municipality did respond



Background

A sunset scene with a bright sun low on the horizon, casting a golden glow across the sky and reflecting on the water. The sky is filled with soft, orange and yellow clouds. In the foreground, the water is calm, with gentle ripples. On the right side, the dark silhouette of a tree is visible against the bright background.

- In 2008 CuDyWat conducted similar research for Fezile Dabi
- Assessment of environmental health of Vaal River water in Ngwathe Local Municipality
- Report critical, but provided perspective of public perceptions
- Reception at first not favourable, but later attitude change
- Yielded results: government support



Objective collaboration between health authorities

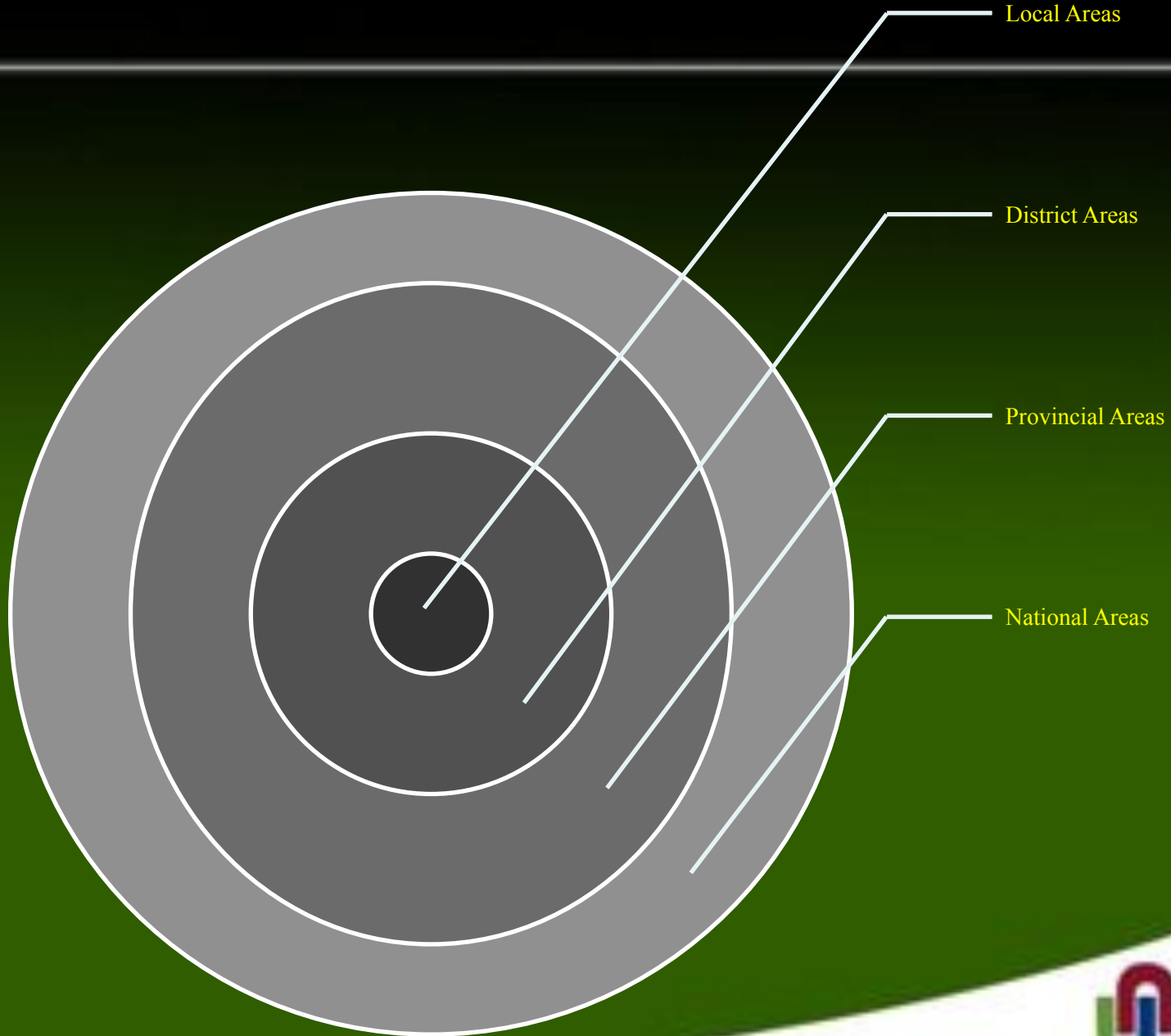
- Current research project
- SA's Vaal River severely polluted: hardest working river in country
- Initiative to generate collaboration amongst environmental health officials, across district and provincial boundaries
- Establish transboundary water quality assessment system
- Share data
- Need for effective assessment call by experts
- Need for modelling data in the face of climate change
- Vaal River Part of Orange River catchment extends from east to west
- Diversity: east moist mountain Highveld; west hot arid desert regions
- Parts of Vaal River already under sound monitoring hierarchy, but large areas not monitored
- New generation water scientists calling for TD approach to IWRM

Water quality and health services

- Water quality monitoring key function of municipal health services in SA
- *National Health Act, 61 of 2003*
- Regulation 698 of 2009 under the *Health Professions Act, 56 of 1974*
Outlines the responsibilities of the environmental health practitioner in terms of water quality monitoring
- Monitoring v assessment
 - Need for more holistic approach
 - Also broader application
- Attach value to words:
- Vygotsky:
 - “A word calls to mind its content as the overcoat of a friend reminds us of that friend, or a house of its inhabitants.”

Boundaries and integration

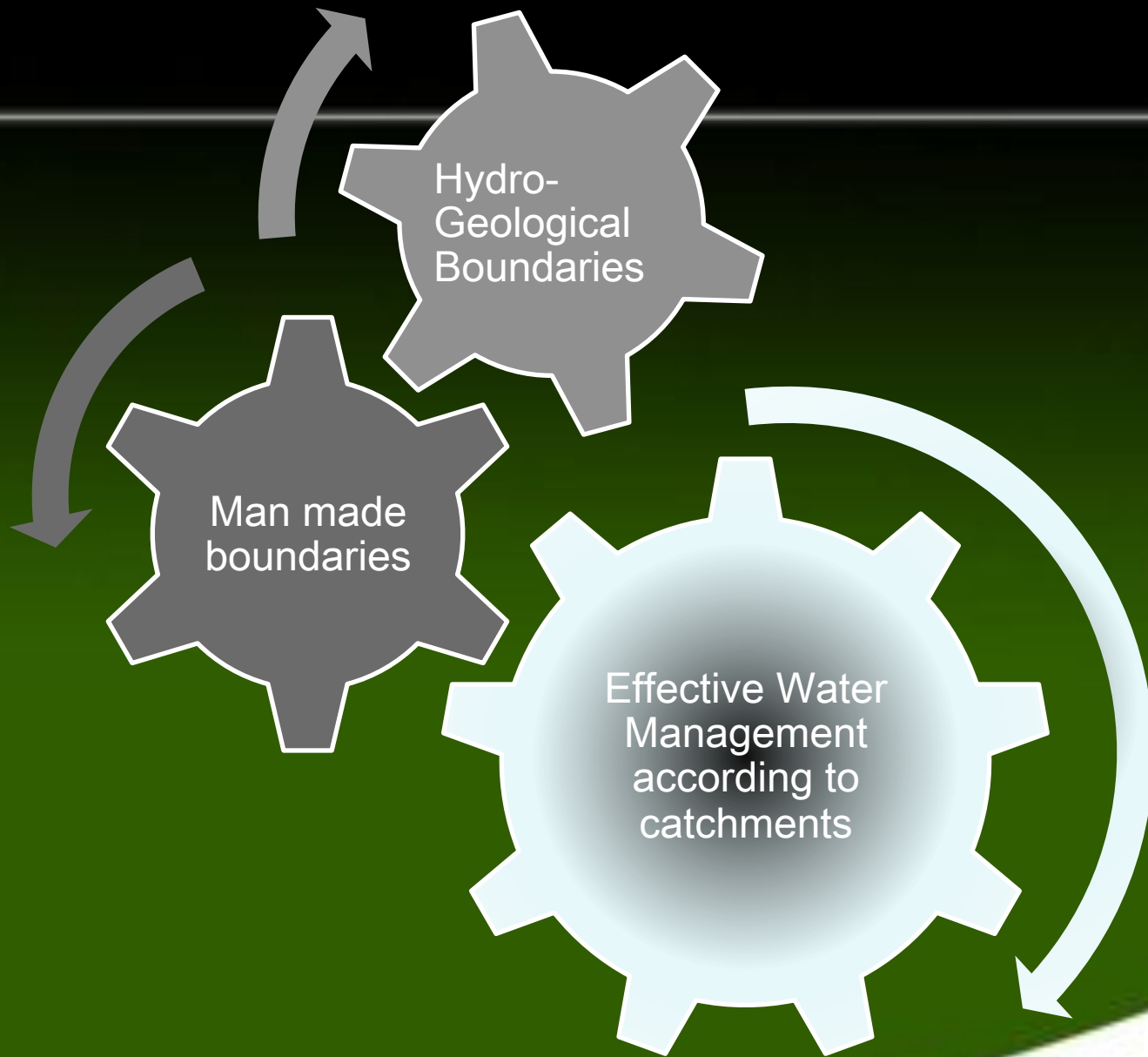
- Theoretical tools of transdisciplinary research to be used for comprehending complexity of boundaries: integration, social learning and interest-based bargaining
- Boundaries:
 - Manmade: Administrative municipal, district and provincial.
 - In case of Fezile Dabi: 5 districts and 4 provinces
 - Nature: Vaal River catchment formation by hydrogeological forces over a period of 180 million years
- Boundaries: manmade 'solidified'
- Historically solidified
- Officials operate in silos
- Recommendation: strive towards inter-department collaboration
- Legally outlined objective: cooperative governance
- Seek collaboration between health and other departments that have vested interest in hydrosphere



Catchment
Management
Agency

Catchment

Sub-catchment



Social learning and interest-based bargaining

Social learning increasingly important as normative goal in natural resource management

Social engagement of stakeholders

Acceptance for the fact that it is only by means of interest-based bargaining that consensus can be reached to work towards collaborative governance

In the case of the project: collaborative water quality assessment



Assessment

- Assessment:
- A framing process. Framing is an activity to provide guideposts for knowing, analysing, persuading and acting
- Ongoing quest for advancement of rigorous research scholarship
- Aspiration:
 - construction of understanding that transcends discrete cases and advances knowledge of collective interest
- Major requirement:
 - Constant assessment of research to ensure compliance with measures to assure reliability and validity.
 - Ample opportunities to identify and rectify possible shortcomings in the research design process
- Process:
 - Collect data until a point of saturation is reached, in which researchers can continuously assess the available data to confirm, disconfirm and identify interrelationships

Towards assessment hermeneutics

- Seek collaborative knowledge platform between stakeholders: Two cultures (Snow 1964) to consilience (McCormick, 2011)
 - Hermeneutics as methodological approach
 - Highly effective in humanities research
 - Effectively used in natural sciences (Heelan 1998)
 - Pragmatic and historical hermeneutics
 - Shalin (2007) Pragmatic hermeneutics:
 - Symbolic discursive
 - Somatic effective
 - Behavioural performative
 - Ruesen (2011): Historical hermeneutics
 - Landscape of the past (Benjamin – Klee)
 - Present (Begriffsgeschichte)
 - Future (Horison)
- Outline of phases: heuristics, criticism, interpretation, reportage

Conclusion

- Work towards generating data
- Effective assessment of environmental health of water resources in South Africa
- Willingness to use transdisciplinary strategies to acquire relevant knowledge,
- Outcome: better water quality assessment system
- Need for holistic approach
- Aim at collectively comprehending complex hydrosphere in an age in which anthropogenically shaped causes are beginning to influence the deep history of the future.