CONSERVE

DIGITAL MODEL TO INFORM WATER SECURE CITIES

Team

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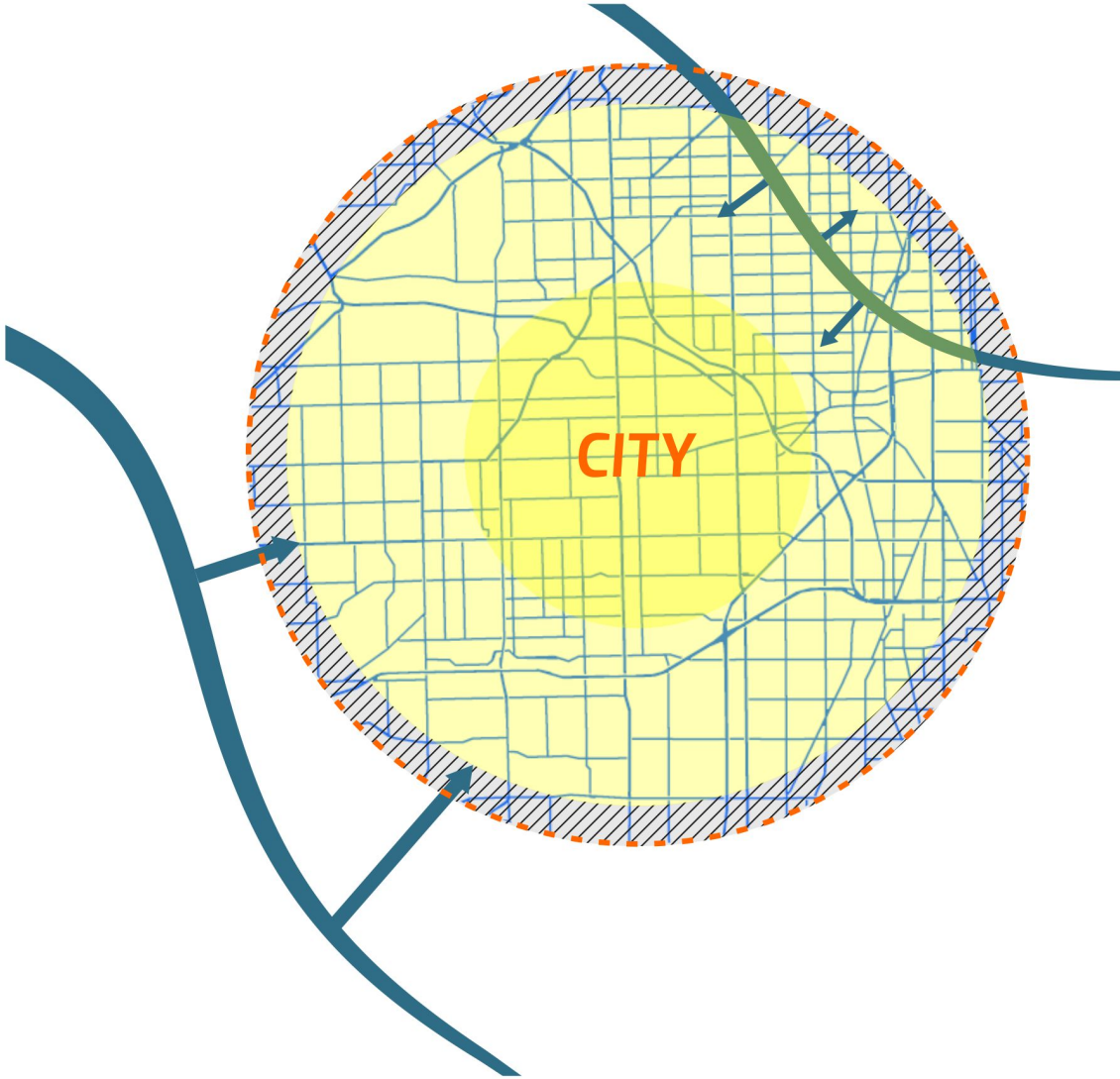
NEED

- Water- fundamental link between climate system, human society and environment
- Cities face great challenge for **WATER SECURITY**
- *Need- right picture of meeting water demand from all the sectors within the limited availability*
- *Identifying the gap between demand and supply*
- *Identifying the gap between judicious need and demand*

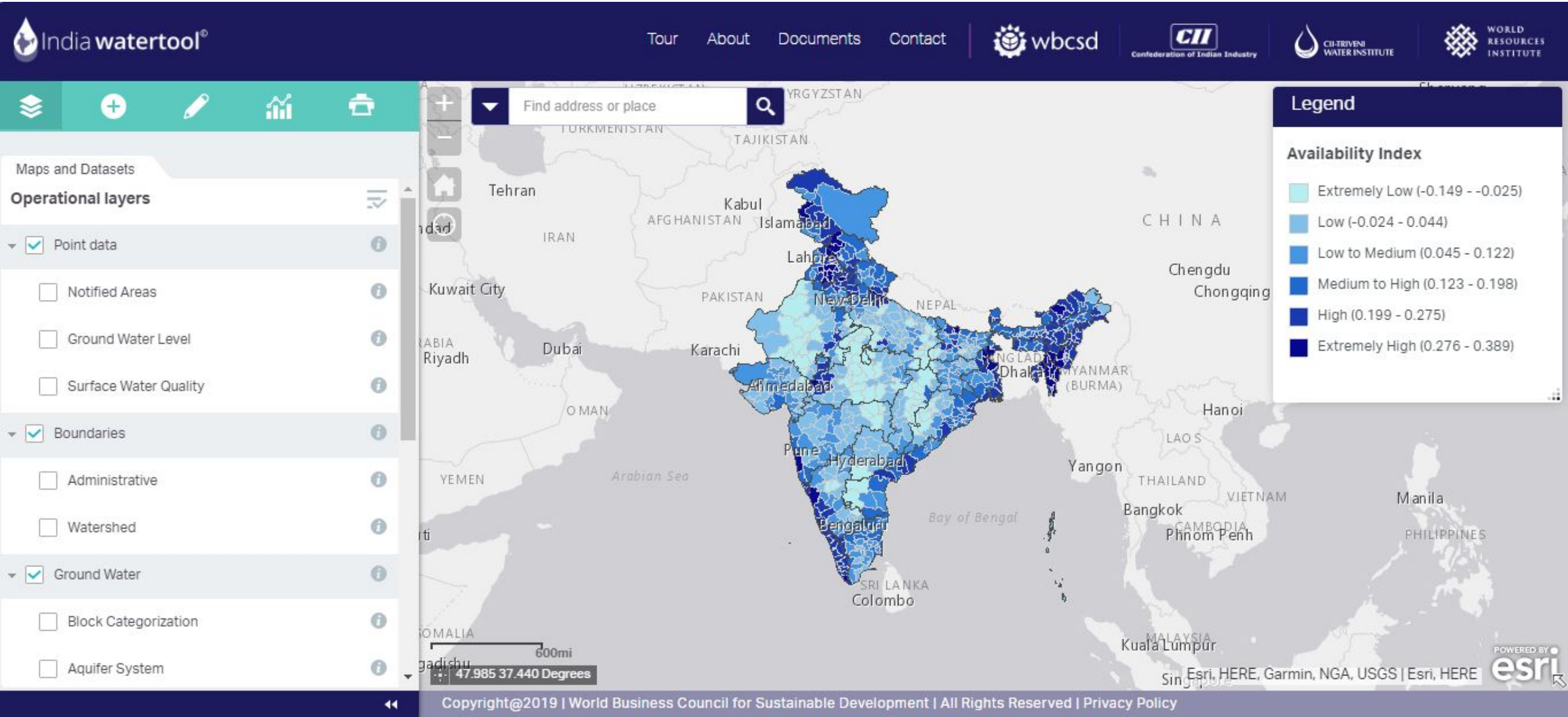


PROBLEM STATEMENT

Cities are **water stressed primarily** due **to increasing population** and **varying climatic conditions**. This creates **uncertain scenarios** for demand and availability of water resulting in improper planning and management of resources. To address these issues, there is need for a **water balance model** for the cities.

SIMILAR INITIATIVES

India Water Tool



India Water Tool

SSAP (State/ UT Specific Action Plan)

Chapter 10: STATE/ UT WATER BUDGET/ Balance (DASHBOARD)

The totals and grand totals of Chapter 9, (basin/sub-basin wise) need to be brought here (right table) and then accumulated in the State/UT Water Budget Table (left table)
Checks: Appropriate Water Balance Checks may be applied considering the Time Scale and the Spatial Scale/ System Boundary.

STATE/UT WATER BUDGET (comprising all Basins/Sub-basins)

Total Availability (MCM)	Utilizable Water (MCM)	Consumptive Use (MCM)	Outflows (MCM)
A1. Precipitation including Snowfall	B1. Directly Harvested Rain Water + Useful Soil Moisture	C1. Farm Sector Consumptive Use	D1. Inter basin transfers (Exports)
A1R. Runoff due to precipitation	B2. Utilizable portion of Springs, Nallahs	C2. Industry & Infrastructure Use	D2. Downstream Outflows (actual) vis-a-vis desirable flow downstream*
A2. Upstream Inflows	B3, B4, B5. Utilizable portion from Major, Medium and Minor Projects	C3. Establishments & Institutions Use	D3. Evapo-Transpiration from Forests, Natural Vegetation
A3. Inflow from Glacial Melts	B6, B7. Utilizable portion from Ponds, Tanks, Wetlands	C4. Domestic Use (Rural)	D4. Evaporation from all Surface Water Bodies
A4. Inflow from Springs, Nallahs	B8. Water from Desalination Plants/ Sea water	C5. Domestic Use (Urban)	
A5, A6, A7. Storage in Major, Medium & Minor Reservoirs as on 1st June	B9. Utilizable portion of Inter-Basin Transfers	C6. Forestry & Wildlife Consumptive Use	
A8 & A9. Storage in Ponds, Tanks, Wetlands as on 1st June	B10. Utilizable Ground Water		
A10. Water available from Desalination Plants	B11. Water available from Treated/ Recycled Waste Water		
A11. Inter Basin Transfer			
A12. Net Annual Ground Water Availability			

Basin/ Sub-basin A

Total Availability (MCM)	Utilizable Water (MCM)	Consumptive Use (MCM)	Outflows (MCM)
A1. Precipitation including Snowfall	B1. Directly Harvested Rain Water + Useful Soil Moisture	C1. Farm Sector Consumptive Use	D1. Inter basin transfers (Exports)
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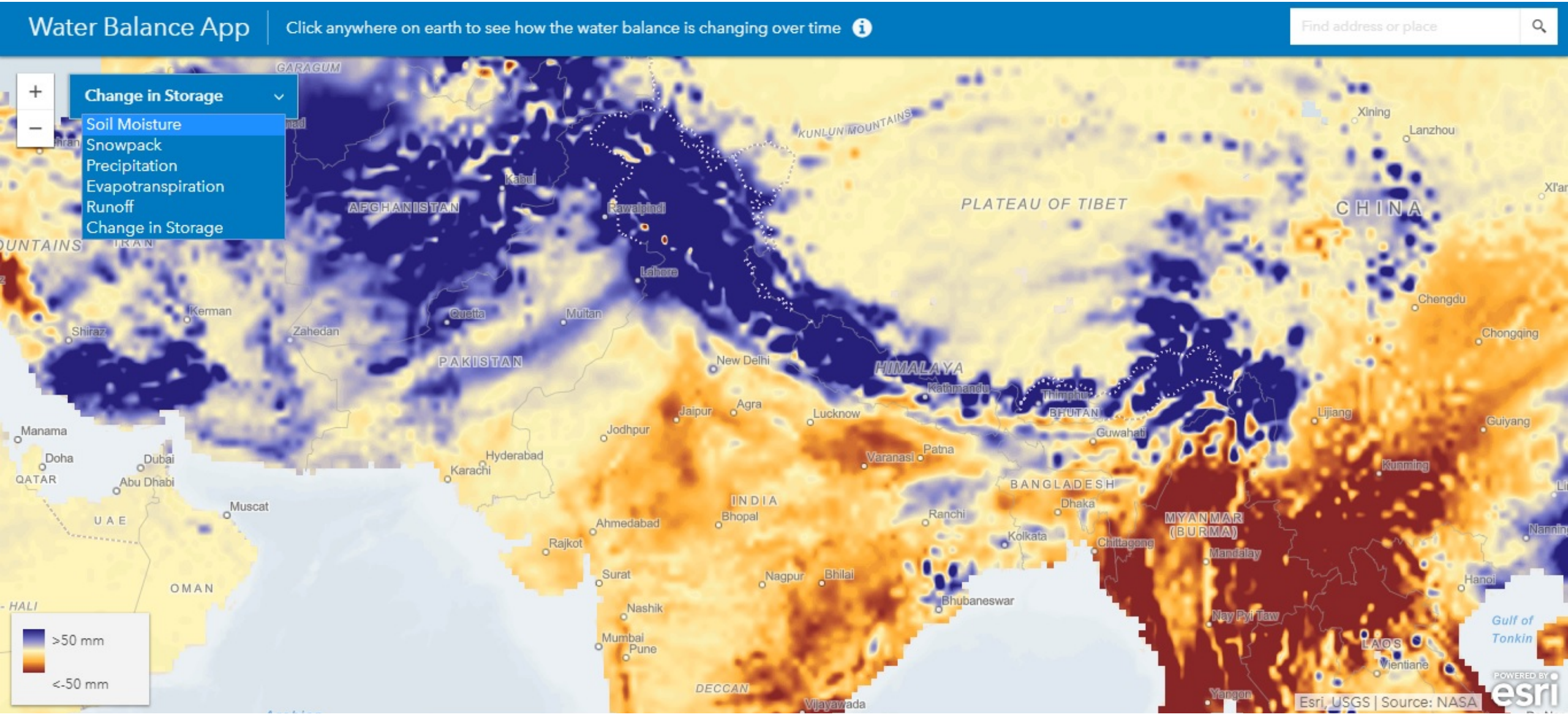
SIMILAR INITIATIVES

India Water Tool

SSAP (State/ UT Specific Action Plans)

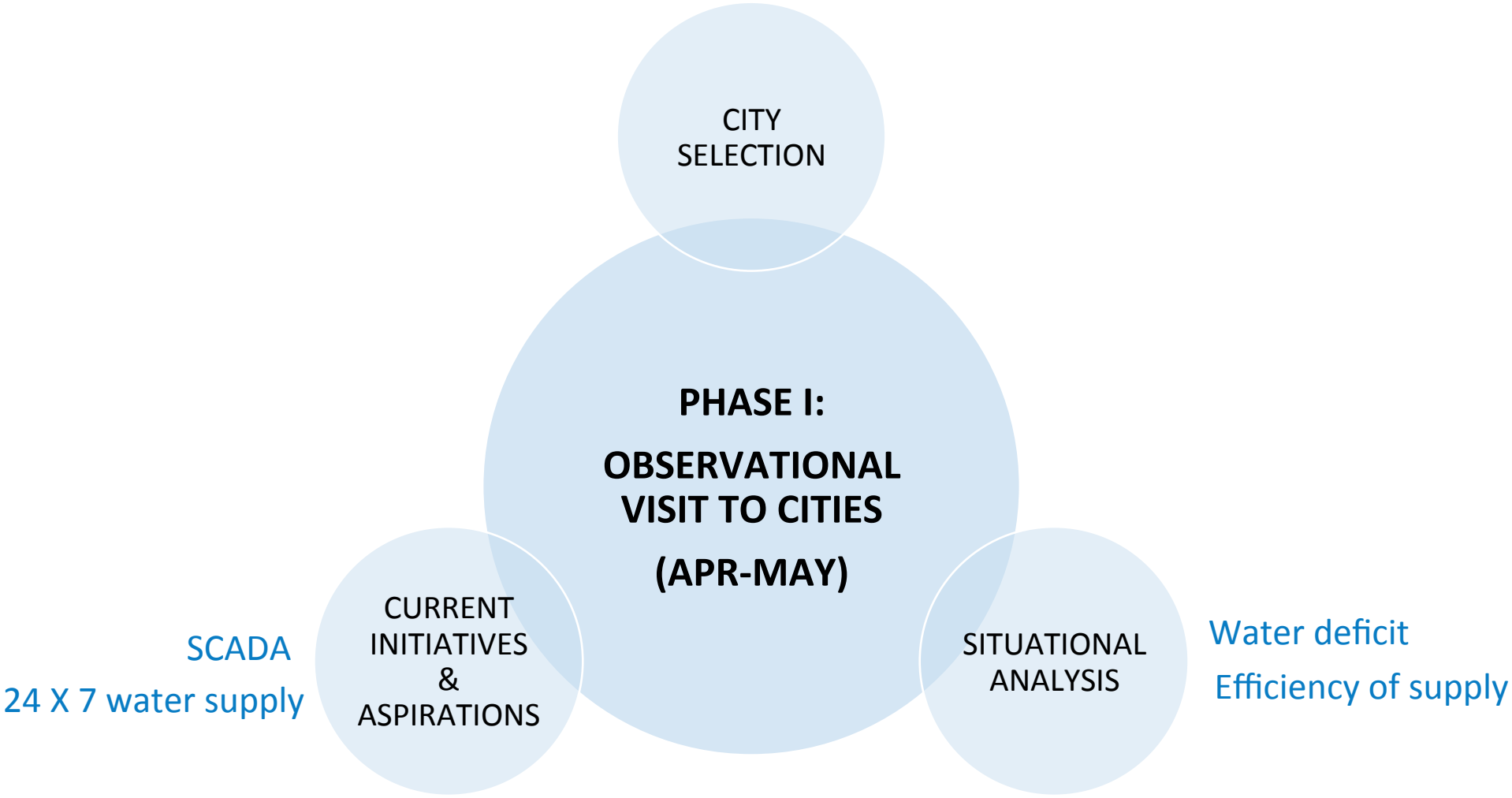
Water Balance App *(Source: ArcGIS)*



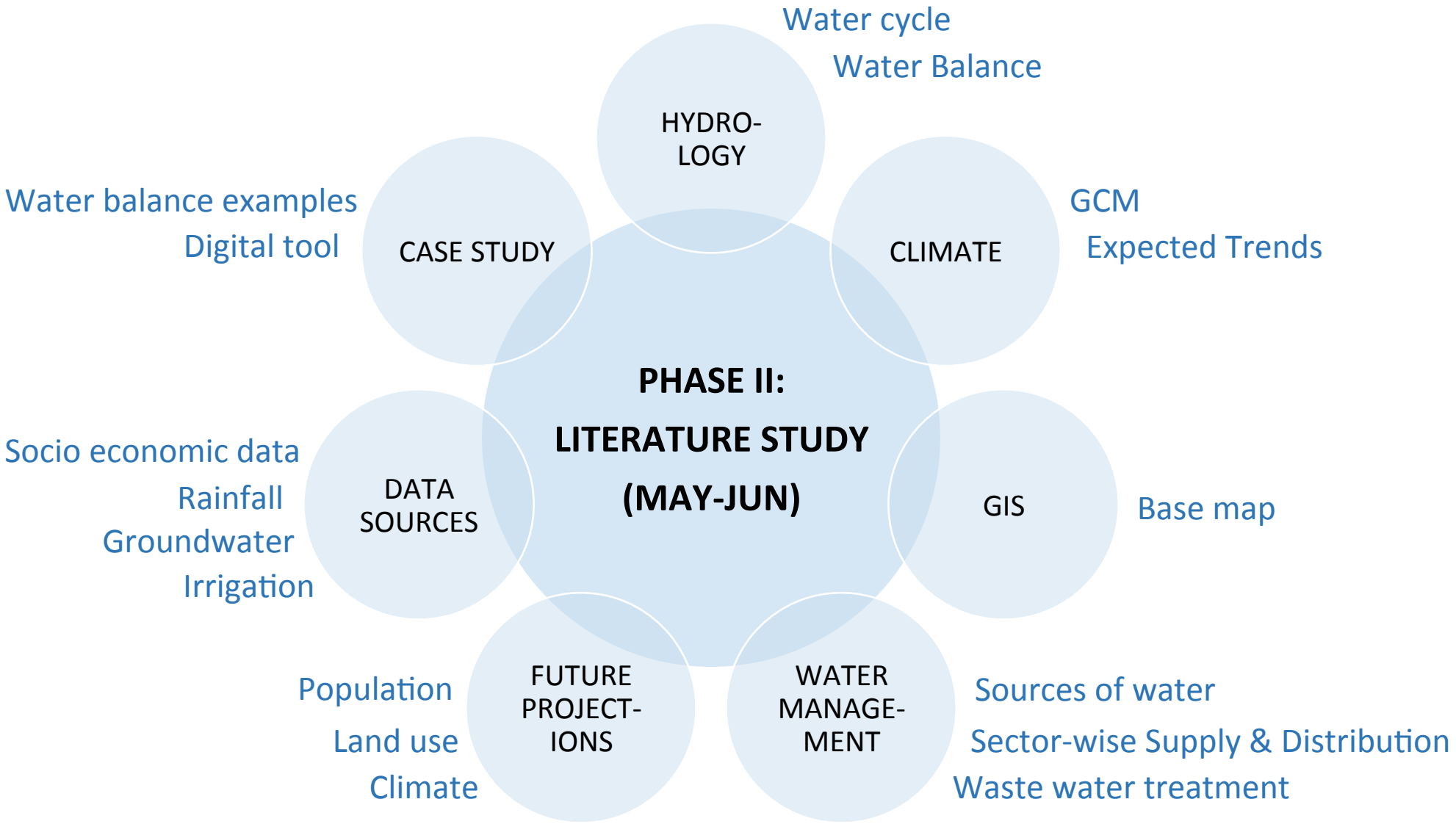
RESEARCH QUESTIONS

CRQ	SRQ	DRQ
How capable is the city in meeting the current and anticipated water demand?	How is the city managing its present water demand?	What is the total water demand of the city and various water resources catering to the demand?
		How are the varying climatic conditions and other factors (pollution, land use change) influencing the water availability?
	How prepared is the city to be water secure in the future (2030s)?	What is the city's aggregate water demand for future?
		In light of climate change, what is the likely scenario for water availability in the future?

METHODOLOGY



METHODOLOGY



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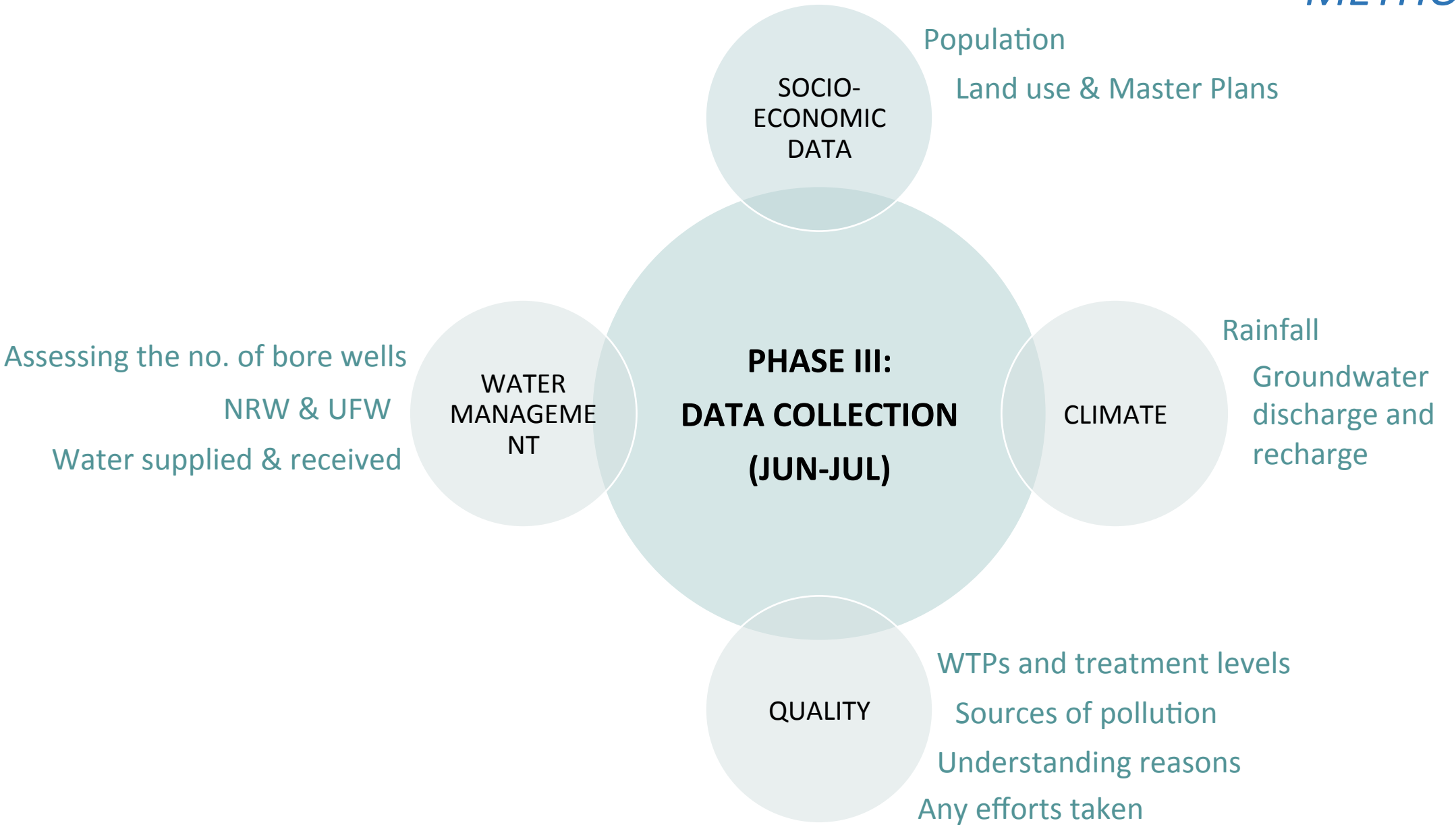

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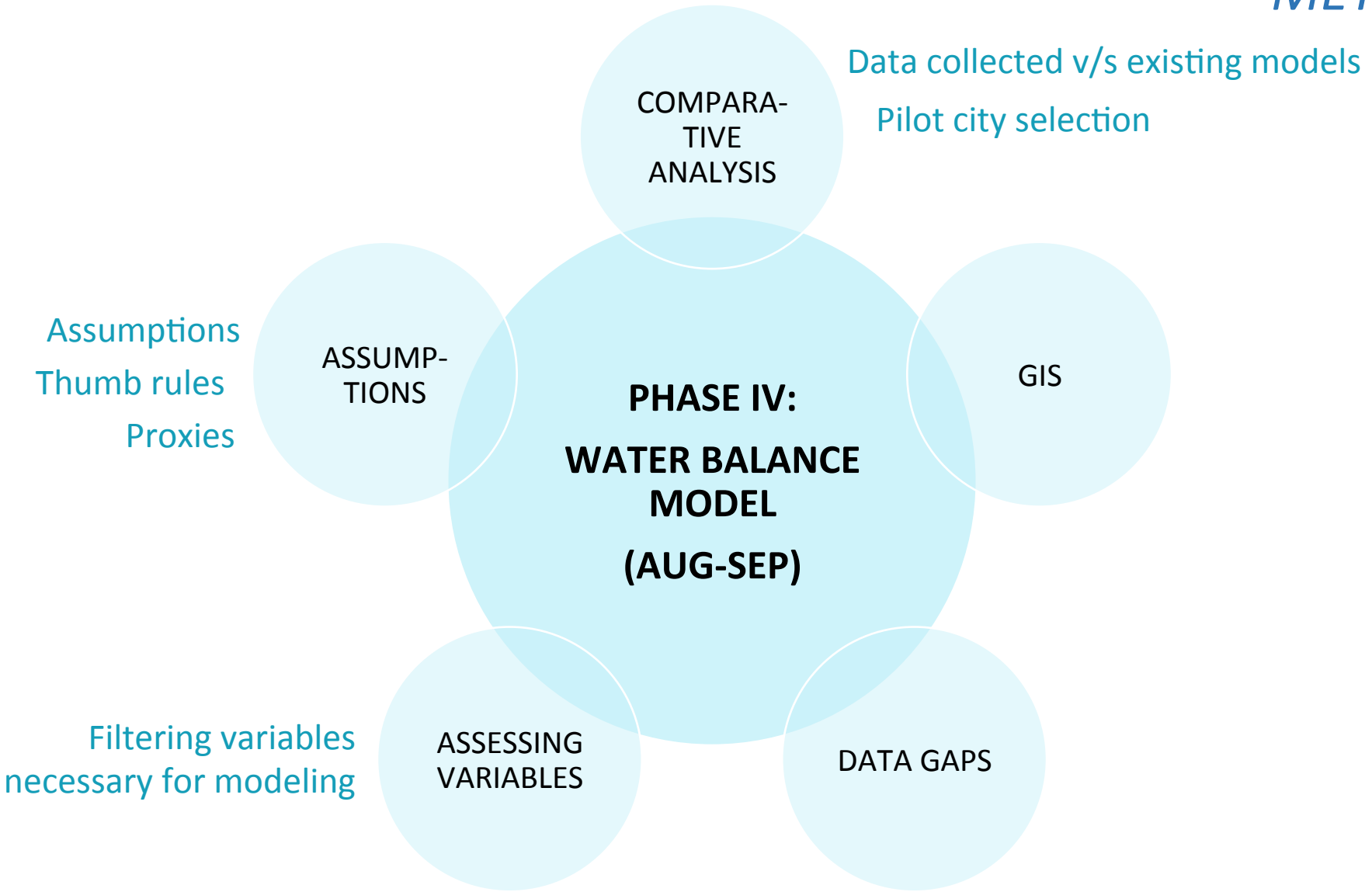

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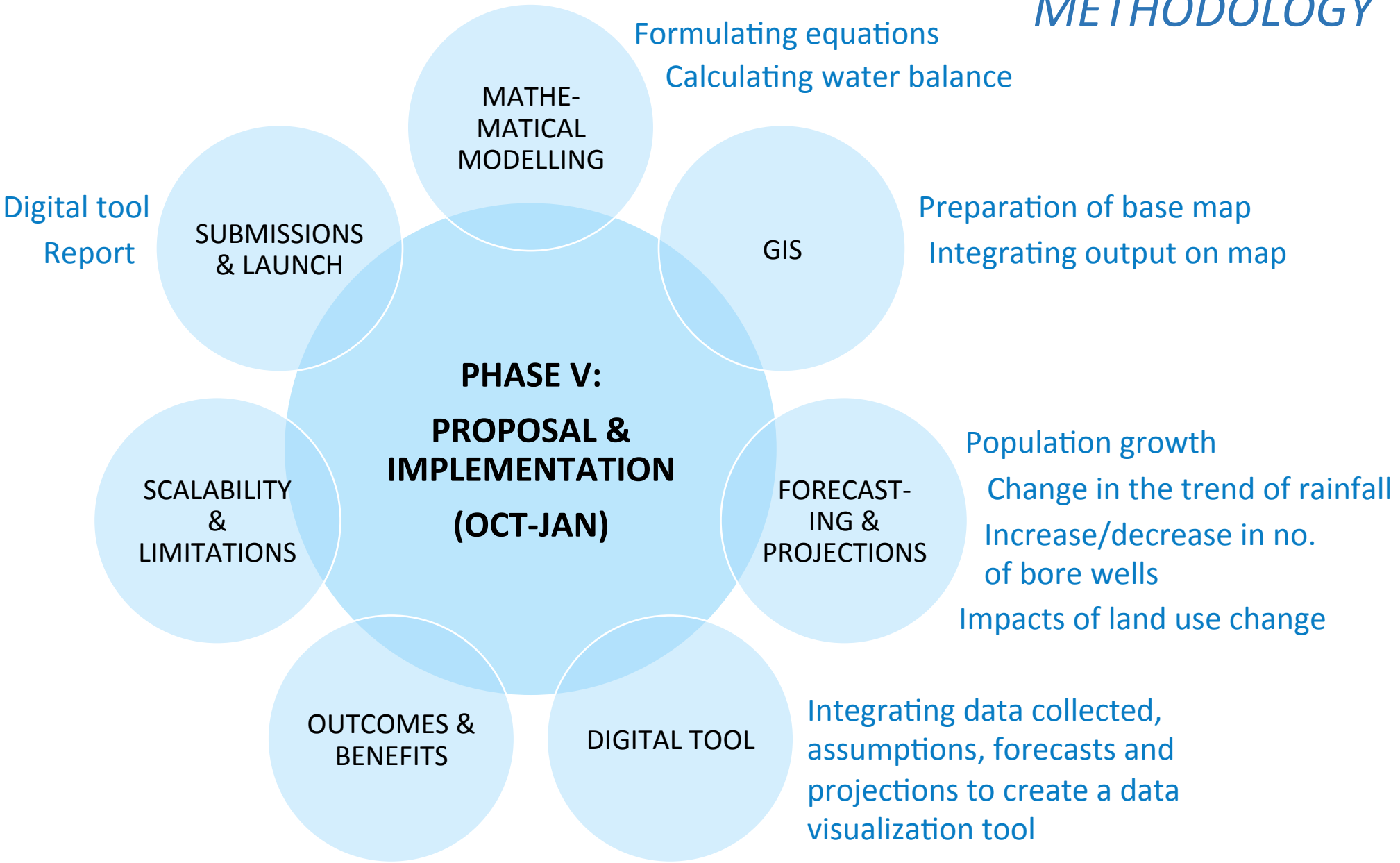
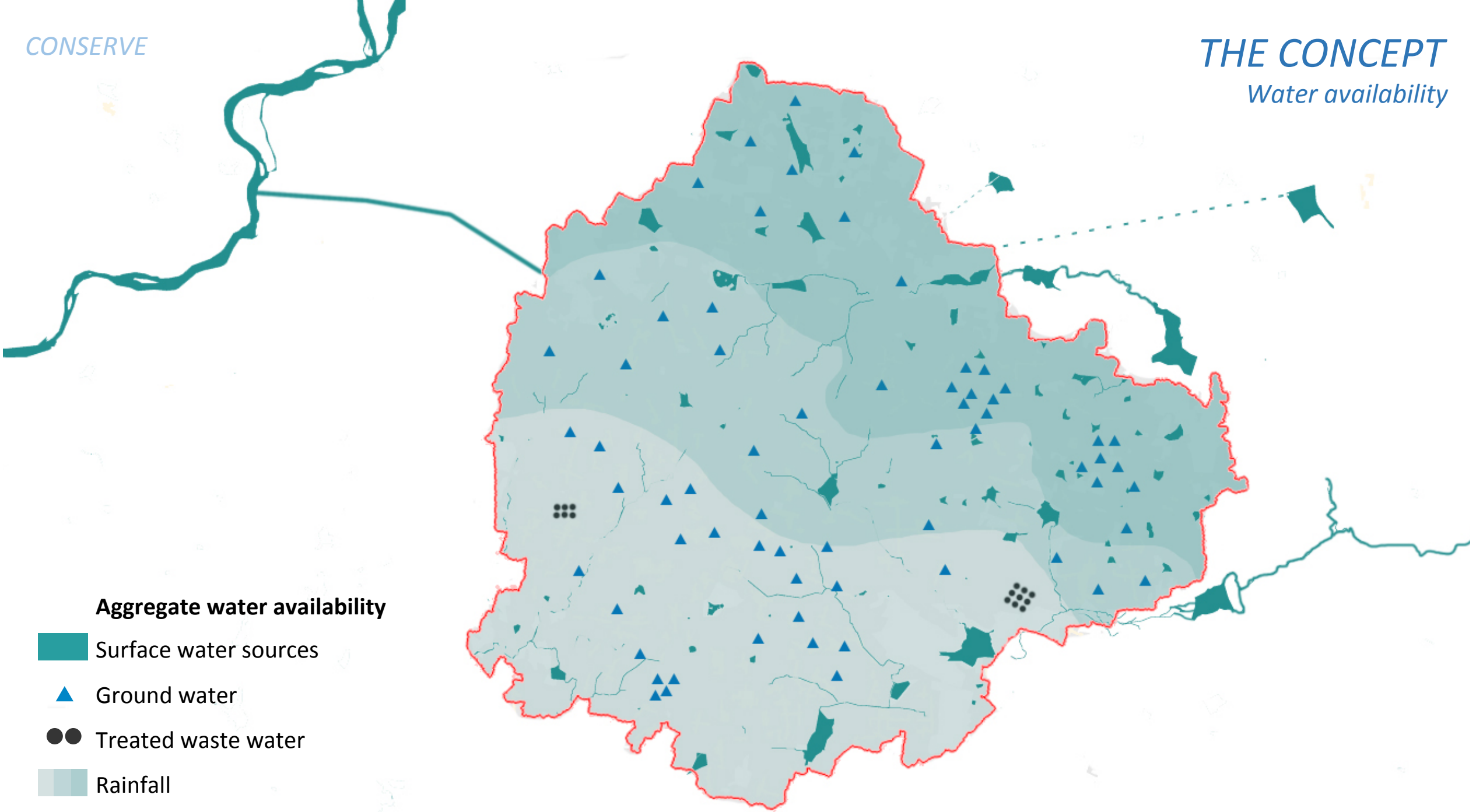


THE CONCEPT

Administrative boundary of the city

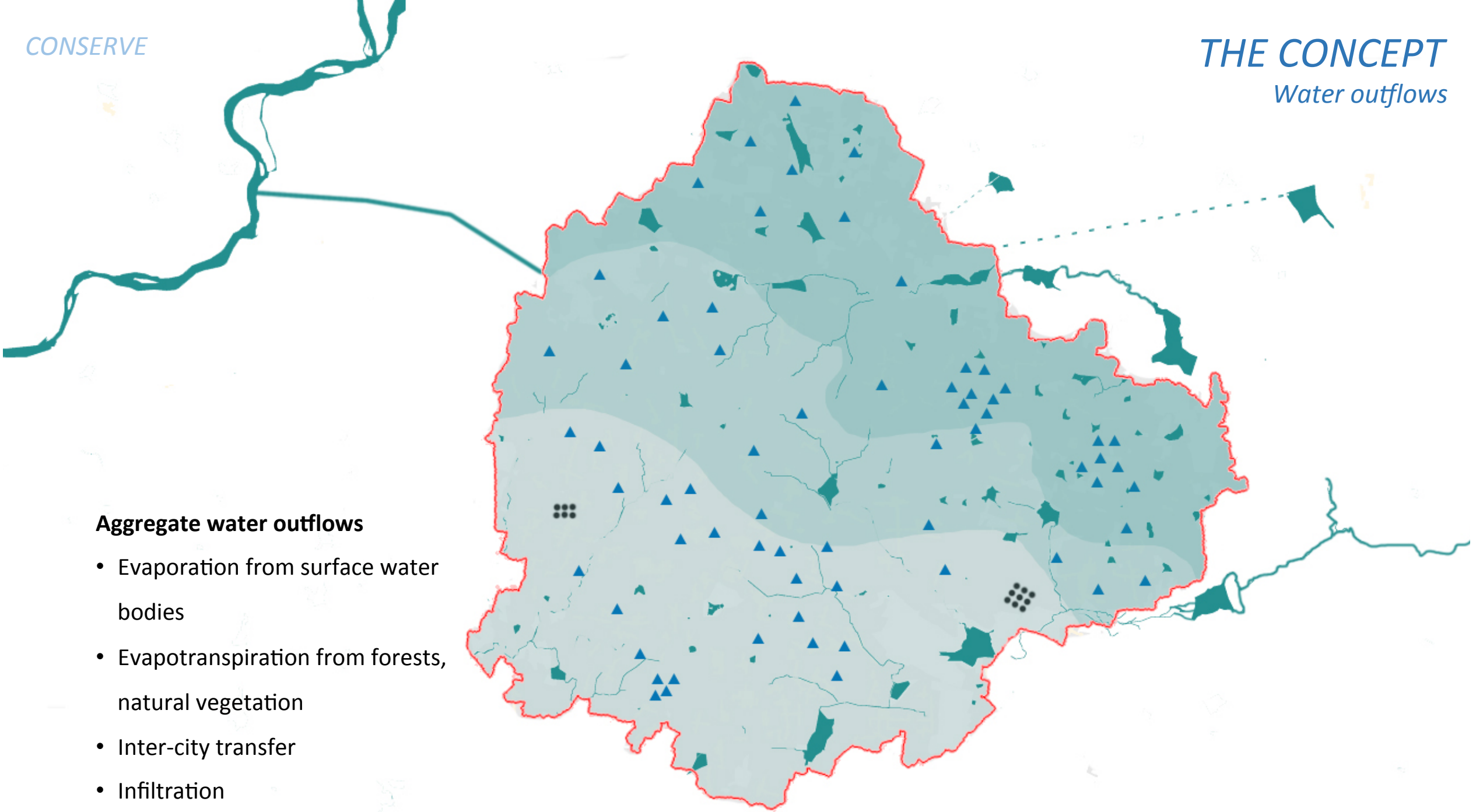
THE CONCEPT

Water availability



THE CONCEPT

Water outflows

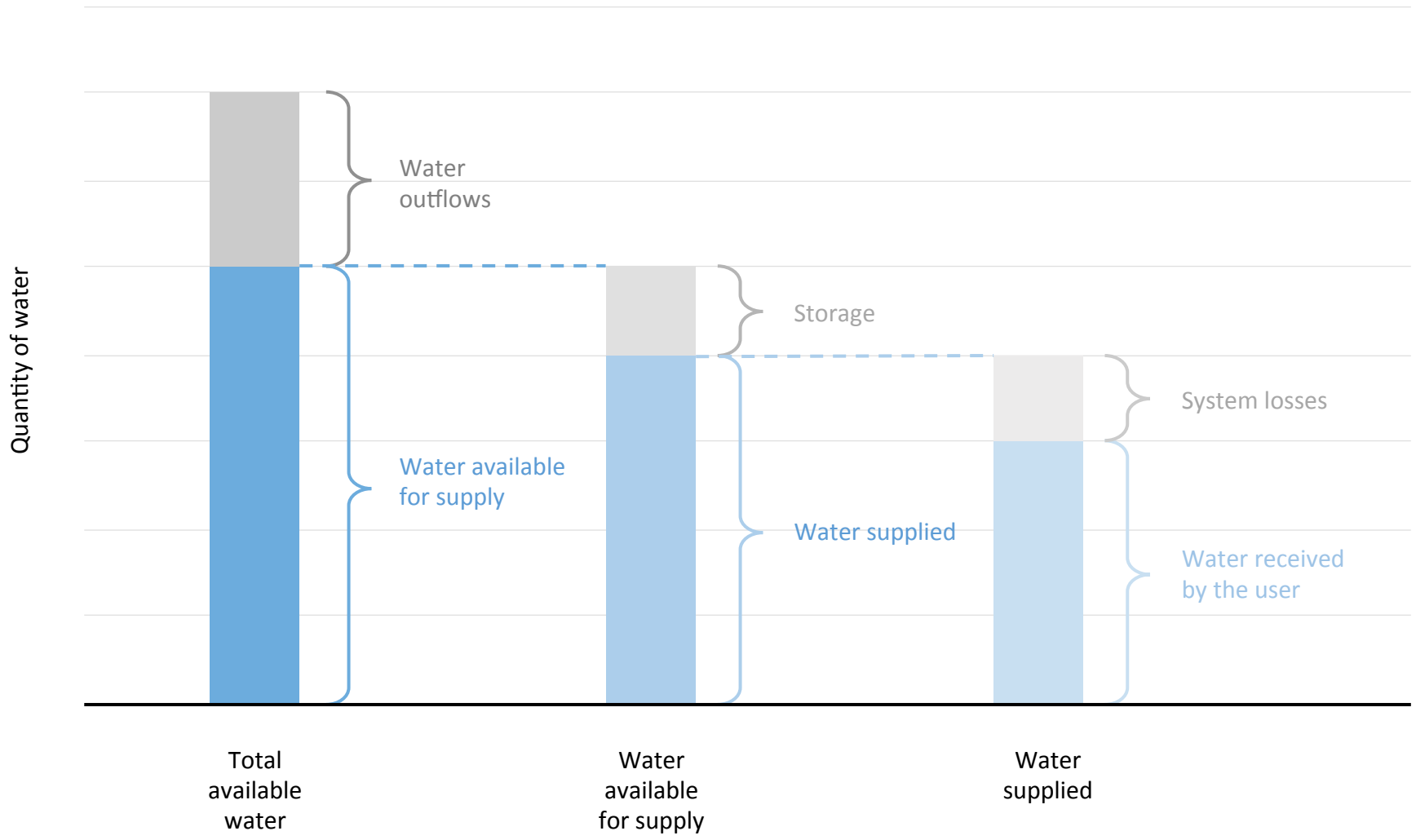


Aggregate water outflows

- Evaporation from surface water bodies
- Evapotranspiration from forests, natural vegetation
- Inter-city transfer
- Infiltration

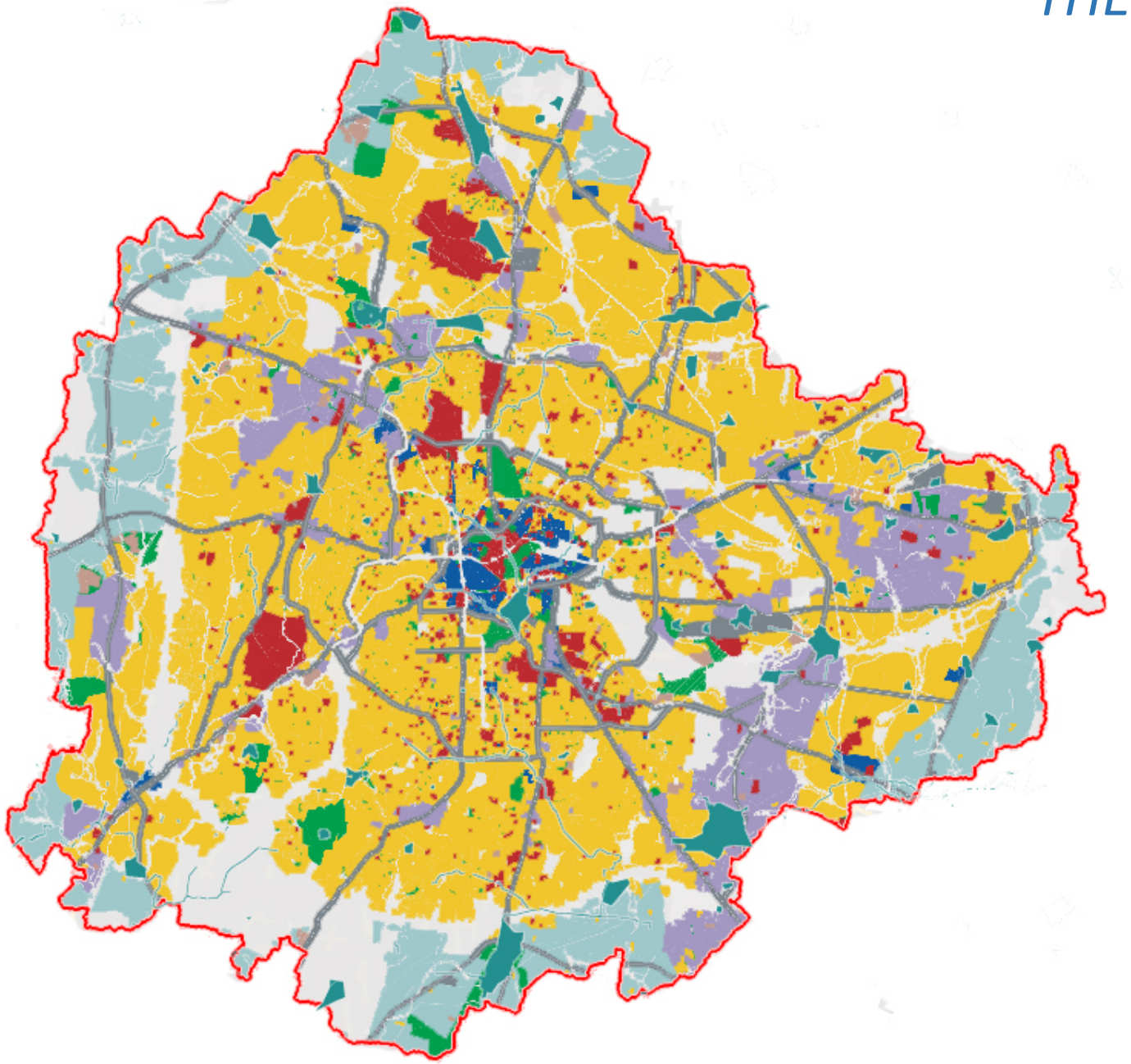
THE CONCEPT

Comparison



THE CONCEPT

Water demand

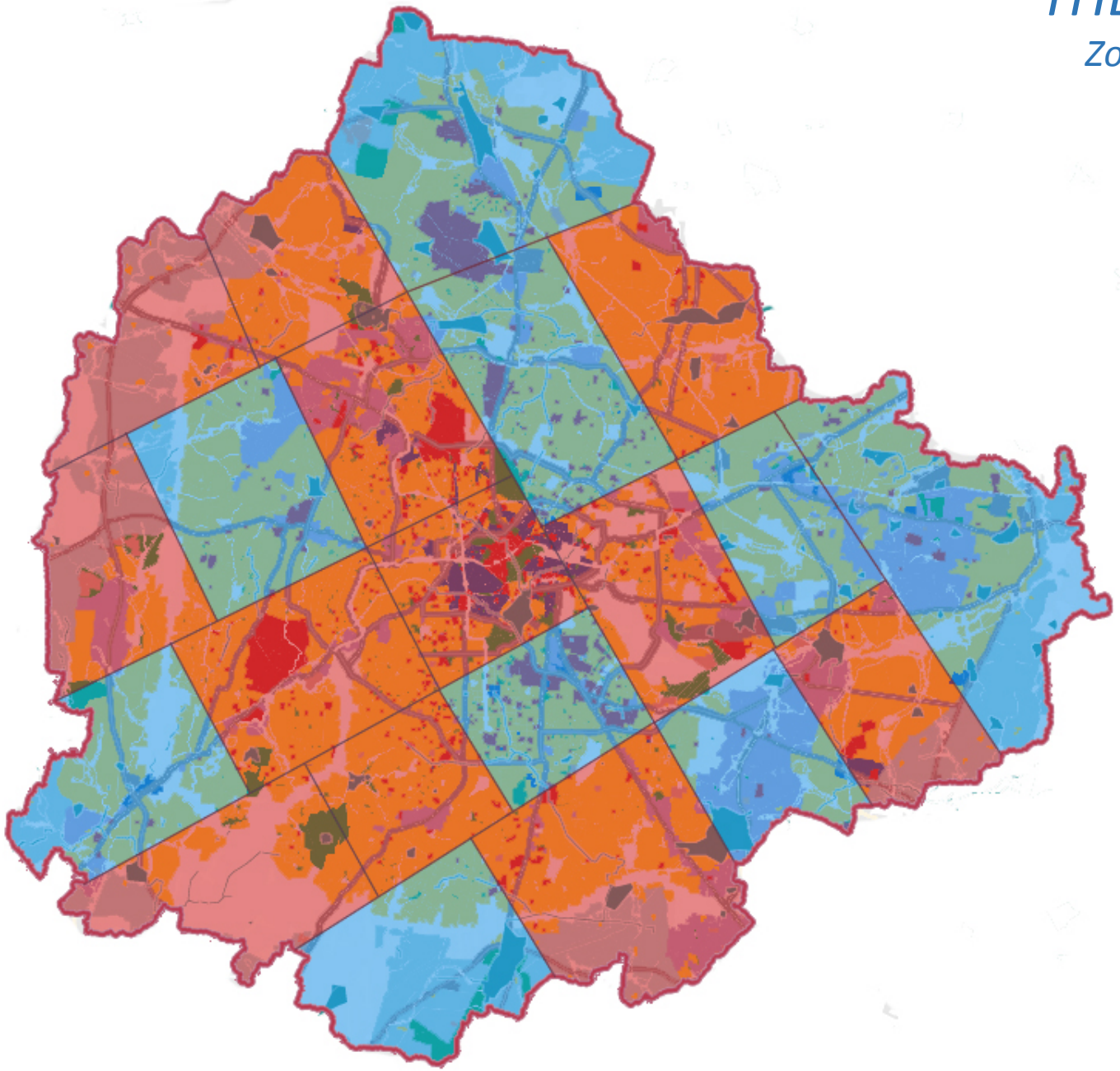


Aggregate water demand

- Domestic
- Industry and infrastructure
- Establishments and institutional
- Farm sector
- Forestry and wildlife

THE CONCEPT

Zonal level analysis

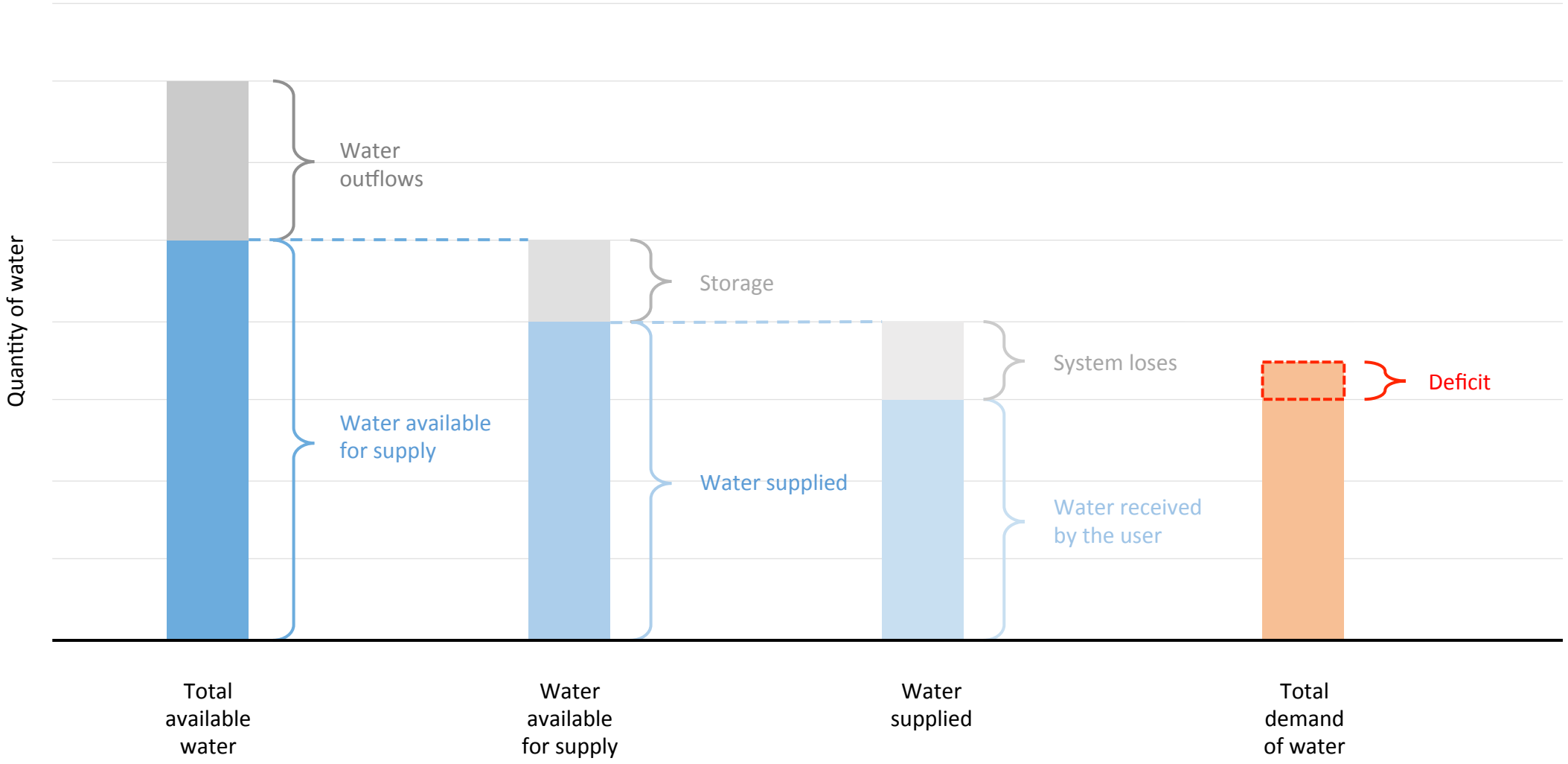


Water surplus zone

Water deficit zone

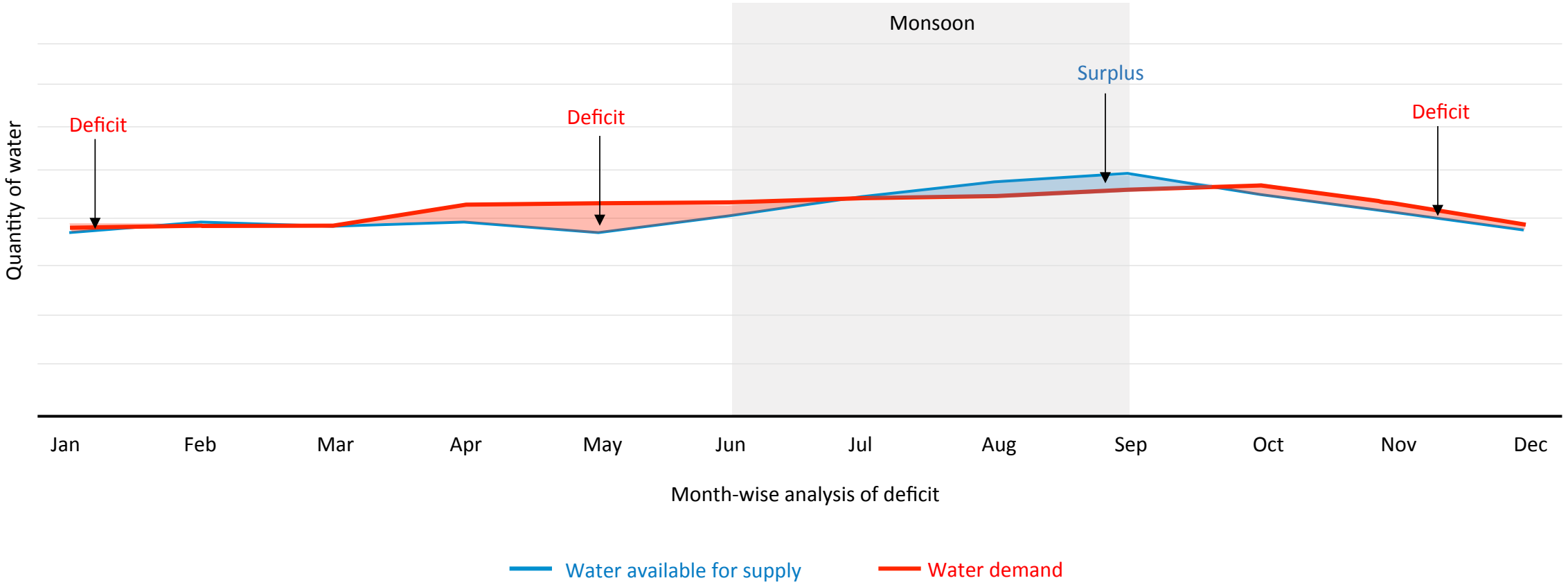
THE CONCEPT

Challenge



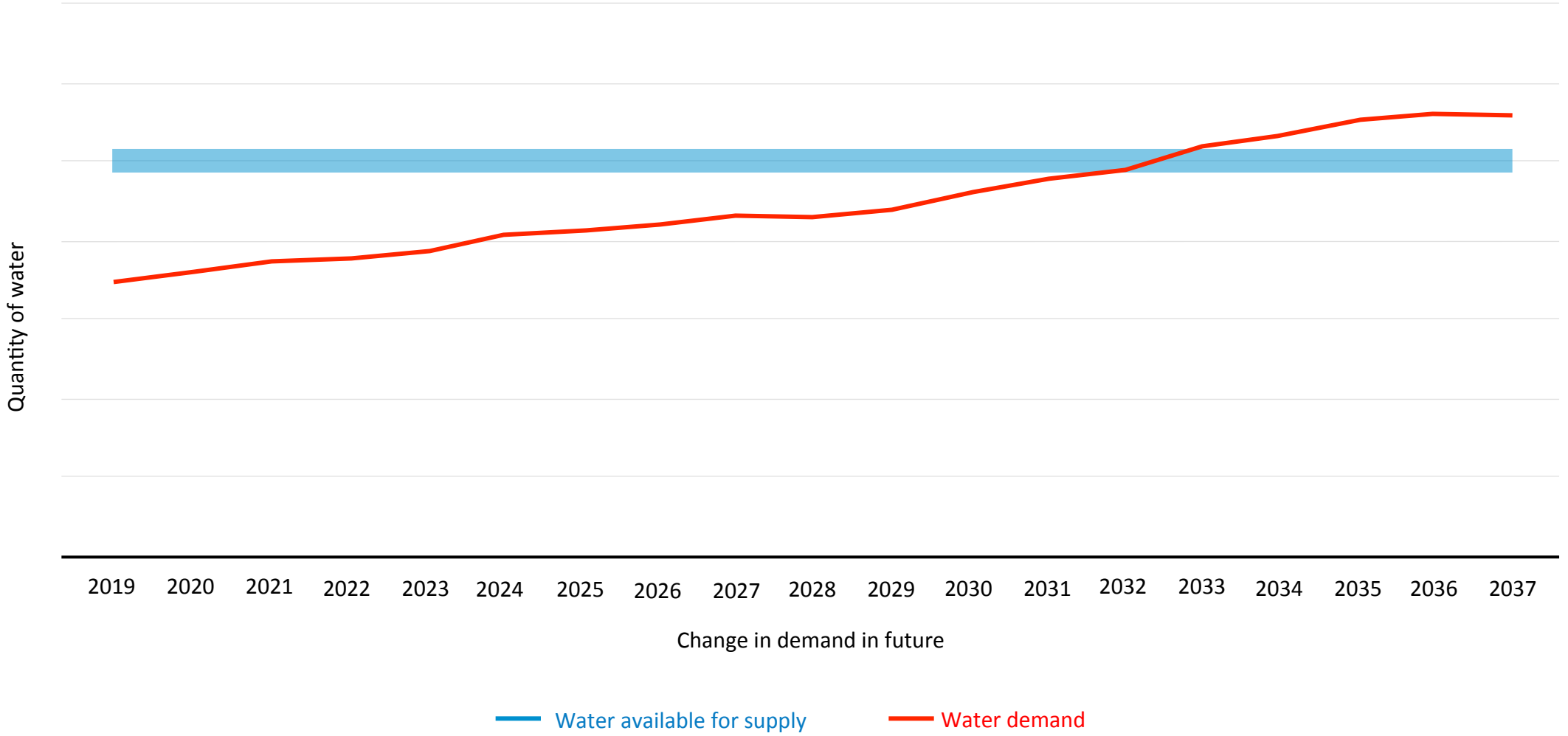
THE CONCEPT

Monthly trend



THE CONCEPT

Projection



KEY DELIVERABLES

- Visually interactive digital platform for water resources management.
- Methodology/algorithm to generate the aggregate water demand and use.

EXPECTED OUTCOMES

- Cities will be better equipped to cater the water needs.
- A robust & reliable GIS based database of city's water resources.
- A transparent platform for citizens to monitor the distribution of their water resources.

THE WAY FORWARD

Reduce the demand

- Decreased consumption
- Empower citizens to save water
- Water responsible agriculture and vegetation

Augment the availability

- Harness rain water at rooftops
- Recycle water for drinking
- Recharge groundwater
- Cap the discharge of polluted water from industries

Increase the efficiency of supply

- Improved drainage and sewerage networks
- Reduce water losses

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THANK YOU