

# Water for Growth and Development

## Water Sector Leadership Group Meeting

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Director General**

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# GROWTH & DEVELOPMENT IMPERATIVES

- Economic growth rate of 6% requires additional water supply
- Halve poverty by 2014 (deal with access backlog and responding to the anti-poverty strategy)
- Already, the Vaal system gets its water from other catchments (Senqu, Tugela & Usuthu)
- Effluents from the Vaal already augment the Crocodile/Olifants systems ([Mines/Energy](#))
- Transfer of water for long distances is expensive
- Some economic activities also impact negatively on water quality ([acid mine water](#))




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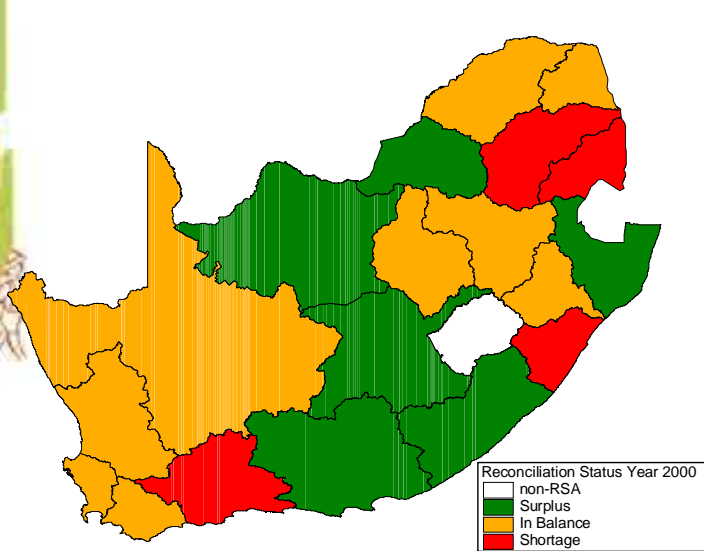
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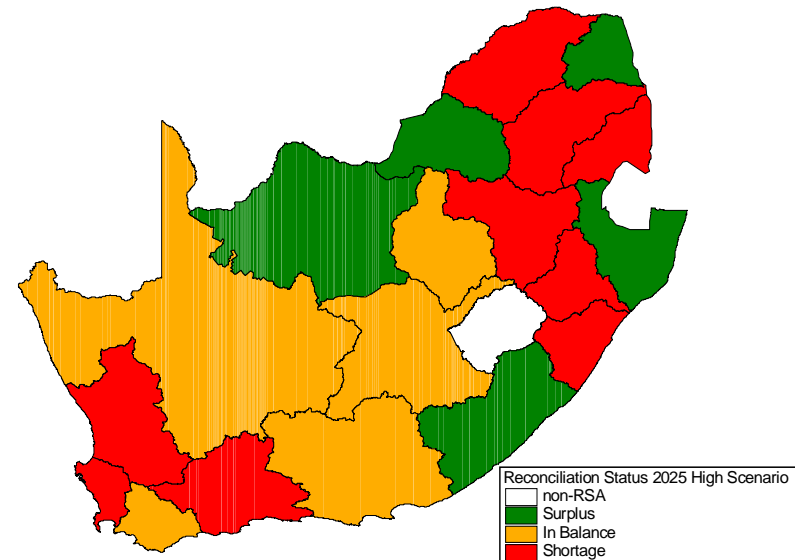
# Quantity

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- Sufficient water can be made available at all significant urban and industrial growth points in the country for water to enhance economic development
  - However, given the long lead times for developing new water schemes, **co-operative planning** is required between water users and water management institutions in order to ensure that water can be made available when it is needed.

# Water Demand / Supply Scenarios



**Scenario 2000**



**Scenario 2025**

- Nandoni dam that was construction in Livuvhu/Letaba WMA improved situation
- All 4 big Metros need serious consideration



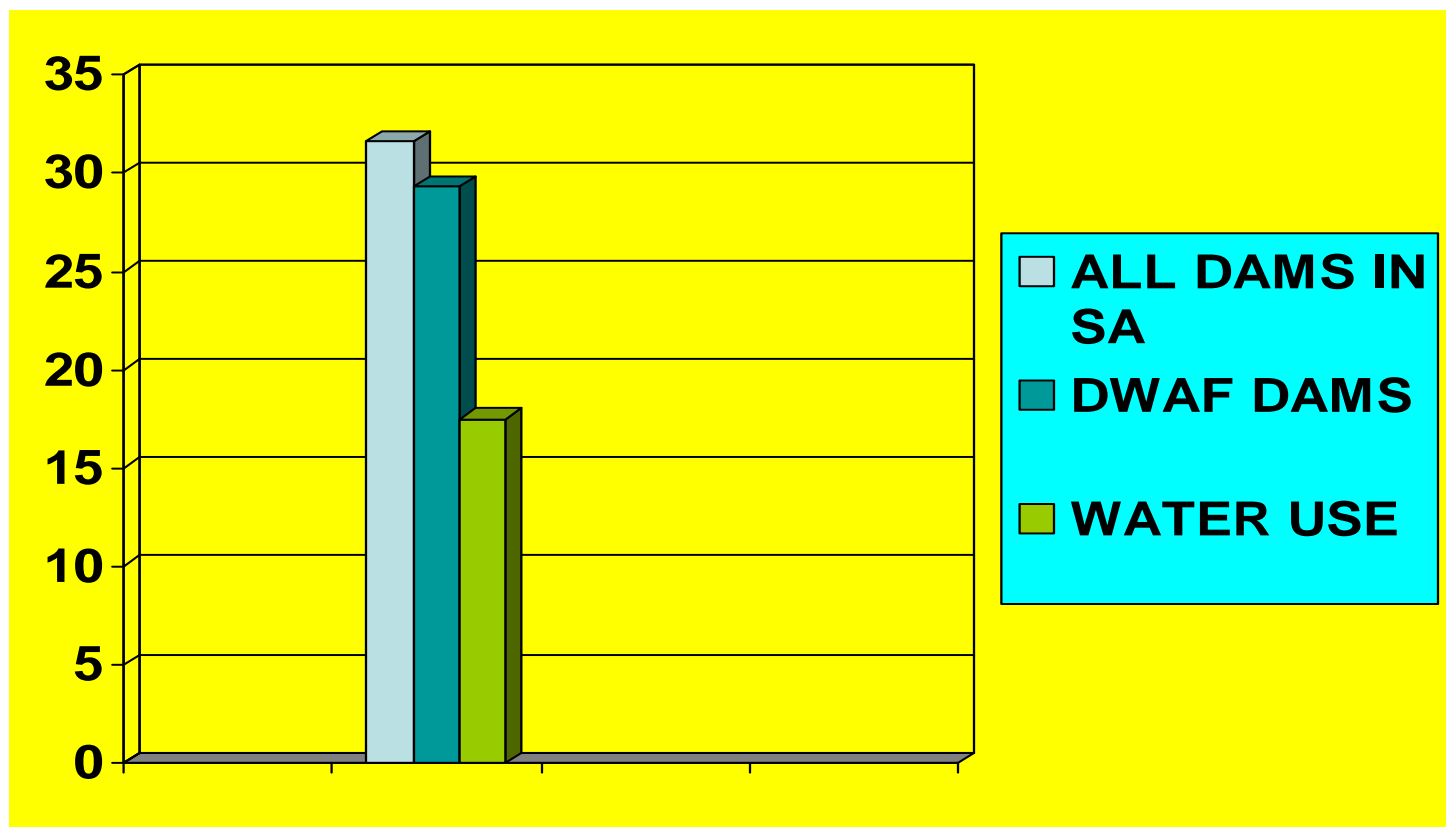
## CURRENT STORAGE

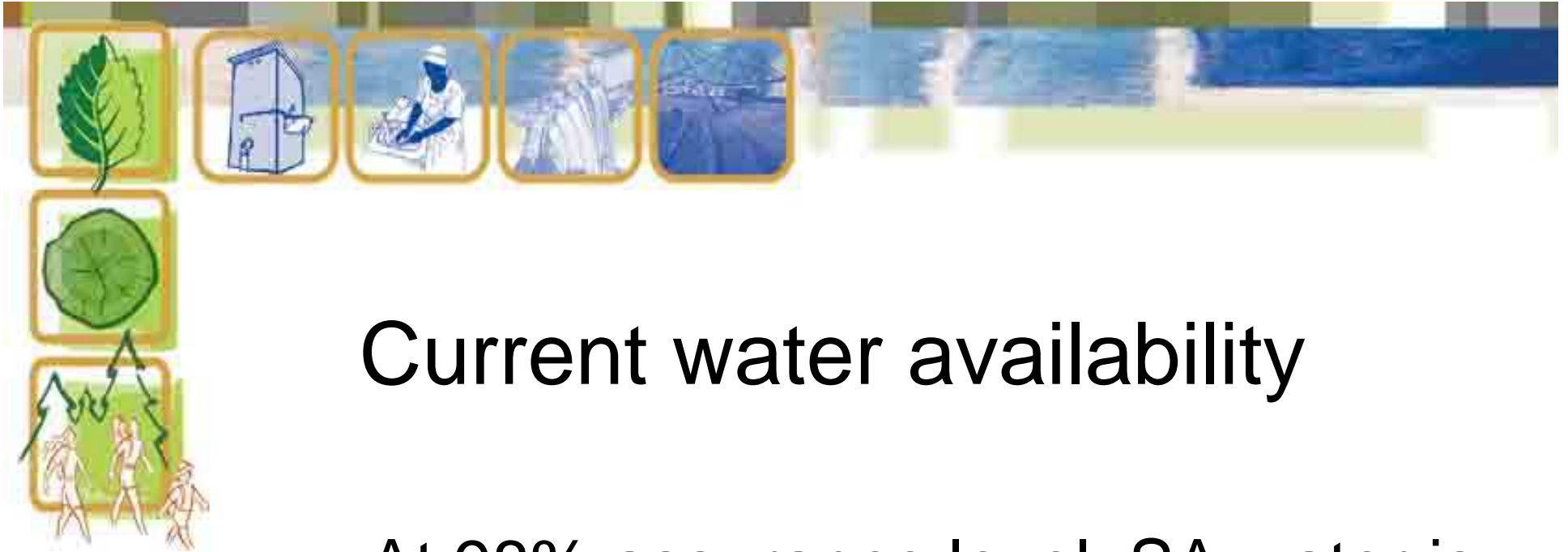
- SA had good runoff in recent years
- Country's dams at 81%
- Limpopo, NW and EC around 70%, other areas above 80%
- Isolated very low storages – serious at Middle Letaba for domestic needs
- 13 years of good runoff - a drought period could happen at any time





# ALL DAMS vs DWAF DAMS vs CURRENT WATER USE

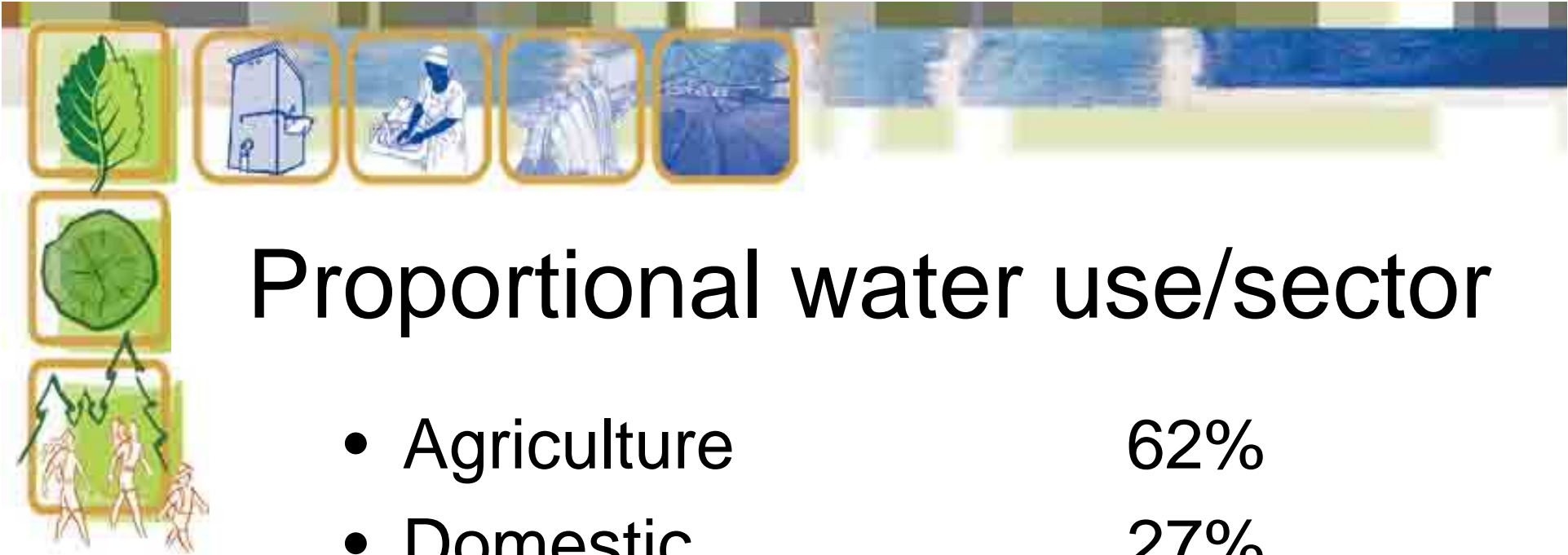




# Current water availability

At 98% assurance level, SA water is constituted as follows:

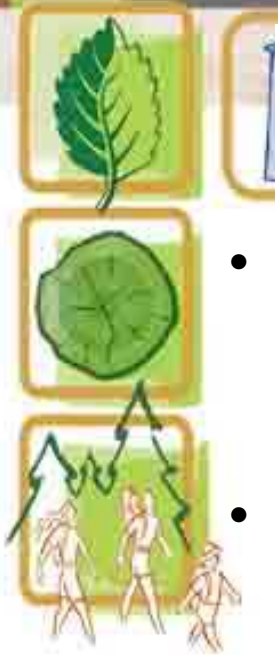
- 77% surface resources
- 9% ground water
- 14% return flows



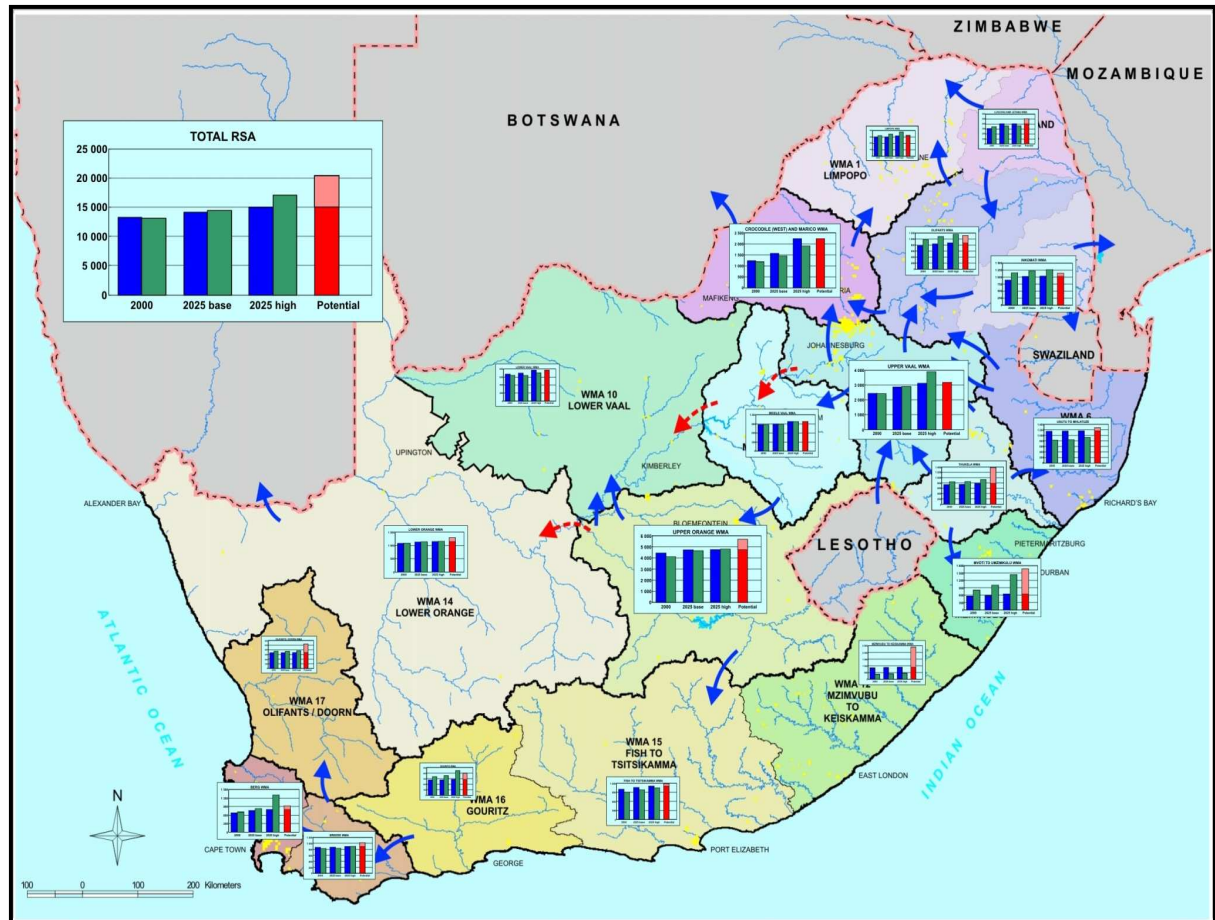
# Proportional water use/sector

- Agriculture 62%
- Domestic 27%
  - Urban 23%
  - Rural 4%
- Mining 2.5%
- Industrial 3.5%
- Power generation 2.0%
- Afforestation 3.0%

# Water availability vs use



- Current water use match water (yield) availability
- Potential for further resource development still exists in KZN (south) & East of EC
- Limited potential for further resource development in most areas



Water demand and availability projections for 2025 (National Water Resource Strategy, 2004). Blue bars = water availability; Green bars = water use; Red bars = water development potential.



# Water Supply and Backlog

## Population – access to water supply

- 1994 – 38,9m population
  - 59% of population had access to basic levels
  - 15,9 million people had no access to safe water supply
- 2008 – 48,7 m population
  - 88 % of population have access to basic levels
  - 5,7 million people still without access to safe water supply

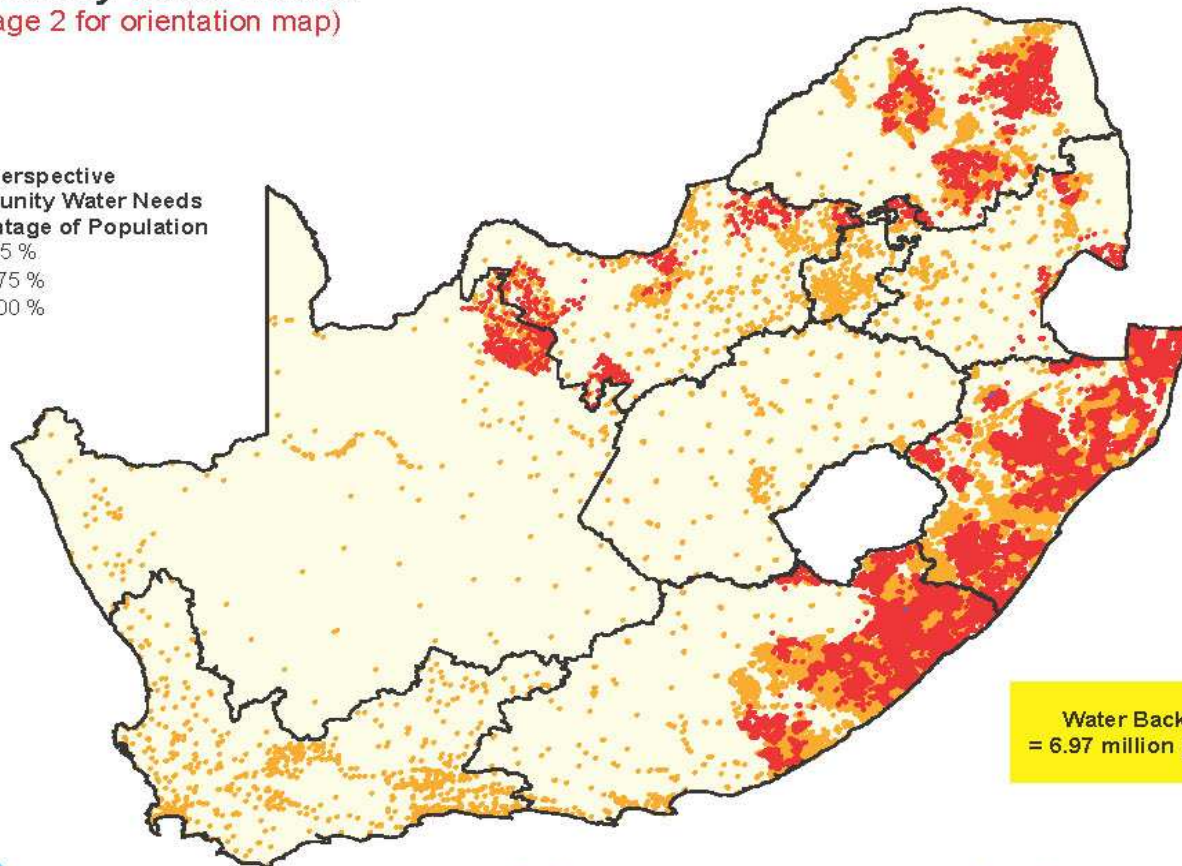


# Concentration of Backlog

Community Water Needs  
(see page 2 for orientation map)

2007 Perspective  
Community Water Needs  
Percentage of Population

- 0 - 25 %
- 26 - 75 %
- 76 - 100 %



Water Backlog  
= 6.97 million people



## Water for Domestic Use

- Current population ~ 48.7m
- Projected growth rate ~0.82%
- Est. population by 2025 ~ 53.0m
- Implications for water demand are that domestic share of total water use will move from the present 27% to between 30 to 35% of the total national use



## Reconciliation Strategies: to meet future demands in Metropolitan Areas (1)

- WC/WDM must be implemented as a matter of urgency in all metropolitan areas – if not, water restrictions will be inevitable
- Use of treated effluent is a huge potential resource – coastal cities discharges into ocean, but even in Vaal system direct re-use is imminent
- Groundwater resource must be developed more extensively, even for metros in specific cases
- Further surface water resource development and interbasin transfers will also be required



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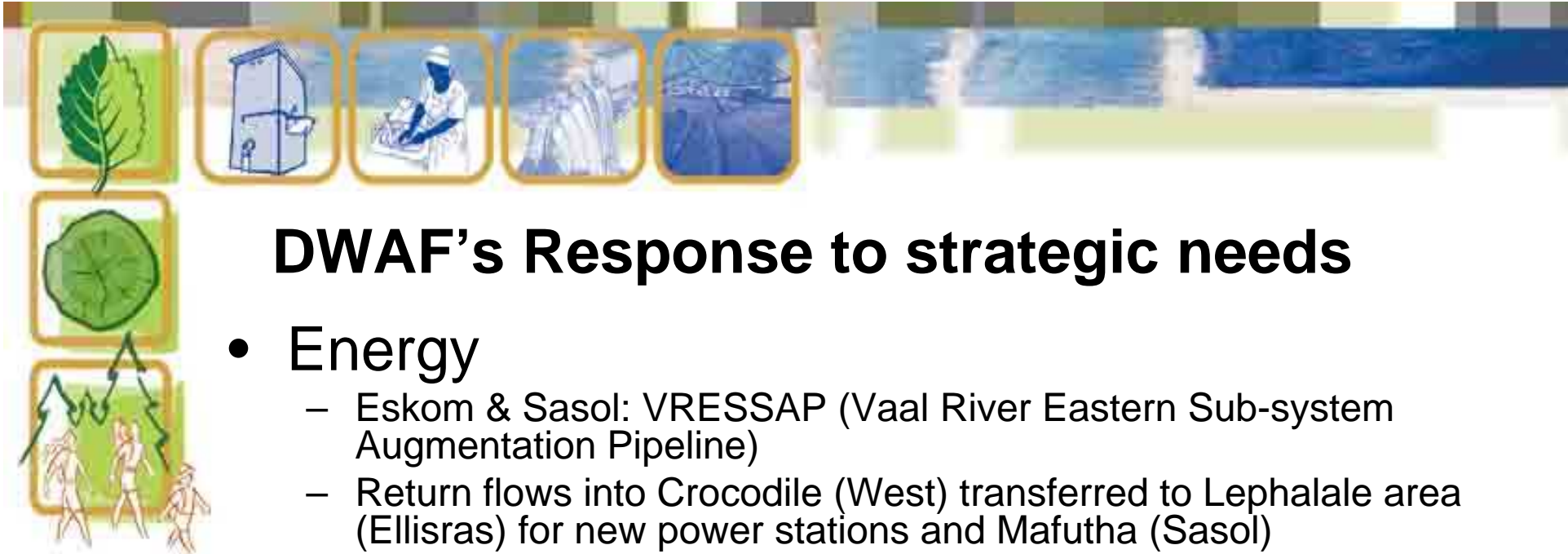
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## Reconciliation Strategies: to meet future demands in Metropolitan Areas (2)

- Unlawful water use reached critical dimensions in Vaal system, urgent action will be taken to eradicate
- Desalination of seawater is final option for coastal cities, detailed investigations will be done
- Inland cities don't have luxury of desalination of seawater – inland water must be reserved for inland use
- Resources supplying metropolitan areas under stress – no further allocation for irrigation from these resources. Water may have to be moved from irrigation to urban over the long term





## DWAF's Response to strategic needs


- Energy
  - Eskom & Sasol: VRESSAP (Vaal River Eastern Sub-system Augmentation Pipeline)
  - Return flows into Crocodile (West) transferred to Lephalale area (Ellisras) for new power stations and Mafutha (Sasol)
  - Construction of De Hoop and Mokolo Dams
- Mining –
  - Crocodile West augmentation
  - Construction of De Hoop
- Industry/urban - reconciliation strategies for Metros
- Agriculture – new schemes only in previously under-developed areas with potential for further development.
- Forestry – specific wet allocations
- Rural – accelerate delivery



# Risks, Threats and Challenges



- Climate change

- 
- Uncertainty of CC already factored into scenario planning
  - Future requirements (security) major issue
  - Water resource characteristics
  - Adaptation and mitigation measures from a water perspective



# Risks, Threats and Challenges



- Infrastructure (WR and WS)


- Assets in fair to poor condition wrt. maintenance and ops.
- Majority of capital investments made in 1970-1980s
- Thus approaching end of useful life – funds required for rehabilitation
- Maintenance backlogs – result of focus on new infrastructure development



## Risks, Threats and Challenges



- **Scarce skills**



- Experiencing critical skills shortages in water sector esp. in engineering, science , technical and artisan areas.


- **An insufficient skills base and fierce competition in the sector for skilled personnel**
- **Huge loss in institutional memory along with strategic and operational decision-making capabilities due to high retirement figures in the next decade**



## Risks, Threats and Challenges

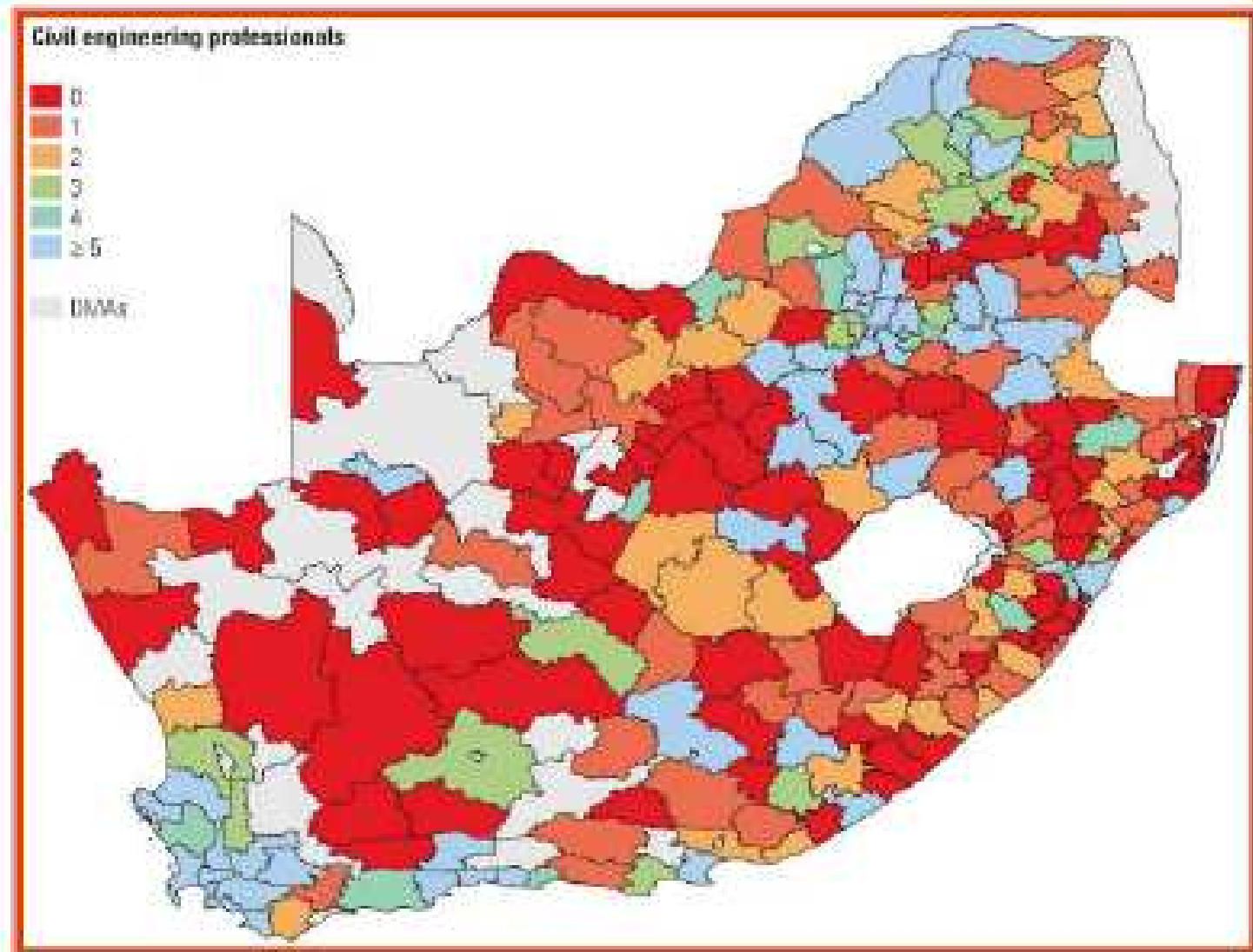


- **Scarce skills**

- 
- The ongoing skills shortage within the water sector poses a threat to the achievement of the water and sanitation delivery and compliance targets as well as the implementation of sustainable water resources management.
  - Skills development is by nature a long term process.



# Civil Engineering Staff in Local



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# Risks, Threats and Challenges



- **Unlawful water use and pollution (i.e. Vaal River System)**

- Large amount of unlawful use
- Exceeding system yield – risk of water restrictions for lawful users
- Large urban areas, industries and mines all contribute to pollution



# Risks, Threats and Challenges

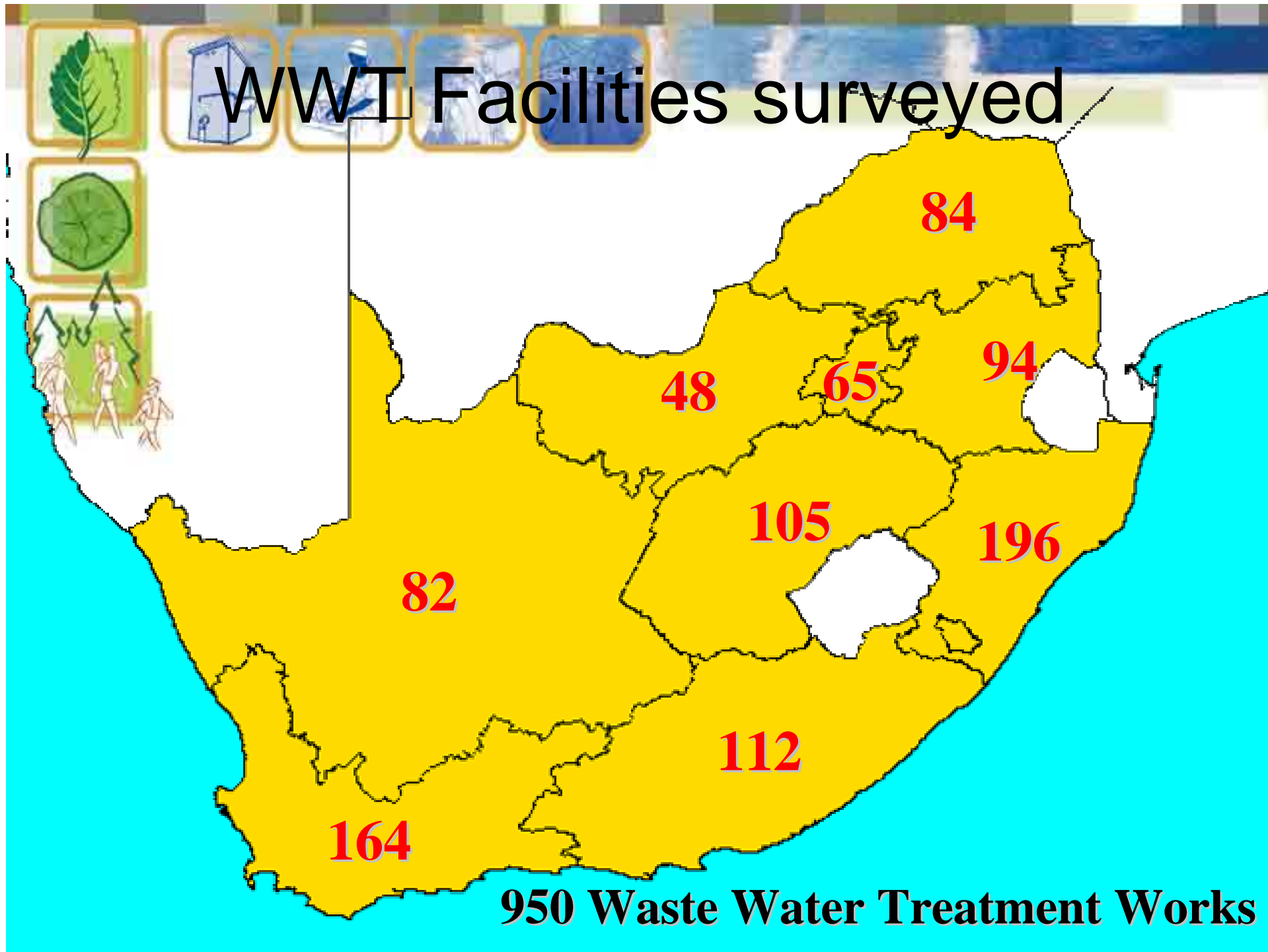
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- **Raw and drinking water quality – often result of poorly managed WWTW (Municipalities)**



– Major threats to sustained safe drinking water quality

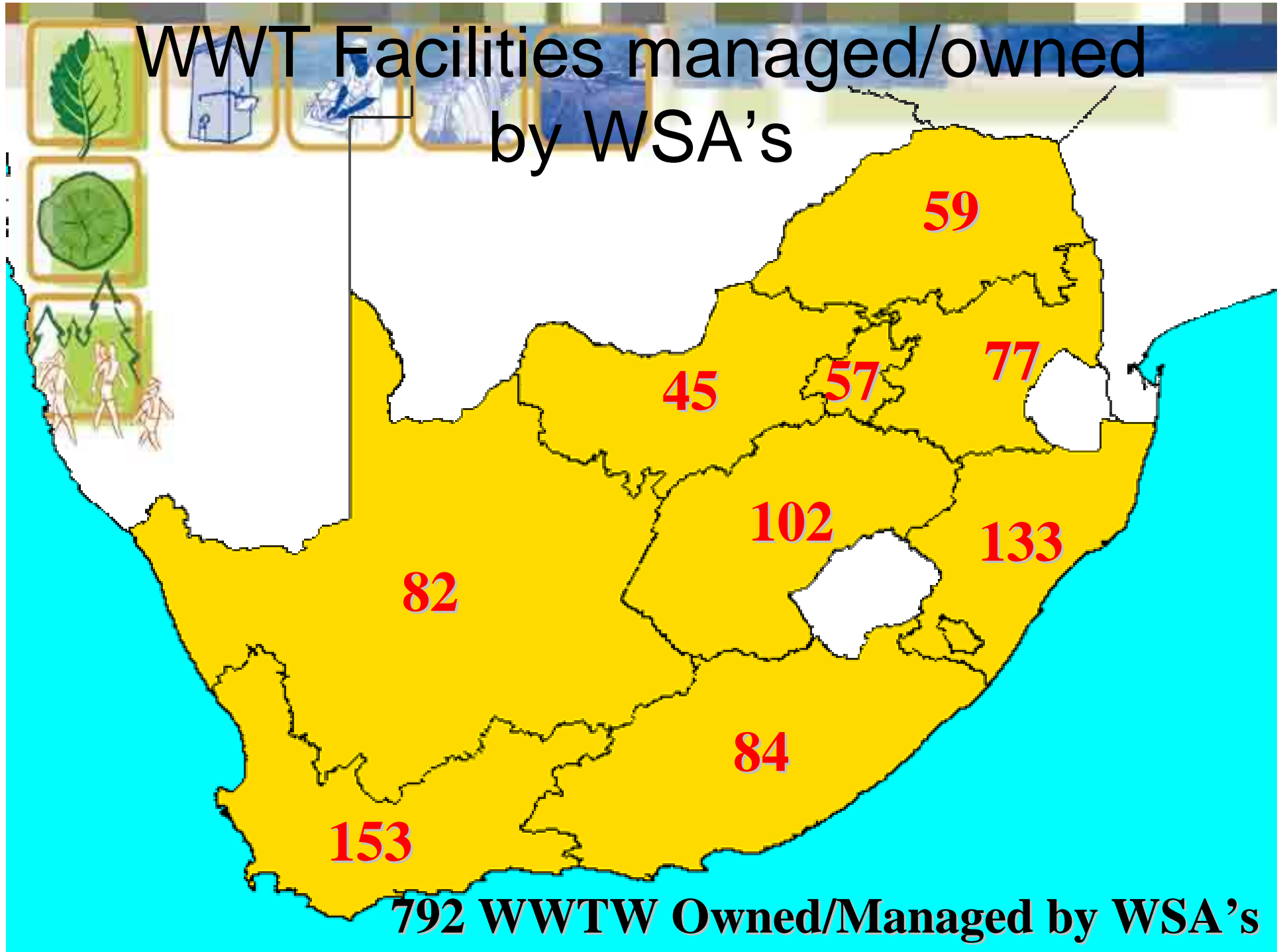
- Inadequate Asset Management
  - Failing infrastructure (Water Purification and Reticulation Infrastructure )
  - Waste Water Collection and treatment
- Capacity of Waste Water Treatment Facilities to meet effluent standards (non- compliance)
- Skills shortage (limited availability of trained process operators)

# WWT Facilities surveyed



**950 Waste Water Treatment Works**

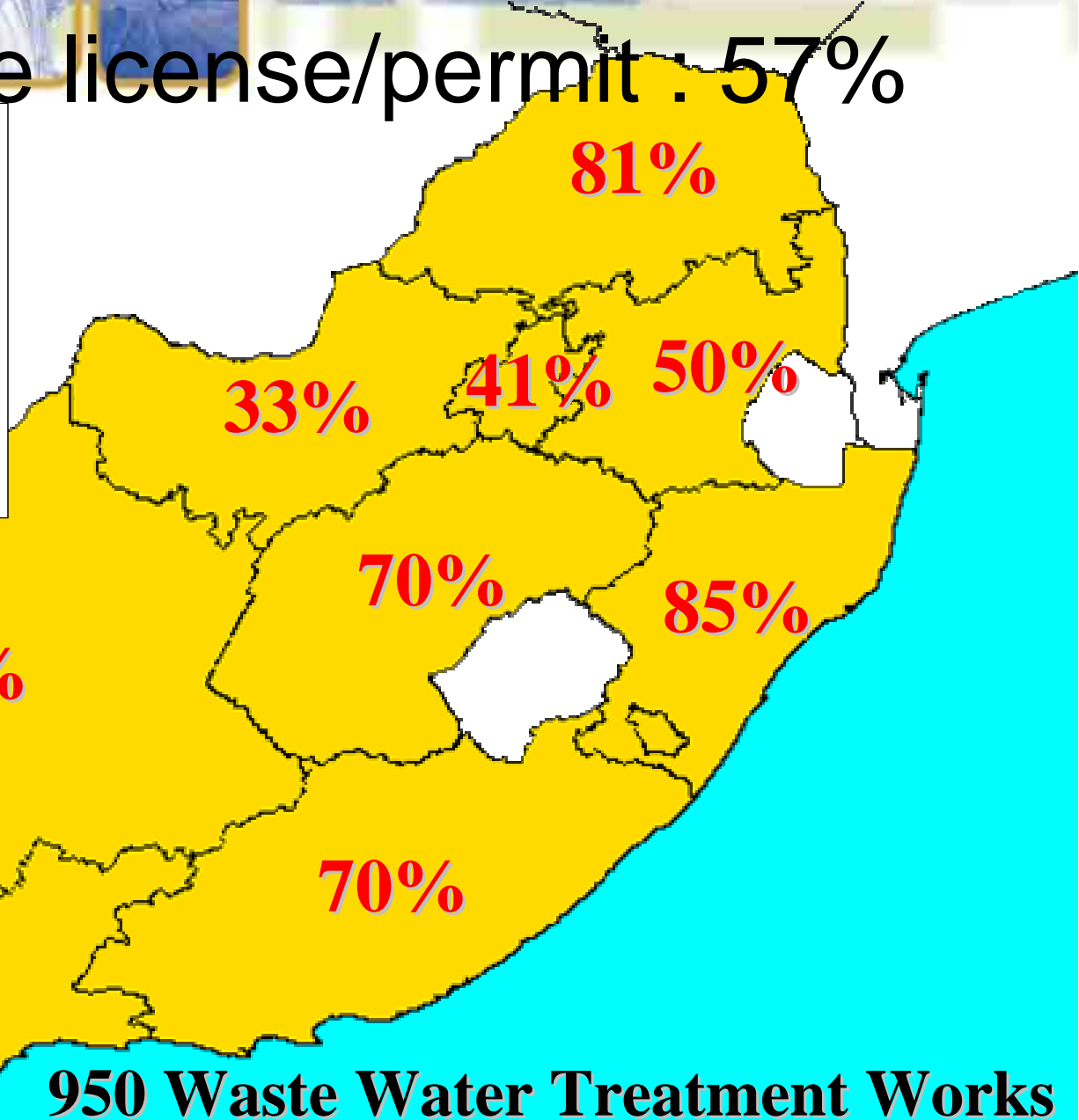
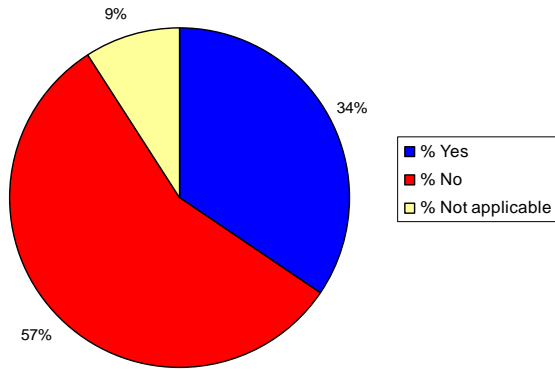
# WWT Facilities managed/owned by WSA's



**792 WWTW Owned/Managed by WSA's**

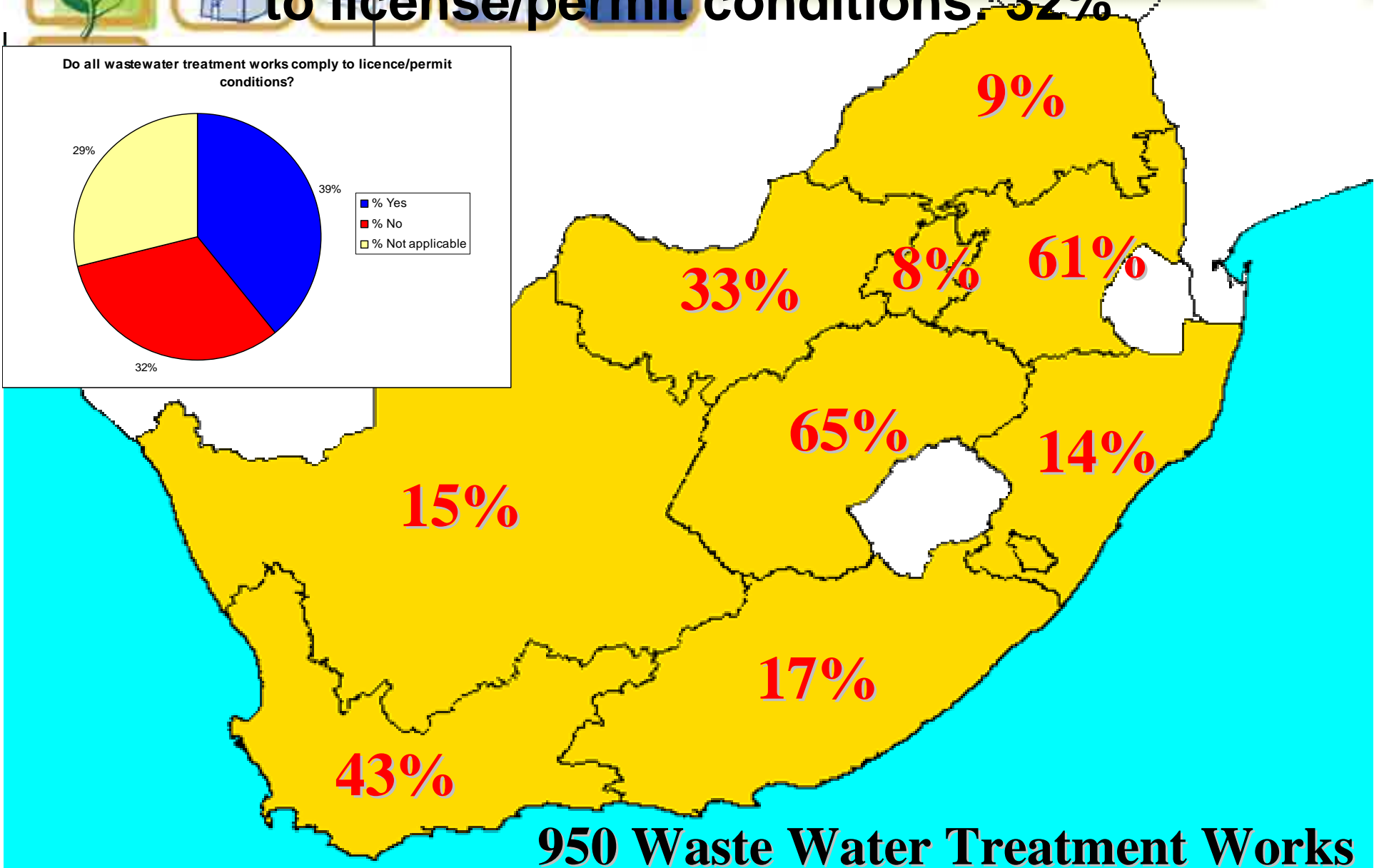
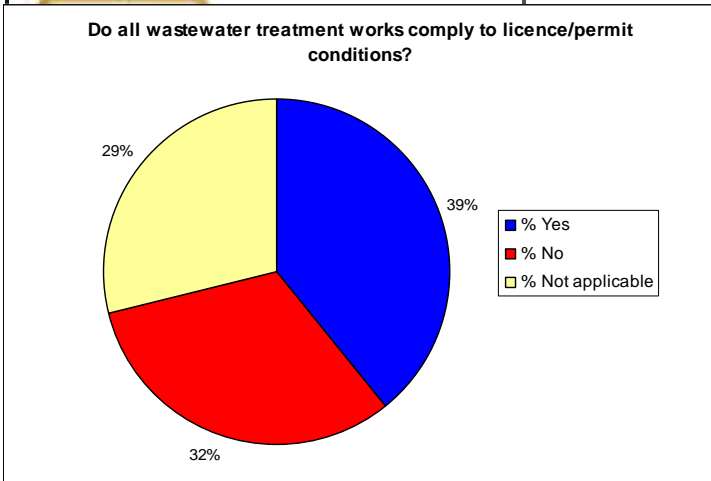
# WWT Facilities with no appropriate license/permit : 57%

Do all wastewater treatment facilities have an appropriate licence/permit?



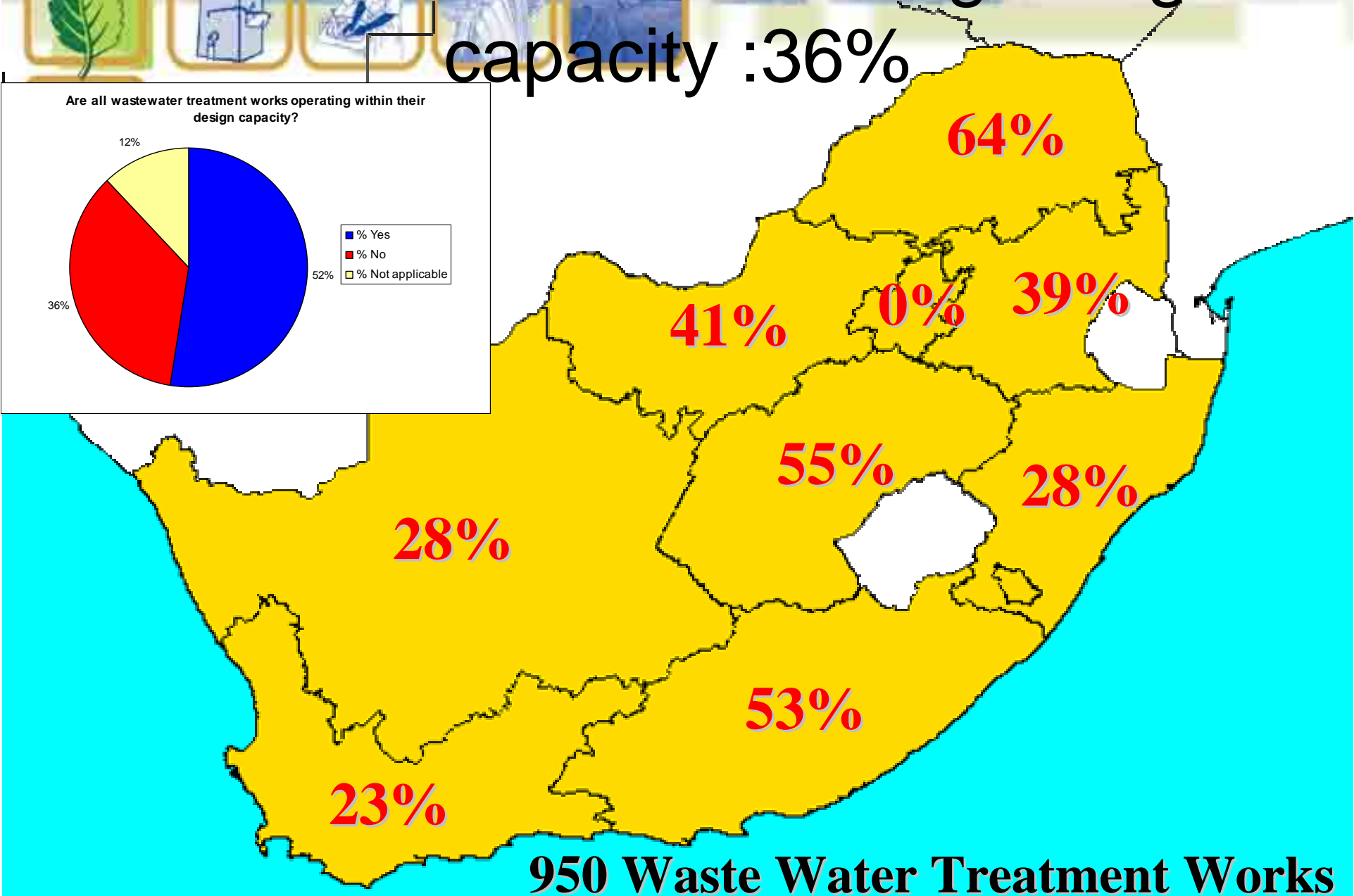
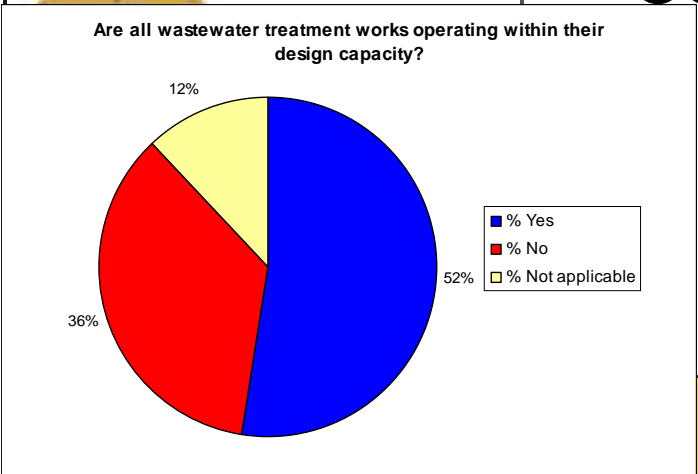
**950 Waste Water Treatment Works**

# WWT Facilities with license not complying to license/permit conditions: 32%



**950 Waste Water Treatment Works**

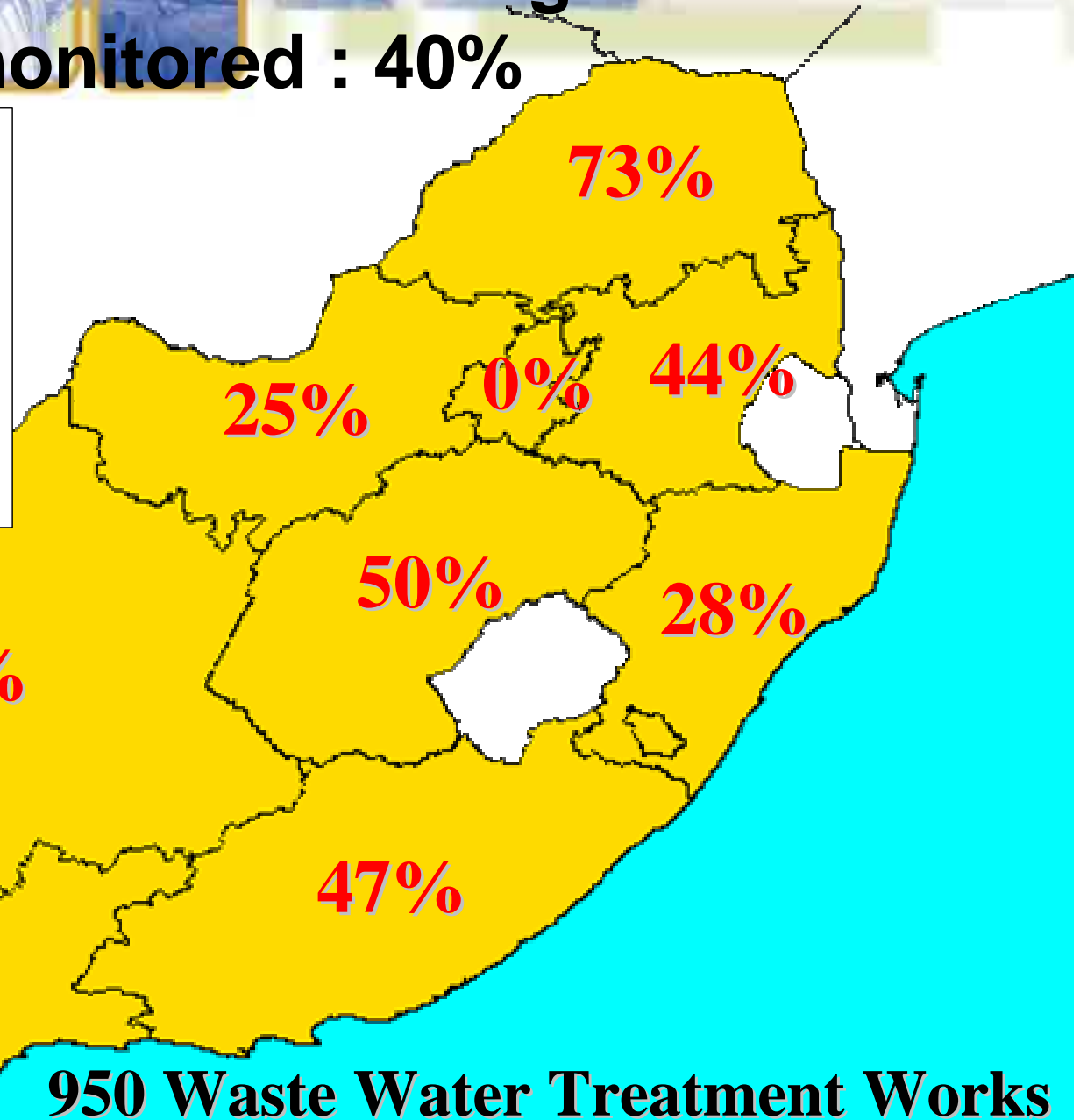
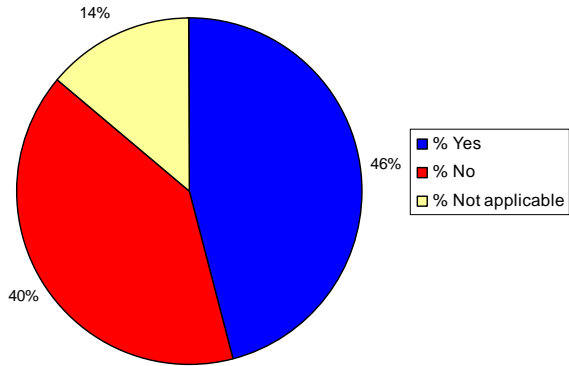
# WWT Facilities exceeding design capacity :36%



**950 Waste Water Treatment Works**

# WWT Facilities discharge not monitored : 40%

Do you monitor the volume of discharge from all wastewater treatment works?



**950 Waste Water Treatment Works**



# Risks, Threats and Challenges



- Pollution of water resources (mining, agriculture, industry)
  - Pollution of fresh water resources due to
    - Mining activities
      - Acid mine drainage - heavy metal contamination
    - Poor agricultural practices- increasing salt loads
    - Eutrophication i.e. lack of Oxygen in the water leading to death of fish etc.



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## Key Recommendations



- Improve Water mix
  - Desalination
    - Set target for coastal municipalities
    - Inland areas with saline water resources
  - Surface water resources
    - Augmentation especially in under-developed areas
    - Multi-purpose



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## Key Recommendations



- Improve Water mix
  - Ground water
    - Promote use in surface-water deficient areas
    - Promote conjunctive use
  - Return flows
    - Use of return flows as source for power stations & coal-to-liquid fuel plants
    - Treated effluent especially for coastal cities



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## Key Recommendations



- Water Conservation & Water Demand Management
  - Declare non-negotiable
  - Set up sector specific targets
  - Regulation through economic instruments
- Water Loss control
  - Enforcement for all municipalities
  - Set a target limit on this as a condition for all sectors




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## Key Recommendations

- 
- Promote water use efficiency
    - Sectoral benchmarking
    - Set Sectoral water use targets
  - Infrastructure
    - Promote construction of Inter-Basin Water Transfer (IBWT) & multipurpose dams
    - Prioritise development according to needs
    - Operation and Maintenance of existing infrastructure
    - Refurbishment of existing ageing infrastructure



## Key Recommendations



- Unlawful Water use
  - Clamp down
  - Priority in stressed catchments
- Irrigated agriculture
  - No further allocations except for new entrants linked to WAR
  - Reduce total water use (target to be set)



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# Key Recommendations

- Afforestation expansion
  - Promote Afforestation in line with LTMS
  - Prioritise KZN & EC)
- Aligned planning
  - Water is central to all planning
  - Misalignment with NSDF, PGDPs, IDPs, etc
  - Encourage joint planning




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# Key Recommendations

- 
- Water quality management & pollution control
    - Roll-out of water resource classification system
    - Adherence to licence waste discharge standards & conditions to be monitored rigorously
  - Climate Change
    - Develop mitigation and adaptation plans for the Sector



# Key Recommendations



## Response to Anti-Poverty Strategy

There are 4 pillars of the **Anti-Poverty Strategy** where DWAF can intervene directly.

Pillar 1: Economic interventions to expand opportunities for employment and self employment

- Response programmes
  - Invest and develop infrastructure that will promote small scale rural development
  - Promote rain water harvesting
  - Develop community benefits around dams
  - Massification of programmes like Working for Water, Working for Wetlands etc
  - Development of value added industries from cleared biomass



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# Key Recommendations



## Pillar 2 : Investment in human capital

### Response programmes

- Developing appropriate skills for the water sector e.g. the learning academy
- Providing community based training in programmes like WfW, WoF, Working on Wetlands
- Awarding bursaries and learnerships



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# Key Recommendations

Pillar 3 :Basic Services and other non-financial transfers consisting of free basic municipal services such as water electricity, refuse removal sanitation and healthcare

- Response Programmes
  - Accelerating access to water and sanitation services
  - Access to free basic services



# Key Recommendations



## Pillar 4: Good governance



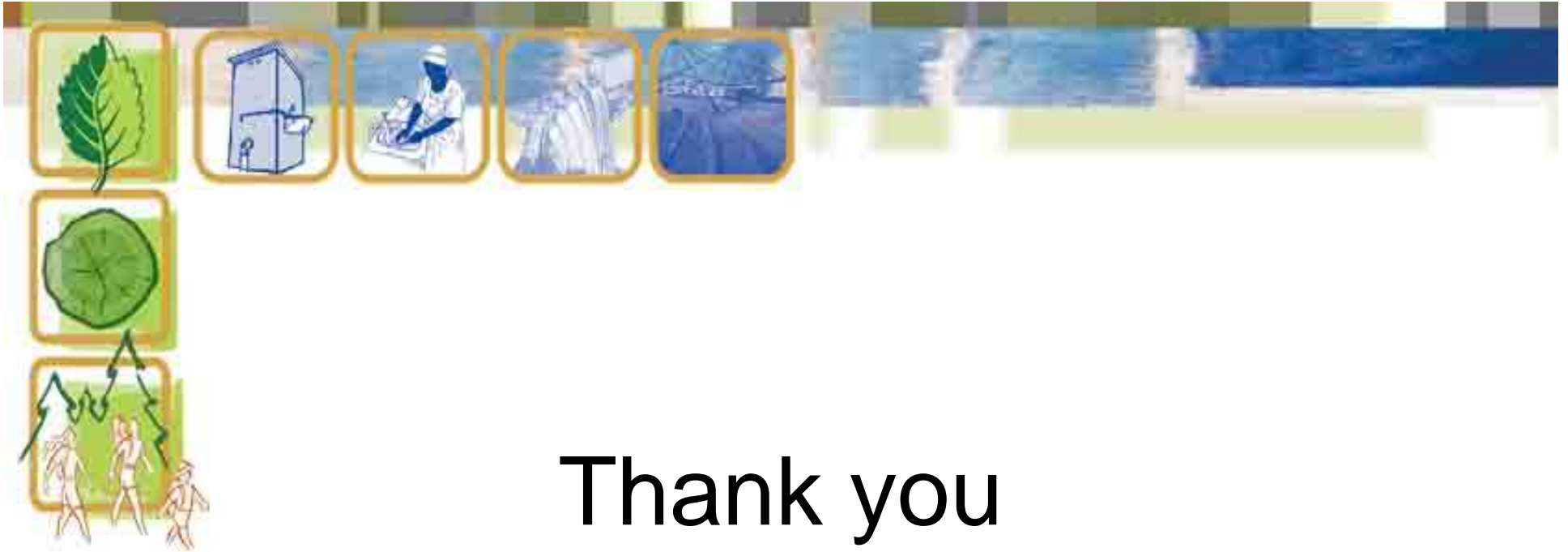
## Response Programmes

- Supporting local government to deliver on its constitutional
- mandate
- Ensuring effective regulation



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# Thank you

## Questions, comments, and inputs