

New technologies and design of future urban water systems

THA 2019 International Conference

24 January 2019

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WHAT IS IWA?

Global Network for Water Professionals spanning the continuum of
research and practice, and covering all aspects of the water cycle

10,000 members
in 140 countries

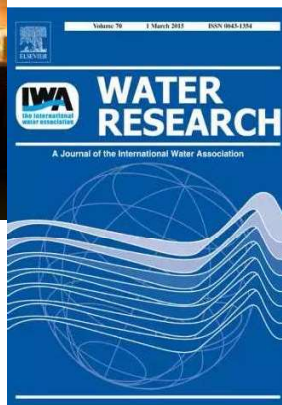
14 Journals
40 books/year

Biennial Congress with
over 9000 participants

Leading edge
technologies and
best practices



50 Specialist Groups



Over 30 conferences/year
with over 50,000 participants



www.iwa-network.org

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WHAT ARE THE CHALLENGES FOR URBAN WATER SYSTEMS

URBAN WATER CHALLENGES

- The rapid pace and scale of urbanization challenges the delivery of water and sanitation services and environmental protection.

Climate change



Irregular patterns of water availability

Population growth



Growing demand for resources

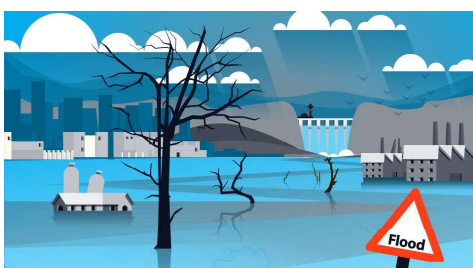
Water users



Competition for water resources

By 2050

70% of population in Urban areas
Extra 2.5 billion in cities



- Uncoordinated use of water & land resources leads to negative impacts on cities and watersheds

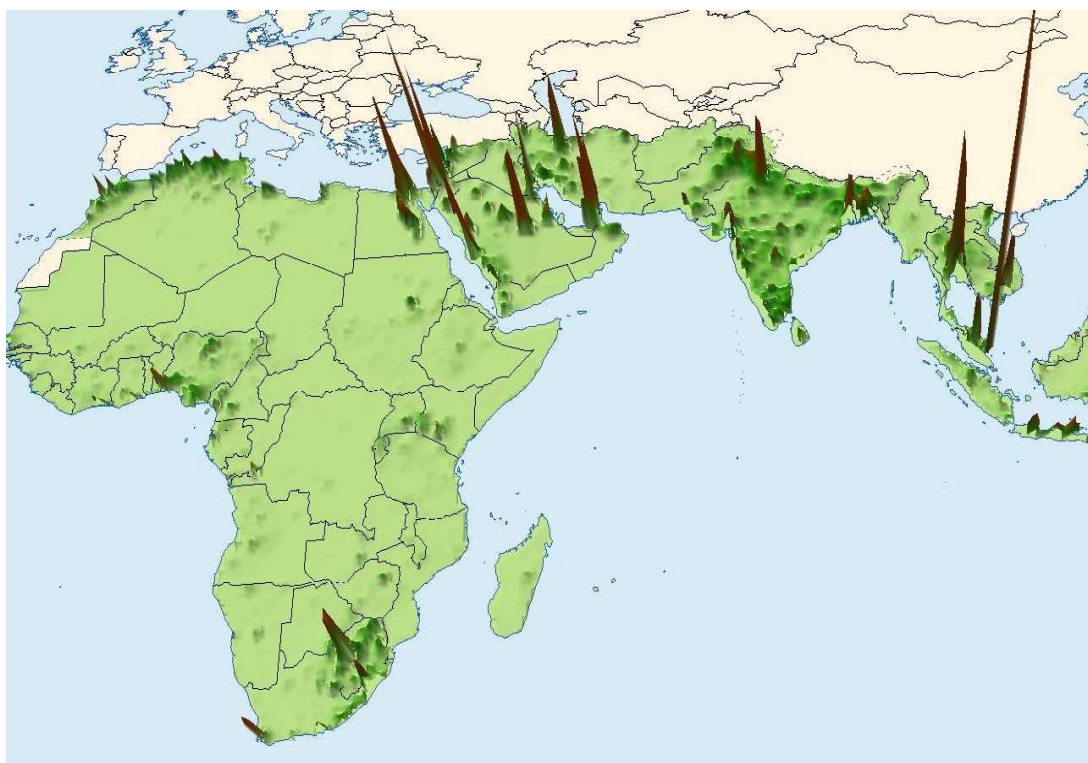


85% of wastewater is NOT treated

Ratio of wastewater treatment



OPPORTUNITY TO DO THINGS DIFFERENTLY



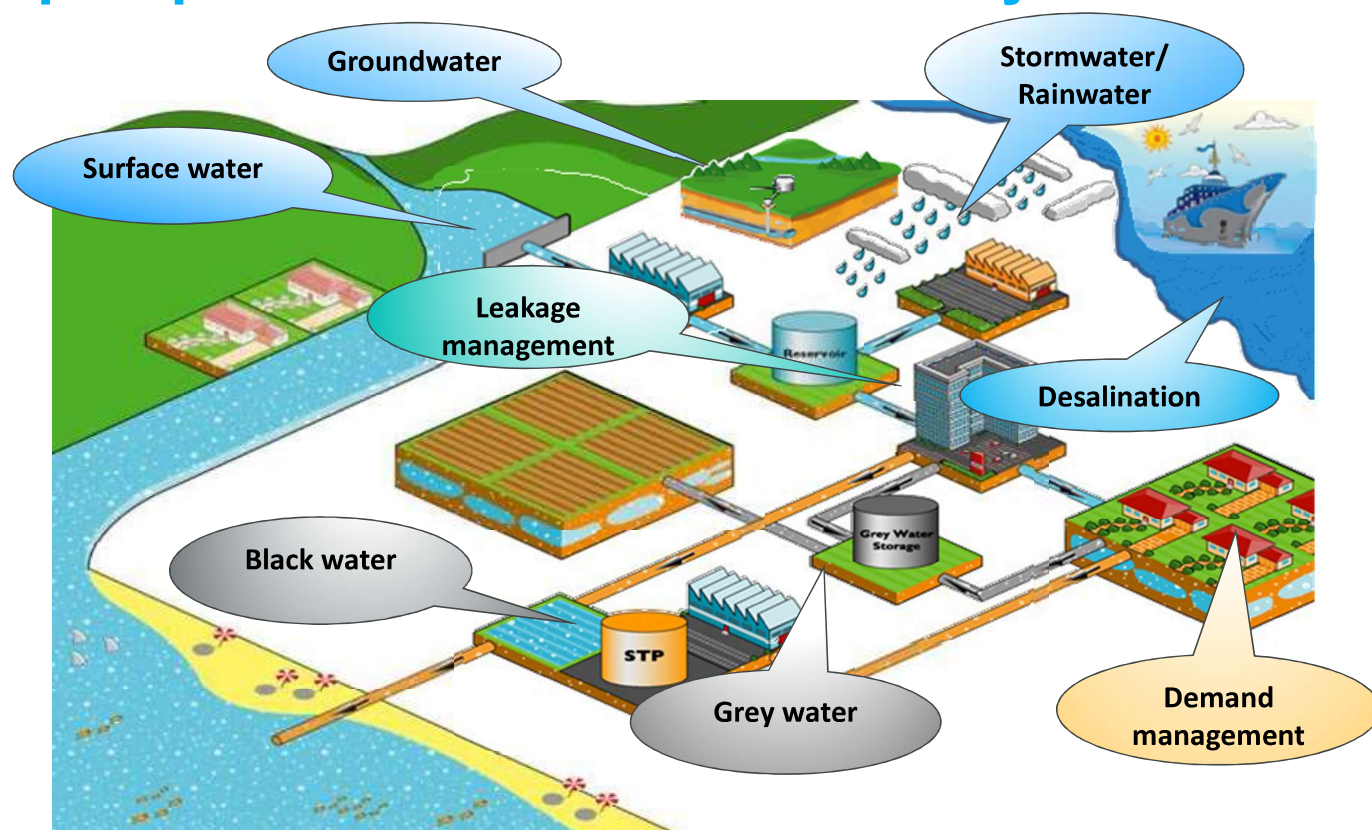
Source: World Bank (2010) World Development Report 2009 *Reshaping Economic Geography*, second edition, pp. 35

OPPORTUNITIES NOW AND FOR THE FUTURE – PRODUCTIVE USE OF WATER

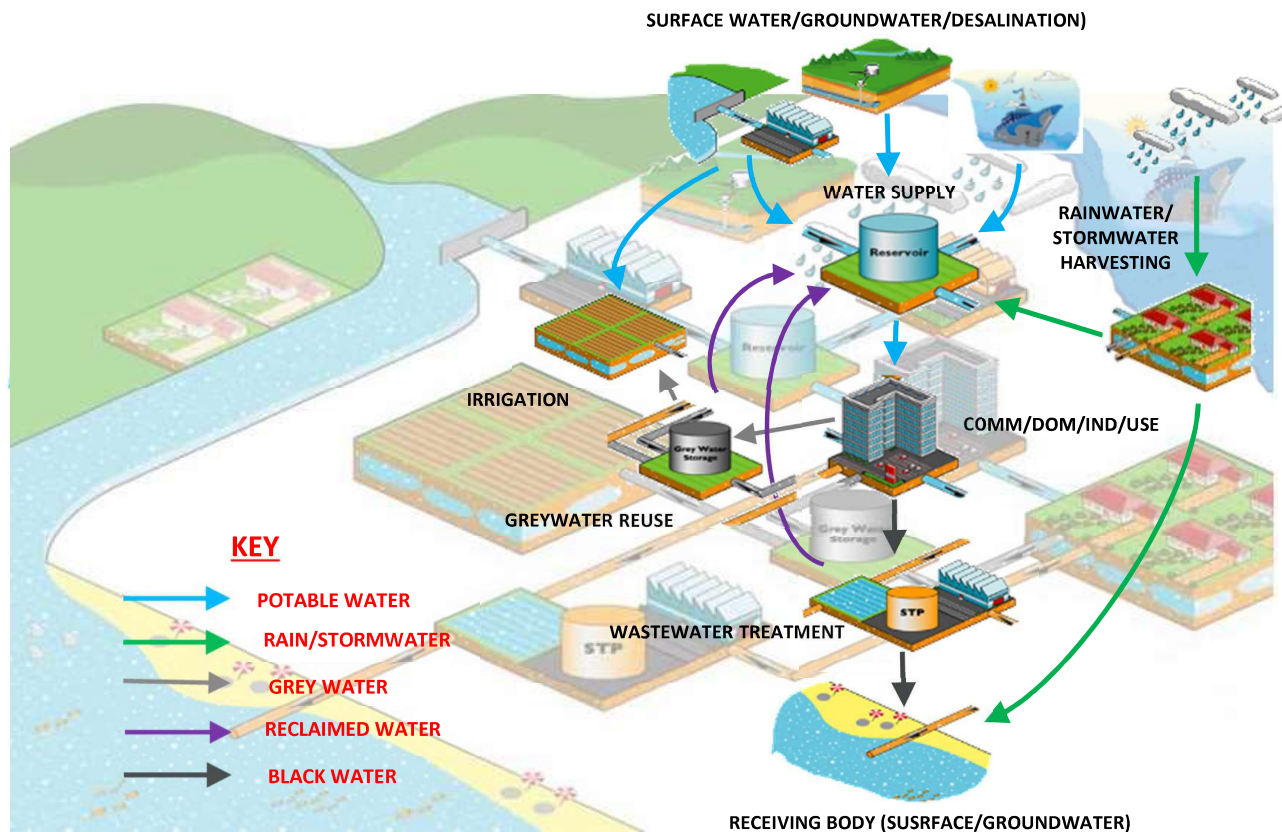
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We need to have a systems perspective of the urban water cycle



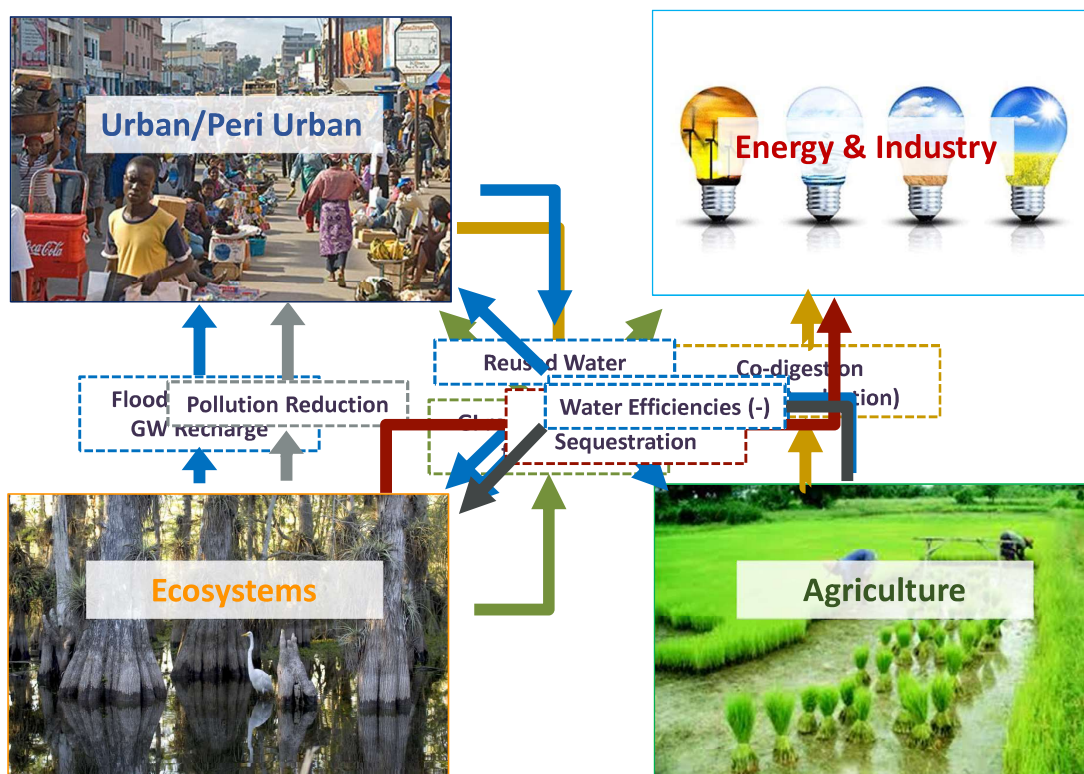
Modelling allows us to connect all flows with productive uses



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BASIN-CONNECTED CITIES – SYSTEM OF SYSTEMS



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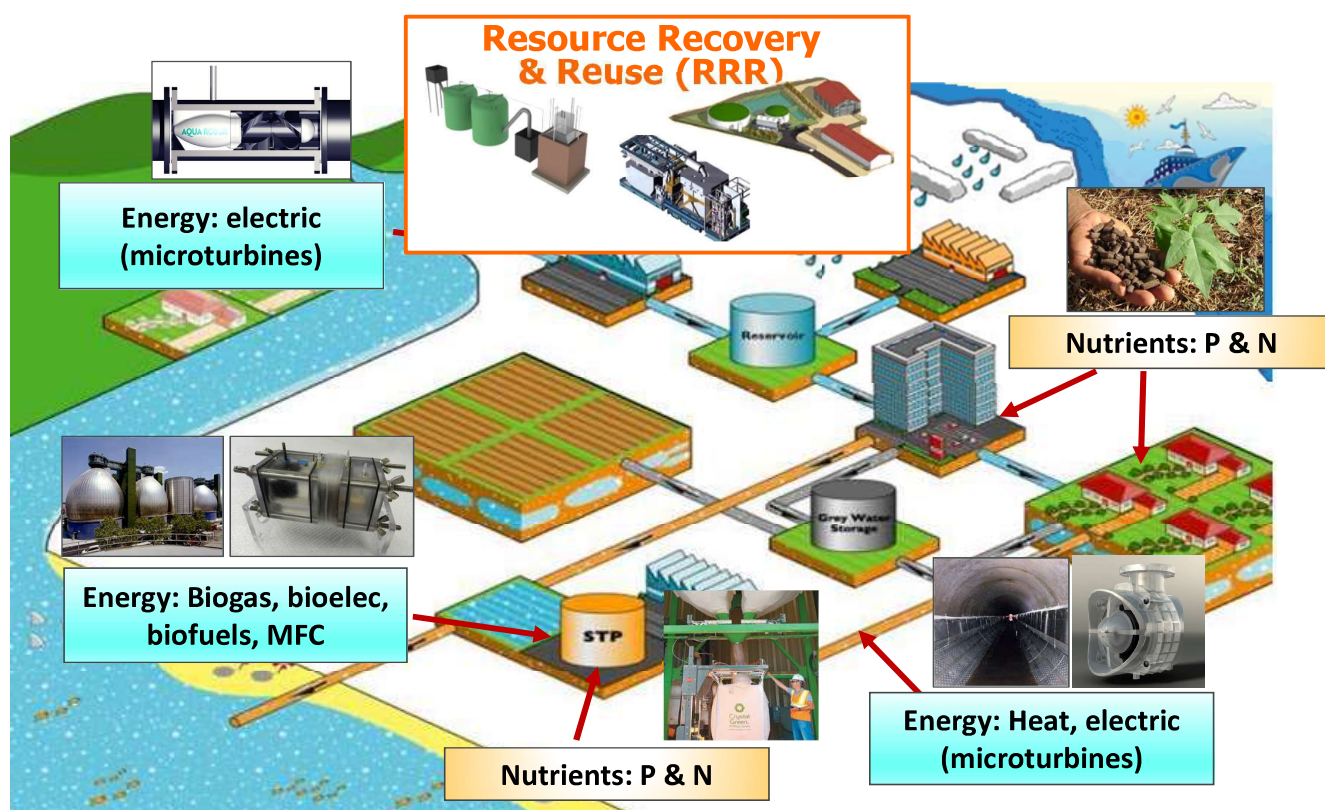
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OPPORTUNITIES NOW AND FOR THE FUTURE – WASTE AS A RESOURCE

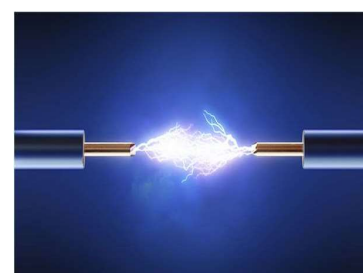
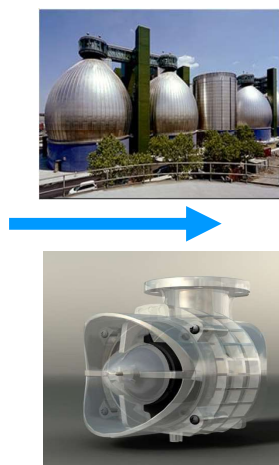
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Changing our perspective creates opportunities to do things differently

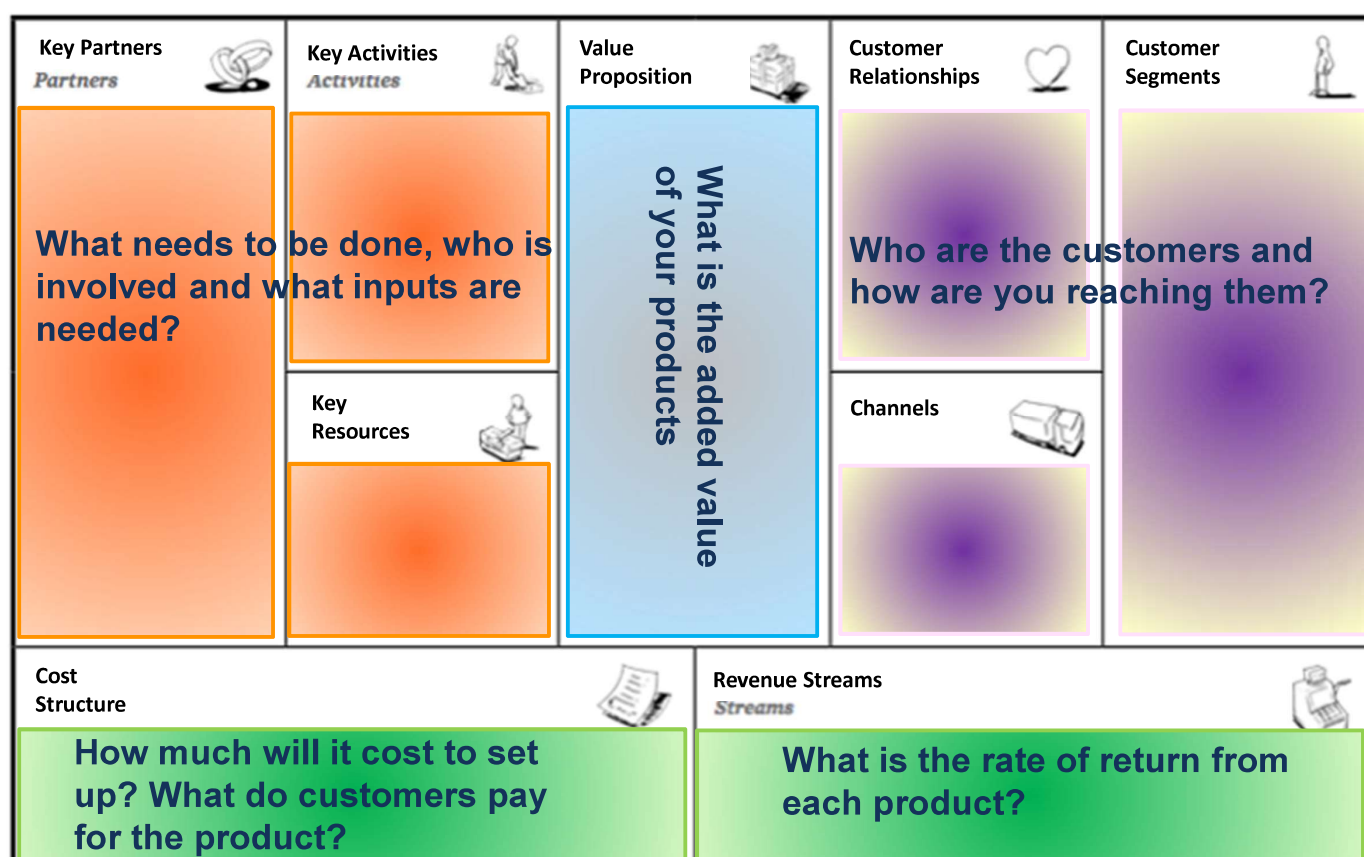


Maximizing the recovery of resources

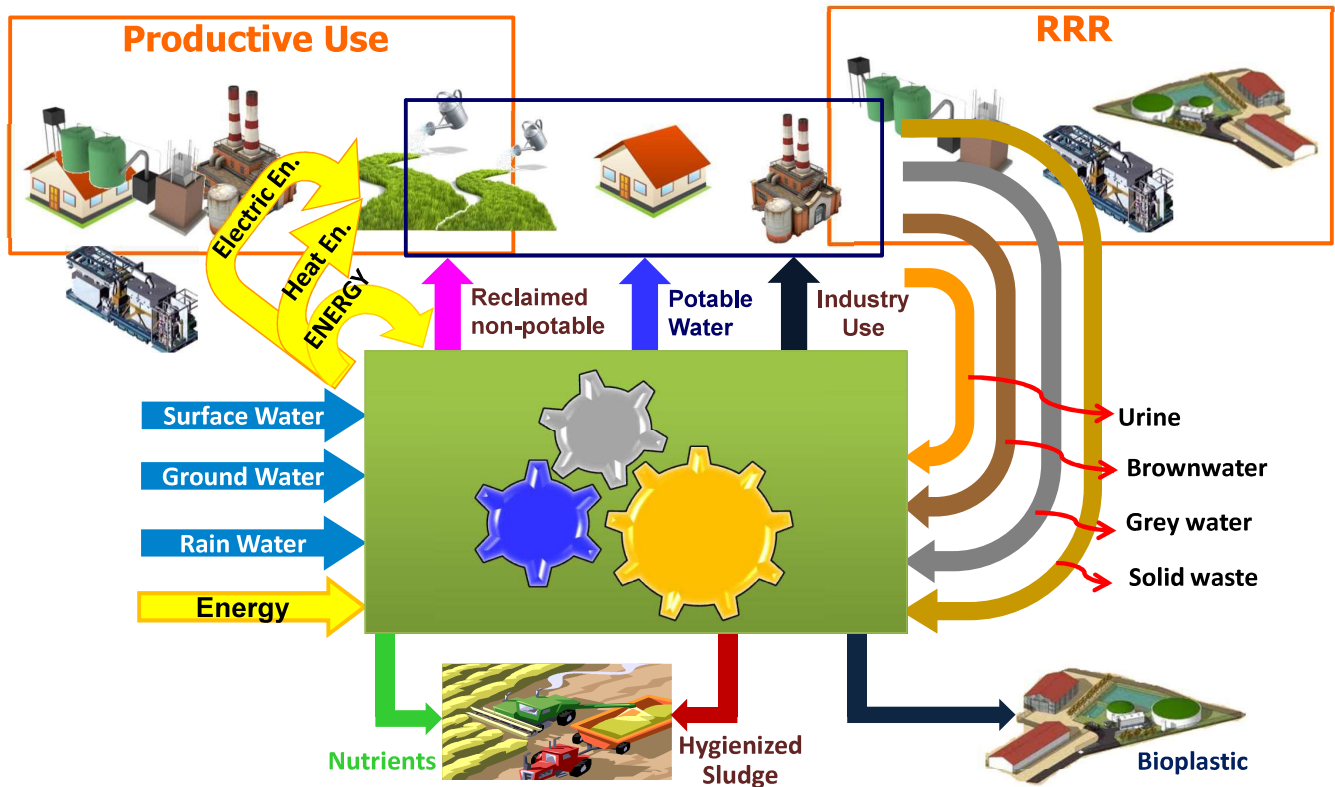


Example - As-Samra WWTP, Jordon

Important to understand the business model



We're starting to talk about machines and factories



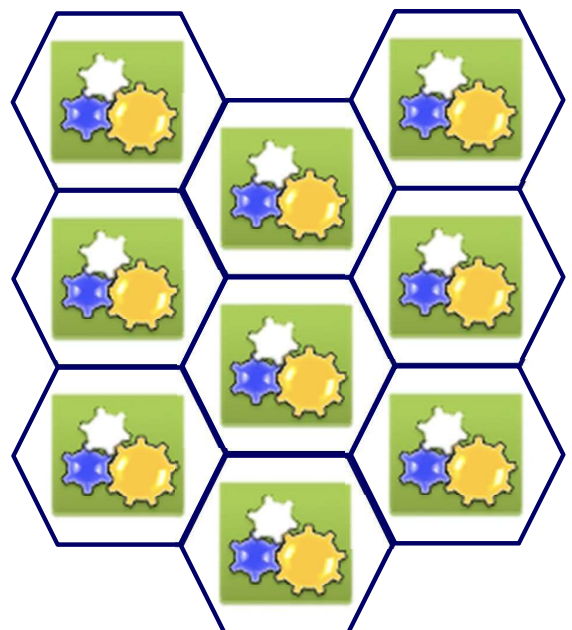
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These perspectives lead to a more distributed type of thinking

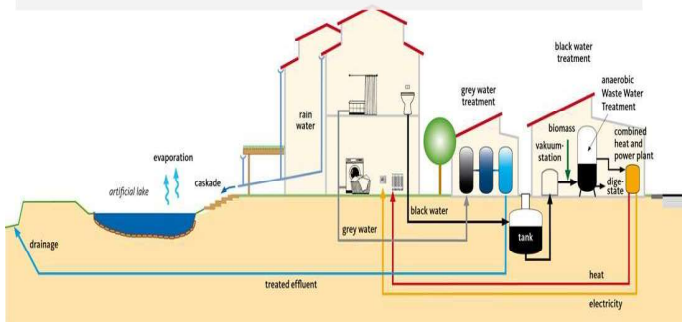
Distributed systems well suited for:

- Energy recovery (heat recovered and used close to source)
- Minimizing energy consumption (for moving water)
- Source separation (to maximize nutrient recovery)
- Adjusted growth (to deal with rapid growing cities)
- Increased resiliency (dampens the propagation of failures)



Moving beyond the grid – disruptive

Hamburg Watercycle™



Battery Park City NY



Siyuan Campus

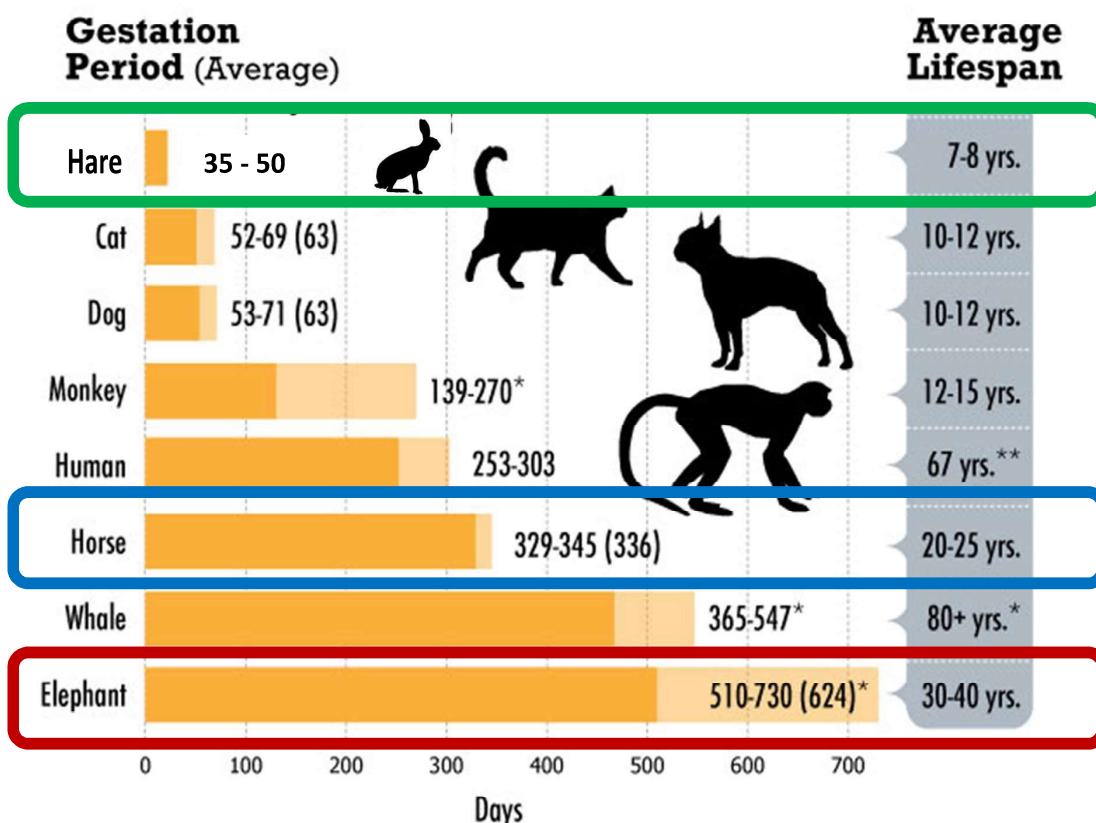


Hammarby Sjöstad



How to accelerate innovation?

Myth - water sector slow moving & presents few opportunities to introduce major innovations



FRAMEWORK TO GUIDE ACTION ON URBAN WATER INNOVATION ACROSS SCALES

THE IWA PRINCIPLES FOR WATER-WISE CITIES

4 Levels of Action



17 Principles for Water-Wise Cities

1 Regenerative Water Services

- Replenish Waterbodies and their Ecosystems
- Reduce the Amount of Water and Energy Used
- Reuse, Recover, Recycle
- Use a Systemic Approach Integrated with Other Services
- Increase the Modularity of Systems and Ensure Multiple Options

2 Water Sensitive Urban Design

- Enable Regenerative Water Services
- Design Urban Spaces to Reduce Flood Risks
- Enhance Liveability with Visible Water
- Modify and Adapt Urban Materials to Minimise Environmental Impact

3 Basin Connected Cities

- Plan to Secure Water Resources and Mitigate
- Protect the Quality of Water
- Prepare for Extreme Events

4. Water-Wise Communities

- Empowered Citizens
- Professionals Aware of Water Co-benefits
- Transdisciplinary Planning Teams
- Policy Makers Enabling Water-Wise Action
- Leaders that Engage and Engender Trust

5 Building Blocks



Vision



Governance



Knowledge
& Capacity



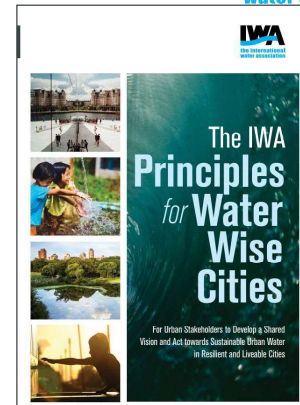
Planning
Tools



Implementation
Tools

THE IWA WATER-WISE CITIES INITIATIVE

- **29 urban regions** have endorsed the Principles, either through their utilities, municipalities, or a combination of several urban stakeholders.
- Building off of the Principles, IWA launched the [Action Agenda for Basin-Connected Cities](#) **influence and activate utilities, cities and their industries** to become water stewards working with basin and catchment organisation
- IWA Members are partnering with IWA to power up the initiative: Arup, CRC for water Sensitive Cities, Greater Paris Sanitation Authority.



CHOICES BEFORE US

