











Why should we conserve water in South Africa: a reflection from a water resource assessment study (WR2005 Study)

Wandile Nomquphu 22 March 2012 at 12:00

Presented at: World Water Day Colloquium College of Agriculture and Environmental Studies UNISA – Florida Campus (Roodepoort)

Presentation Outline

- 1. Introduction
- 2. Water resource assessment in SA
- 3. Reconciliation of Supply and Demand
- 4. Need to conserve water and Conclusions











1. Introduction

- Quantity (natural) of water is largely controlled by
 - A Rainfall
 - Stream or surface water flows
 - Groundwater recharge
- The above processes are interlinked in the hydrological cycle
 - Resource quantification assesses relationship between rainfall – runoff, and rainfall – groundwater recharge
- Availability is largely impacted by demand
 - Water is finite











2. Water Resource Assessment in SA

- 1959: HRU(Wits) 1st national surface water survey = 54 000 Mm³
- □ 1971: Establishment of the WRC
- □ 1981: Update of 1st national survey = 52 000 Mm³
- □ 1990: WR90 = 50 000 Mm³
- 2005: WR2005 = 49 000 Mm³ (surface water) 98% allocated. Groundwater = 10 000 Mm³ (or 7 500 Mm³ under drought conditions)
 - integrated water assessment: surface water, groundwater and water quality









2. Water Resource Assessment in SA ... continued



2a. Rainfall Distribution and rain gauges used





2b. Mean Annual Precipitation...continued





2c. Mean Annual Runoff...continued



WATER RESEARCH COMMISSION

2d. Major rivers and rainfall distribution...continued





2d. Groundwater resource distribution...continued









Intrinsic relationship between rainfall and distribution of water resources









Rainfall: Runoff ratio (Schulze, 2009)















2f. Rainfall – Runoff relationship....continued





2g. Comparison of MAR (10⁹m³) for WR90 and WR2005 per WMA...continued

~	≈
RESE	ARCH

WMA	WMA Description	Mean annual naturalised flow	
		WR90	WR2005
1	Limpopo	986	931
2	Luvuvhu/Letaba	1235	1304
3	Crocodile West and Marico	748	704
4	Olifants	1990	1920
5	Inkomati	3361	3089
6	Usutu to Mhlatuze	6721	6421
7	Thukela	3994	3881
8	Upper Vaal	2581	2453
9	Middle Vaal	1121	913
10	Lower Vaal	236	201
11	Mvoti to Umzimkulu	4929	4922
12	Mzimvubu to Keiskamma	7219	7012
13	Upper Orange	6945	6756
14	Lower Orange	404	274
15	Fish to Tsitsikamma	2152	2184
16	Gouritz	1633	1540
17	Olifants/Doring	1063	1074
18	Breede	2474	2483
19	Berg	1330	1149
	Tota	l 51121	49211











2h. Comparison of MAR (10⁹m³) for WR90 and WR2005 per WMA...continued



Mean annual naturalised flow WR2005



RESEARCH COMMISSION

3. Reconciliation of Supply and Demand





3a. Reconciliation of Availability with Supply





Source: United Nations Economic Commission for Africa, 1999¹⁰ 4/26/2012

- Demand exceeds supply
- □ Water stress mode to water scarcity
- Water is finite and yet demands increase daily

















Thank you for your attention!

www.wrc.org.za

wandilen@wrc.org.za

26-Apr-12









