

# Building a Resilient and Secure Water Sector

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# water is recognized as a priority



Weapons of mass destruction	Weapons of mass destruction	Weapons of mass destruction	Failure of climate change mitigation and adaptation
Extreme weather events	Extreme weather events	Failure of climate change mitigation and adaptation	Weapons of mass destruction
Water crises	Natural disasters	Extreme weather events	Biodiversity loss
Major natural disasters	Failure of climate change mitigation and adaptation	Water crises	Extreme weather events
Failure of climate change mitigation and adaptation	Water crises	Natural disasters	Water crises

# but why then is it not on the **political** & **business** agenda?

- It's on the **political** agenda, but not in the right sequence  
*events, my dear boy, events*

**we need to reverse the sequence**  
(‘prevention & cure’ **NOT** ‘rescue and recovery’)

- It's on the **business** agenda, but we need to better articulate  
the **value of water**

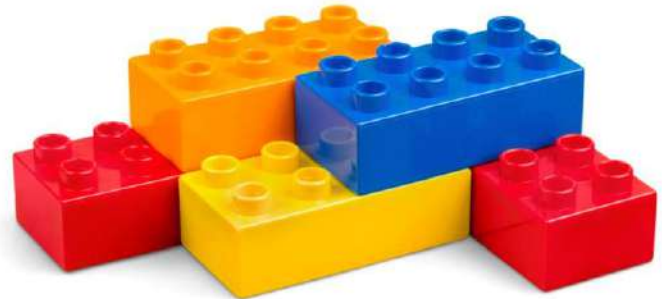
**we need to value the diverse benefits & spill-over effects**

# opportunities to reverse the sequence



# need to **RESET** water management in the context of new narratives

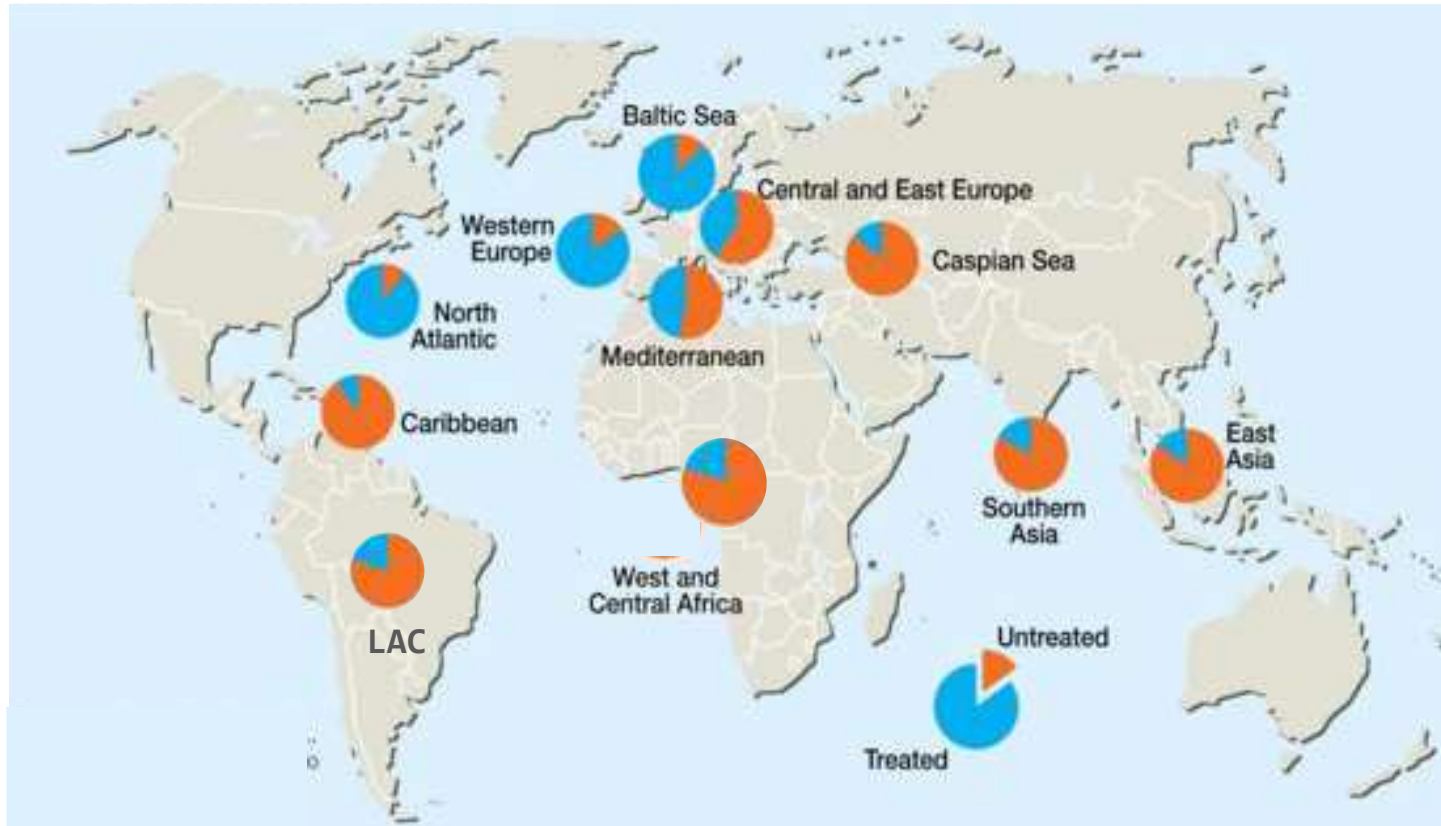
- historically a building block of the **high carbon economy**
- now water should become a building block for the new **low carbon economy** (particularly in emerging economies)



**wastewater is the key**



80% of wastewater is **NOT** treated



# used water can be reused in **productive & creative ways**



Tertiary: **Irrigation**



2nd+RO+MF: **AAR**



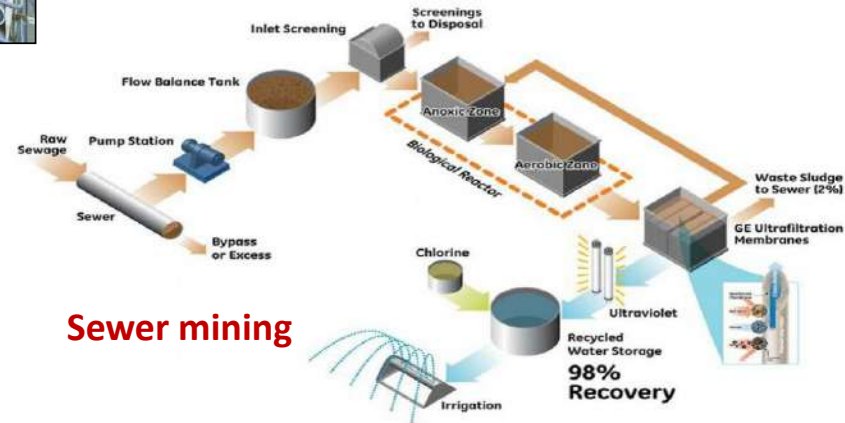
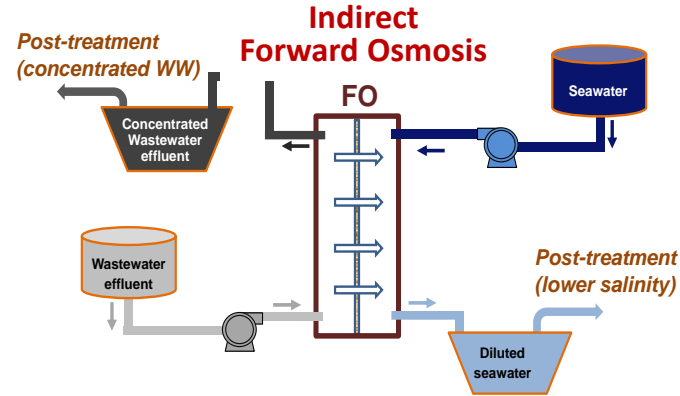
Nitrified: **Cooling**



RO: **Refinery**



RO(x2): **Refinery**

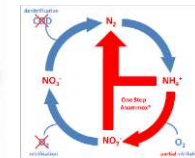
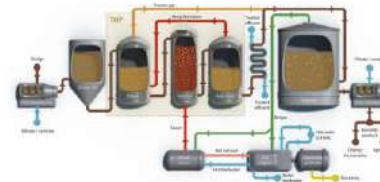
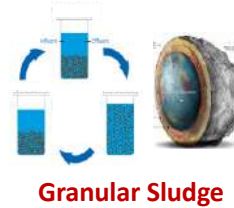




# next 20 years golden age for wastewater & sanitation - opportunities to “leapfrog”

## building on the big pilot study

- smaller plant footprint
- energy savings (up-to 50%)
- improved TOTEX
- backed-in circular water principles



Thermal Hydrolysis

Anammox

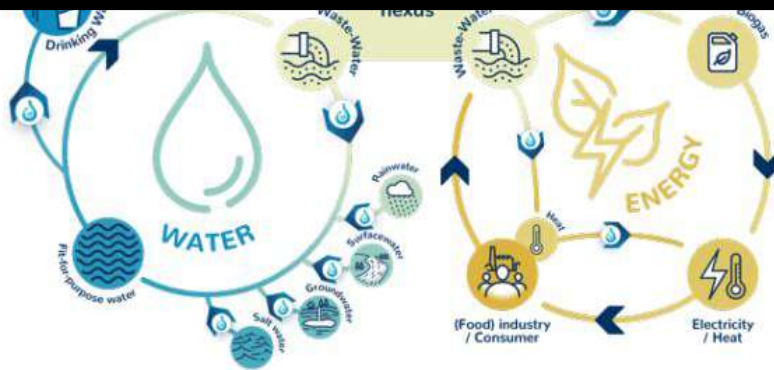
Adv. Control

# next 20 years golden age for wastewater & sanitation - opportunities to “leapfrog”



always now described within the  
economy  
forcefulness

**Danube Region** – 25% of population still  
need wastewater infrastructure

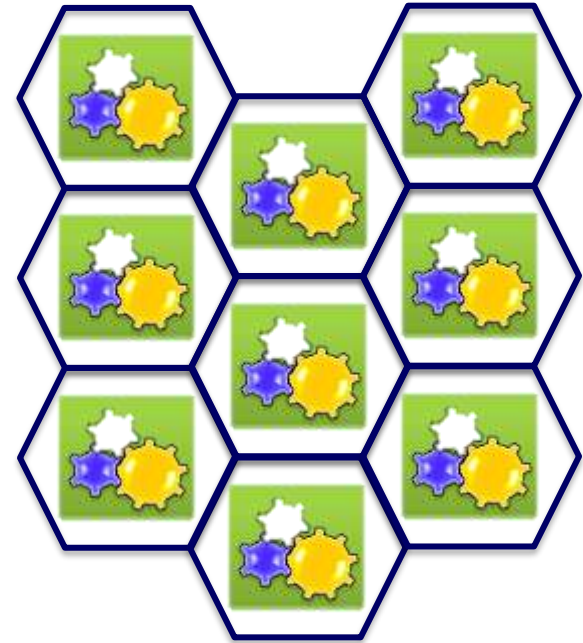


# decentralized systems have adaptive capacity

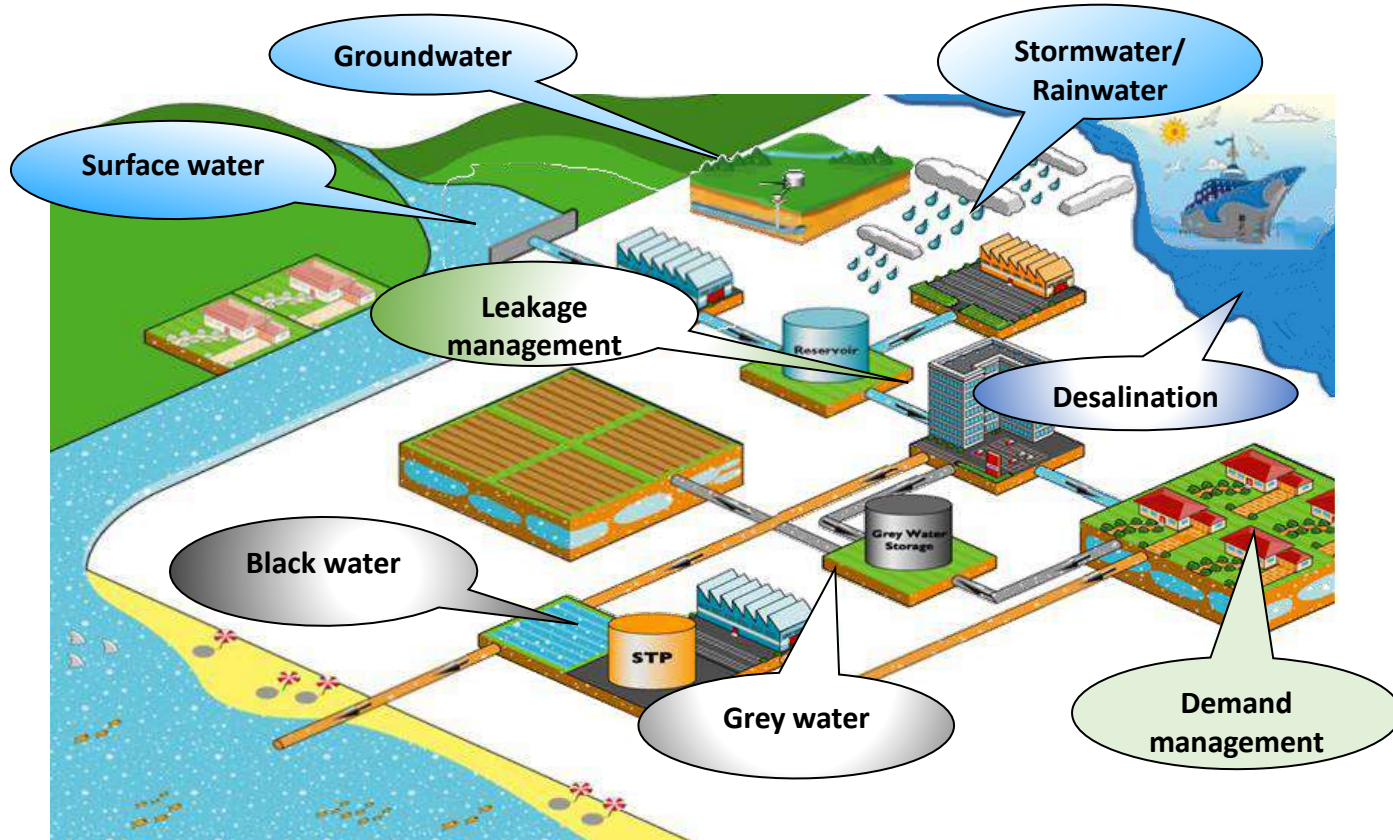
## decentralized systems well suited for:

- adjusted growth (to deal with rapid growing cities)
- increased resiliency (dampens the propagation of failures)
- minimize energy for reuse

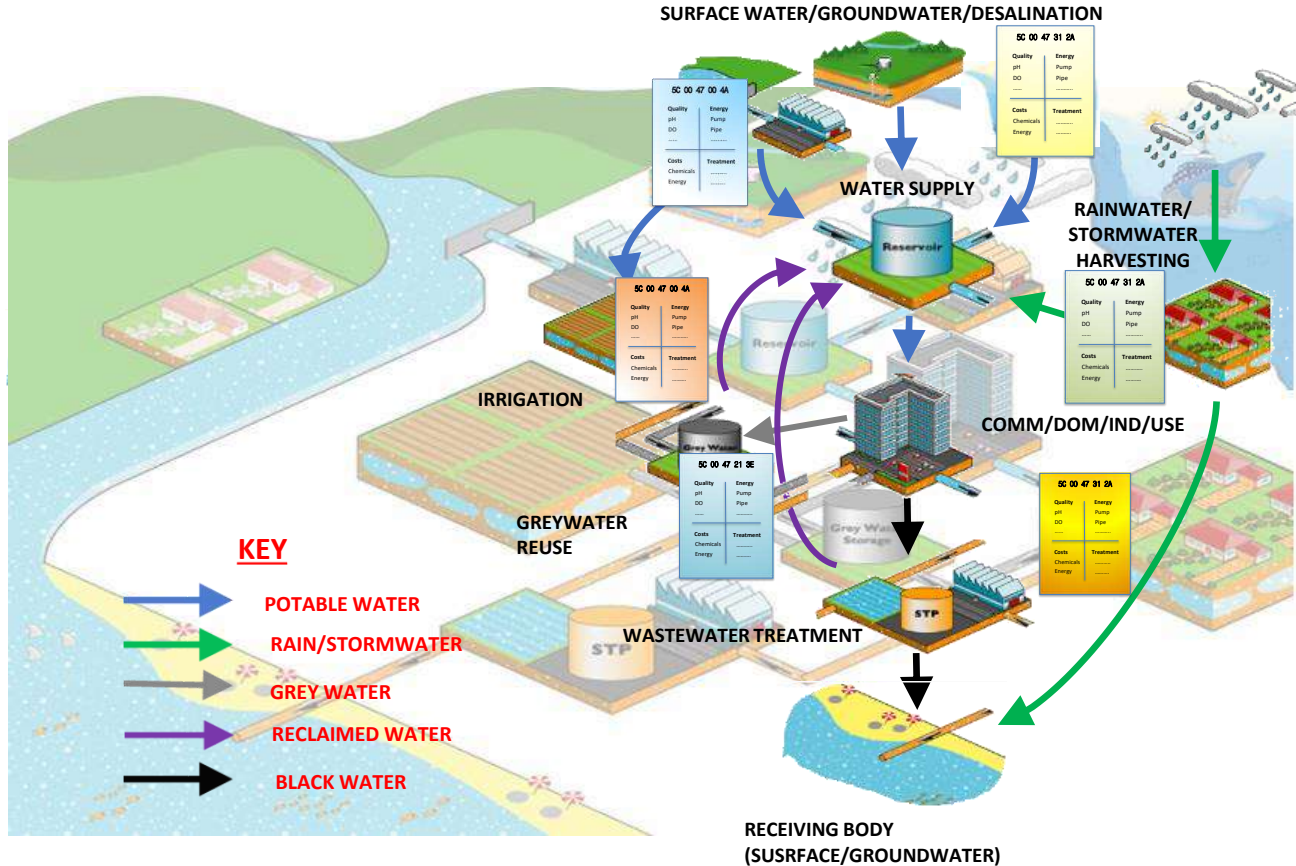
**‘urban form’ can  
help or hinder**



# we need a **systems** perspective of the water cycle

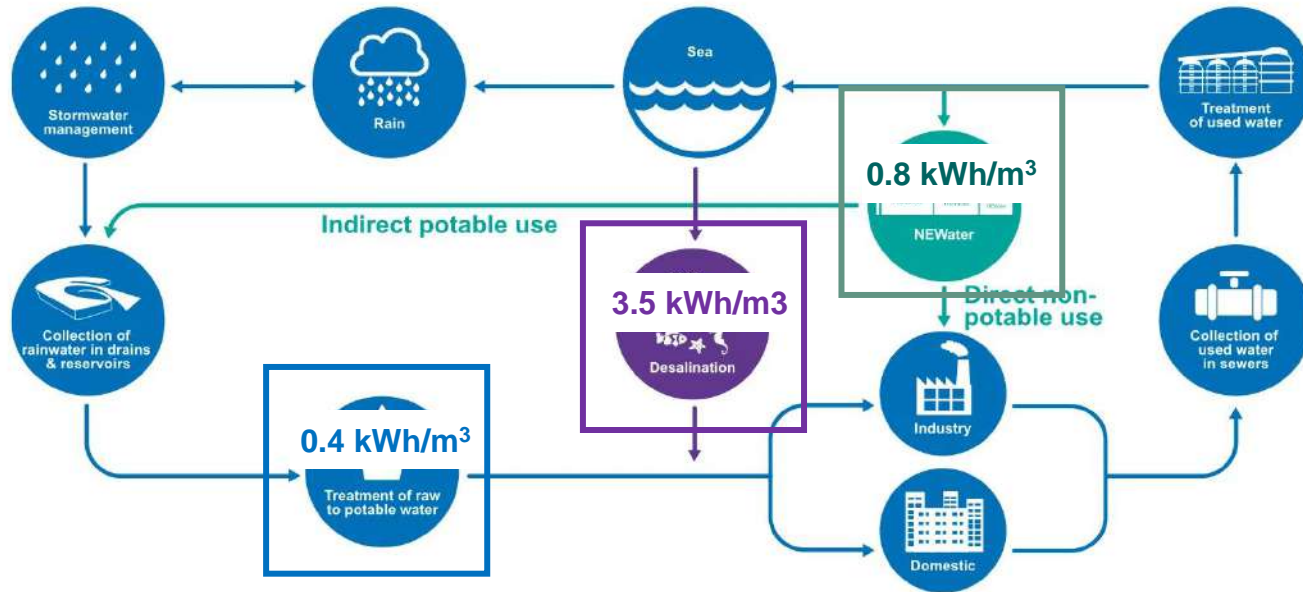


# modelling allows us to connect all flows for productive uses – digital ledgers help



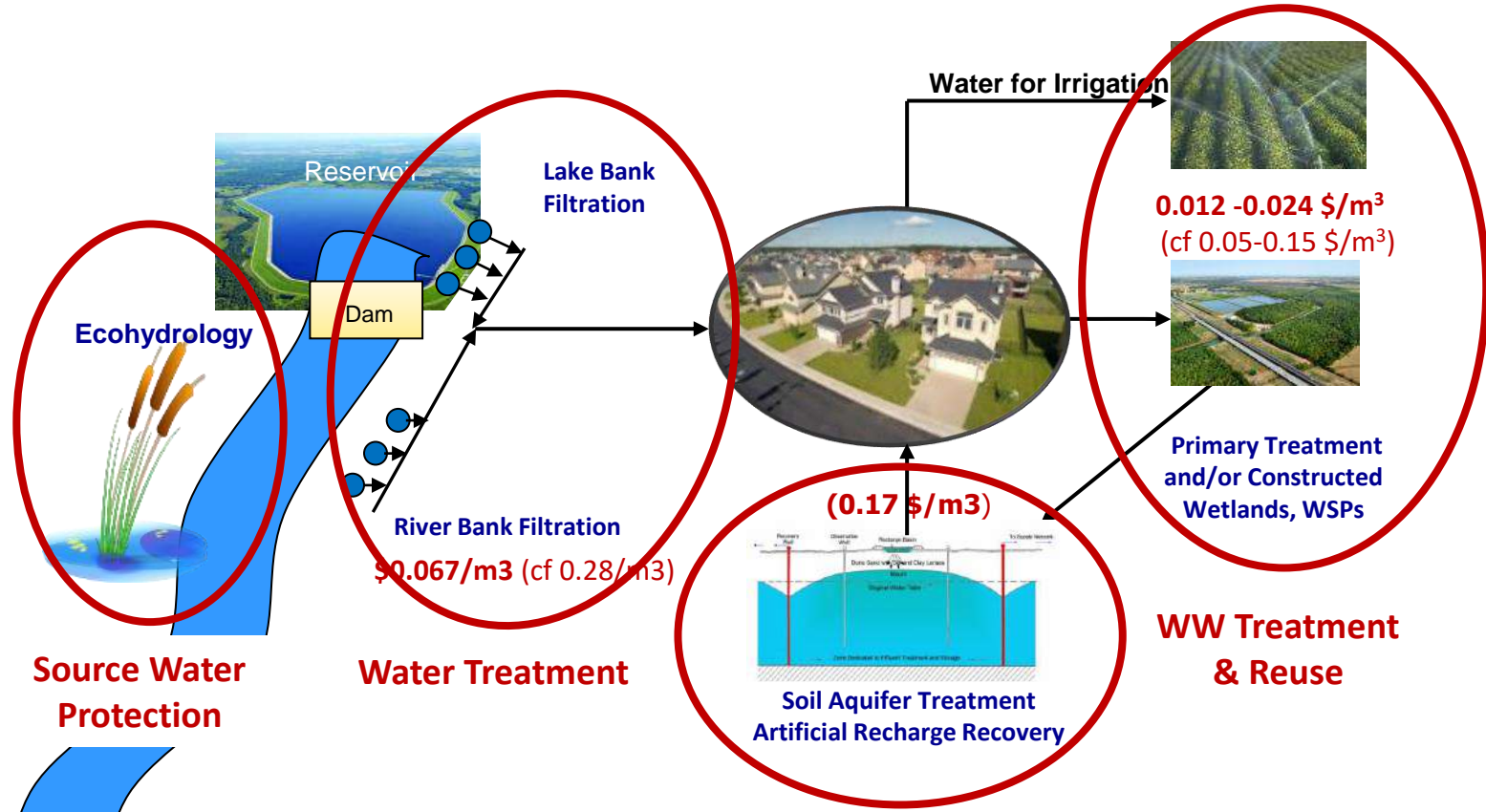


# portfolio of options may conflict with **decarbonisation** ambitions

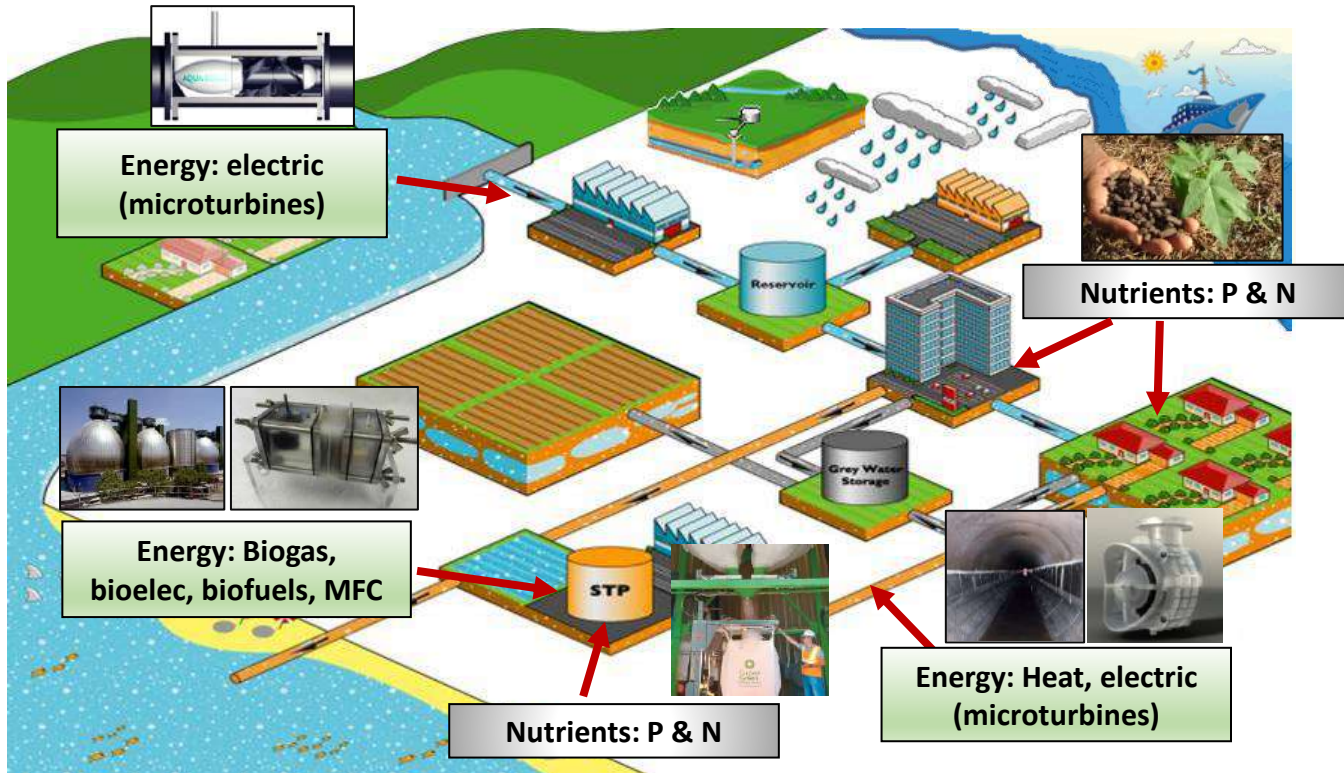




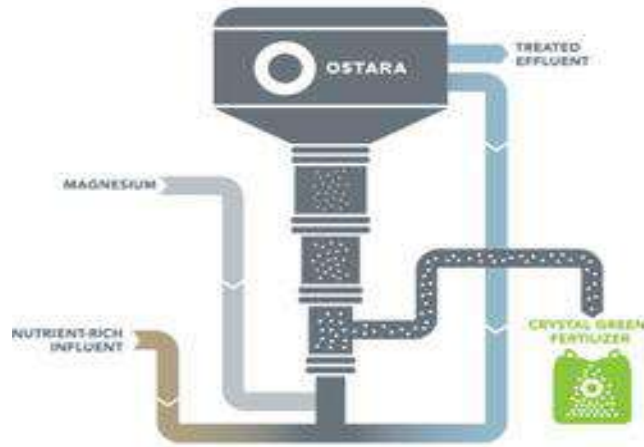
# nature based (green) solutions can support resiliency & decarbonize



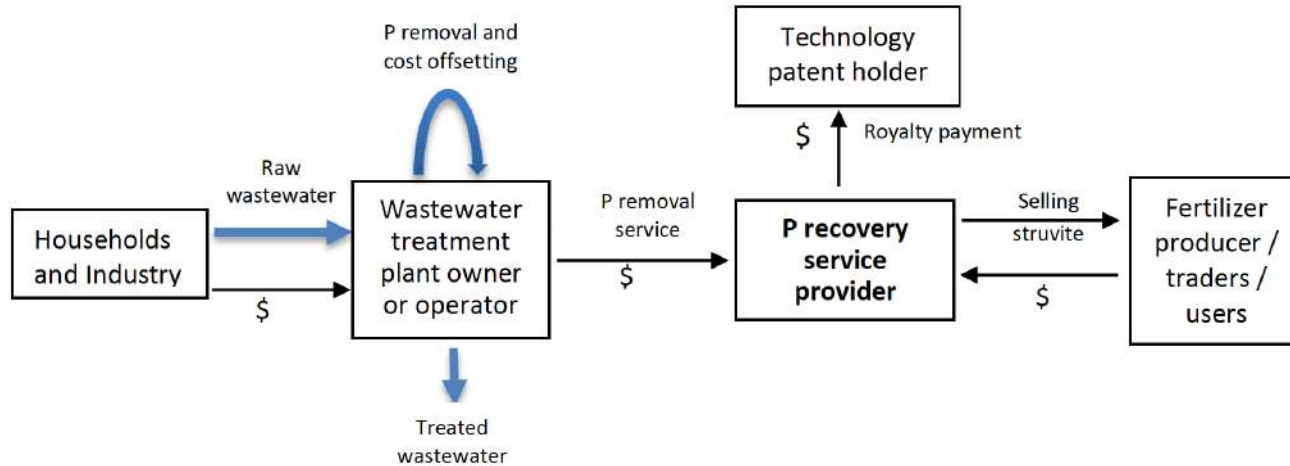
# systems view allows to prioritise interventions for **mitigation** & **RRR**



important to understand the **business** model

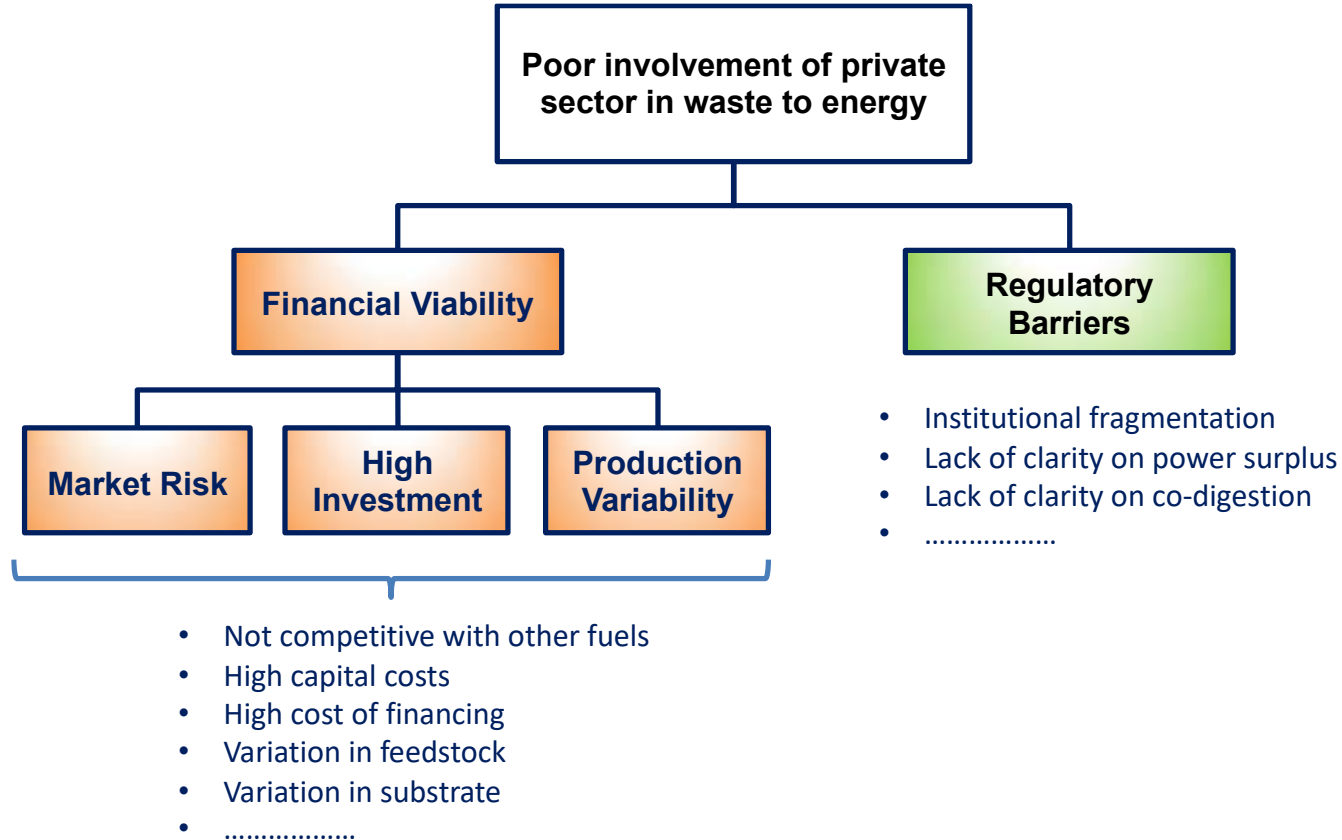


# important to understand the **business** model

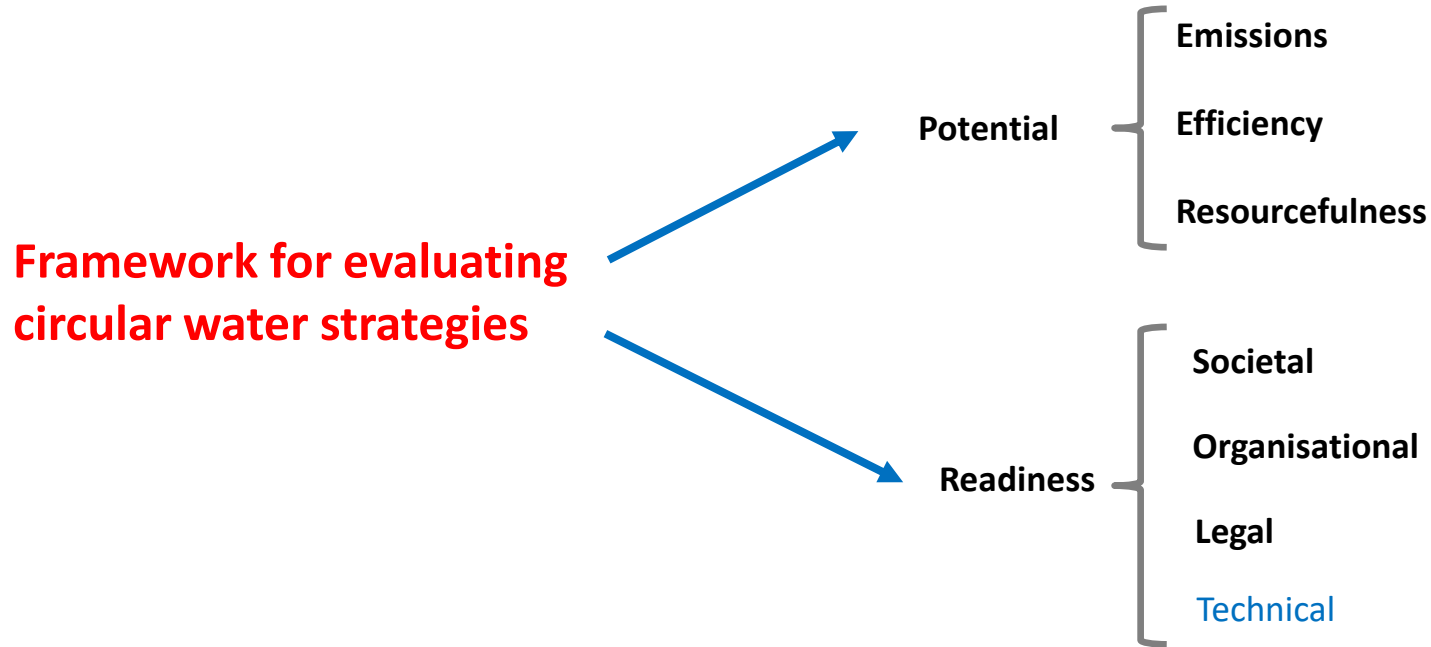


capital purchase business model OR treatment fee model

# challenges to make 'waste to energy' work



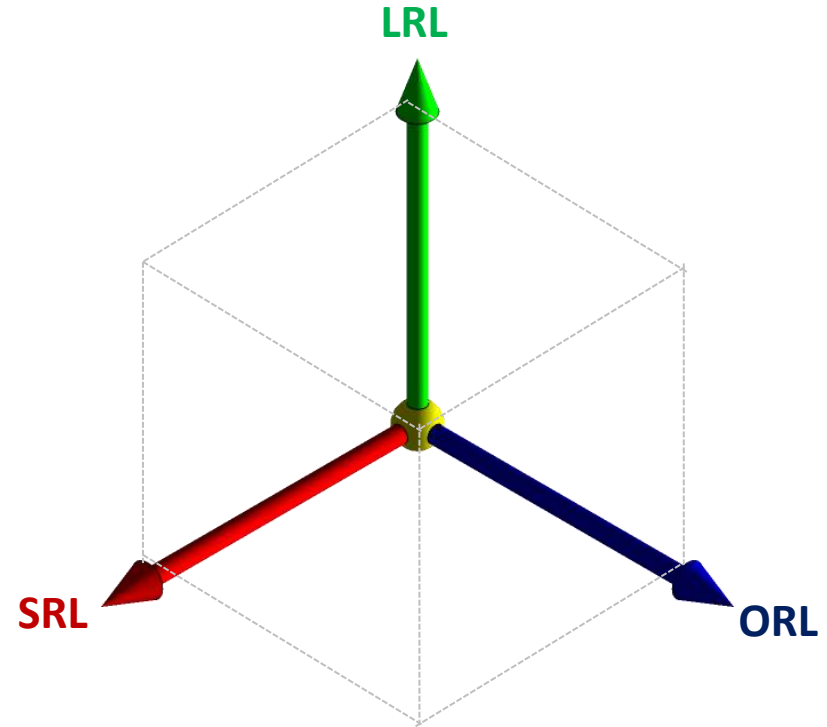
# understanding 'readiness' is important





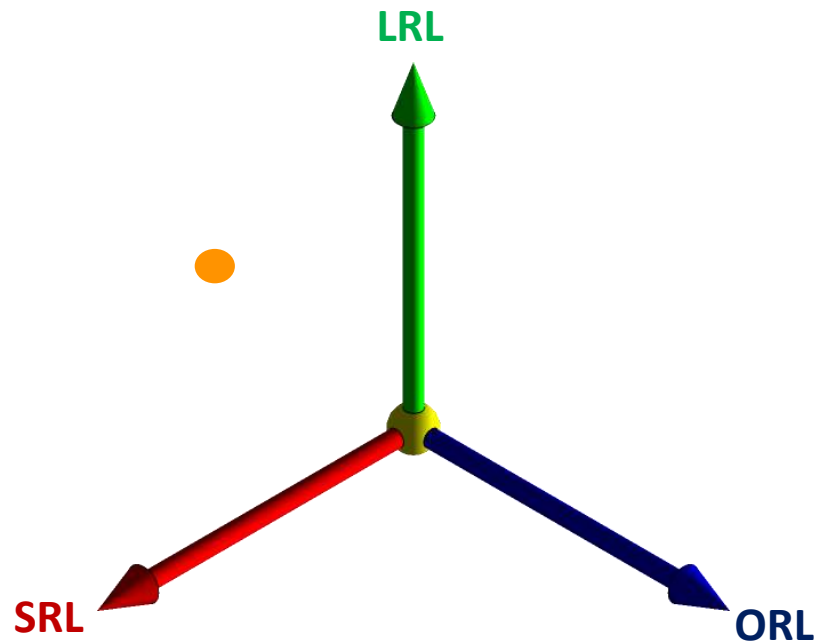
# understanding 'readiness' is important

Technical	Societal	Organisational	Legal
TRL	SRL	ORL	LRL
9	9	9	9
8	8	8	8
7	7	7	7
6	6	6	6
5	5	5	5
4	4	4	4
3	3	3	3
2	2	2	2
1	1	1	1



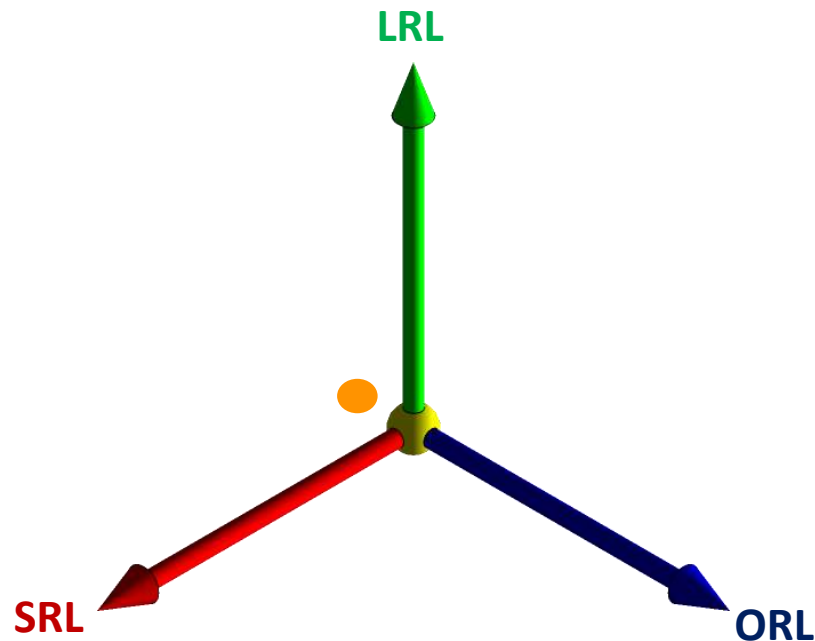
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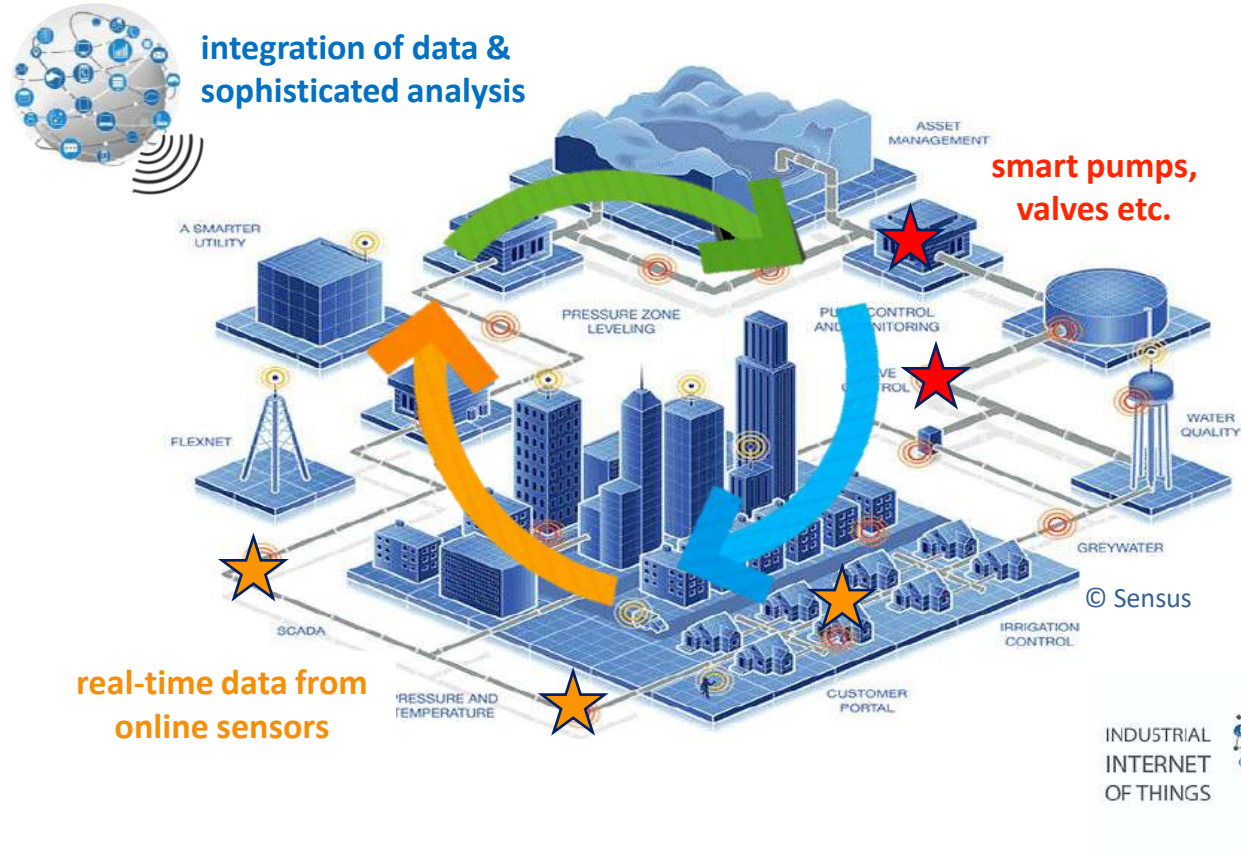
TRL	SRL	ORL	LRL
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1	1	1	1



# digital water

enabling us to transition towards  
green, resilient, and inclusive growth

# digital ecosystem – silent running



# We need to change the **default** setting for sustainable water management

- **Reward** water use efficiency, resource use efficiency, extraction of value from waste streams
- **Promote** systems that are more integrated, hybrid grey & green, multi-use & multi-functional, distributed
- **Encourage** approaches and solutions that are flexible and offer increased levels of immunity to hydrologic cycle



# We need to change the **default** setting for sustainable water management

- **Recognise** the complex **value of water** and encourage a **systems view** to better capture the **diverse benefits & spill-over effects**
- **Stimulate** innovation & investments by coupling a better articulation of the **values of water** with related **policy instruments**
- **Embed** all the above into **institutional strengthening & building**
- **Support** the trail-blazers – **share success stories with others**

# Choices Before Us

