

# Introducing Non-Sewered Sanitation Sensitive Spatial Planning and Design for Climate resilience

Jay Bhagwan

Water Research Commission – South Africa

Global South Academic Conclave on WASH and Climate linkages

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# Human spatial patterns



**Our  
settlement  
evolution**

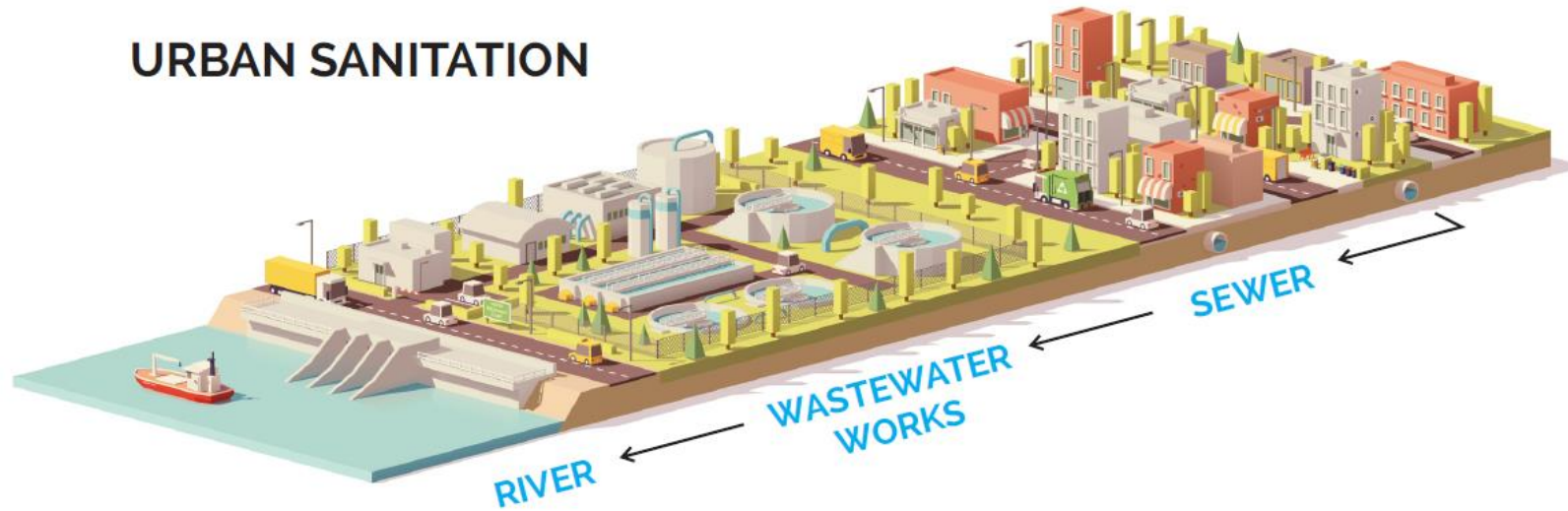


# Where we are in the developing world



# PROBLEM IS THE BINARY ENGINEERING APPROACH: FLUSH = "GOLD STANDARD"

## URBAN SANITATION



## RURAL SANITATION





# Problem.....

Water/sanitation is not the main criteria.....

- Roads, comms and settlements form the high-level planning platform

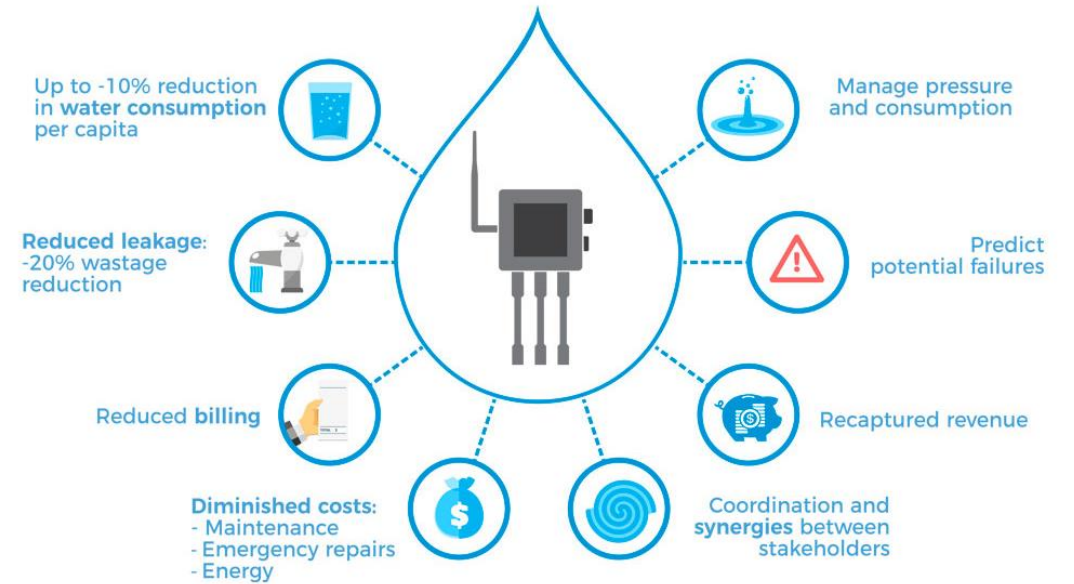
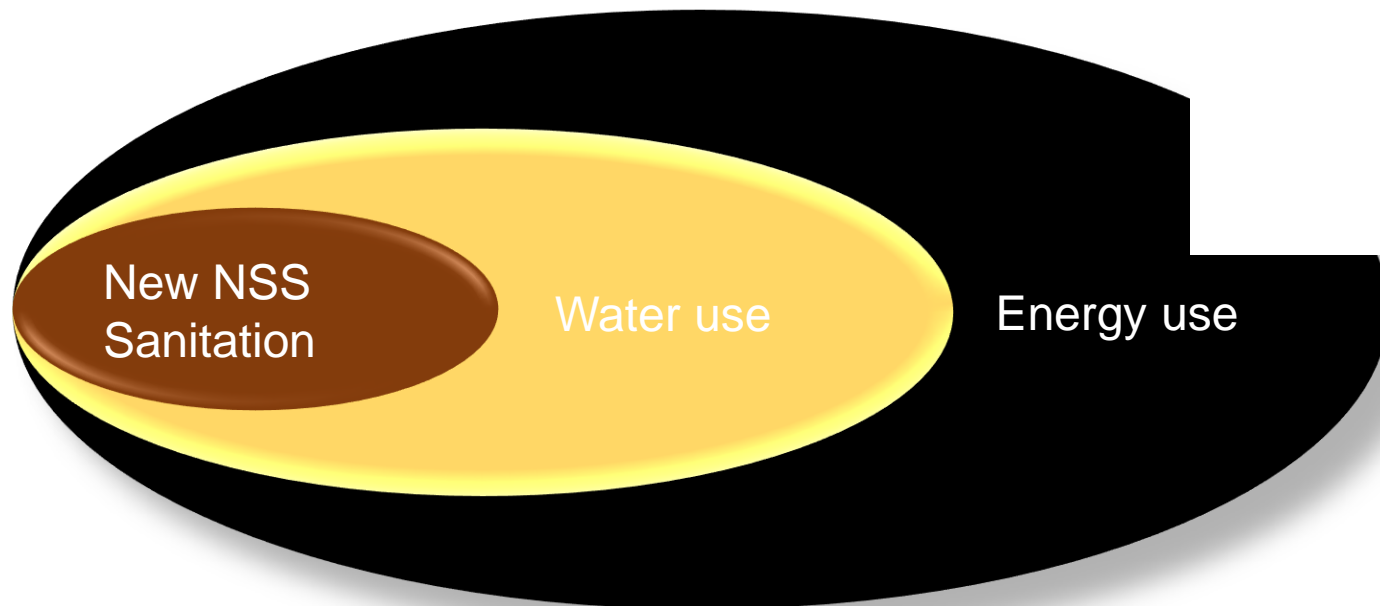
Water/sanitation is not integrated

- Spatial planning for water is not included
- Water planning forms part of a separate layer which does not talk to future constraints and requirements of the plans.

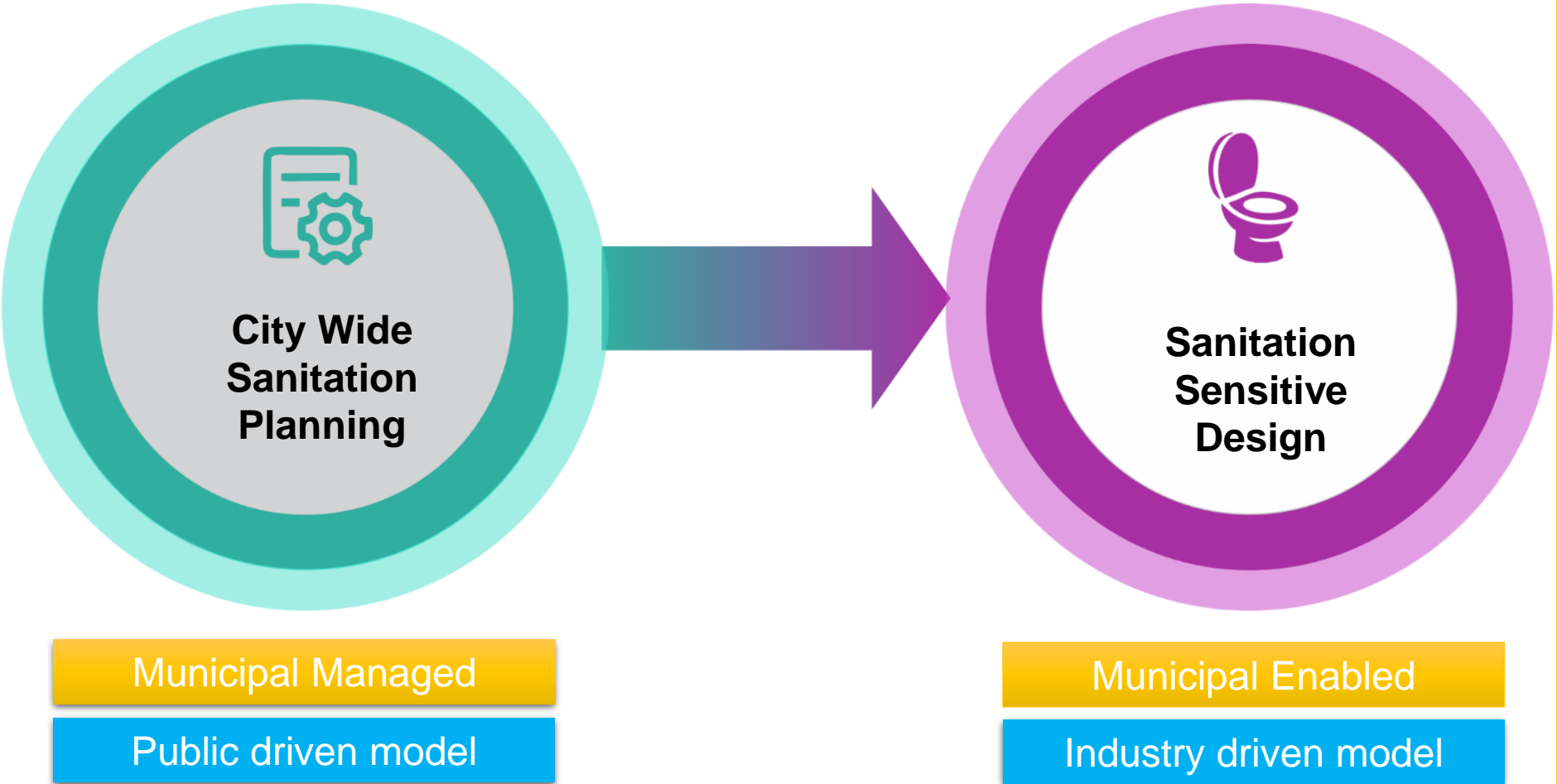
Results – shortages, stresses and crisis

# New NSS Sanitation saves Water and Energy

## It's the ideal low carbon accelerator



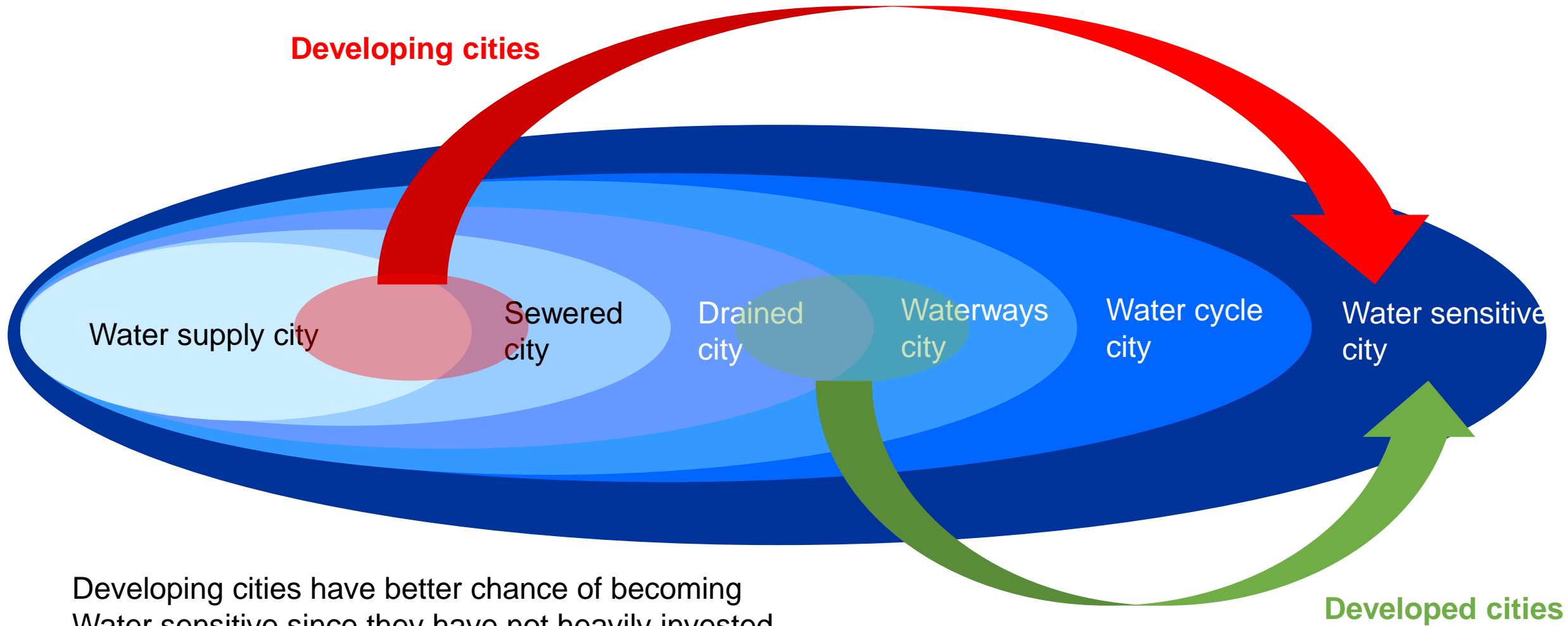
# Conceptual framework for Sanitation Sensitive Design



## KEY ELEMENTS OF SSD

- DRIVES WATER EFFICIENCY
- OFFERS EQUITABLE SERVICE
- HUMAN WASTE AS A RESOURCE
- MANAGES ENVIRONMENTAL POLLUTION
- OFFERS RIGHT TO ACCESS
- CREATES A NEW SANITATION MARKET AND ECONOMY
- ALIGNED TO TECHNOLOGY DISRUPTION – NON-SEWERED AND OFFGRID SOLUTIONS (GREEN)
- NEW BEHAVIOURS

# Spatial planning must change – more decentralization and off-grid



Developing cities have better chance of becoming Water sensitive since they have not heavily invested into old single-purpose systems



# Re – organizing how we plan cities

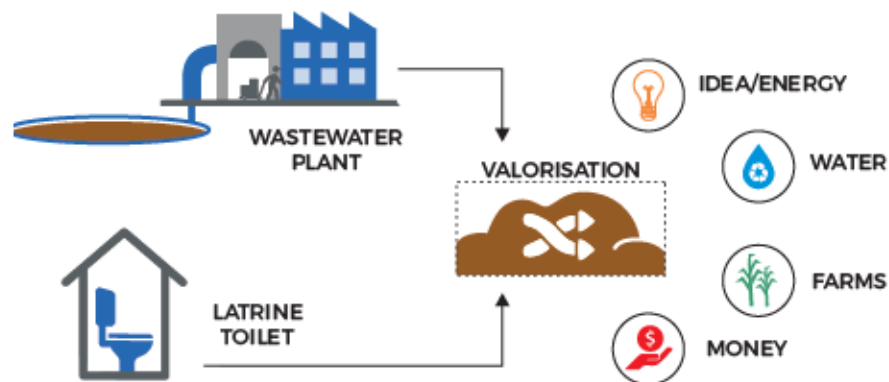
## RE-ENGINEERED TOILETS



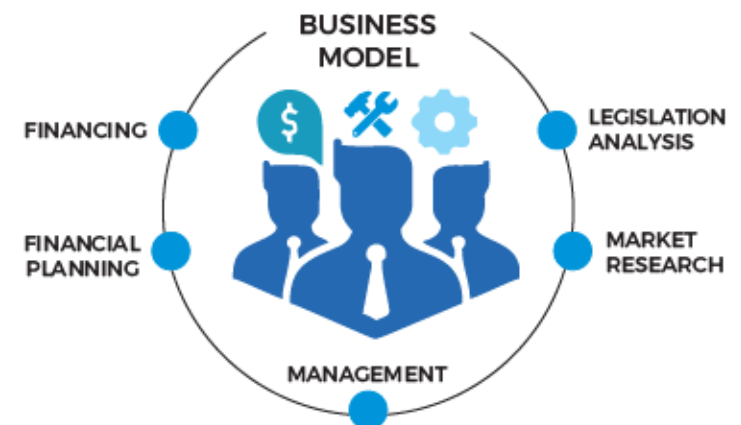
## SANITATION-SENSITIVE DESIGN



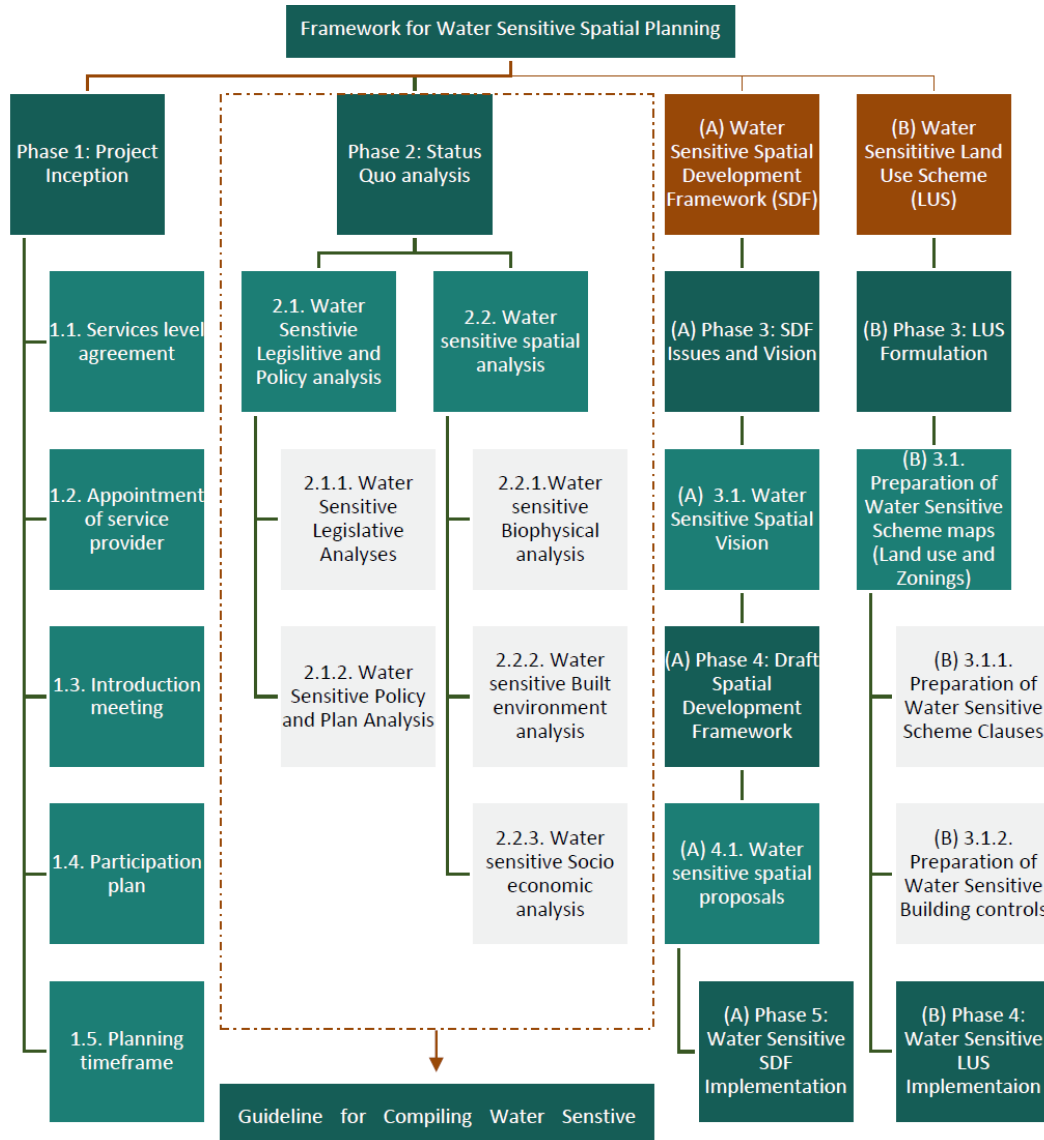
## MUNICIPAL SLUDGE VALORISATION



## SANIBUS



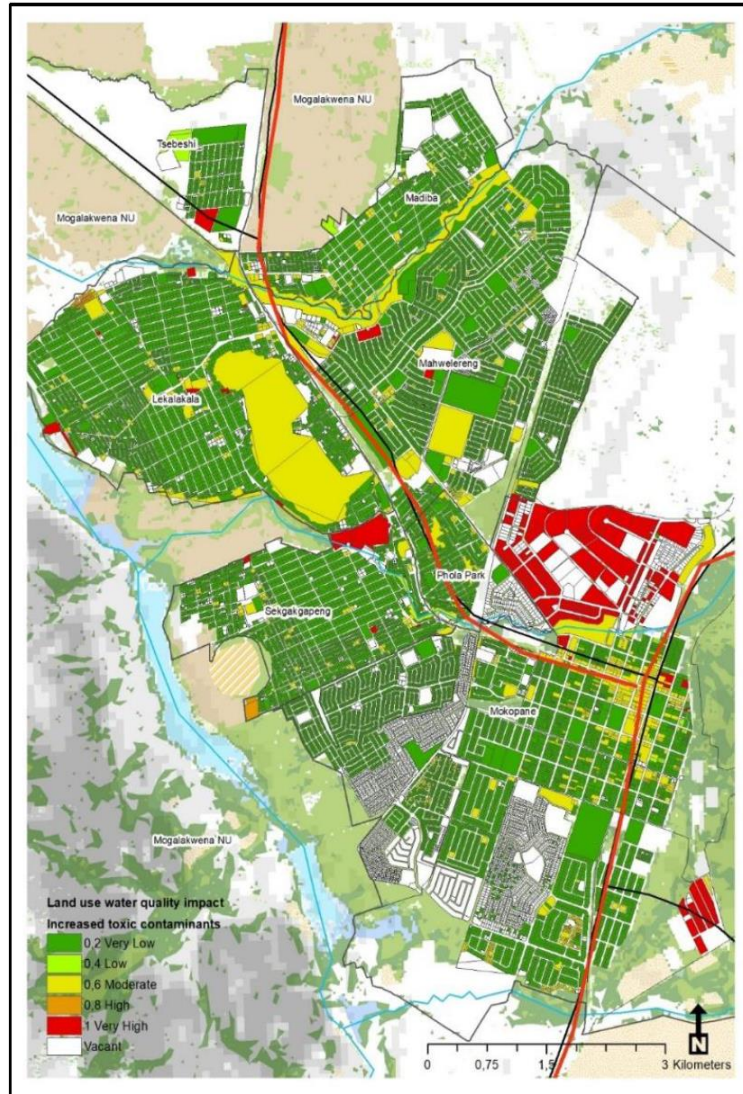
# Changing spatial planning processes



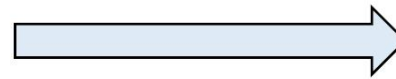
Phase	Water Sensitive Objectives	Water Sensitive Outcome
<b>Phase 1: Project Inception</b>		
Phase 1.1. Services level agreement	<p>The TOR for the development of municipal SDF and LUS are mostly standard and refers to Sections 20 and 21. Most municipalities appoint private sector Service Providers to compile the spatial planning documents required by law using an open tender process. Most often the professional team requirements for a service provider is only a registered Professional Town and Regional Planner. <b>Water Sensitive Spatial Planning</b> requires additional input e.g.</p> <ul style="list-style-type: none"> <li><b>Geographic Information Systems Specialist</b> - to assist in the modelling of spatial data as prescribed in the guideline document.</li> <li><b>Civil engineer</b> - Location, extent, condition and capacity of existing infrastructure networks. Quantification of additional infrastructure required to give effect to spatial proposals.</li> <li><b>Environmentalist</b> - Environmental sensitive inputs, location of water resources, inputs to planning (what should be conserved, where it is located etc.)</li> <li><b>Landscape architect</b> - Detail site specific considerations with regards to landscaping of green spaces in a water sensitive manner.</li> <li><b>Stormwater engineer</b> - Inputs into large scale natural stormwater features that may affect the future shape of the town or city.</li> <li><b>Building Officer / Specialist</b> - Evaluate and consult on building control clauses, specifically related to water sensitive urban design.</li> </ul>	<p>The Municipality will align its TOR for the preparation and implementation of SDFs and Land Use Schemes tender bids with this <b>Framework for Water Sensitive Spatial Planning</b> as well as the <b>Guideline for Compiling Water Sensitive Tools</b>.</p> <p>As a result, the Municipality will appoint a Services Provider with a project team consisting of a Registered Professional Town Planner, Geographic Information Systems Specialist, a Civil Engineer, an Environmentalist, Landscape Architect, Stormwater engineer, and a building officer with the necessary skills and competencies to ensure that the municipality's planning documents adheres to the <b>Framework for Water Sensitive Spatial Planning</b> as well as the <b>Guideline for Compiling Water Sensitive Tools</b>.</p>
Phase 1.2. Appointment of service provider		
Phase 1.3. Introduction meeting	<p>The introduction meeting is set to be the first engagement between the municipality's project coordinator and the Services Provider. This meeting also presents an opportunity for the appointed Service Provider together with the Municipal or the District Project Coordinator to discuss possible stakeholders be invited to the inception meeting.</p> <p>During phase 1.3, the <b>Water Sensitive Spatial Planning Framework</b> must be introduced to the Service Provider by the project coordinator to ensure that</p>	<p>The appointed Services Provider and Project Owner (the Municipality) adopts the objectives of Water Sensitive Spatial Planning and is capacitated with this <b>Framework and Guideline for Water Sensitive Spatial Planning</b> to influence to normal planning methodology. In addition, all water related document and data is provided to the Service Provider and all queries related to the information presented, is addressed by the custodians of such information.</p>



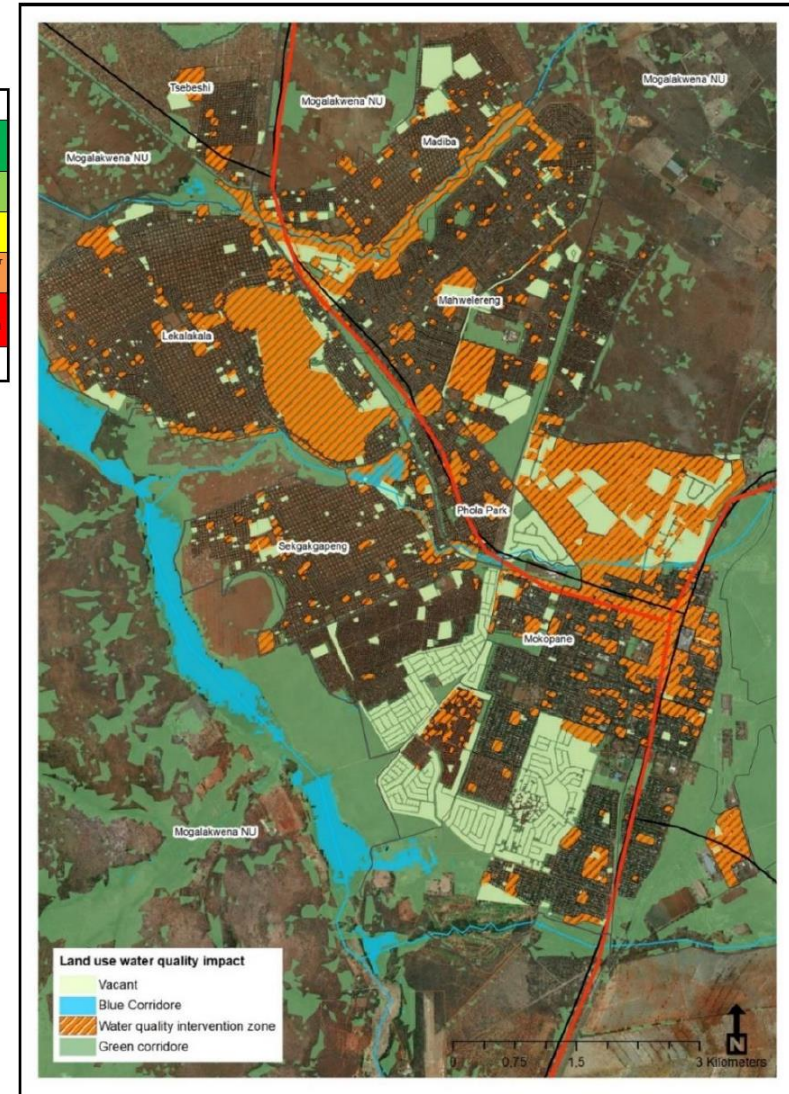
# Planning as a mitigation tool



Threat rating	symbol	Threat score	Description
Very Low	VL	0.2	The level of threat (based on likelihood, magnitude and frequency of potential impacts) posed by the land use / activity to water resources is very low for the threat type assessed. In the case of water quality impacts, SLV limits are unlikely to be exceeded in diffuse surface runoff.
Low	L	0.4	The level of threat posed by the land use / activity to water resources is low for the threat type assessed. In the case of water quality impacts, GLV limits are unlikely to be exceeded in diffuse surface runoff.
Moderate	M	0.6	The level of threat posed by the land use / activity to water resources is moderate for the threat type assessed. If not managed, pollutant loads in diffuse surface runoff may range up to 5x the GLV limit.
High	H	0.8	The level of threat posed by the land use / activity to water resources is high for the threat type assessed. If not managed, pollutant loads in diffuse surface runoff may range up to 10x the GLV limit.
Very High	VH	1	The level of threat posed by the land use / activity to water resources is very high for the threat type assessed. If not managed, pollutant loads in diffuse surface runoff may exceed 10x the GLV limit.



Translate data to **Land Use Water Quality Intervention Zone (orange)**





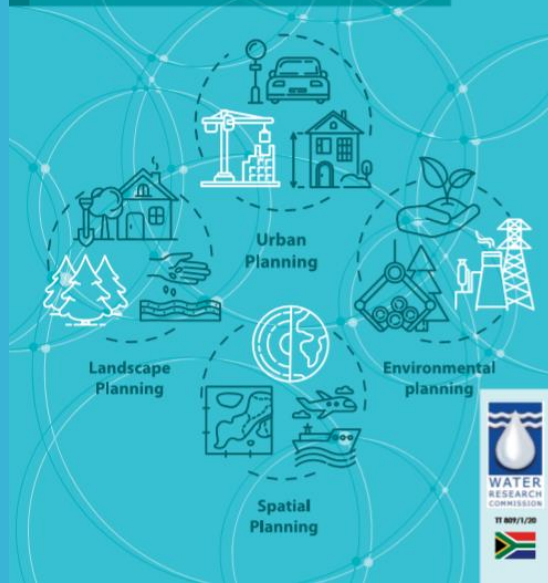
## GUIDELINE ON COMPILING WATER-SENSITIVE SPATIAL PLANS

Werner Fourie, Hildegard Edith Rohr, Juaneé Cilliers, Werner Mostert



## FRAMEWORK TOWARDS WATER-SENSITIVE SPATIAL PLANNING AND LAND USE MANAGEMENT

Werner Fourie, Hildegard Edith Rohr, Juaneé Cilliers, Werner Mostert



# Thank You

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