

Integrated monitoring of water allocation reform

Aileen Anderson (Ninham Shand Consulting Services)
James Cullis (Ninham Shand Consulting Services)
Sipho Mahlangu (DWAF)
Sheena Swartz (Ninham Shand Consulting Services)
Gavin Quibell (independent consultant)

Background to Project

Paper draws on 2 projects:

1. DWAF initiated (DFID funded) project to develop a methodology for estimated allocations to HDIs (tested in 5 WMAs)
2. Integration of approach into monitoring framework (DWAF initiated and funded)



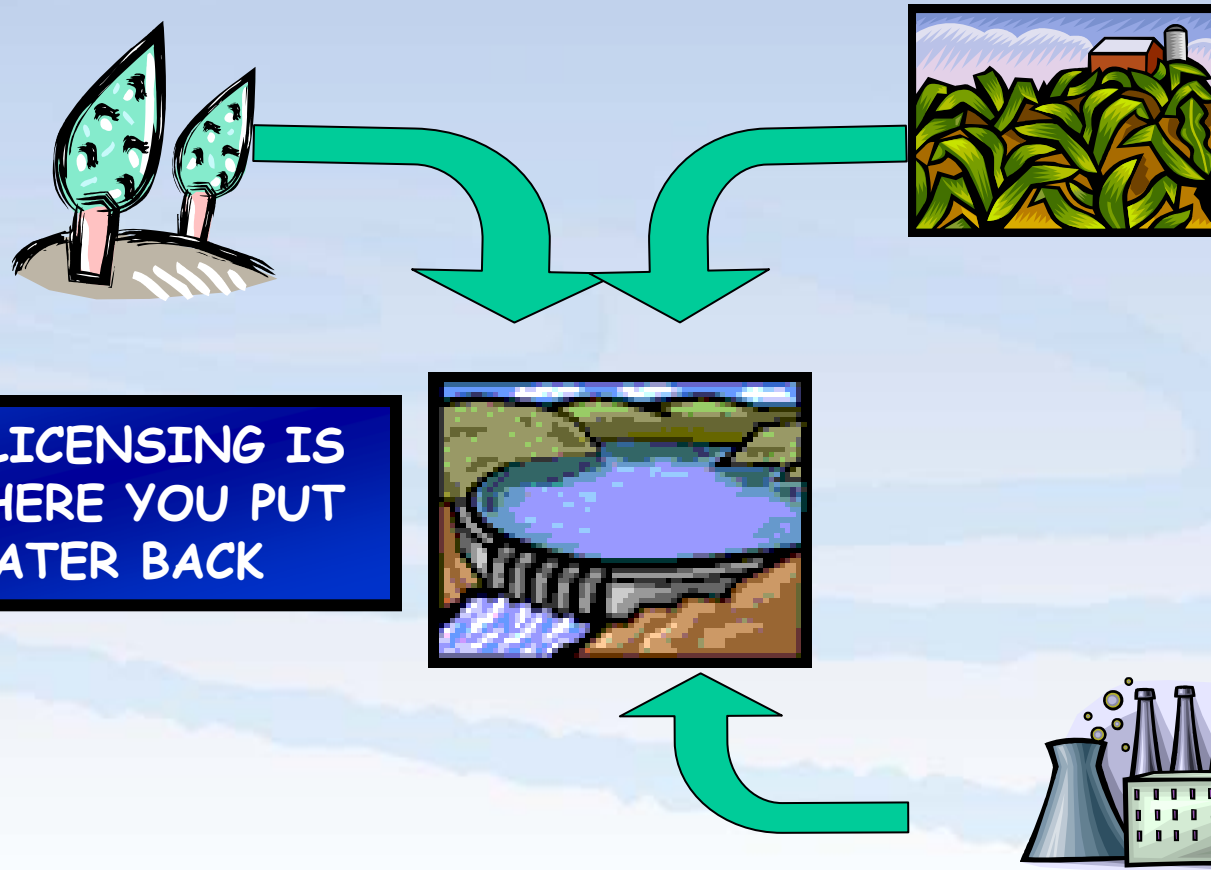
The importance of Monitoring

- IWRM is process to achieve efficiency, equity, and sustainability in water resource management.
- Need to monitor progress towards objectives.
- Need to monitor beyond traditional means.
- Cross-disciplinary monitoring using indicators that guide decision making and implementation.
- Indicators combine large data into single value to measure progress over time/space.

Water Allocation Reform (WAR) Programme

- Government initiative to address inequities in water allocation patterns.
- Focus on water for productive use (beyond provision of basic services).
- Various tools to facilitate WAR.
- Compulsory licensing where all existing user authorisations are reconsidered.

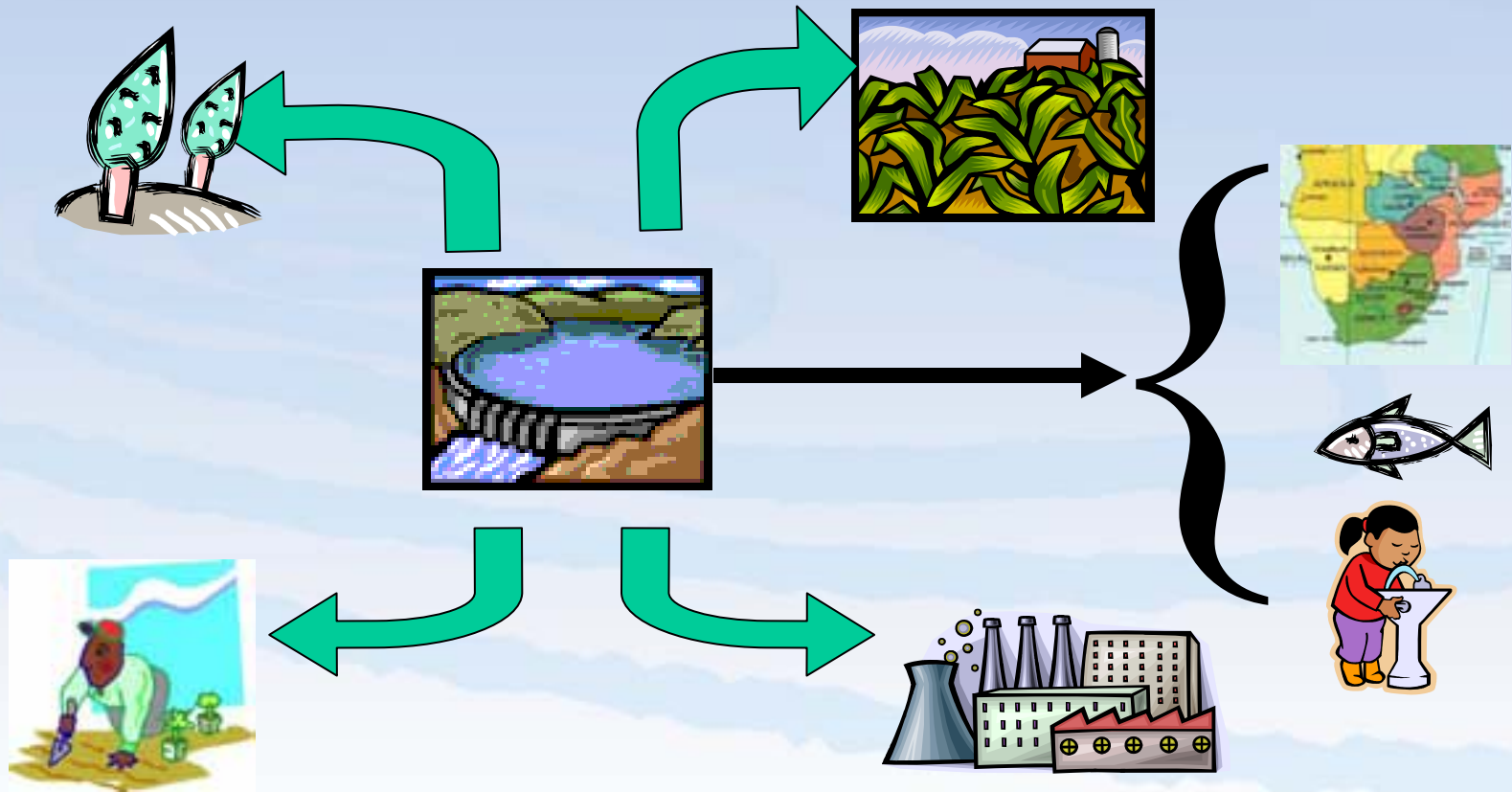
WHAT IS COMPULSORY LICENSING?



**COMPULSORY LICENSING IS
A PROCESS WHERE YOU PUT
ALL THE WATER BACK**

SET ASIDE SOME FOR THE RESERVE AND INTERNATIONAL REQUIREMENTS

THEN DIVIDE THE REST UP MORE FAIRLY IN THE BEST INTERESTS OF ALL SOUTH AFRICANS



WATER ALLOCATION MUST PROMOTE BENEFICIAL USE OF WATER IN THE PUBLIC INTEREST.

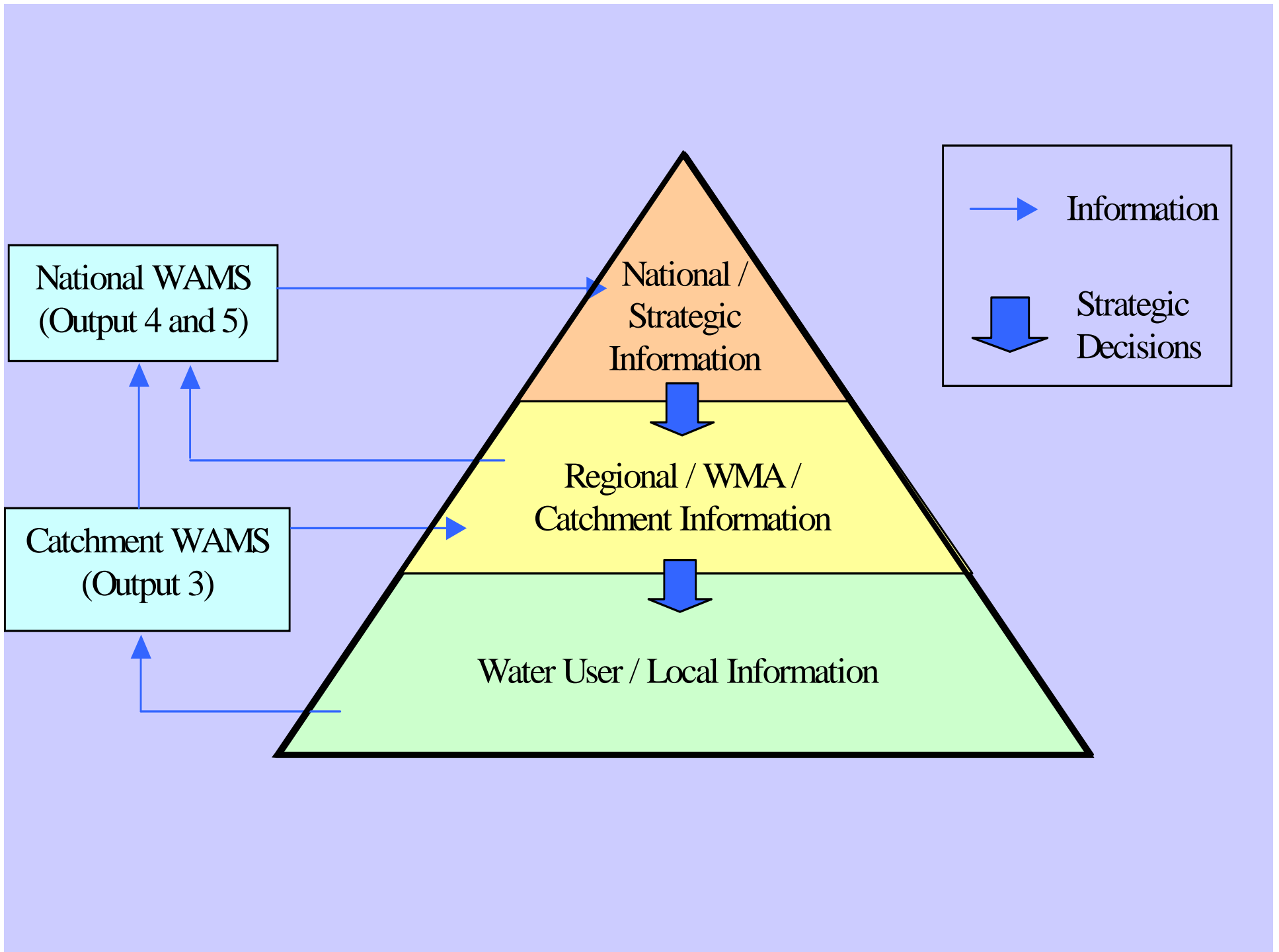
THIS REQUIRES PRIORITISING WATER FOR:

-  **ECONOMIC GROWTH & SOCIAL DEVELOPMENT**
-  **JOB CREATION**
-  **EQUITABLE ACCESS TO WATER**
-  **SOCIAL STABILITY**
-  **INVESTOR CONFIDENCE**
-  **PROTECTION OF AQUATIC ECOSYSTEMS**
-  **EFFICIENT AND NON-WASTEFUL USE OF WATER**
-  **A BALANCE BETWEEN SECTORS**

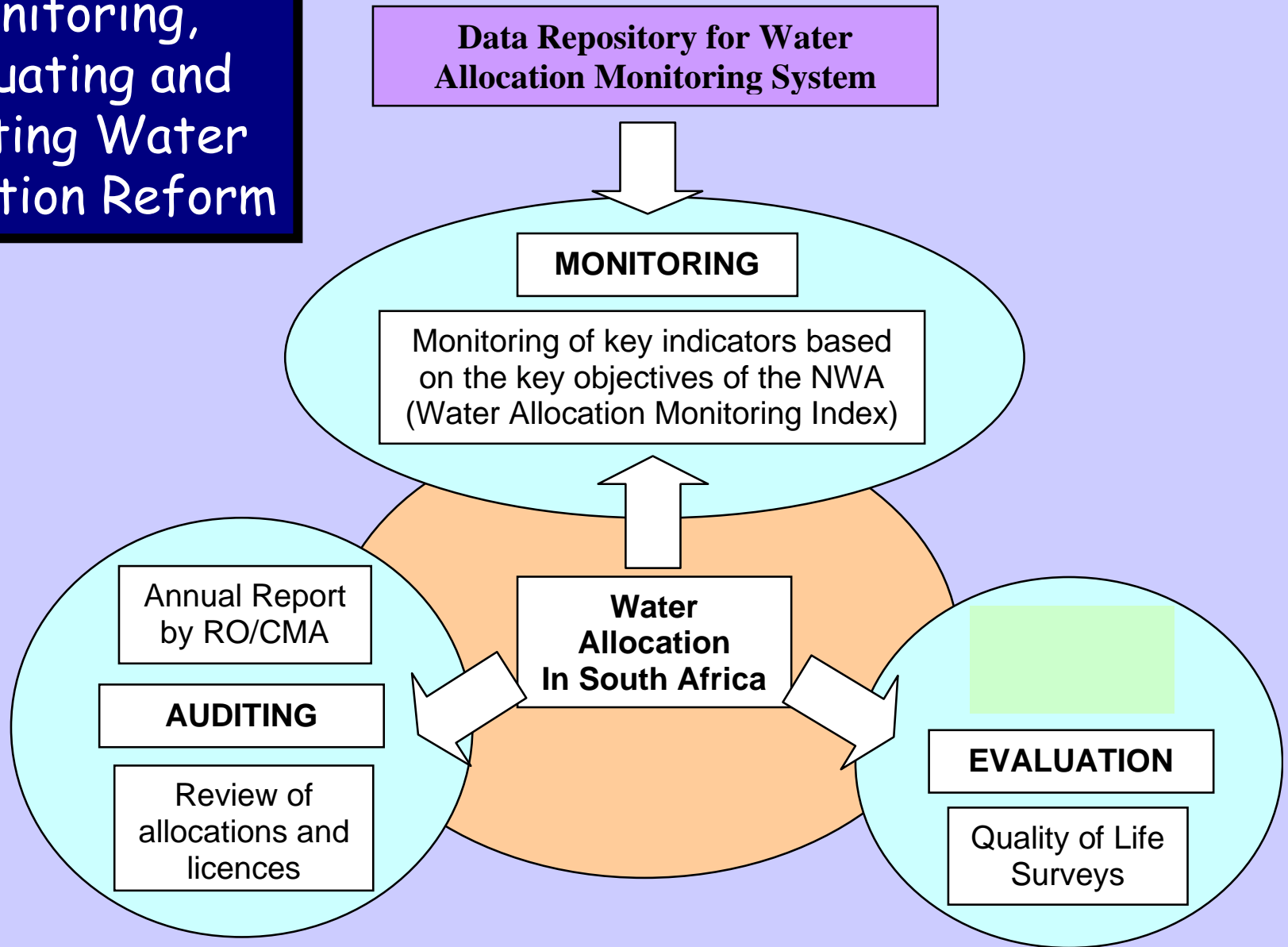


Awethu Sonke
"Some for all"

**Need a means to monitor progress with
WAR**



Framework for Monitoring, Evaluating and Auditing Water Allocation Reform



MONITORING

Monitoring of key indicators based on the key objectives of the NWA (Water Allocation Monitoring Index)

Equity Indicator

Sustainability indicator

Efficiency Indicator

- Water Allocation Registration and Management System
- Land Affairs Data
- Quantec Economic Data

Auditing

Review of allocations
and licenses

Annual reporting and
sharing experiences



Evaluation

Quality of life surveys

Framework for Monitoring, Evaluating and Auditing Water Allocation Reform

Data Repository for Water Allocation Monitoring System

thu Sonke
"Some for all"

MONITORING

Monitoring of key indicators based on the key objectives of the NWA (Water Allocation Monitoring Index)

Annual Report by RO/CMA

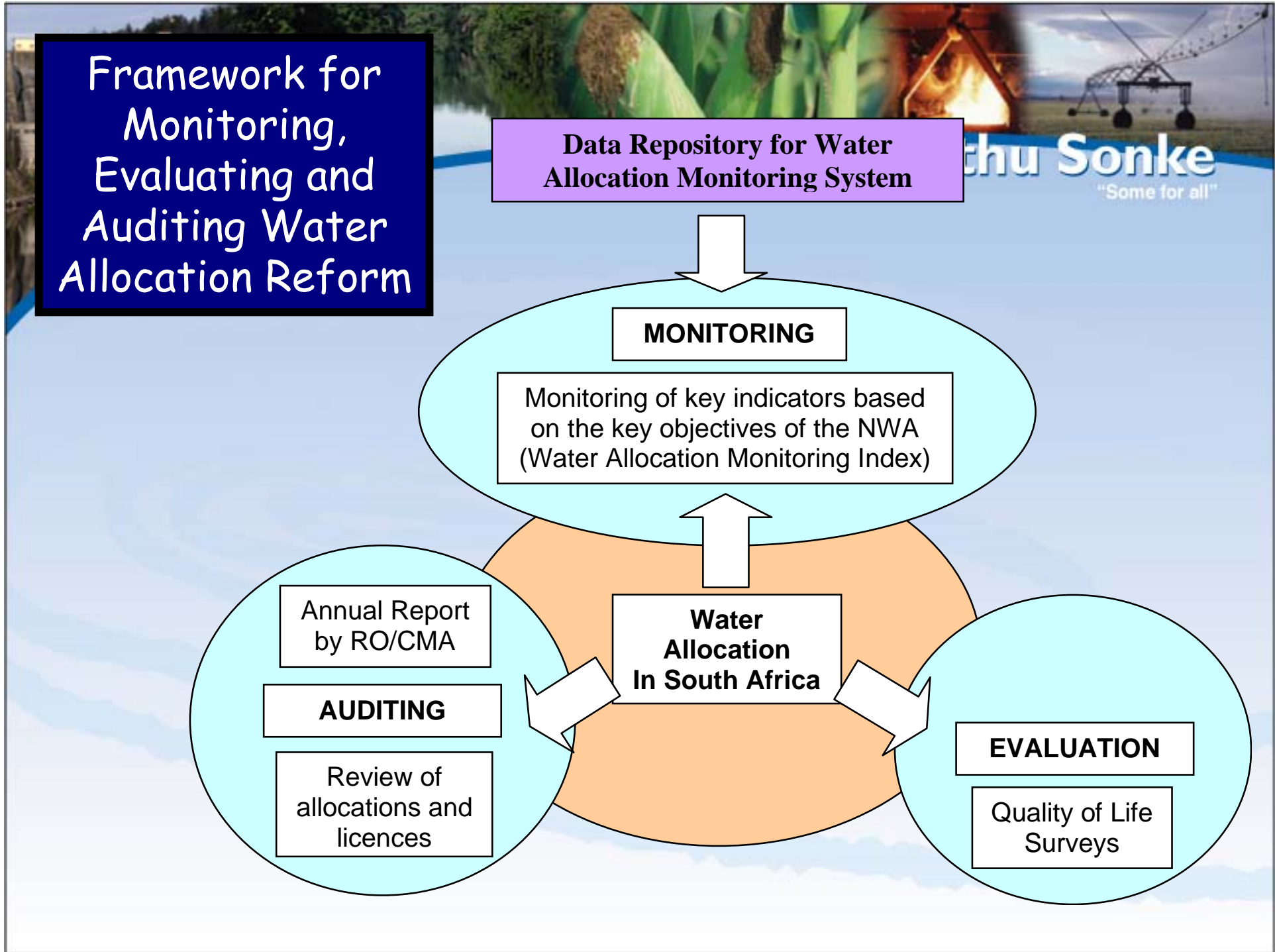
AUDITING

Review of allocations and licences

Water Allocation In South Africa

EVALUATION

Quality of Life Surveys



MONITORING

Monitoring of key indicators based on the key objectives of the NWA (Water Allocation Monitoring Index)

Equity Indicator

Sustainability indicator

Efficiency Indicator

- Water Allocation Registration and Management System
- Land Affairs Data
- Quantec Economic Data

	Indicators	Supporting Variables	Data
Equitable Allocation	Percentage of individual allocation to women	Total registered allocation to women (Mm ³ /a)	WARMS
		Total allocation to individuals (Mm ³ /a)	WARMS
	Percentage of total allocation that is to black users	Total allocation to black users (Mm ³ /a) (excluding WSP)	WARMS/ DLA/TA
		Total allocation to all users (Mm ³ /a) (excluding WSP)	WARMS
Efficient and Effective Allocation	Contribution to GDP per cubic meter allocated to all sectors.	Total GDP for catchment (R million/a)	Quantec
		Total allocation to all sectors (Mm ³ /a)	Quantec
	Contribution to employment per cubic meter allocated to all sectors.	Total level of employment in catchment (equivalent full time jobs)	Quantec
		Total allocation to all sectors (Mm ³ /a)	WARMS
Sustainable Allocation	Percentage of Reserve Requirement met based on total allocations.	Total yield less total allocation to all sectors adjusted to 98% assurance (Mm ³ /a)	WARMS/ ISP
		Average annual Reserve requirement (Mm ³ /a)	ISP



Methodology for Equity indicator (% water allocated to black users)

- Link WARMS registrations to properties listed by DLA as a Land Restitution or Land Redistribution project.
- Assume water registrations will be transferred to black individuals with land.
- Registrations in WARMS located in Tribal Areas assumed to be to black users.
- Additional information obtained from the regional office that could be linked to WARMS was also included.

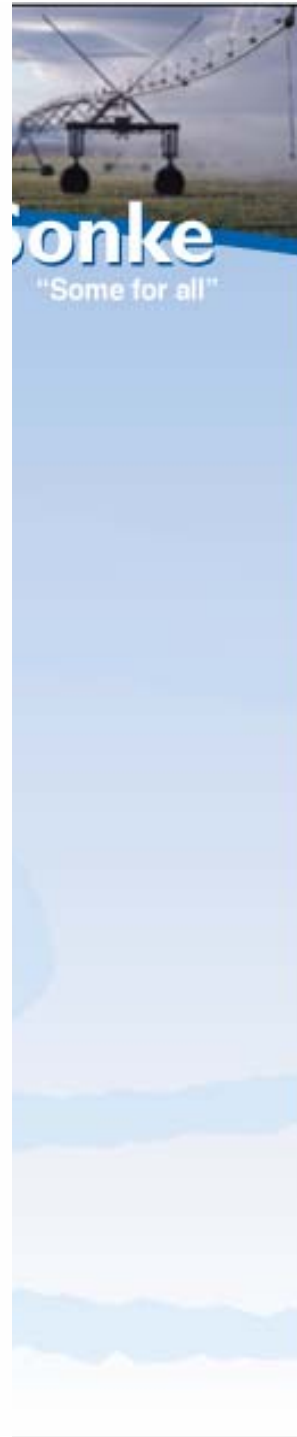
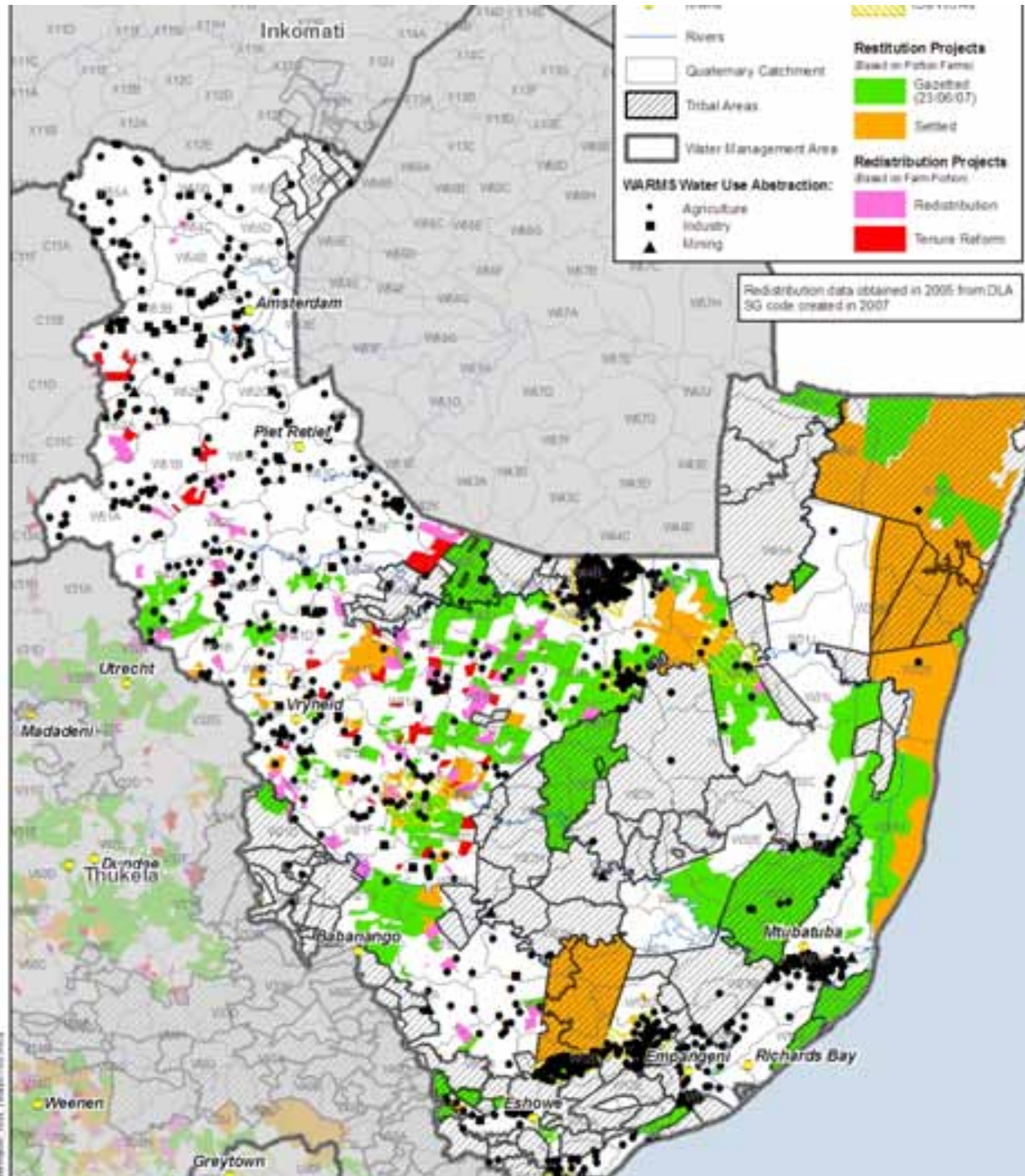
Tested Analysis in 4 WMAS:

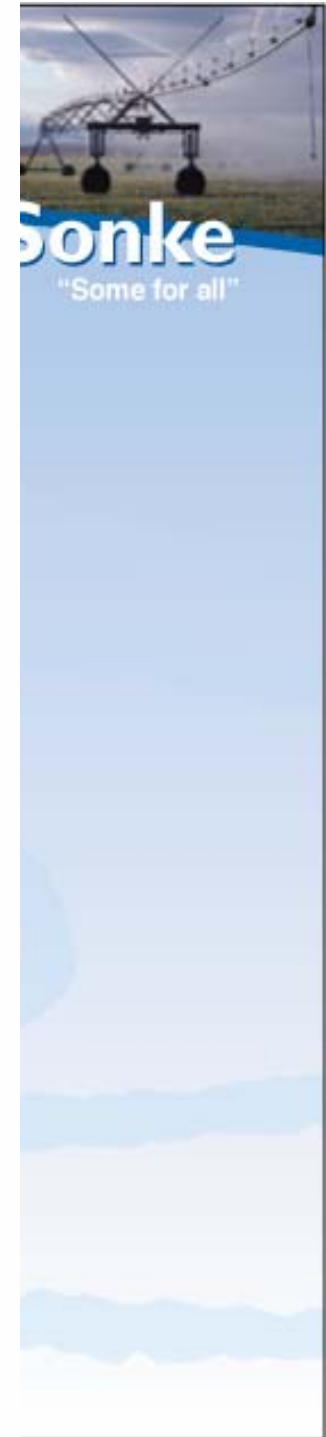
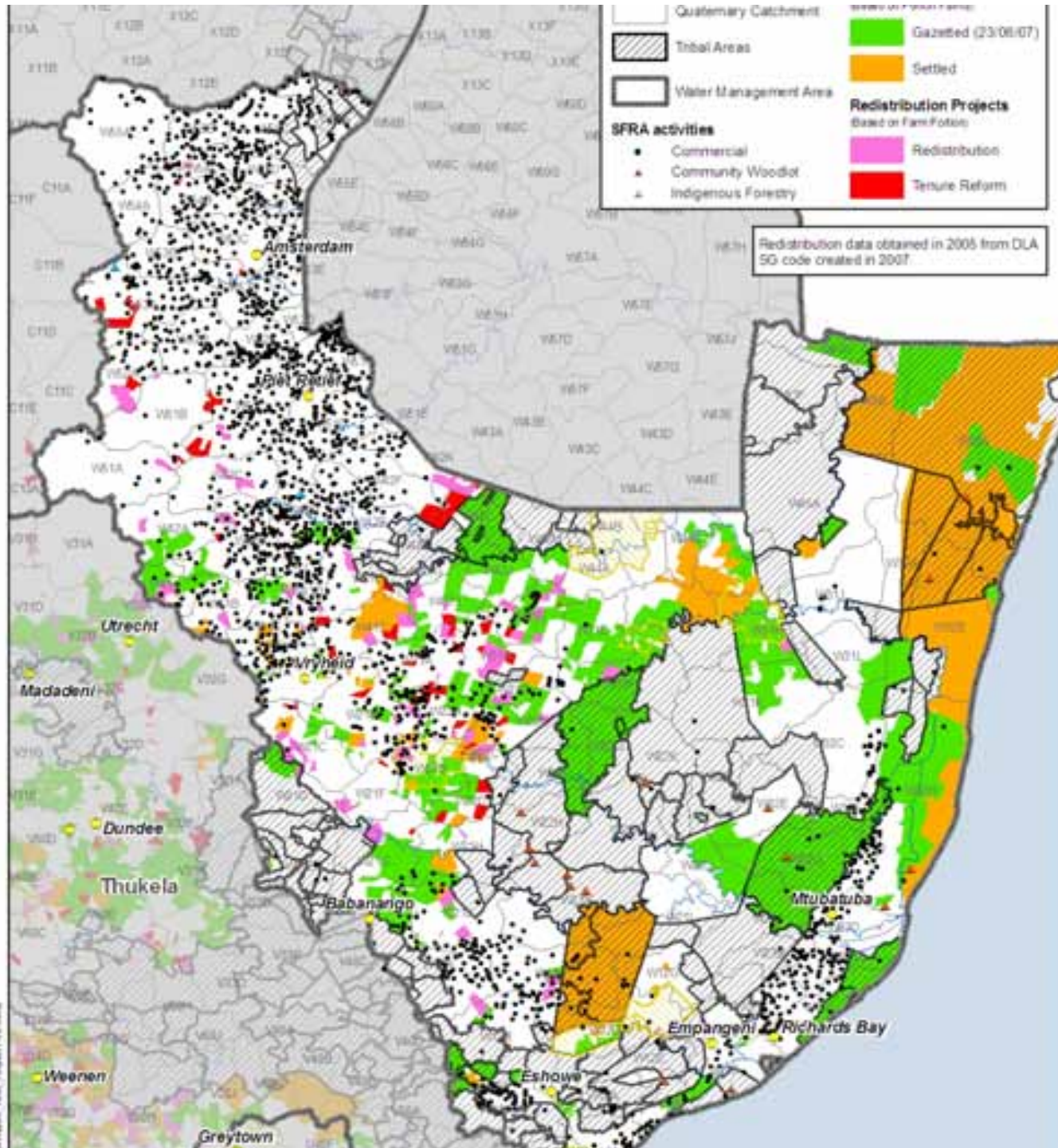
- **Usuthu to Mhlathuze WMA**
- **Thukela WMA**
- **Mvoti to Umzimkulu WMA**
- **Inkomati WMA**
- **(Olifants/Door)**

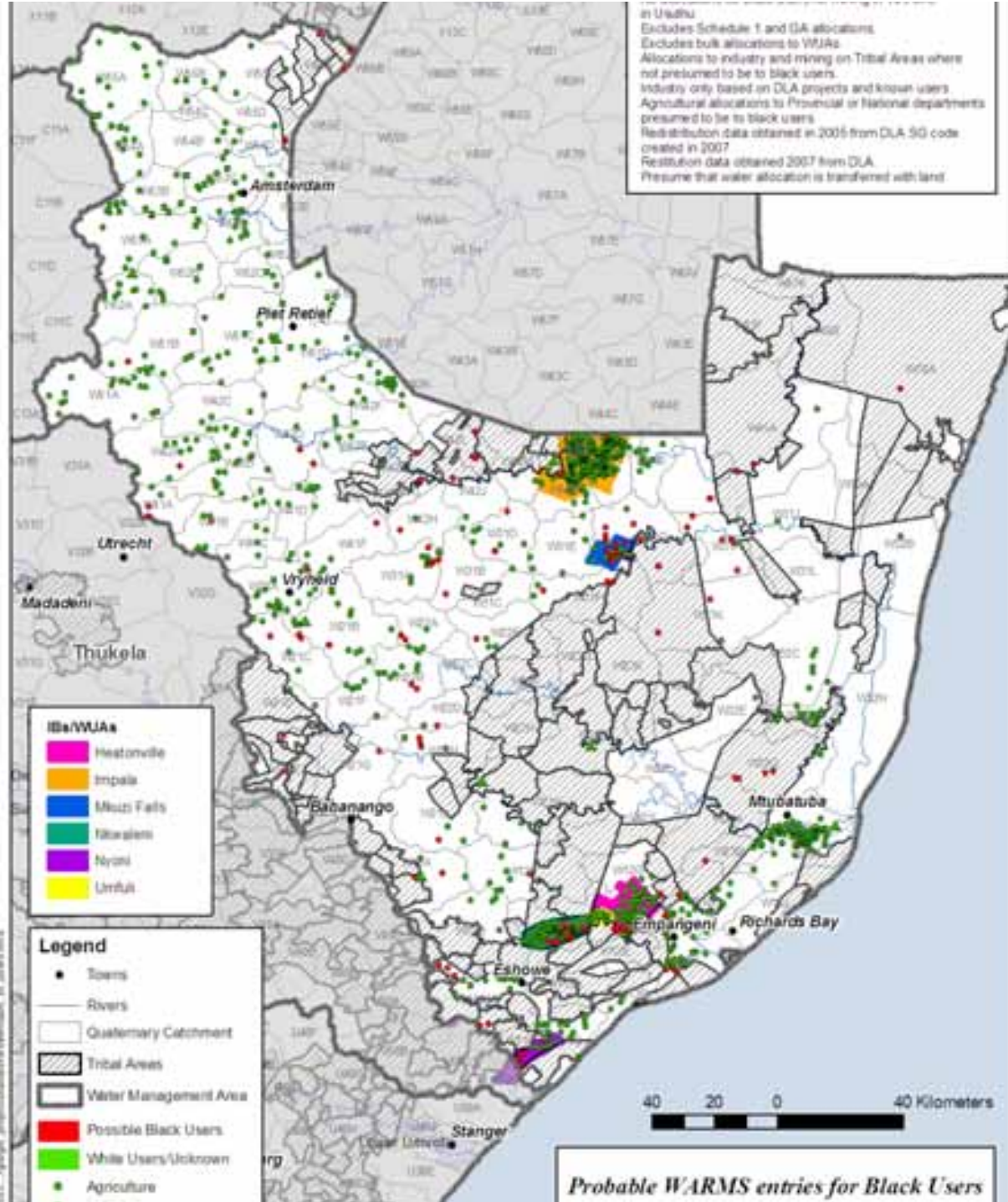


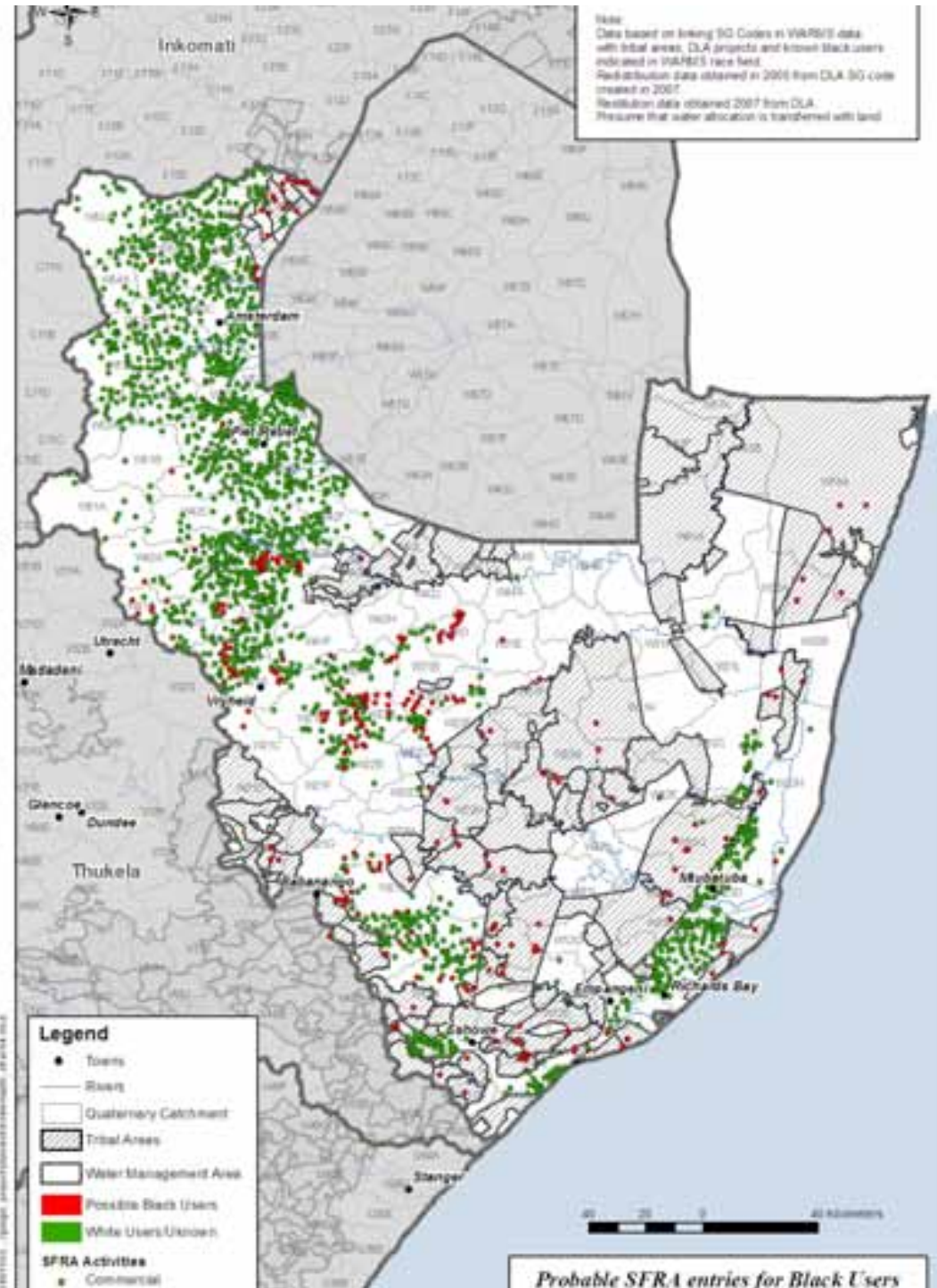
Awethu Sonke
"Some for all"

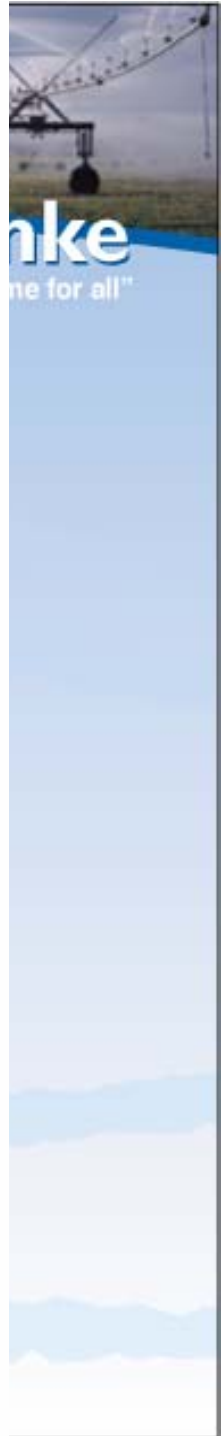
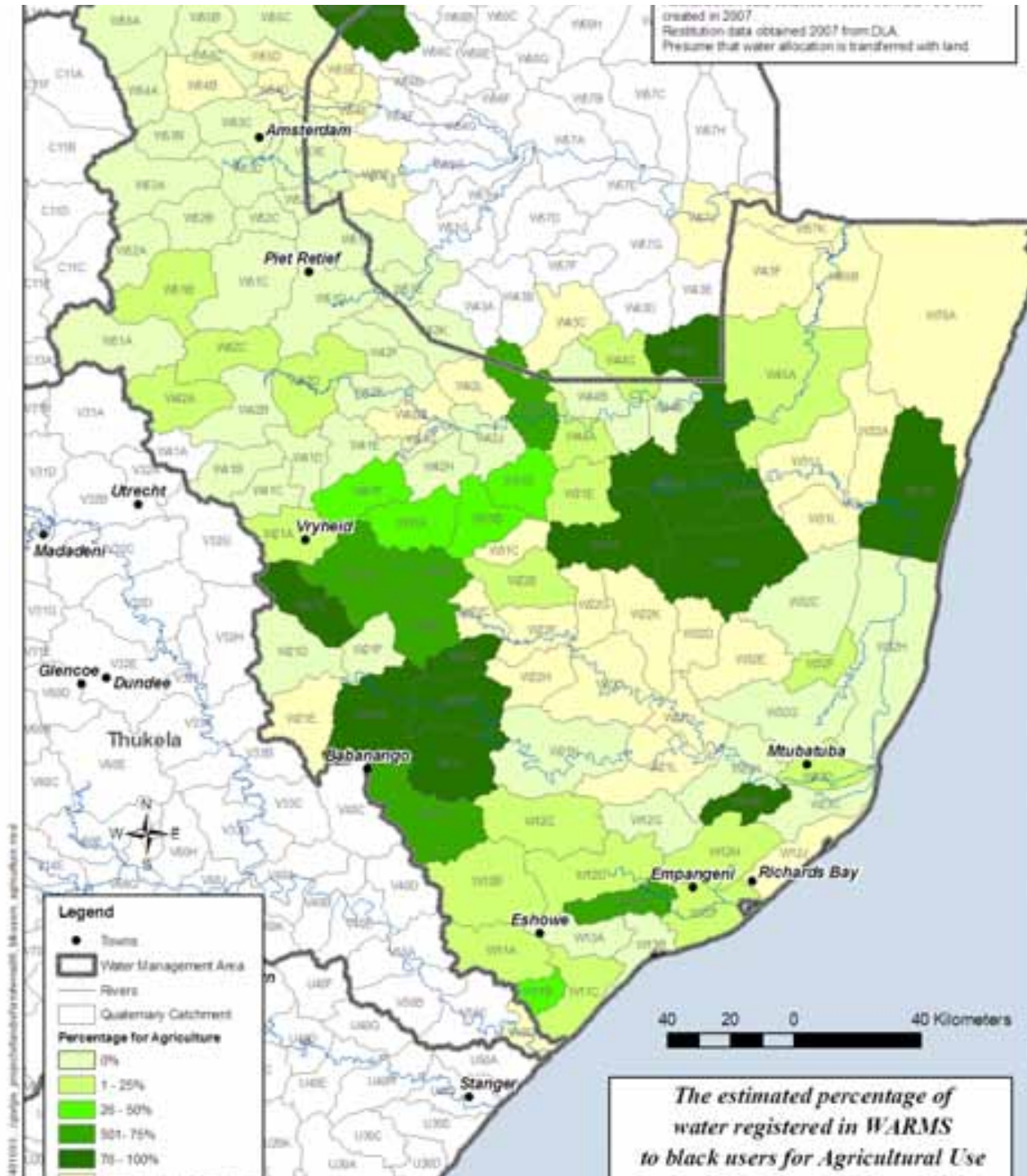
Results for Usuthu to Mhlathuze

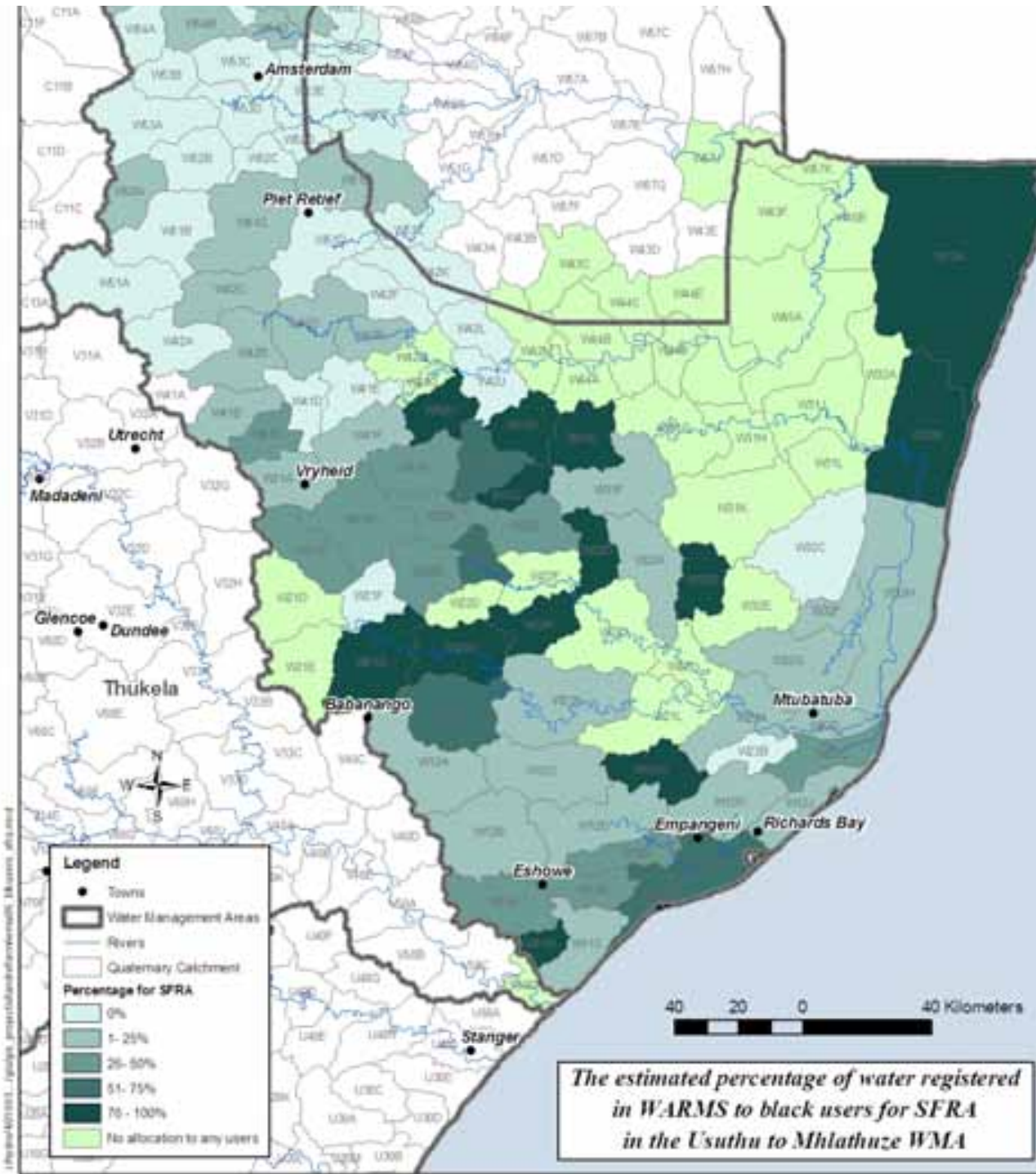


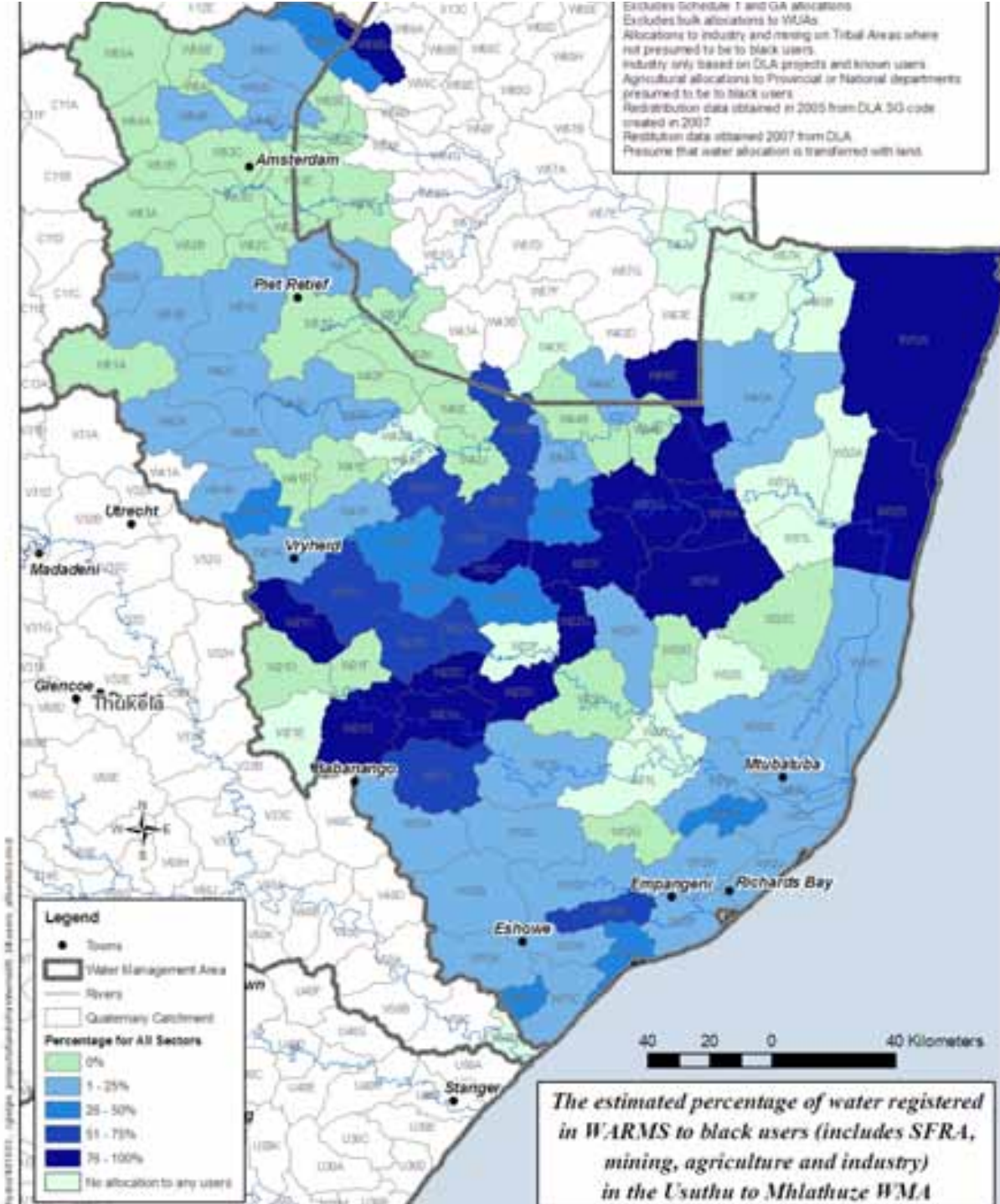












WMA	Percentage of total registered to black users for agriculture	Percentage of total registered to black users for SFRA
Usuthu Mhlathuze WMA	25%	15%
Thukela WMA	26%	26%
Mvoti to Umzimkulu WMA	21%	15%
Inkomati WMA	31%	12%

	Indicators	Supporting Variables	Data
Equitable Allocation	Percentage allocation of individuals to women	Total registered allocation to women (Mm ³ /a)	WARMS
		Total allocation to individuals (Mm ³ /a)	WARMS
	Percentage of total allocation that is to black users	Total allocation to black users (Mm ³ /a) (excluding WSP)	WARMS/ DLA/TA
		Total allocation to all users (Mm ³ /a) (excluding WSP)	WARMS
Efficient and Effective Allocation	Contribution to GDP per cubic meter allocated to all sectors.	Total GDP for catchment (R million/a)	Quantec
		Total allocation to all sectors (Mm ³ /a)	Quantec
	Contribution to employment per cubic meter allocated to all sectors.	Total level of employment in catchment (equivalent full time jobs)	Quantec
		Total allocation to all sectors (Mm ³ /a)	WARMS
Sustainable Allocation	Percentage of Reserve Requirement met based on total allocations.	Total yield less total allocation to all sectors adjusted to 98% assurance (Mm ³ /a)	WARMS/ ISP
		Average annual Reserve requirement (Mm ³ /a)	ISP



Awethu Sonke
"Some for all"

Example of the result of the Water Allocation Monitoring Index (WAMI) using preliminary results from the Usutu to Mhlatuze Water Management Area

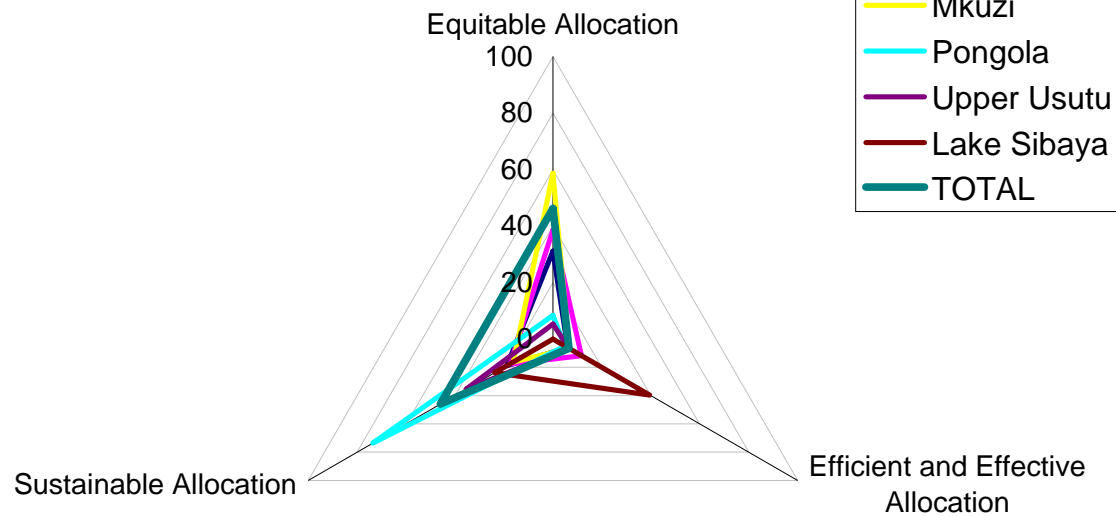
USUTU TO MHLATUZE WATER MANAGEMENT AREA

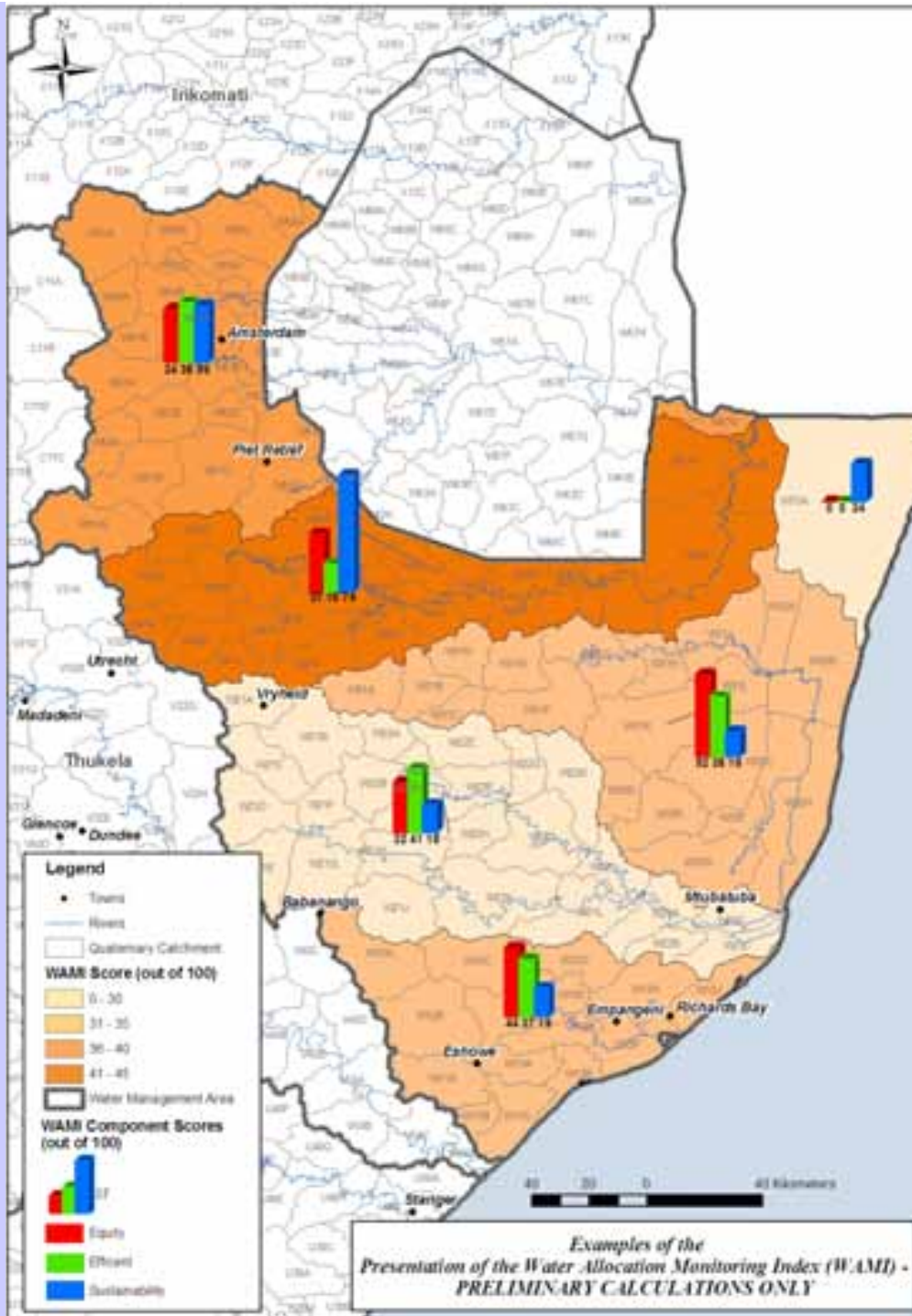
Indicator Values for Monitoring Water Allocation Reform

WAMI Key Component		Equitable Allocation of Water		Efficient and Effective Allocation of Water		Sustainable Allocation of Water	
Indicator Description		Percentage of allocation to individuals that is to women	Percentage allocation to black users	Contribution to GGP per cubic meter of allocated water	Contribution to employment per cubic meter of allocated water	Percentage of Reserve Requirement met	Average present ecological status of resource
Catchment	ID	%	%	R/m3	job/m3	%	Rank
Mhlatuze	W1	2%	18%	1	251	-390%	1.88
Mfolozi	W2	6%	20%	3	434	-267%	1.75
Mkuzi	W3	9%	76%	2	233	-131%	1.62
Pongola	W4	5%	2%	1	173	254%	2.36
Upper Usutu	W5	0%	3%	3	181	11%	3.01
Lake Sibaya	W7	N/A	N/A	13	1319	26%	1.10
TOTAL	W	4%	25%	2	241	53%	1.95
Determining 0 and 100 Scores for Indicator Values							
Maximum Value of Indicator		9%	76%	13	1319	254%	3.01
Minimum value of indicator		0%	2%	1	173	-390%	1.10
Average value of Indicator		4%	24%	4	404	-64%	1.95
Value of 100 Score for Indicator		50%	30%	50	2500	100%	5.00
Value of 0 Score for Indicator		0%	0%	0	0	0%	0.00
Indicator Scores for Monitoring Water Allocation Reform (Scores out of 100)							
Mhlatuze	W1	3	59	2	10	0	38
Mfolozi	W2	12	66	6	17	0	35
Mkuzi	W3	17	100	4	9	0	32
Pongola	W4	9	8	3	7	100	47
Upper Usutu	W5	1	10	6	7	11	60
Lake Sibaya	W7	#VALUE!	#VALUE!	26	53	26	22
TOTAL	W	9	84	4	10	53	39
Weighting of Indicator in Component Score		1	1	1	1	1	1

USUTU TO MHLATUZE WATER MANAGEMENT AREA					
Water Allocation Monitoring Index (WAMI) and Key Component Scores (Scores out of 100)					
		WAMI	Equitable Allocation	Efficient and Effective Allocation	Sustainable Allocation
Catchment	ID	Weighting	1	1	1
Mhlatuze	W1	19	31	6	19
Mfolozi	W2	23	39	12	18
Mkuzi	W3	27	59	7	16
Pongola	W4	29	8	5	74
Upper Usutu	W5	16	5	7	36
Lake Sibaya	W7	#VALUE!	#VALUE!	40	24
TOTAL	W	33	46	7	46

Water Allocation Monitoring Index Usutu to Mhlatuze WMA





Conclusions

- Indicators are useful for strategic, national level planning
- Should be used to guide implementation of WAR
- Based on best available data (with limitations)
- Need collaboration to obtain data
- Collection process can be resource intensive and timely
- Requires support from regional offices to gather data especially IB/WUA allocations
- Results do not reflect what is being used or productively taken up

Next Steps

- Currently processing data for entire country
- Completed in July/August

Comments:

Aileen.anderson@shands.co.za

021 481 2481

WMA	Allocation to Agricultural Sector Mm³/a	Allocation to WUA Mm³/a	Percentage Allocation to Bulk Users
Inkomati	581.4	335.7	58%
Breede	573.5	323.8	56%
Olifants/Doorn	311.2	142.8	46%
Berg	232.7	102.5	44%
Olifants	610.2	254.3	42%
Lower Orange	795.1	315.2	40%
Crocodile	497.9	156.9	32%
Upper Orange	653.2	196.3	30%
Gouritz	293.7	77.0	26%
Fish-Tsitsikamma	259.9	60.0	23%
Mzimvubu-	84.0	10.9	13%
Luvuvhu I	198.3	16.9	9%
Limpopo	375.9	28.7	8%
Middle Vaal	254.6	10.2	4%
Lower Vaal	235.8	7.1	3%
Thukela	219.5	6.2	3%
Upper Vaal	437.3	8.6	2%
Mvoti-Umz	207.9	0.0	0%
Usutu-Mhl	526.2	2.2	0%