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Water and Sanitation
REPUBLIC OF SOUTH AFRICA

NATIONAL WATER RESOURCE STRATEGY-3 CHAPTER-11: IMPROVING RAW WATER QUALITY

PIETER VILJOEN
SCIENTIST MANAGER
WATER QUALITY PLANNING

2022 STAKEHOLDER CONSULTATION

PRESENTATION OUTLINE

- Indicators of Poor Water Quality
- Raw Water Quality Assessment
- Water Quality Management Challenges
- Factors That May Contribute to Poor Water Quality
- Contexts and Motivation for Improving Raw Water Quality
- Integrated Water Quality Management Strategy (IWQMS)
- Alignment with key Strategies

INDICATORS OF POOR WATER QUALITY

■ Most predominant constituents of concern in SA:

- Nutrients
- Salts
- Microbial contamination
- Urban Runoff & Litter



■ Other issues that have been identified are:

- Acidification,
- Siltation/sedimentation,
- Metals in sediment,
- Persistent Organic Pollutants (including agro-chemicals),
- Radiation,
- Thermal Pollution,
- Nano-particle pollution, CEC and EDC.

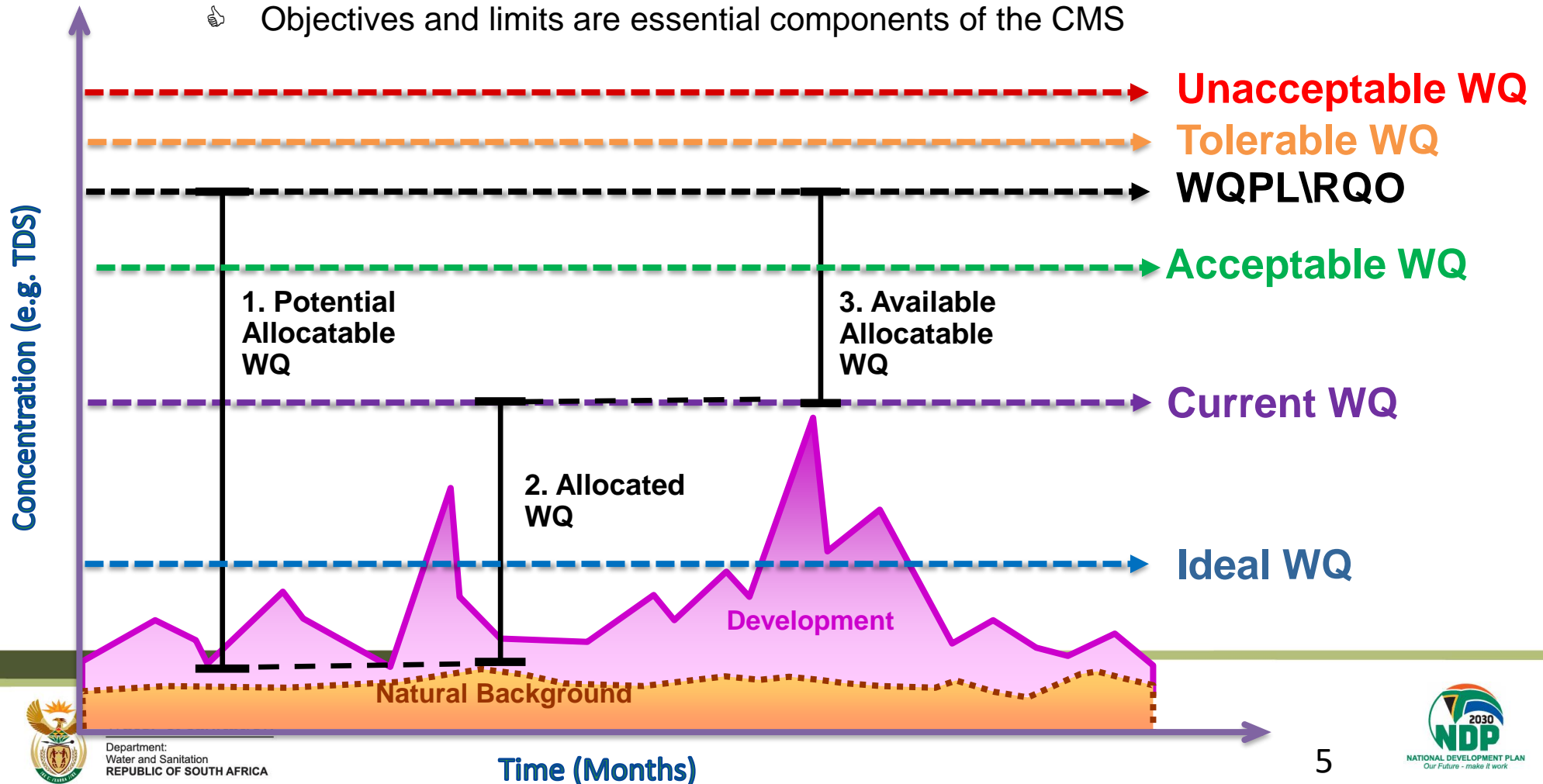


RAW WATER QUALITY ASSESSMENT

- Planning level reviews of the resource water quality status in all Water Management Areas:
 - Planning Level Review of Water Quality in South Africa (DWA 2011).
 - Planning Level Review of Water Quality in South Africa: A Situation Analysis (DWS 2015)
 - Assessments of Water Quality and Land Use Impacts in all 9 Water Management areas (DWS 2019)
- Aimed to:
 - Identify the instream water user requirements while considering the impacts from the attributed land use in the catchment;
 - Conduct desktop water quality assessment and literature review
 - Stakeholder engagement to ground truth the information used in the study;
 - Identify the gaps and water quality issues of concern and
 - Compiling a planning level review of water quality for each Water Management Area.

UNDERSTANDING WATER QUALITY LIMITS

- 👉 Sets a benchmark for future improvement or deterioration in Water Quality(WQ)
- 👉 Allow for the Identification of problem catchment and of issues of concern
- 👉 Report on Water Quality Management Performance
- 👉 Used to calculate the allocatable WQ
- 👉 Objectives and limits are essential components of the CMS



RAW WATER QUALITY 2011 COMPARED TO 2015

NATIONAL MONITORING POINTS COMPLIANCE TO PLANNING LIMITS AND COMPARISON TO PREVIOUS STUDY (2011 VS 2015)

EC 2015	27	26	18	29
EC 2011	30	25	17	28

SO4 2015	5	10	18	67
SO4 2011	11	9	10	70

Cl 2015	18	7	32	44
Cl 2011	19	8	29	44

PO4 2015	27	7	54	12
PO4 2011	71	25	3	1

NH3 2015	10	7	16	68
NH3 2011	7	5	33	55

pH 2015	59	31	10
pH 2011	42	40	18

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RAW WATER QUALITY IN SOUTH AFRICA

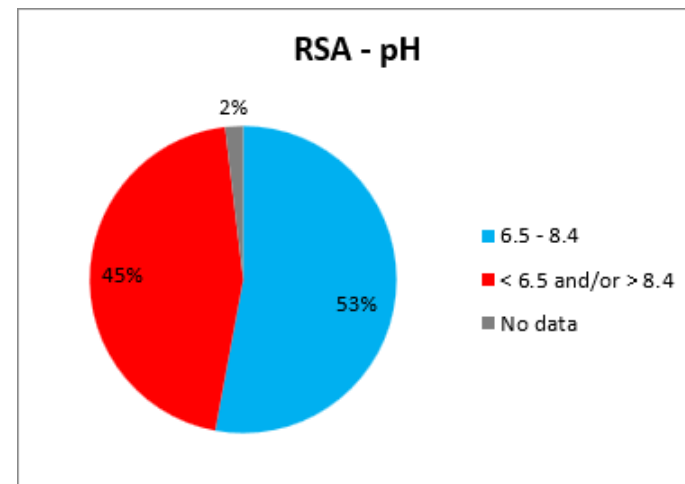
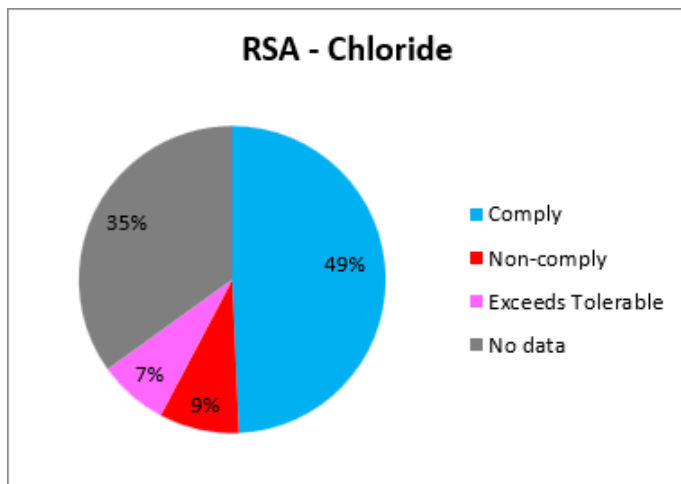
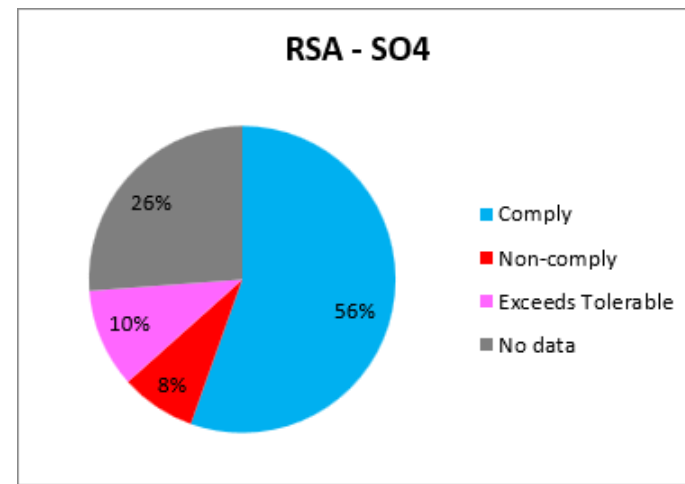
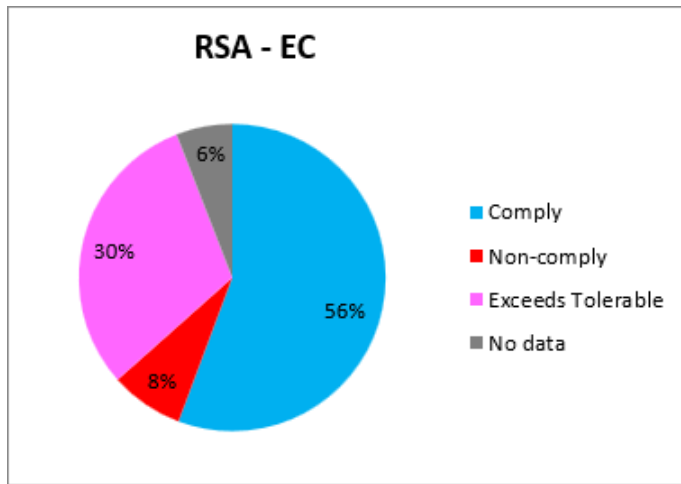
Variable	Total number of monitoring points in the RSA that :				Total
	Comply	Non-Comply	Exceeds Tolerable	No data	
PO4*	1206	119	457	234	2016
SO4*	1118	160	210	528	2016
pH*	1067	911		38	2016
Cl*	994	170	148	704	2016
NH3*	1036	144	354	482	2016
EC*	1123	156	618	119	2016

Variable	<1000	1000 - 2000	2000 - 4000	4000 - 20 000	> 20 000	Total
E.COLI*	314	128	168	114	182	906

Summary of National percentage compliance of surface water resources to WQPL's				
EC	6	31	8	56
SO4	26	10	8	55
Cl	35	7	8	49
PO4	12	23	6	60
NH3	24	18	7	51
pH	2	45		53

E.Coli	20	13	19	14	35
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RAW WATER QUALITY IN SOUTH AFRICA



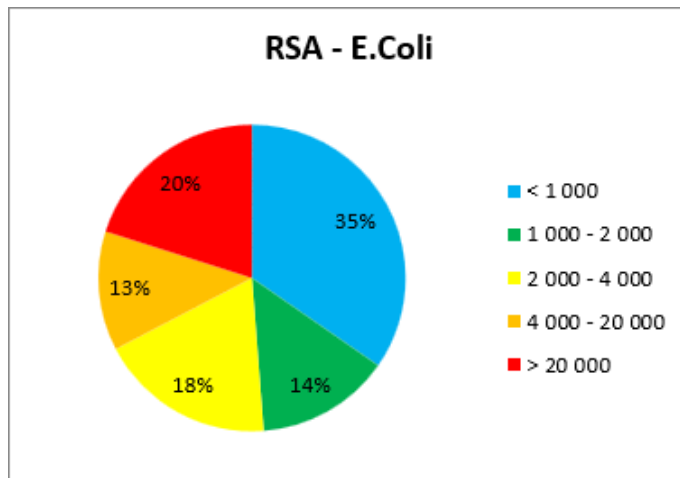
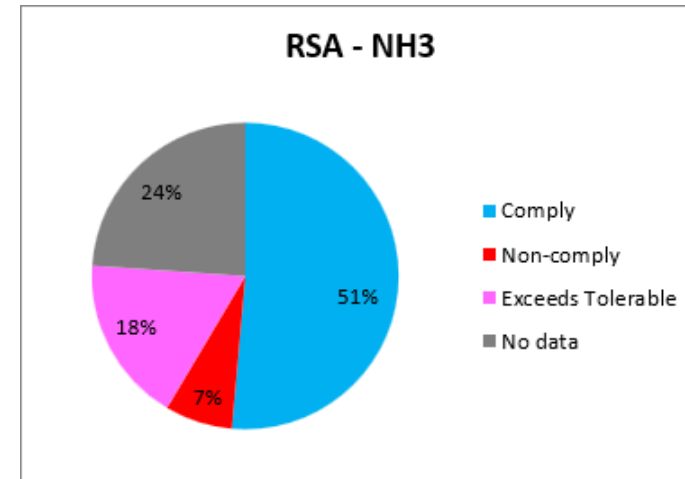
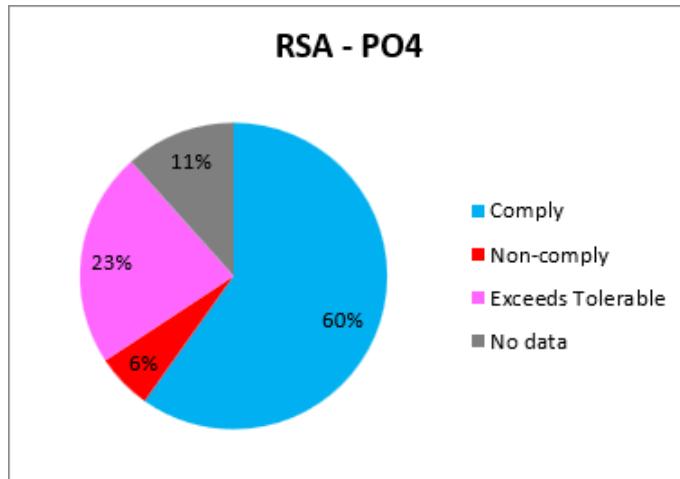
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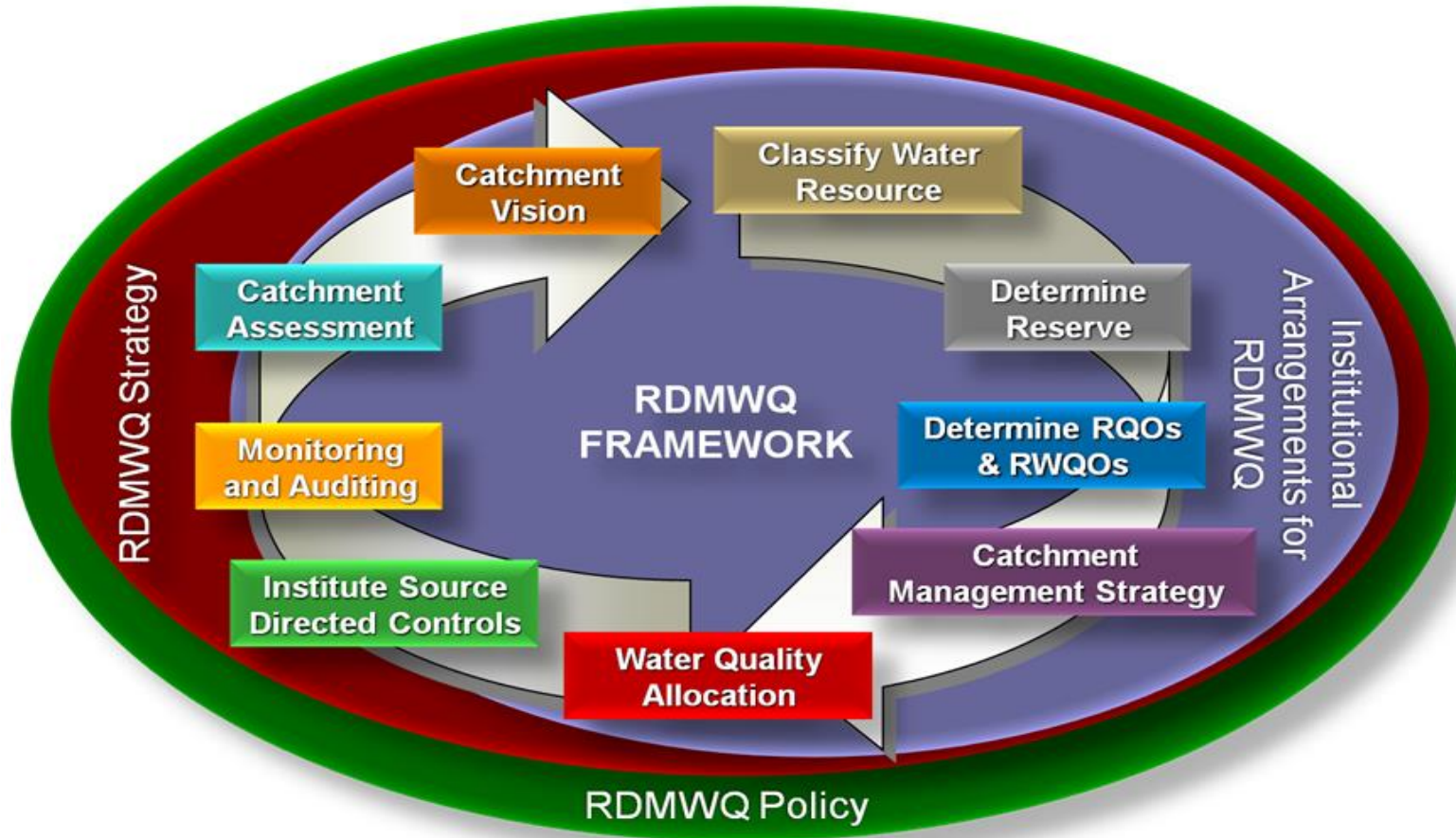


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ADAPTIVE MANAGEMENT

THE WATER RESOURCE MANAGEMENT CYCLE



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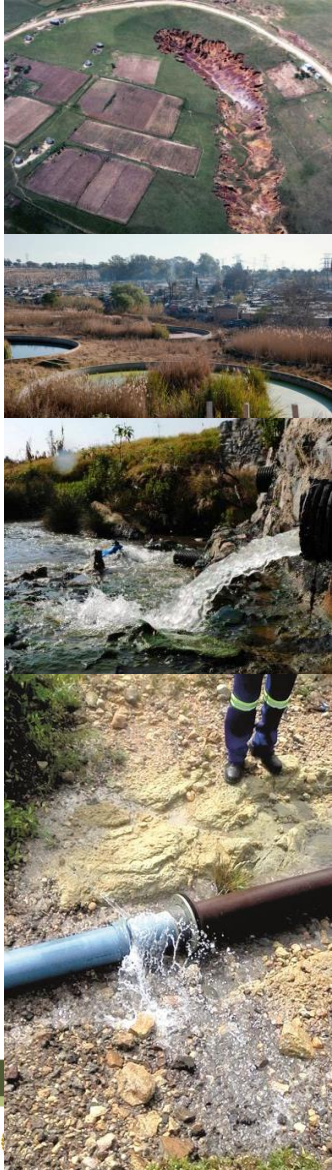


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WATER QUALITY MANAGEMENT CHALLENGES



- Vandalism of Infrastructure
- **Dysfunctional WWTW's**
- Lack of sufficient maintenance plans
- Poor budgeting
- **Lack of sufficiently adequate / appropriate urban planning**
- Lack of **sufficient formal sanitation** in all informal settlements.
- **Destruction of ecological infrastructure** (wetlands)
- Flow regime changes (less dilution capacity)
- Use of Inappropriate land management practices
- Lack of adequate litter control and prevention measures
- Lack of sufficient institutional, technical and financial capacity
- Intricate procurement processes (government is slow to react)
- Ineffective monitoring

DIGNITY



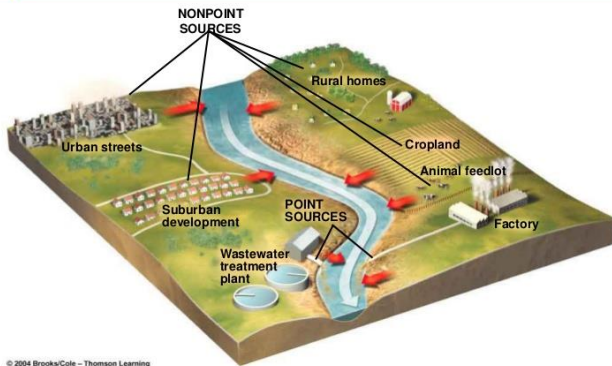
WATER QUALITY MANAGEMENT CHALLENGES



- Uncontrolled discharges from abandoned mines and runoff from discarded mine dumps (legacy issues).
- Inadequate **financial provisioning** for rehabilitation
- Insufficient precautionary planning, regulation and enforcement
- **Insufficient compliance with licence conditions;** inappropriate licence conditions; inadequate enforcement capacity
- Land degradation and over-grazing
- Inappropriate fertilization practices/over-fertilization
- Over-irrigation and in-appropriate irrigation technology
- Lack of **sufficient awareness creation programmes** on water pollution
- Lack of sufficient incentives to treat water or support from government to use alternative technology

FACTORS THAT MAY CONTRIBUTE TO THE WQM CHALLENGES

Sources of Water Pollution



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- **Lack of necessary alignment and coordination within and between government departments:** WQM hampered by poor coordination & conflicting approaches
- **Lack of necessary finance for WQM:** Financial resources available are insufficient and do not recognize the investment required to counteract economic harm.
- **Lack of sufficient data and information management:** Data sharing is a challenge, including transboundary-management. There is a challenge in ensuring that the public has access to information
- **Lack of sufficient capacity & skills**
- **Lack of a Sector approach and ownership at all levels:** Self regulation, awareness and accountability



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CONTEXT AND MOTIVATION FOR IMPROVING RAW WATER QUALITY

It is evident that inadequate management of water quality challenges impacts on the environment, peoples' wellbeing, the growth of the economy and the cost of doing business.



© Ester Havens



CONTEXT AND MOTIVATION FOR IMPROVING RAW WATER QUALITY

- The vision for water quality management in South Africa is captured in the concise statement **“Fit for use, for all, forever”**,
 - **Fit for use** - A scientific judgement, involving objective evaluation of available evidence, of **how suitable the quality of water is for its intended use** or for protecting the health of aquatic ecosystems.
 - **For all** - This indicates a fundamental commitment to equitable utilisation. It is accepted that water resources will be utilised in ways which will **benefit all the people of South Africa**.
 - **Forever** - This acknowledges the **commitment to sustainable management**: the willingness to balance the needs for long term access to the water resource, against the needs for short term development and utilisation.

CONTEXT AND MOTIVATION FOR IMPROVING RAW WATER QUALITY



In response to the country's need to take an improved **INTEGRATED** approach to **Water Quality Management (WQM)**; the Department of Water and Sanitation initiated a project to **revise its current WQM Policies** and **develop a National, Integrated Water Quality Management (WQM) Strategy**.

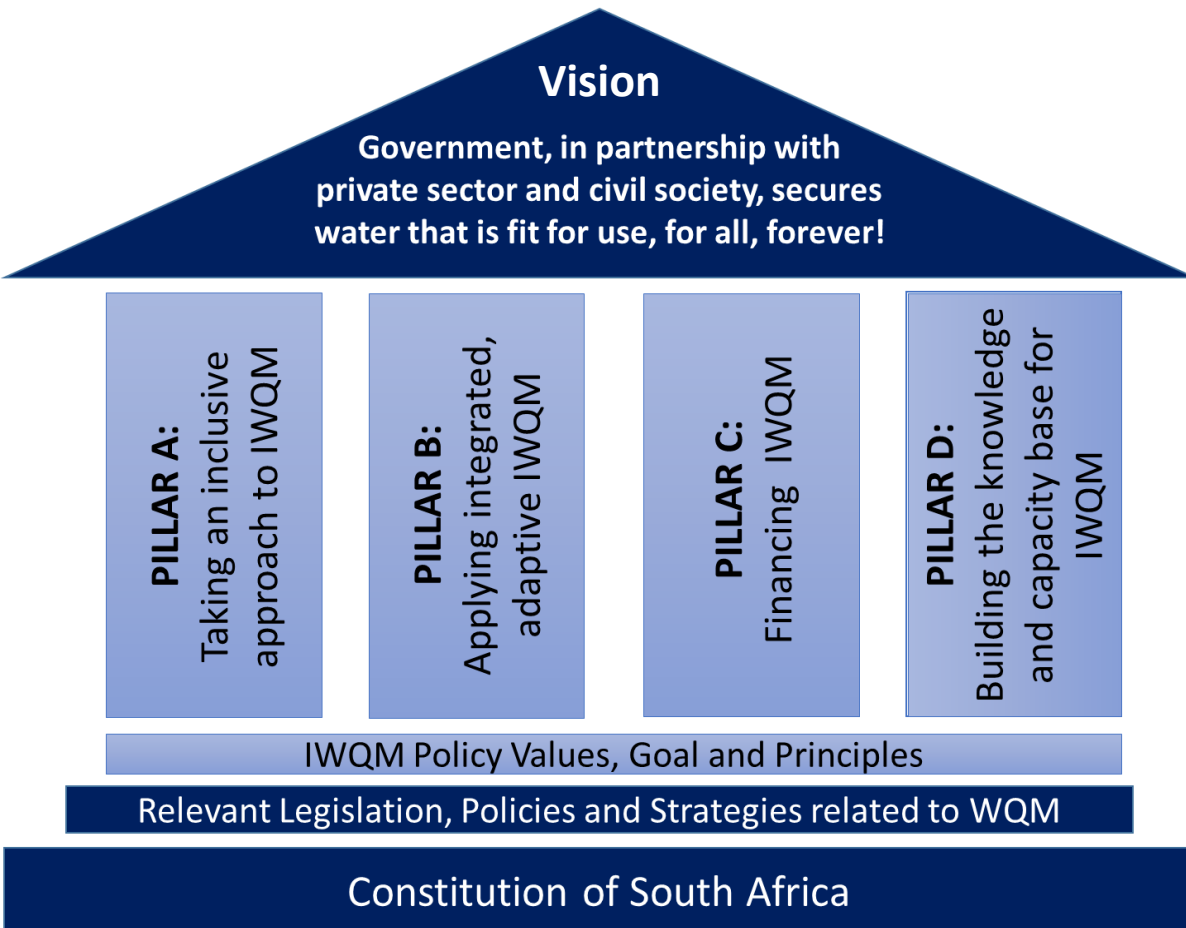
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INTEGRATED WATER QUALITY MANAGEMENT POLICY PILLARS



Deals with the need for a government wide response to the WQM challenges in the country, as well as the need to build partnerships between government, civil society and the private sector in order to be able to successfully address the challenges.

Provides a framework for an integrated, risk-based and adaptive approach to the management of water quality.

Examines the financial underpinnings of IWQM, looks at tools for financing the required actions, as well as the role of the private sector in this regard.

Describes the policy with regard to the knowledge, human resource capacity and information requirements to achieve integrated WQM in the Sector.

ALIGNMENT OF POLICY PILLARS TO STRATEGIC GOALS



To be able to address current challenges and be prepared for future challenges, a new approach is required. The IWQM Policy and Strategy have been structured around a fundamental shift in approach that enables sector-wide engagement through more active partnerships with Government Departments and institutions, as well as the private sector and civil society.



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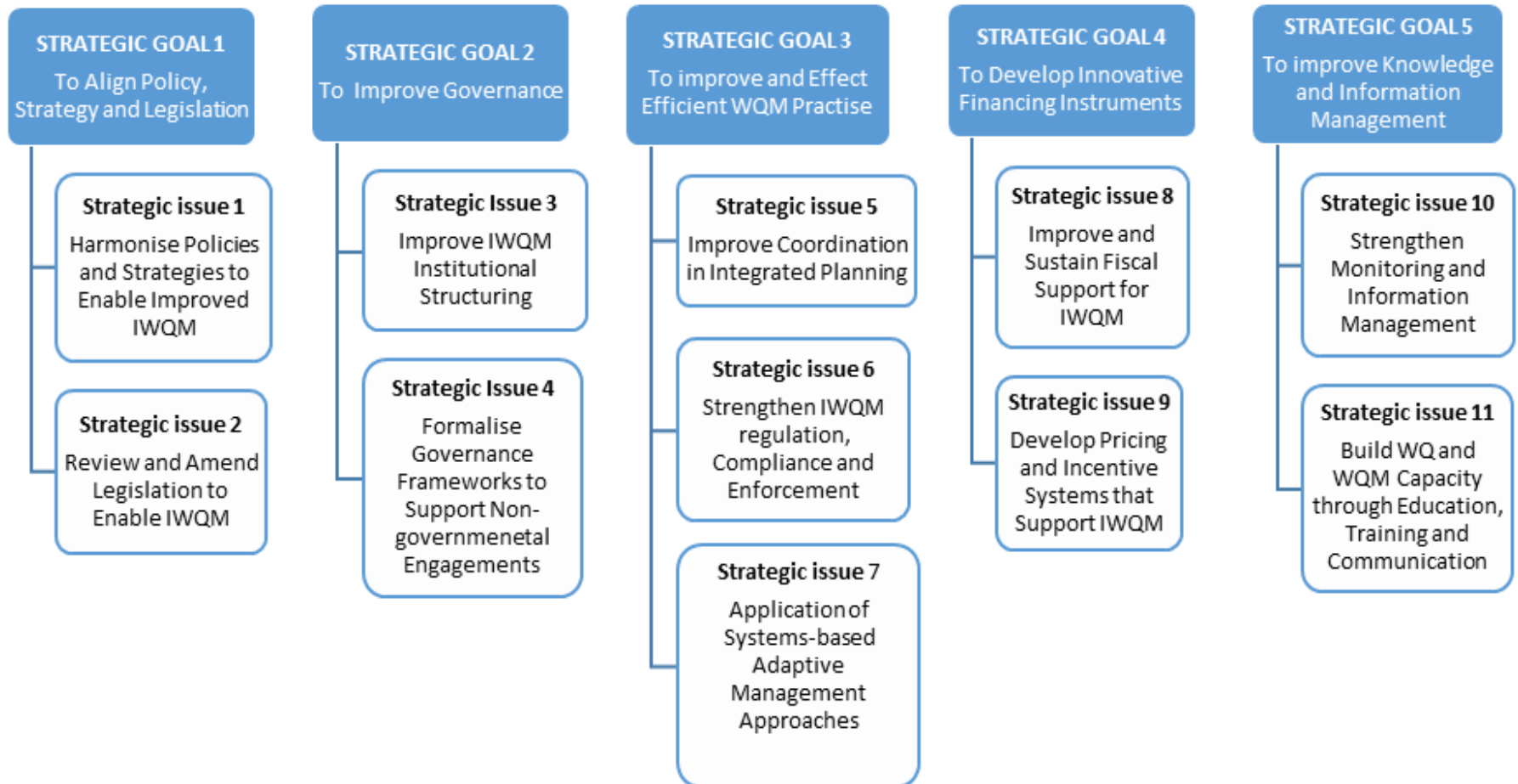


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INTEGRATED WATER QUALITY MANAGEMENT STRATEGY (IWQMS)



STRATEGIC APPROACH



Prioritisation

- What are the biggest problems that we need to fix?
- What are the foundational activities that will improve our ability to deliver in future?
- What will result in the biggest impact and how do we allocate resources to achieve that impact?
- What can we realistically, yet with ambition, achieve in the short term, given financial and human resource constraints?
- What are the preferred ways to meet the objectives?
- Who are the key players and what are their roles?

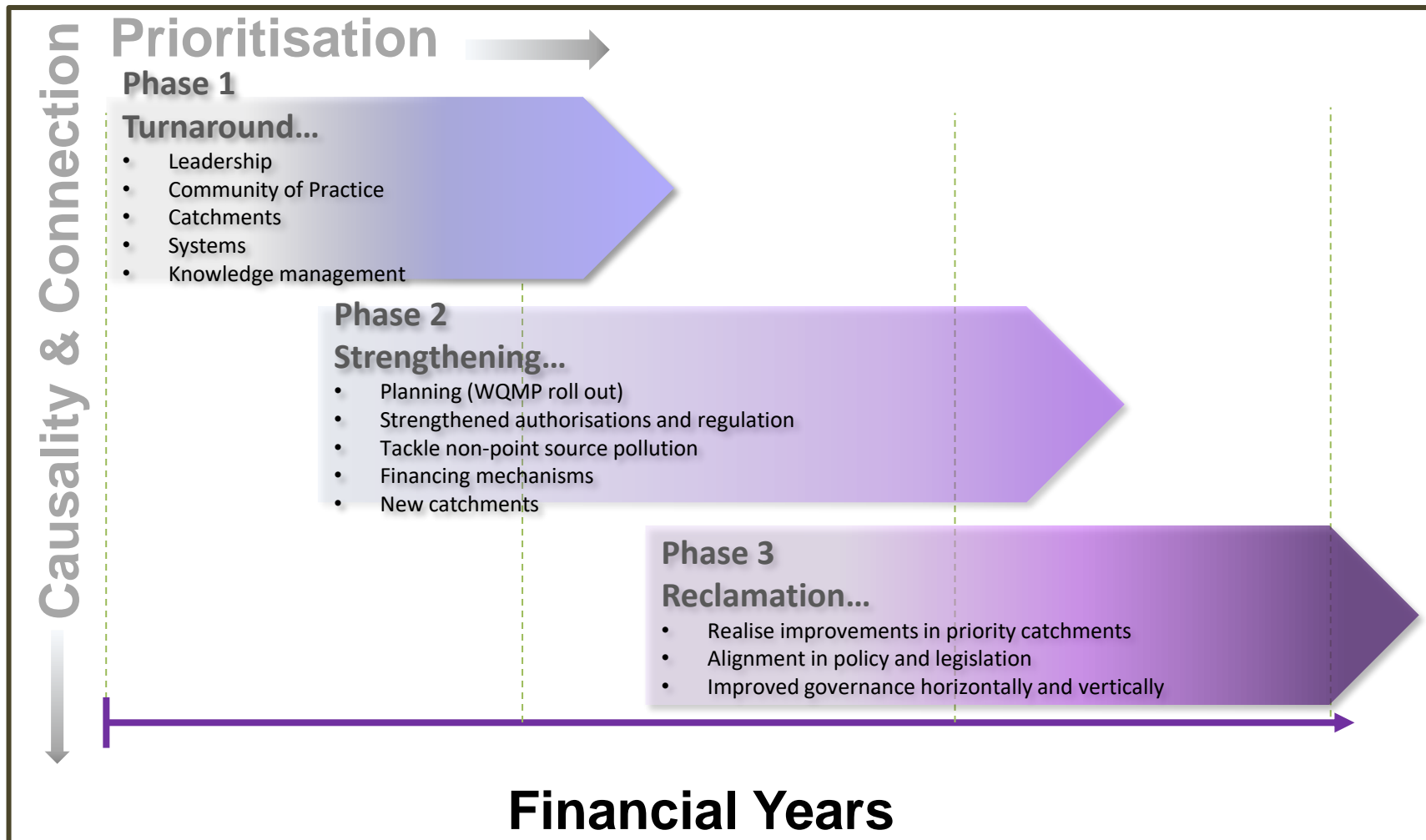
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INTEGRATED WATER QUALITY MANAGEMENT (IWQM) IMPLEMENTATION PLAN



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IMPLEMENTATION PLAN, PHASE 1: TURNAROUND

Focuses on the **work that must be done over the next 3 years**

Core focus: undertake activities that **provide the basis for future phases that will aim to realise real impacts in catchments (there are things we need to do before we see real change in the catchments-we need to work on the foundation first).**

Towards this end five key focus areas have been identified:

- Strengthening the **leadership** for IWQM;
- Building up the **broader community of practice** both internally to the DWS as well as with a range of external partners;
- Improving **key operational aspects** that will lay the foundation for meaningful impact in catchments;
- **Strengthening our systems** particularly with respect to monitoring and information management; and
- Initiating a range of activities that will **build capacity and awareness**, again, both within and external to the DWS.

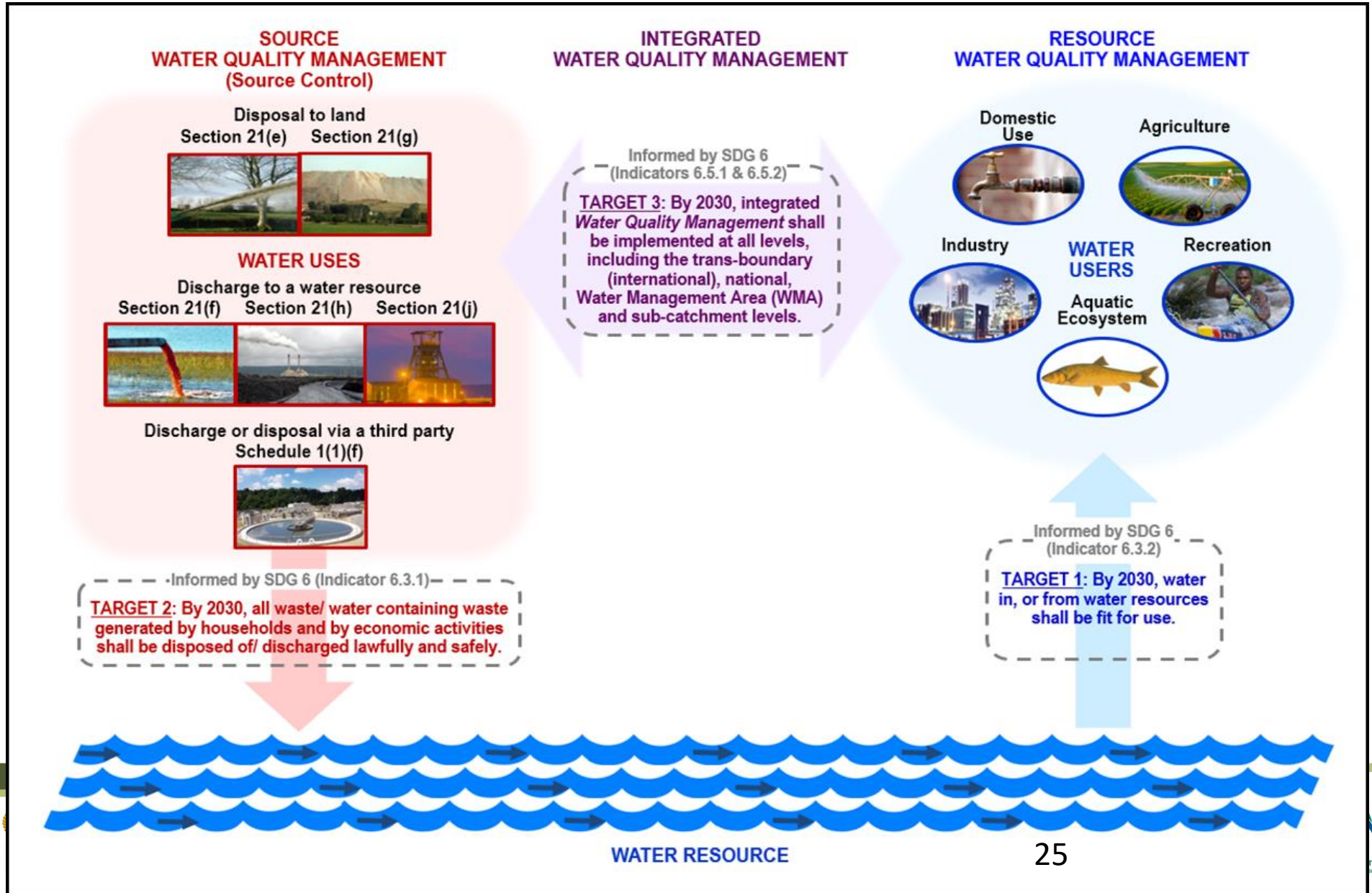
FOCUS AREAS FOR CHANGE	LEADERSHIP	COMMUNITY OF PRACTICE	WQM OPERATION	SYSTEMS	KNOWLEDGE MANAGEMENT
	<p>Reconfigure the DWS WQM function as needed to ensure efficiency and effectiveness</p>	<p>Strengthen existing inter-departmental WQM structures</p>	<p>Develop IWQM plans and for national priority catchments, ensuring consideration of transboundary WQ concerns</p>	<p>Ensure the harmonisation of data and information systems in DWS pertaining to WQ</p>	<p>Formalise and institutionalise the approach to WQM</p>
	<p>Identify strategic water quality management champion that will drive and monitor the implementation of the IWQM Policy and Strategy</p>	<p>Establish, strengthen and foster existing strategic sector partnerships</p>	<p>Develop a consolidated approach to WWTW & LG</p>	<p>Strengthen existing systems in DWS to enable data and information access by stakeholders/public</p>	<p>Develop and implement a IWQM Communication Strategy</p>
	<p>Develop line function support plans to ensure an integrated approach</p>	<p>Develop and enable engagement framework that enables more active participation of civil society at transboundary, national and catchment levels</p>	<p>Implement the WDCS in pilot Catchment/s</p>	<p>Develop protocols and systems in DWS to ensure M&E and new information inform adaptive management decisions for IWQM</p>	<p>Develop and implement Strategic IWQM Research Roadmap</p>
			<p>Develop and Implement Strategic Action Plan to strengthen CM&E approach</p>		
			<p>Develop an implementation protocol for RQOs</p>		
			<p>Develop a strategic action plan for the implementation of the mine-water management policy</p>		



ALIGNMENT WITH OTHER KEY GLOBAL AGENDA AND NATIONAL STRATEGIES

- Sustainable Development Goals
- National Water Resource Strategy
- National Water and Sanitation Master plan
- Integrated Water Quality Management policy and Strategy

ALIGNMENT WITH HIGH-LEVEL TARGETS FOR THE PLANNING AND MANAGEMENT OF RAW WATER QUALITY



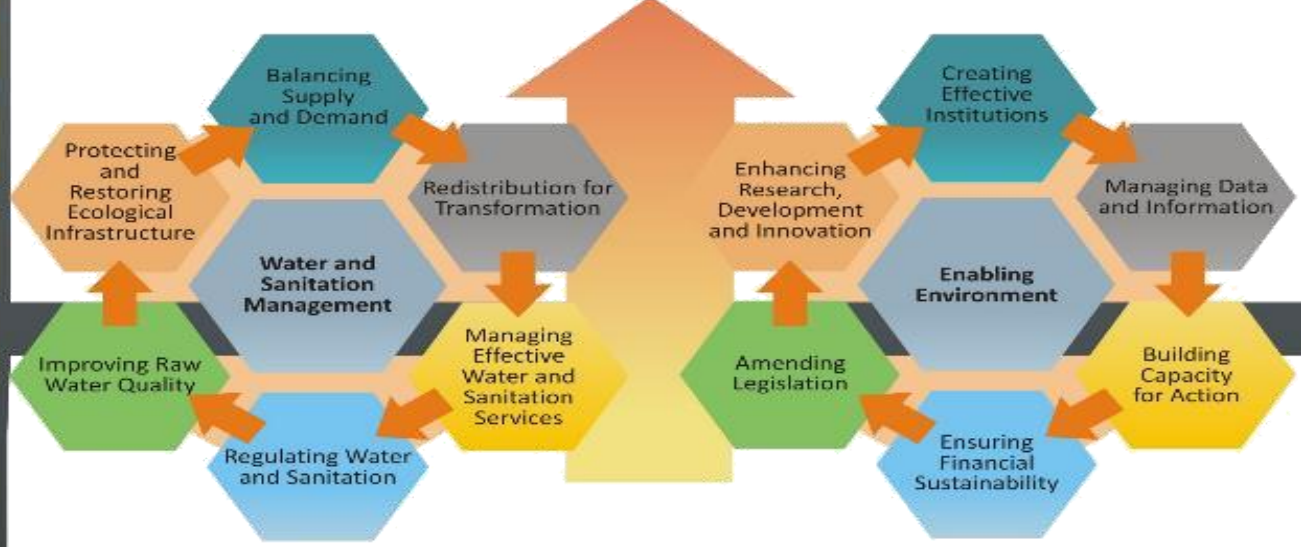
NW&SMP PHILOSOPHY

INSTRUMENTS

- ✓ National Water and Sanitation Bill
- ✓ National Water and Sanitation Master Plan
- ✓ National Water and Sanitation Resources Strategy
- ✓ Water Security Framework

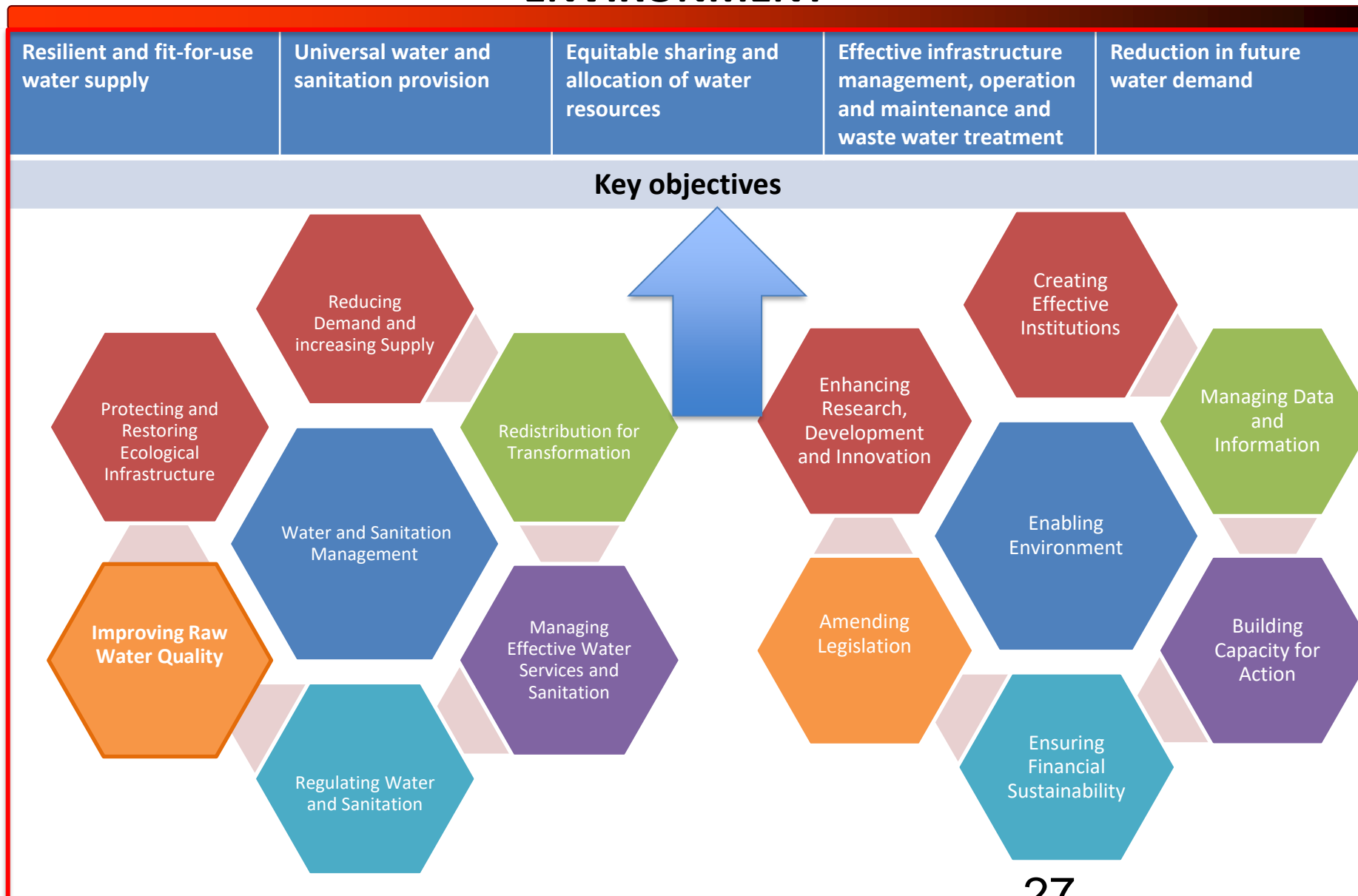
Affordable and reliable access to sufficient and safe water and hygienic sanitation for socio-economic well-being with due regards to the environment

Without sufficient revenue from transfers and tariffs, the sector will be unsustainable



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WATER AND SANITATION MANAGEMENT AND ENABLING ENVIRONMENT



ALIGNMENT WITH ANTIPOLLUTION TASK TEAM (APTT)

Tasks for the APTT Water Quality Action Plan

- 2 AN EFFICIENT AND COORDINATED WATER QUALITY MONITORING PROGRAMME FOR THE DEPARTMENT
- 3 STRENGTHEN MONITORING DATA AND INFORMATION MANAGEMENT
- 4 PRICING AND INCENTIVE SYSTEMS THAT SUPPORT IWQM
- 5 IDENTIFICATION OF WATER QUALITY PROBLEMS AND HOTSPOTS
- 6 IMPLEMENTATION OF KEY PROJECTS THAT WILL HAVE A DIRECT LINK TO IMPROVING THE WATER QUALITY IN THE COUNTRY.
- 7 STRENGTHEN WQM REGULATION, COMPLIANCE AND ENFORCEMENT
- 8 WELL CAPACITATED WATER QUALITY OFFICIALS



<https://www.dws.gov.za/iwrrp/iwqms/Documents.aspx>

WAY FORWARD

Discussion/questions and suggestions

