

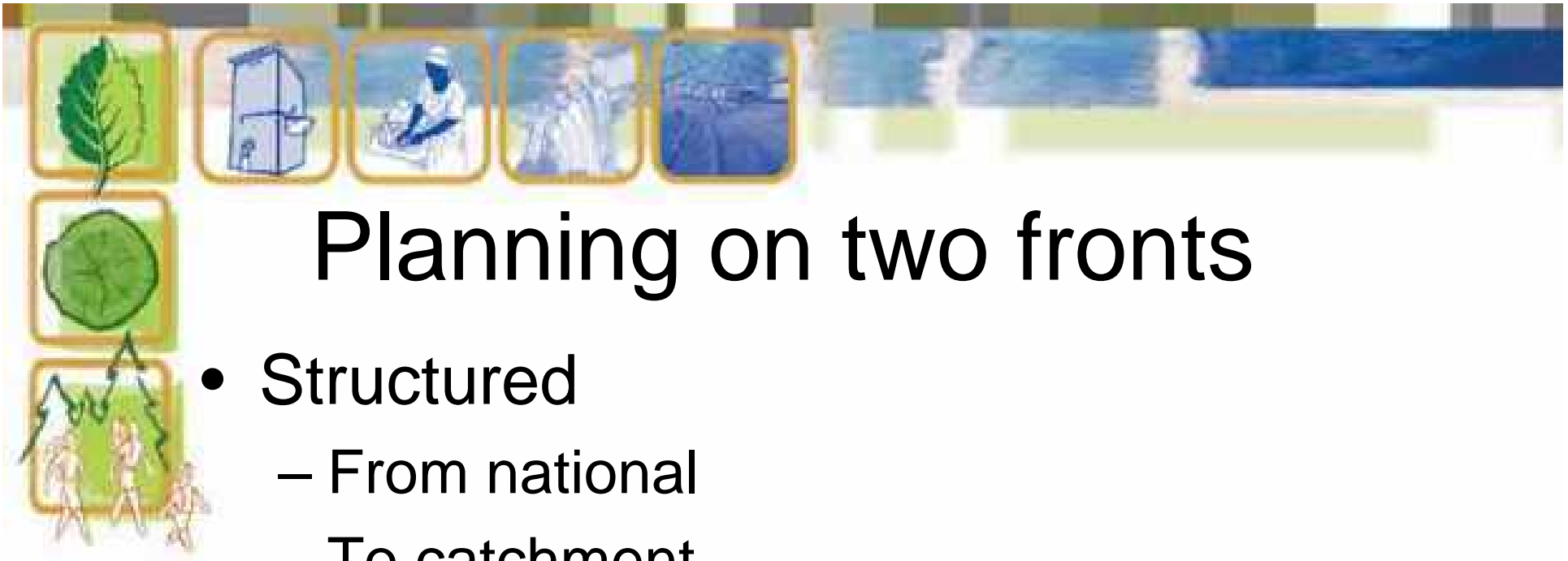
South Africa's Water Situation and Planning for the Future

WSSLG Strategic Workshop

21 November 2006

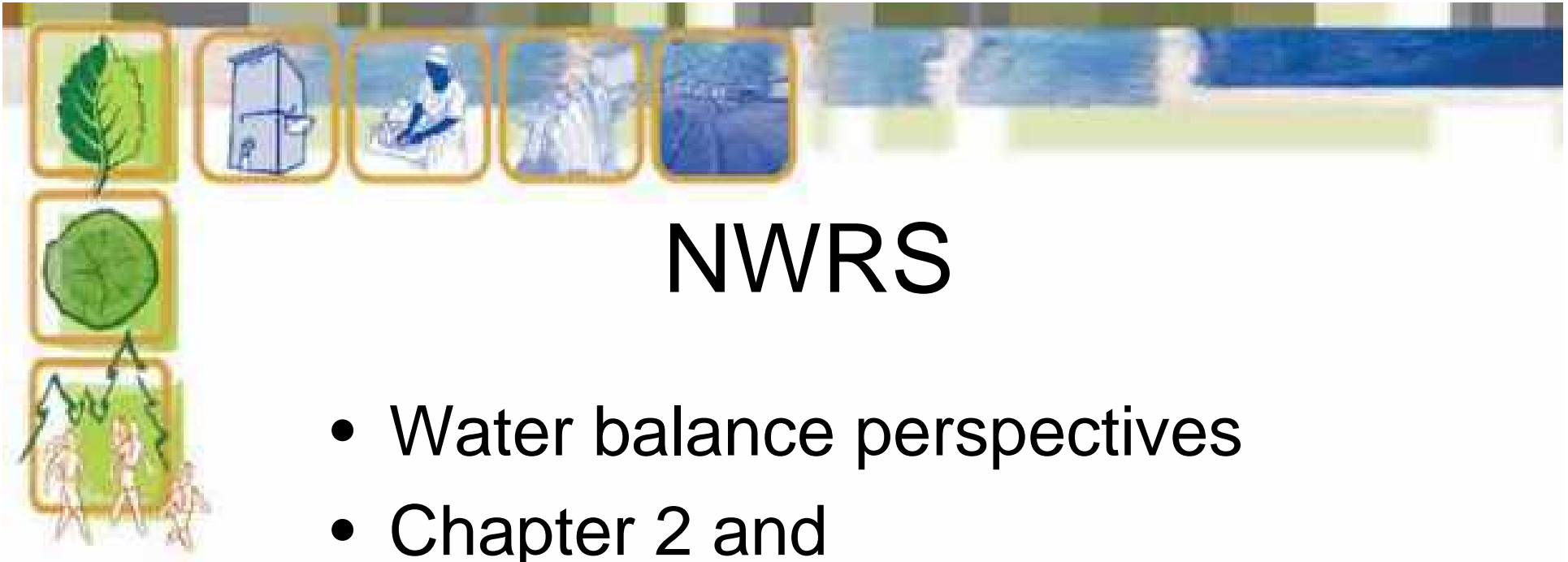
Johan van Rooyen

Director: National Water Resource Planning



Planning on two fronts

- Structured
 - From national
 - To catchment
 - To detail for users
- Ad hoc
 - Where problems require urgent action



NWRS

- Water balance perspectives
- Chapter 2 and
- Appendix D



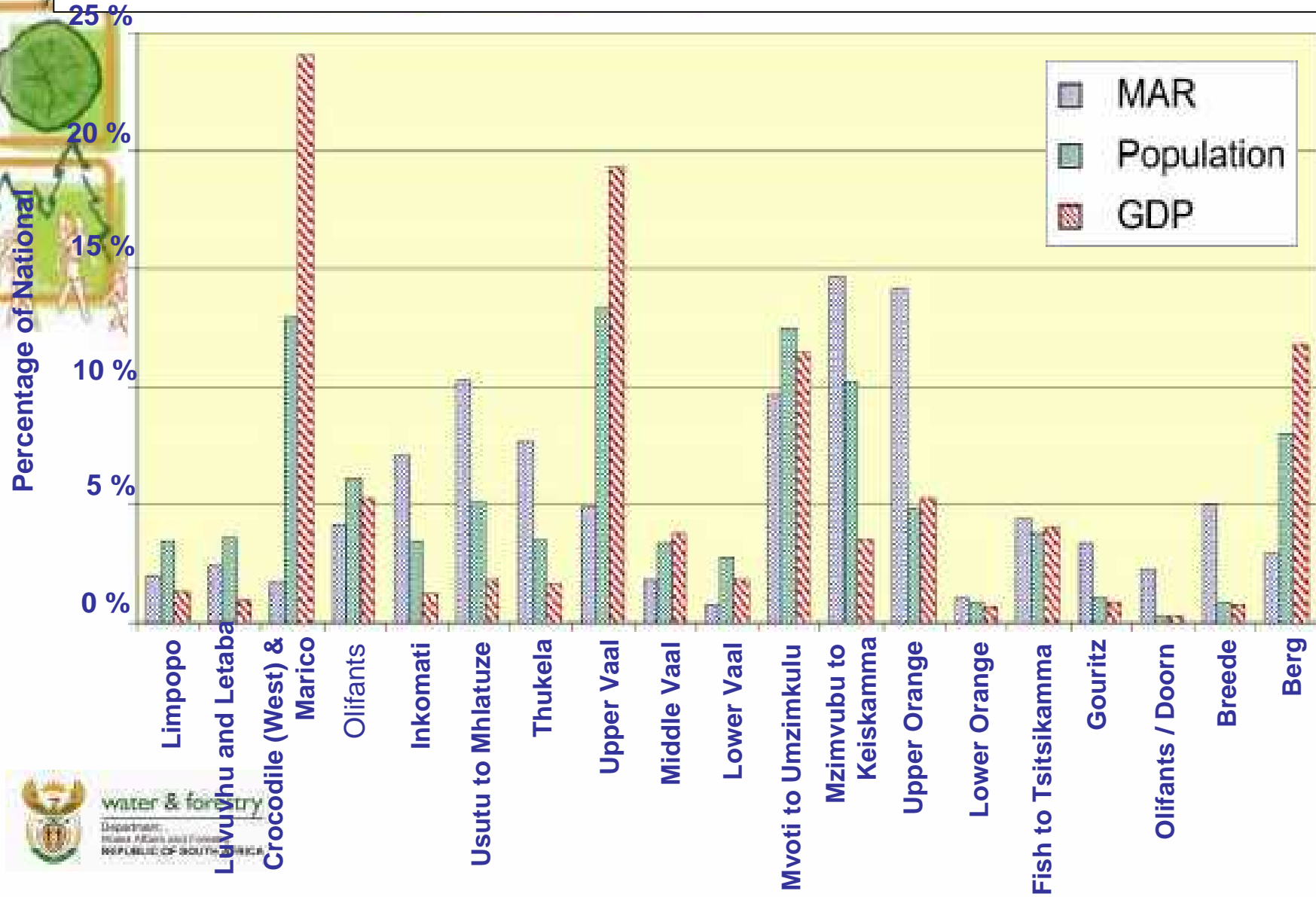
Water resources under direct control of the Minister

- Water in South Africa is a national asset
- Some water in each WMA under direct control of Minister - quantity and quality
 - Reserve (ecological Reserve, basic human needs)
 - water to meet international rights and obligations
 - water use of strategic importance (e.g. to generate electricity)
 - transfers of water between water management areas
 - contingency to meet future growth

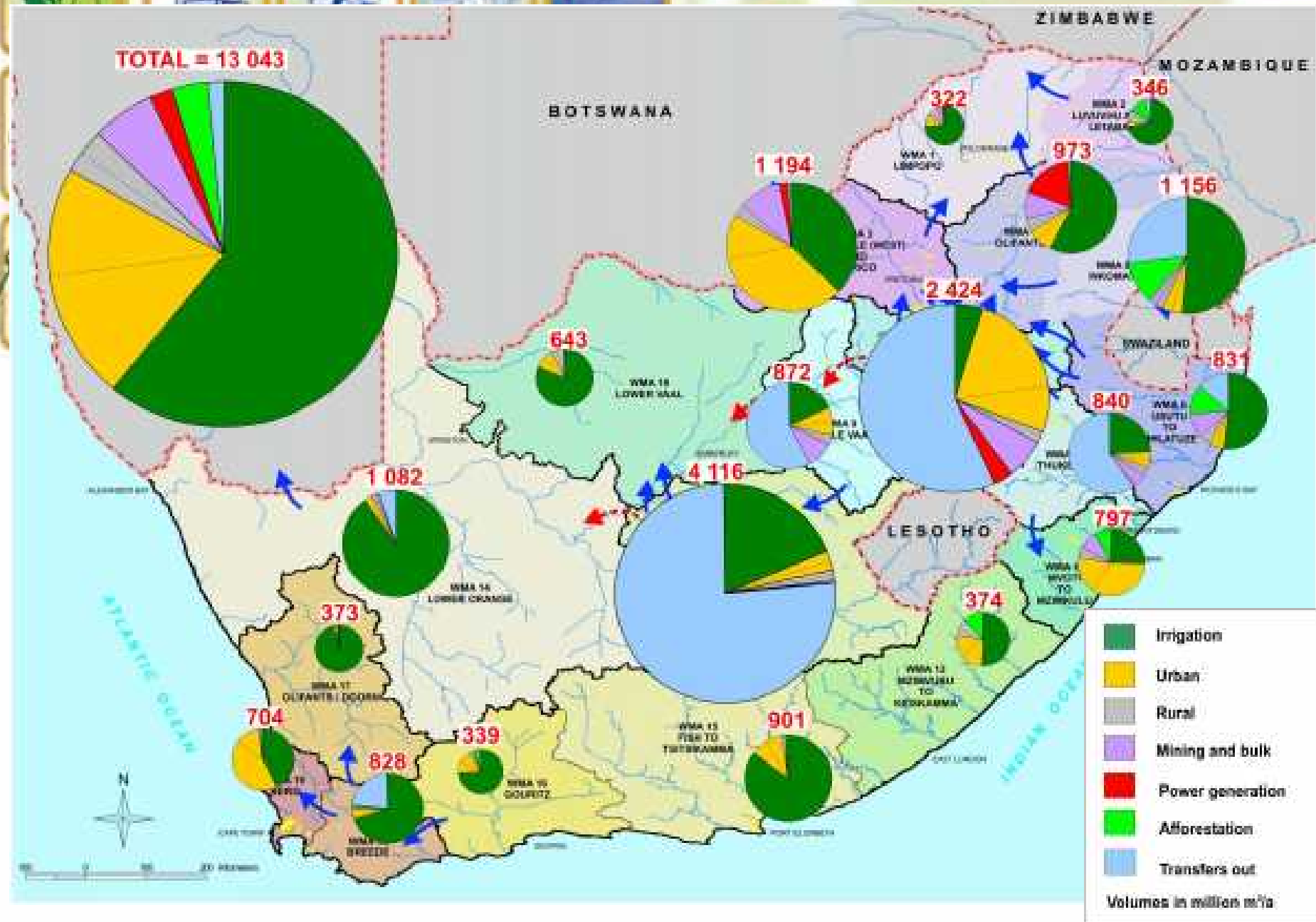
International Rivers shared by South Africa



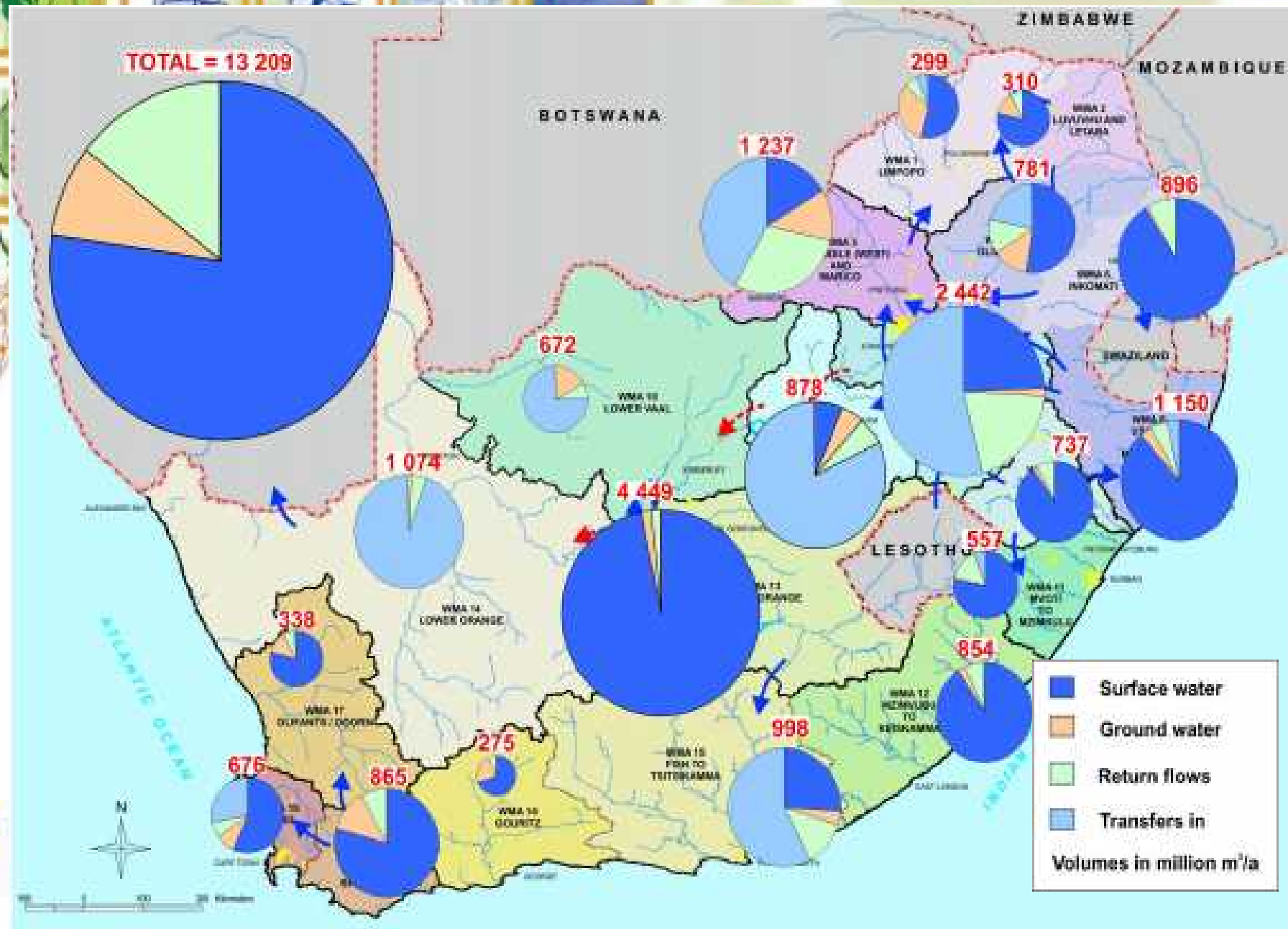
Comparison of the mean annual runoff, population and economic activity per water management area



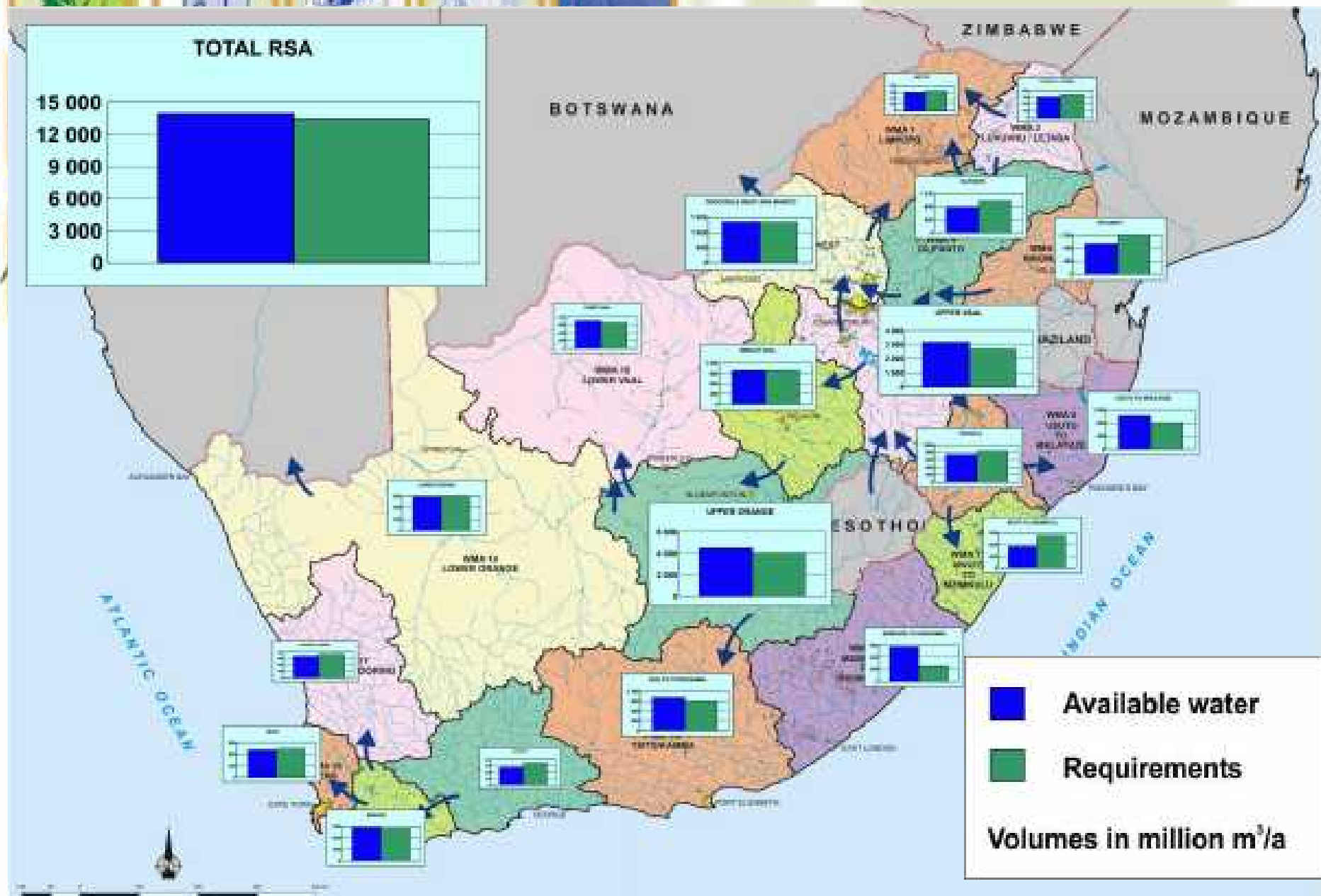
Water requirements, year 2000



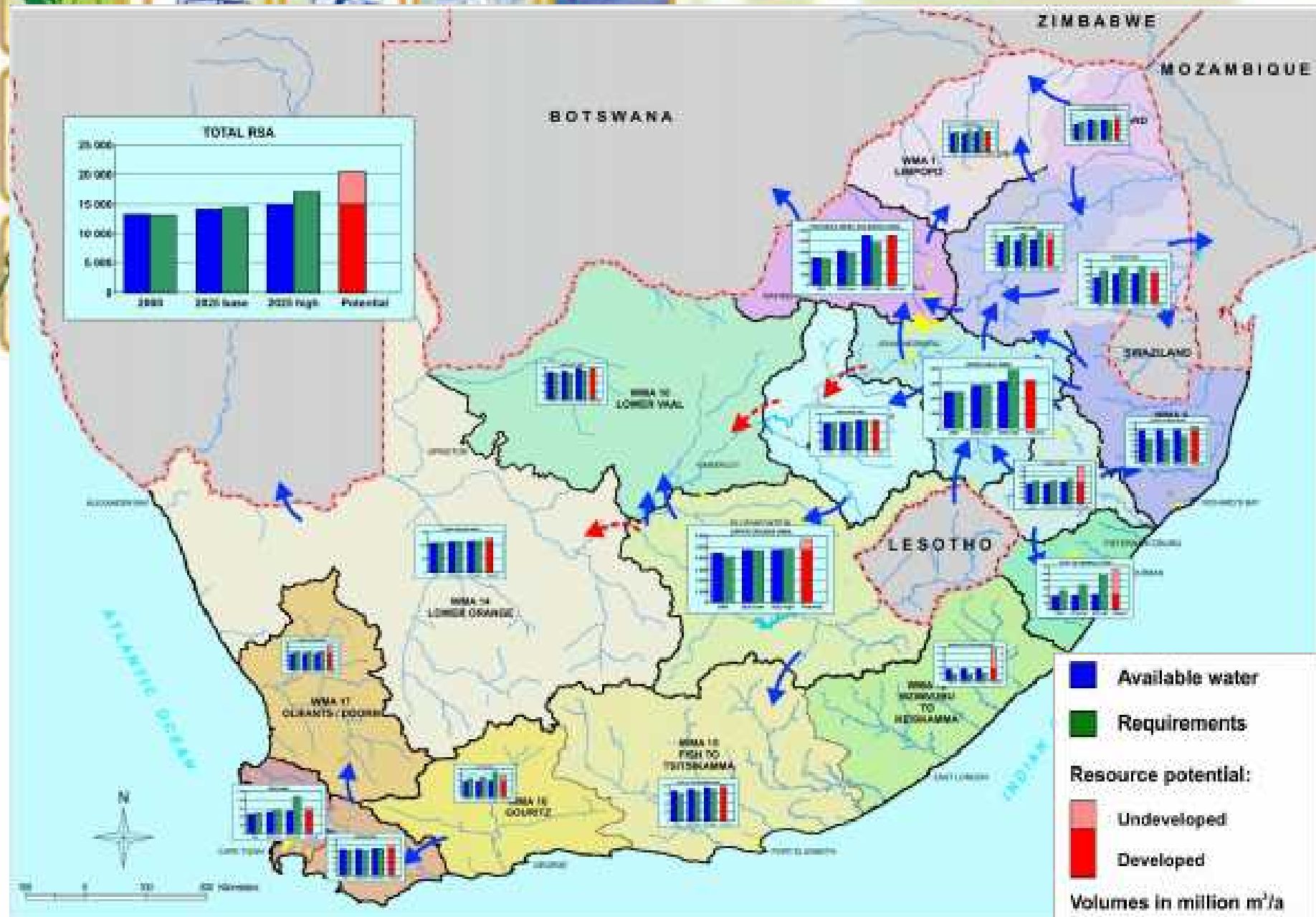
Water availability, year 2000



Water reconciliation, year 2000



Water reconciliation, year 2025



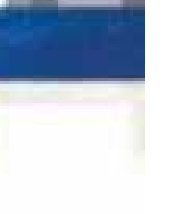
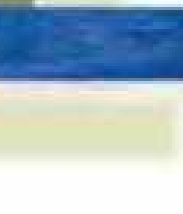
Water quality

- Essential that water be of appropriate quality for intended uses
- Deteriorating water quality potential major threat in SA
 - can render water unfit for use
- Main sources of impact on water quality are:
 - discharge of urban and industrial effluent to rivers
 - high salinity irrigation return flows
 - wash-off and leachate from mining operations
 - wash-off from areas with insufficient sanitation
- Water quality thus fundamental element to water resource management



Why is the NWRS important for Local Government

- Inter basin transfers in many cases for municipal supplies
- Strategic guidance on reconciliation



NWRS Reconciliation strategies - meeting the needs for water

- Water demand management and conservation
- Surface water resource management (operation of dams) and conservation
- Managing and use of groundwater
- Re-use of water
- Eradication of invading alien vegetation
- Re-allocation of water
- Development of surface water resources (e.g. dams)
- Transfer of water



Catchment Management Strategies

- Initial function of a CMA after established and functional
- There is a gap until established
- DWAF (Regional Offices) is acting as CMA
- DWAF Produced “Internal Strategic Perspectives” (ISPs)



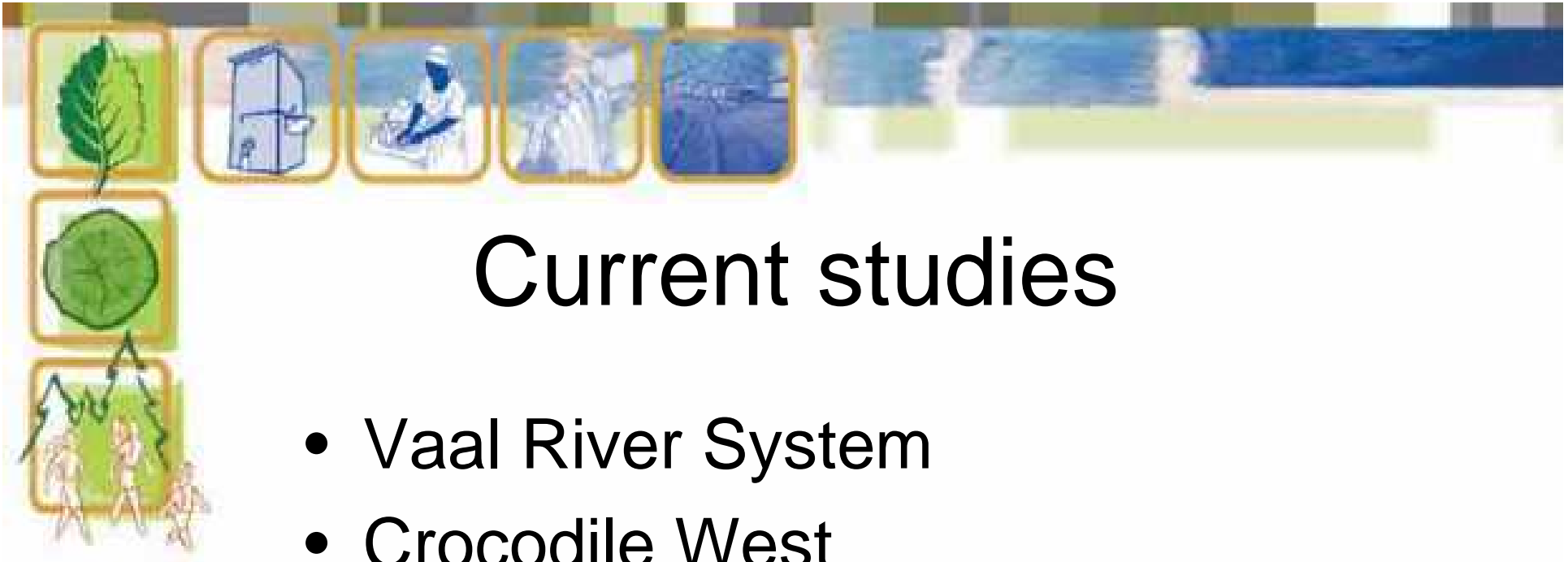
ISPs

- More detailed than NWRS
- Covered more aspects
- Some covered situation of municipalities in more detail
- Improved on water balances where better information became available
- Identified need for more detailed studies



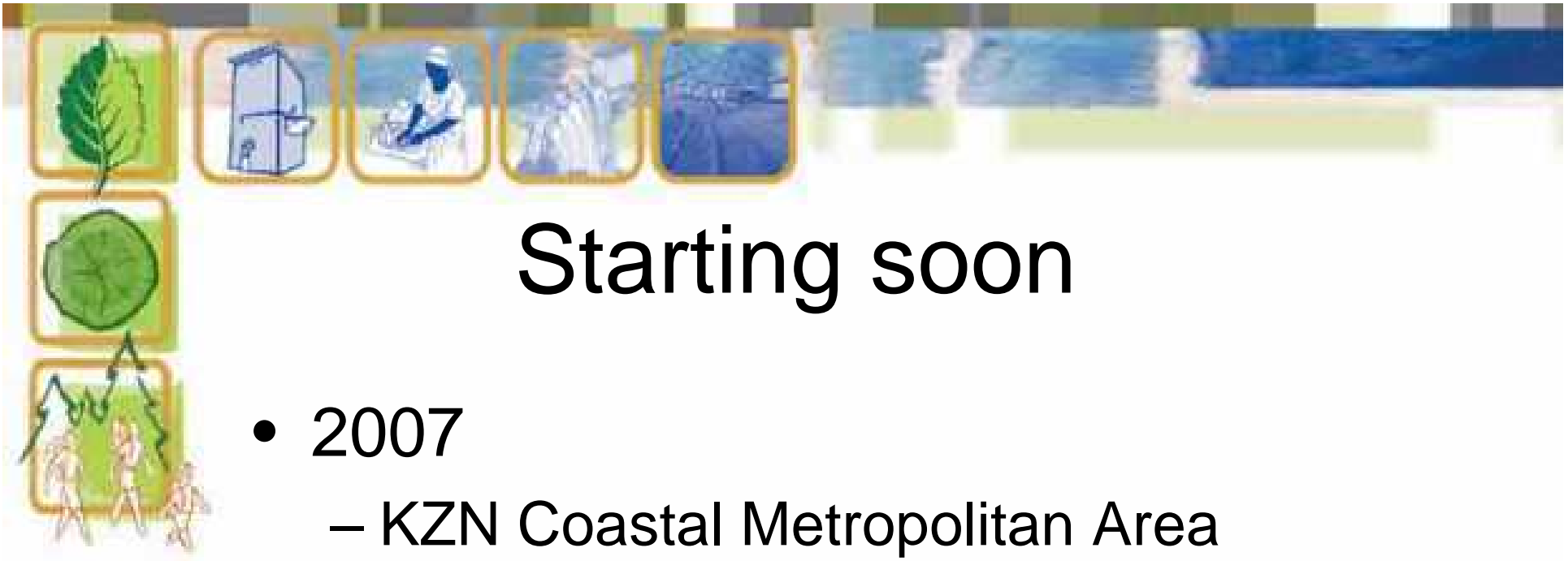
Reconciliation strategies for metropolitan areas

- Develop water requirement scenarios for and with metros
- Investigate all possible resources and other interventions
- All possible methods for reconciling the requirements and the resource
- Recommendations for implementation



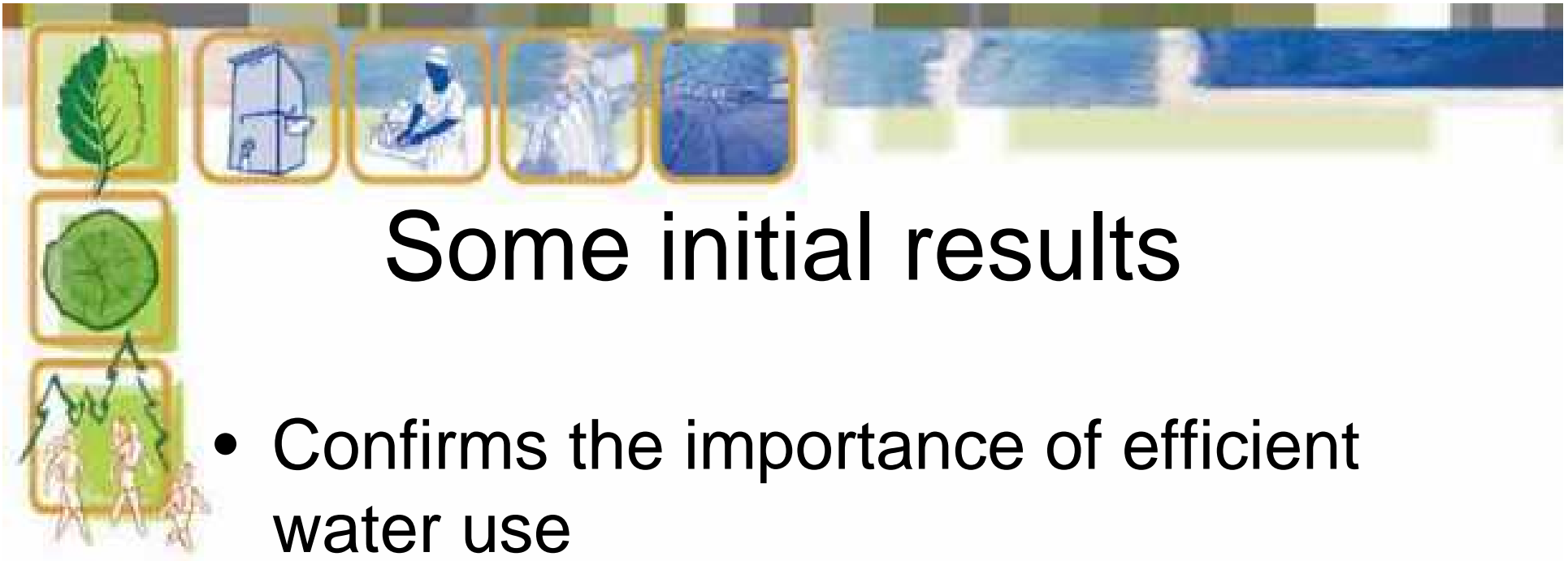
Current studies

- Vaal River System
- Crocodile West
- Western Cape
- Amatole System
- Many smaller municipalities also covered



Starting soon

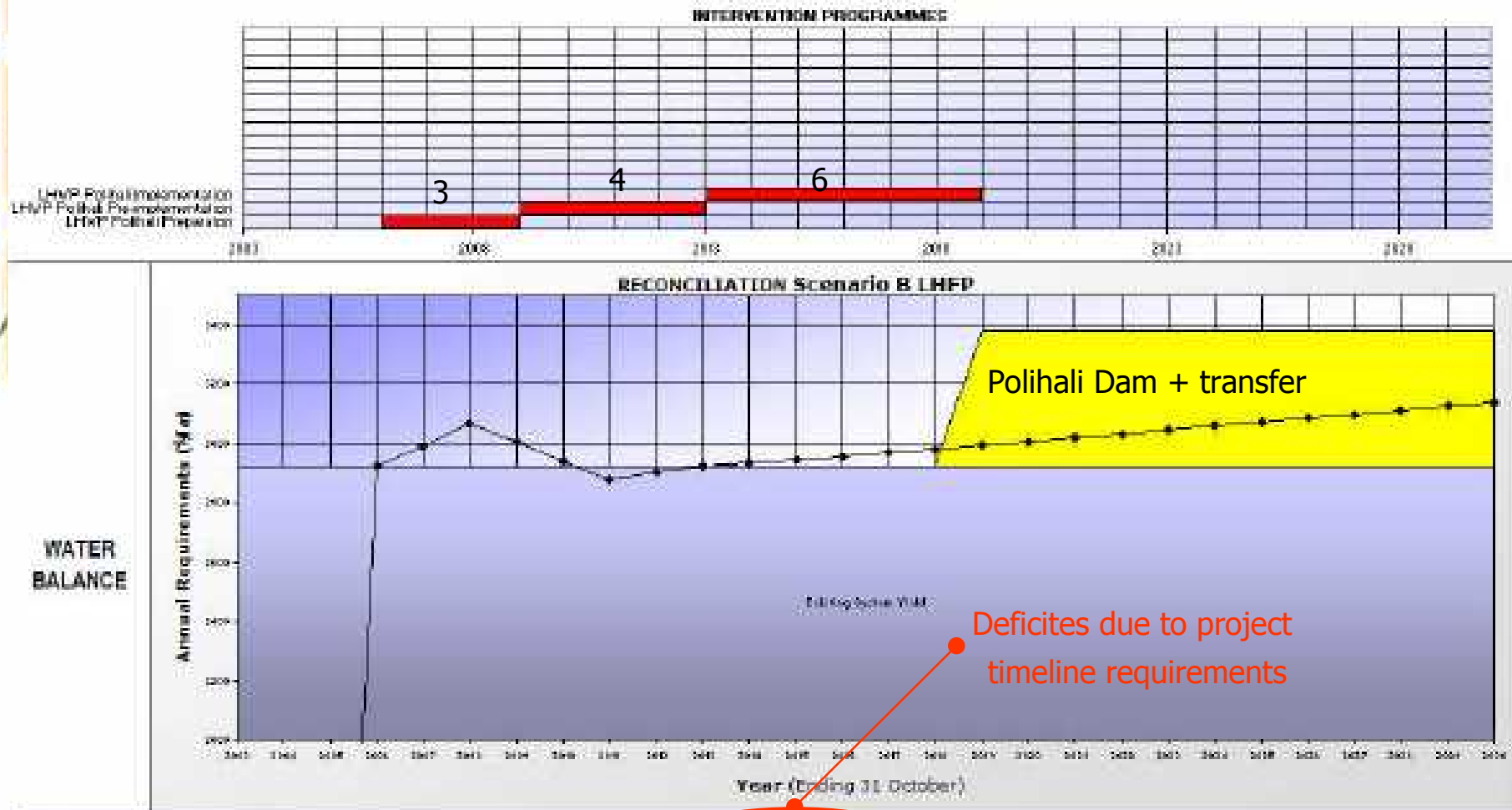
- 2007
 - KZN Coastal Metropolitan Area
 - Algoa System (NMMM)
- 2008
 - Bloemfontein
 - Richards Bay



Some initial results

- Confirms the importance of efficient water use
- Importance of groundwater for Cape Town
- Huge potential for re-use in coastal cities

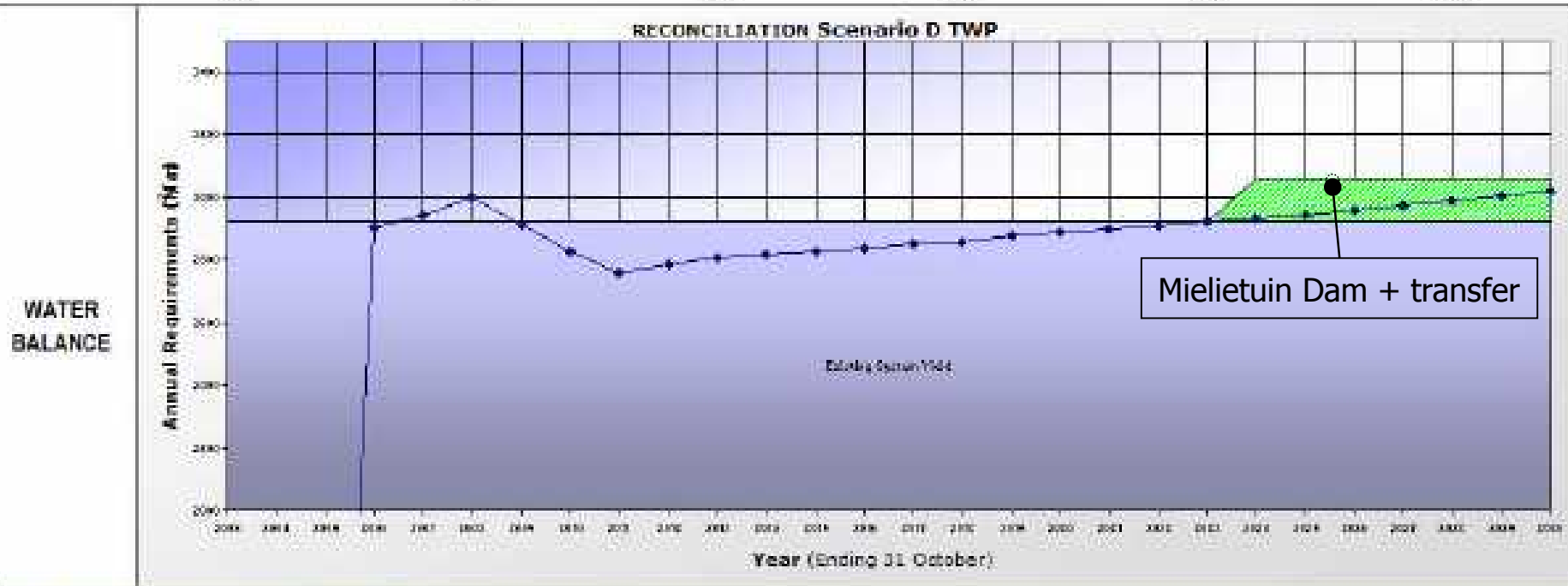
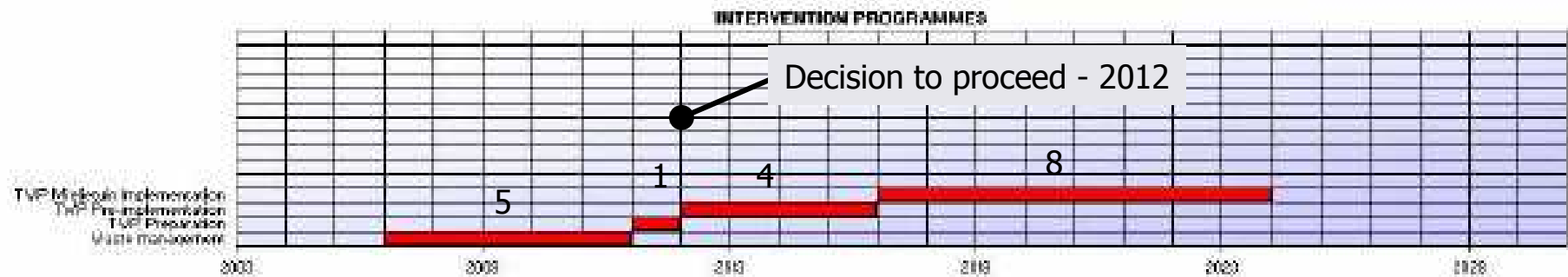
Vaal System: "No WC/DM"



WATER BALANCE CALCULATIONS (Mm³)																									
Water Balance (Mm³)		-2	-50	-103	-32	-10	46	21	-9	-11	-21	-32	-42	-50	400	370	340	310	280	250	220	190	160	130	100
System Yield (cumulative)		2121	2071	1968	1836	1686	1526	1356	1186	1016	846	676	506	336	166	0	136	266	396	526	656	786	916	1046	1176
Annual Interventions	Yield	0	0	0	0	0	0	0	0	0	0	0	0	0	150	150	150	150	150	150	150	150	150	150	150
	Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjusted Requirements		2121	2071	1968	1836	1686	1526	1356	1186	1016	846	676	506	336	166	0	136	266	396	526	656	786	916	1046	1176
Requirements (selected scenario)		2121	2071	2064	2113	2208	2276	2300	2321	2332	2342	2352	2362	2372	2384	2395	2401	2401	2403	2403	2403	2403	2403	2403	2403
Year		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029

LHFP information provided by Feasibility Study Team

Vaal System: 15% saving



WATER BALANCE CALCULATIONS (Mm³)																											
Water Balance (Mm³)		21	-22	-73	0	34	159	129	114	105	95	72	63	46	36	24	12	1	124	152	58	64	70	53	41		
System Yield (cumulative)		1121	2342	3101	3921	4901	6021	7301	8841	10641	12701	15021	17601	20441	23541	26901	30521	34401	38541	42941	47601	52521	57701	63141	68841		
Annual Interventions	Yield	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106	106	106	106	106	106	111		
	Saving	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Adjusted Requirements		2901	2942	2938	2912	2927	2762	2796	2807	2876	2828	2838	2849	2851	2875	2885	2897	2909	2920	2933	2945	2959	2973	2987	3000	3016.29	
Requirements (selected scenario)		2901	2942	2938	2912	2927	2762	2796	2807	2876	2828	2838	2849	2851	2875	2885	2897	2909	2920	2933	2945	2959	2973	2987	3000	3016.29	
Year		2004	2007	2010	2010	2010	2012	2012	2013	2014	2014	2015	2017	2018	2019	2019	2020	2020	2020	2021	2021	2022	2022	2023	2023	2023	2023

Vaal System: 30% saving



WATER BALANCE CALCULATIONS (Mm ³)		03	-19	-72	0	91	169	258	351	459	569	681	795	912	1030	1150	1270	1390	1510	1630	1750	1870	1990	2110	2230	
Water Balance (Mm ³)		2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921	2921
Annual Interventions:	Yield	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Saving	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjusted Requirements:		2888	2938	2938	2941	2940	2762	2783	2778	2768	2781	2768	2771	2774	2781	2768	2781	2799	2806	2812	2818	2833	2848	2863	2878	2883.33
Requirements (selected scenario)		2888	2938	2938	2941	2940	2762	2783	2778	2768	2781	2768	2771	2774	2781	2768	2781	2799	2806	2812	2818	2833	2848	2863	2878	2883.33
Year		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030



Next level – smaller municipalities

- Studies to start in 2007
- Priority to towns with largest growth potential (as per NSDF)
- Followed by the rest
- Remember that some already covered by metro studies

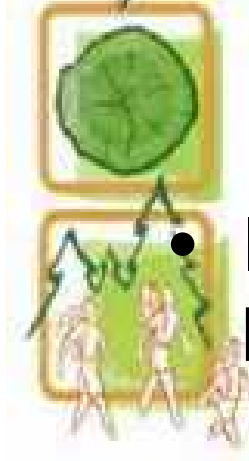


Ad hoc studies

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- Olifants River development
 - Pondoland (Lusikisiki)
 - Outenikwa Coastal towns
 - Cacadu
 - Albany Coast
 - Lephalale



Feedback loops

- 
- Information from these planning studies must be fed back into
 - WSDPs, IDPs
 - CMS
 - NWRS
 - Planning is an iterative incremental process
 - Planning is extremely important, the plan is not