The Water Sector: Future Constraints and Competing Demand, Water Resources of South Africa.

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Introduction

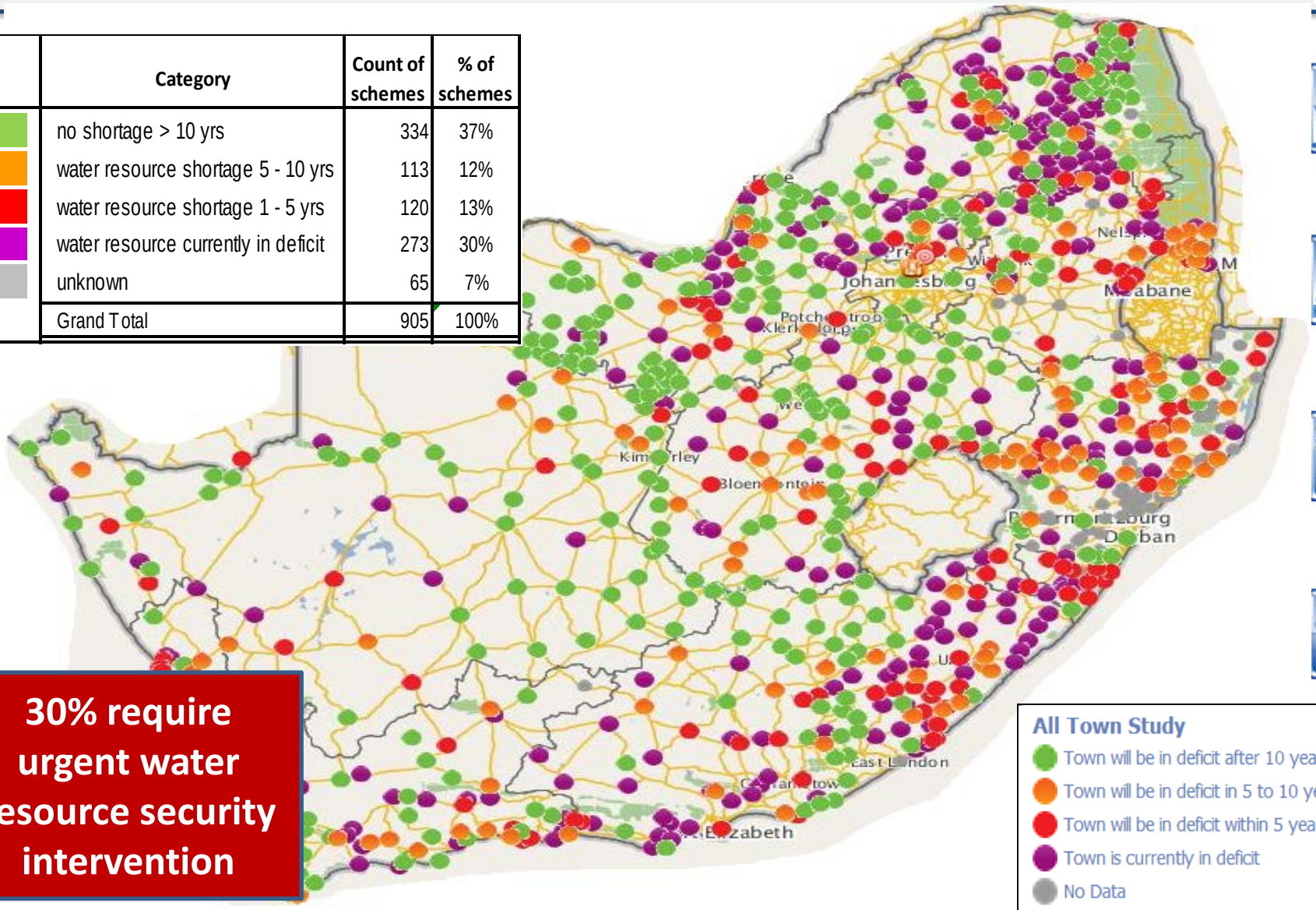
- South Africa is a water scarce country.
- The water sector in this country faces multi stress.
- Water, energy and food security are all central to South Africa's independence vision of delivering a better quality of life to its citizens.
- Water and Energy are inextricably linked (demand for more water & energy).
- The energy sector tends to need water in areas or provinces that are already water stressed.





Water supply and future projections

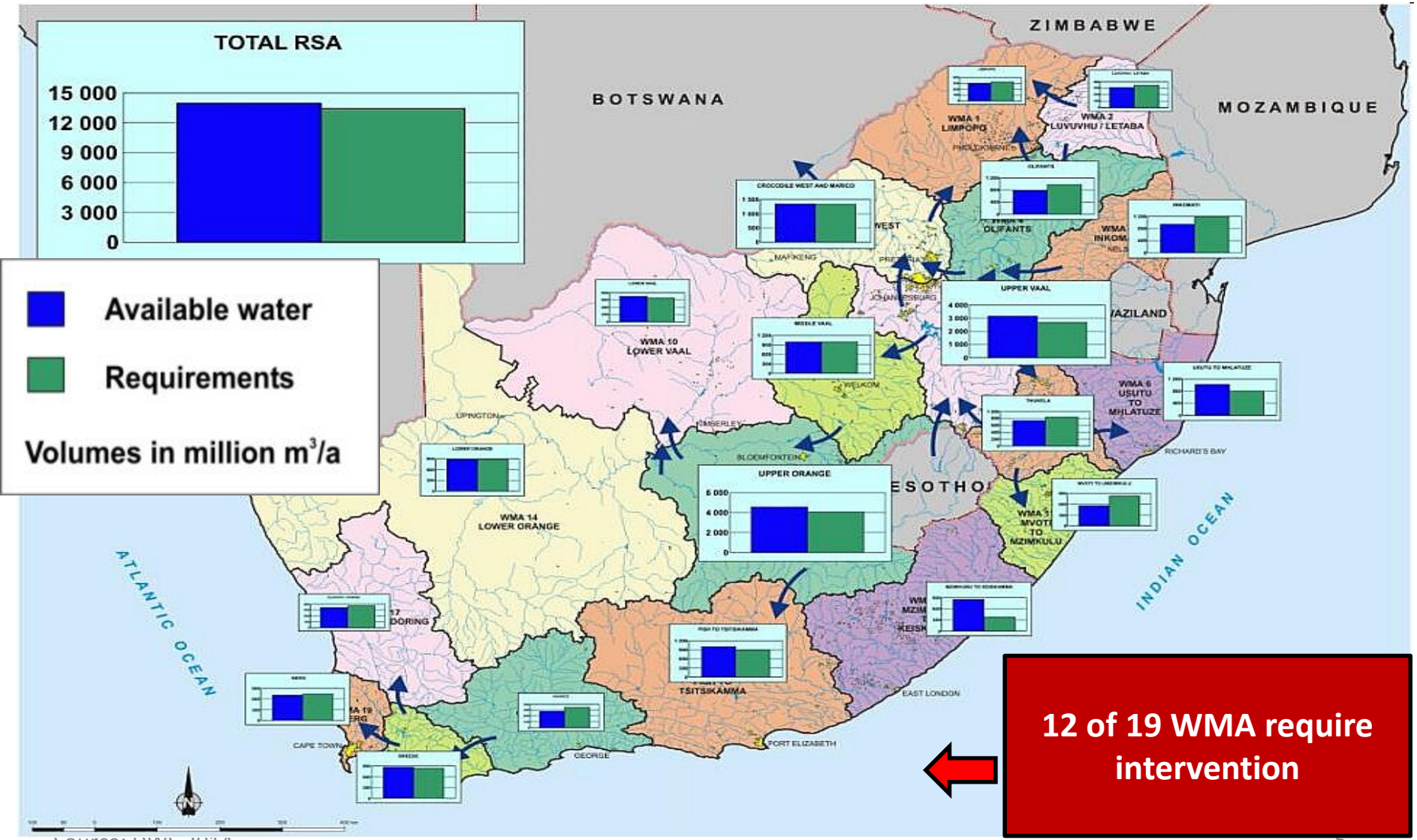
	Category	Count of schemes	% of schemes
	no shortage > 10 yrs	334	37%
	water resource shortage 5 - 10 yrs	113	12%
	water resource shortage 1 - 5 yrs	120	13%
	water resource currently in deficit	273	30%
	unknown	65	7%
	Grand Total	905	100%



30% require urgent water resource security intervention

Source: DWS 2014

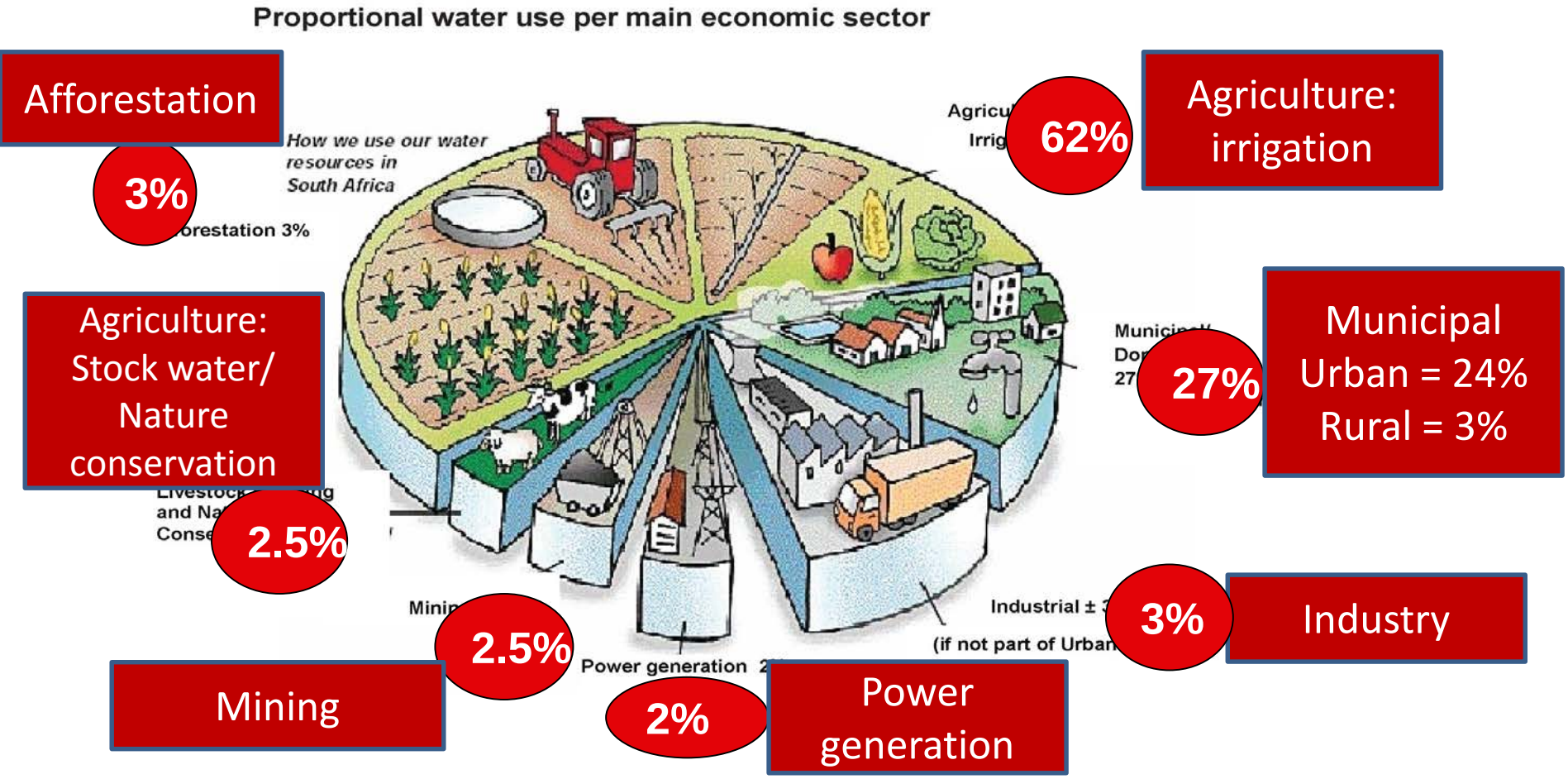
Water availability on national scale



12 of 19 WMA require intervention

Source: DWS 2014

Water use per economic sector



Source: DWS 2014

Current act, policies, strategies under the water sector

- ✓ In this country, the right to water is enriched in the constitution and implemented by the work of ordinary status as highlighted by the constitution of 1996 (RSA, 1996, Madhlopa, 2014).
- ✓ Section 27(b) of Chapter 2 states that everybody has the right of access to sufficient water (RSA, 1996).





National Water Act 36 of 1998

- ✓ Since, 1998, the National Water Act has been championed as the **blue print** within the water sector.
- ✓ It provides the legal framework for the effective and sustainable management of South Africa's water resources (RSA, 1998a).
- ✓ The Act aims to *protect, use, develop, conserve, manage and control water resources as a whole*.
- ✓ *Chapter 4 of the National Water Act provides for use of water by various stakeholders*





National Water Act 36 of 1998 Cont...

- ✓ This strategy takes on board a range of options for balancing the supply and demand of water.
- ✓ It has been noted that these options have implications for energy demand.
- ❑ The National Water Resource Strategy covers the following issues: *(a) As the availability of fresh water sources becomes fully utilised, the energy sector shifted to the implementation of dry cooling tech. (b) The energy sector is continuously improving the efficient use of water, for example, the handling & management of ash and waste. (c) There are some challenges in implementing water allocations and water use authorisations across sectors.*





White paper on a National Water Policy for South Africa

- ✓ This White paper was aimed at guiding the management of water in the country.
- ✓ The White paper on National Water policy emphasized on *efficiency, effectiveness and demand-side management in water utilisation* in order to promote water conservation.
- ✓ According to DWS, 2013 & Madhlopa, 2014, a recent review of water – related policies was conducted, the review outlined several issues:

(a) Authorisation to use water for productive purposes is aligned with demographics realities.

White paper on a National Water Policy for South Africa Cont...

(b) Minimum of 25 litres per person per day provided free of charge to all indigent households.

(c) Indirect benefits of water from healthy river systems are protected and maintained.

(d) Allocation and use of water supports the reduction of poverty and equality across the country.

Water for Growth and Development Framework

- ✓ This is one of frameworks that partially highlights the nexus approach, although to a limited extent.
- ✓ It takes cognisance that there is a close working relationship with large water users in the energy sector to ensure that current and future power plants are included in the DWS water resource planning initiatives (DWS, 2009).
- ✓ *This was a recognition of the water – energy linkages. It is reported that 2% of the available water is allocated to the energy sector.*

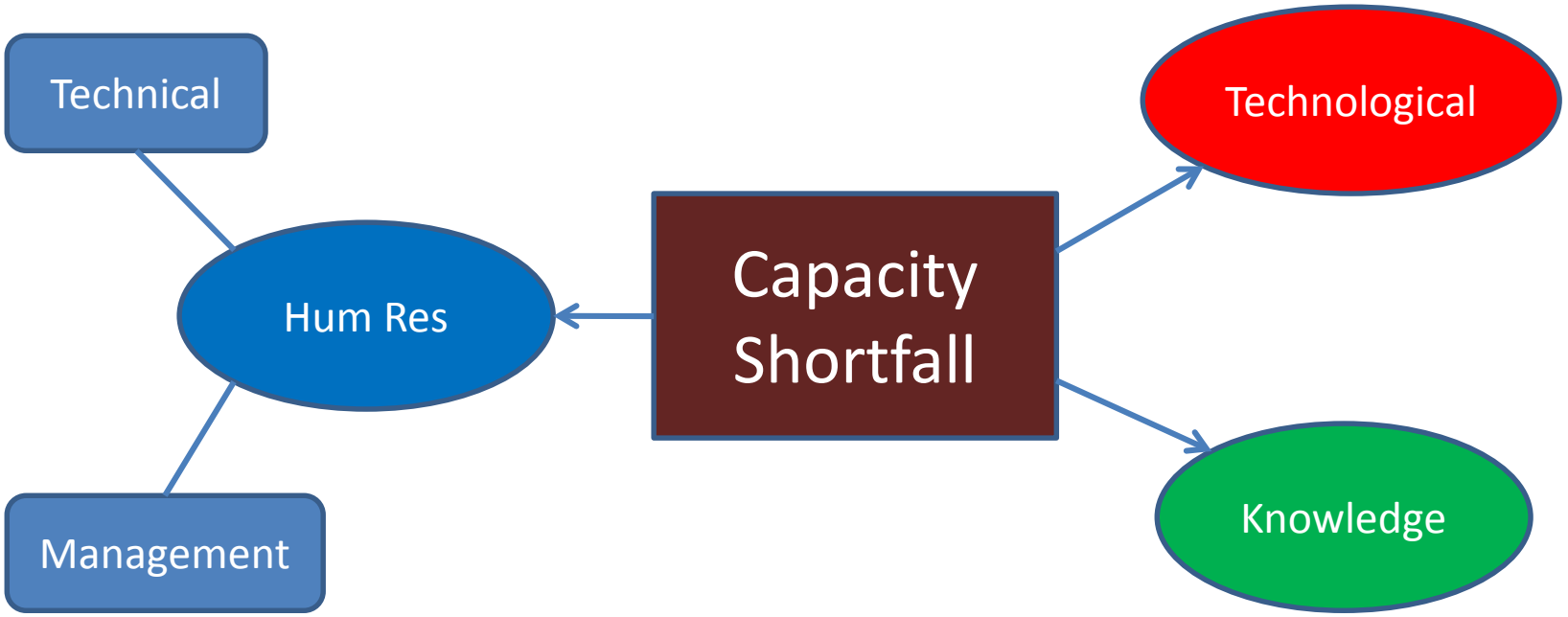




South Africa's water sector challenges

Water availability – quantity and quality

Water access – physical, economic and social



South Africa's water sector challenges Cont...

- ✓ According to Schulze, 2000, the adverse impact of climate change will worsen the existing problem of systemic water shortages.
- ✓ There's a need to ensure access to water for the country's population.
- ✓ With the exception of National Water Act & Water for Growth Development Framework (NWA, 1998 & DWA, 2009), existing water policies neither explicitly nor adequately highlight linkages that exist between water, energy and agric sectors.





South Africa's energy sector challenges Cont...

- ✓ Currently, South Africa is faced with ongoing energy shortages. More recently, this has even been reported to have contributed to the country's credit status being downgraded.
- ✓ The 'crises' in the energy sector has also led to the signing of nuclear power deals with Russia and China as well as an 'explosion' of new coal mines with new prospecting licences being issued in areas like Mpumalanga.
- ✓ This has raised renewed fears of acid mine drainage in the Vaal River; the mushroom of new mines is set to clash with water and agriculture sectors.





Water links to energy

- ✓ South Africa's Constitution (Act No.108 of 1996) stipulates that the government should have a national energy policy.
- ✓ The White paper (DME, 1998) recognised the fact that South Africa is endowed with a broad spectrum of renewable and non renewable energy resources.
- ✓ The White paper on energy recognised the existence of cross cutting issues and the fact that agric formed part of demand and water formed part of the supply matrix but does not recognise linkages between three components.





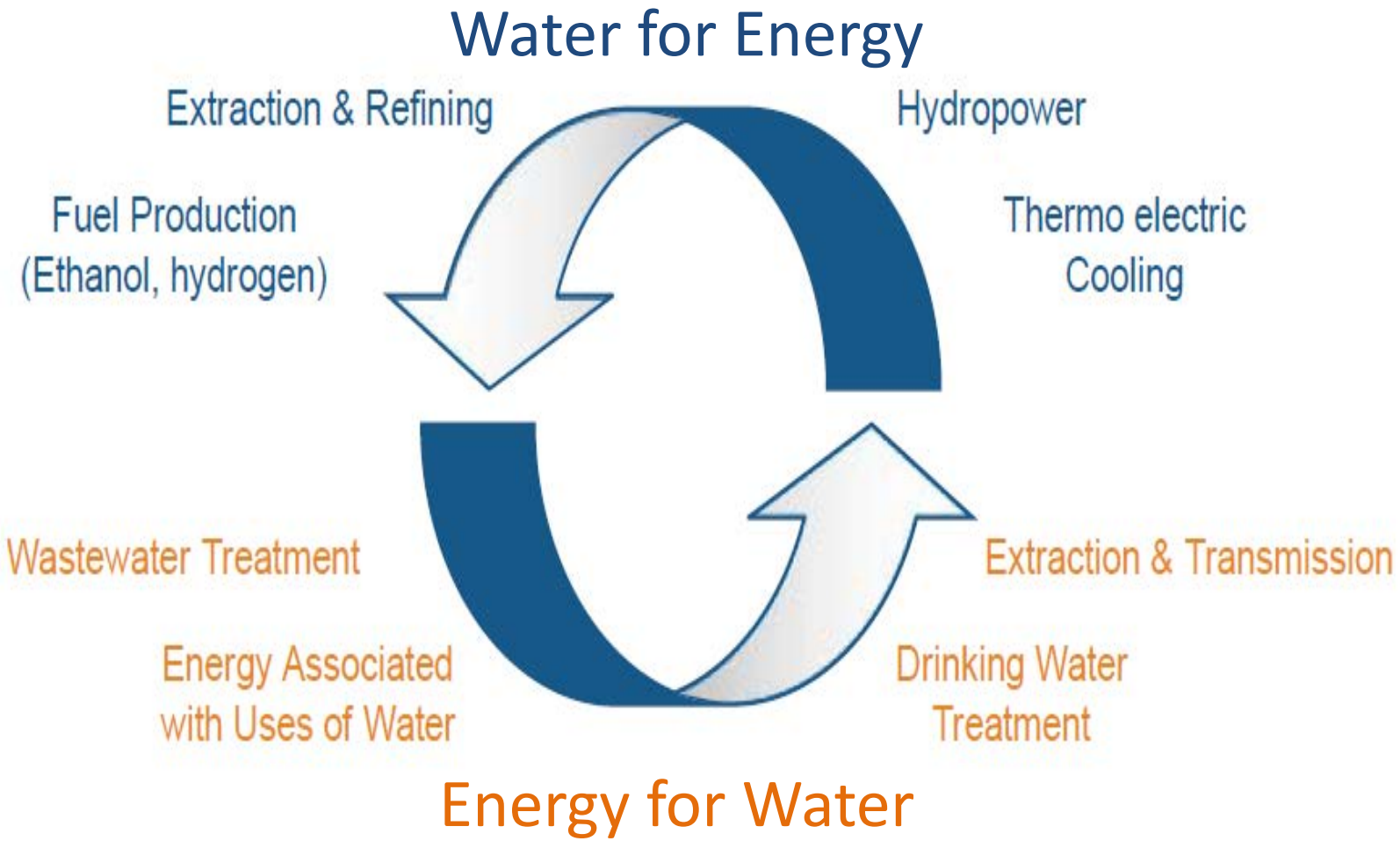
Water & Energy relationship

- Water and energy are intimately linked. Substantial energy is required to move water over long distances for social and economic purposes.
- Large amounts of water are necessary to produce all forms of energy for social and economic use (Gleick, 1994).
- Water is required for cooling, extraction and refining, as well as for fuel production. For many generation technologies, water requirements are in every part of the generation cycle (fuel extraction, generation, cooling of steam & as well as general maintenance).





Water links to energy Cont...



Source: Gleick, 1994

Conclusions

- ✓ Since 2009, an opportunity has been created through the National Planning Commission (NPC) to integrate policies, strategies and plans together in order for government departments to collaborate, manage their resources in an efficient & effective ways, and enforce policies and legislation.
- ✓ It is important to note that the energy sector has been identified as one of the key strategic sectors by the National Water Act 36 of 1998 and it has been given priority together with the agricultural sector.





Conclusions Cont...

- ✓ The Water for Growth and Development Framework takes cognisance of the intersectoral linkages with the energy sector in order to make sure that current and future power plans are incorporated into the water resource planning initiatives.
- ✓ This shows that the water sector takes cognisance of the role played by the energy sector in terms of *water use, water allocation and water use efficiency*.





Recommendations

- ✓ The NDP should made sure that it safe guards against sectors operating in silos than aligning their activities in an integrated way.
- ✓ The government needs to pursue the nexus approach in order to *improve efficient use of water, energy, and agricultural resources in a sustainable manner*.
- ✓ If government does not follow the nexus approach chances of these sectors duplicating their activities are very high and there would be more collusion of sectors than convergence of acts, policies, strategies and plans.





Thank you for your attention