

<http://FloridaClimateInstitute.org>

FCI Overview and 2014 Goals

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<http://FloridaClimateInstitute-UF.org>

Outline



Brief History
Achievements
Where We Are Now
Future Plans of FCI



FCI to date

- 2010 – UF and FSU form joint institute
- 2011– SUS Board of Governors Project (Climate Change Task Force – UF, FAU, FSU)
 - Symposium at UF in November (www.FloridaClimate.org) (175 attendees)
- 2012– Expansion of FCI to 6 universities
- Proposals submitted- cumulative (20) and funded (11) thru 2012
- 2013—Added 7th university (FIU)
- Will be submitting an LBR this summer to support our research and outreach efforts toward a more climate-resilient Florida



Where We Are Now



James W. Jones (Director), W. Graham, Carolyn Cox (UF Coordinator)



Len Berry, Nicole Hammer (FAU Coordinator)



Rich Olson, Mike Sukop



Eric Chassignet, Vasu Misra, Meredith Field (FSU Coordinator)



Scott Hagen, Reed Noss, Sonia Stephens (UCF Coordinator)



Ben Kirtman, Dave Letson



Kalanithy Vairavammoorthy, Gary Mitchum

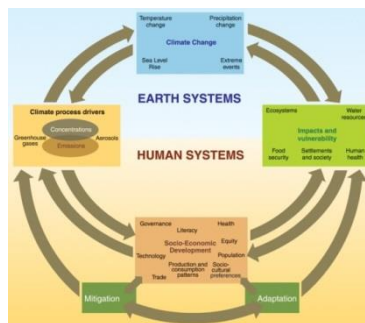
FCI Special Publication

Special Publication (Led by V. Misra, FSU):

- FCI Special Issue of Journal of Environmental Change**

The Florida Climate Institute, the Southeast Climate Consortium, and UF Water Institute researchers partnered to produce a special issue in the Journal of Environmental Change to be released in August 2013. 15 UF faculty contributed to this publication. See full list of titles, authors, and collaborators

<http://www.floridacclimateinstitute-uf.org/wp-content/uploads/2013/06/recauthors.pdf>



Benefits to the State of Florida

- Produce and provide region-specific climate and sea level data used to reduce risks to Florida's economy and natural resources
- Design adaptation strategies for the increased resiliency of coastal communities for tourism, real-estate, infrastructure, and natural systems
- Foster the protection of ecosystems that provide habitat, water supply, and opportunities for recreation and tourism
- Develop crop varieties, technologies, and management systems to increase economic benefits and protect agricultural investments
- Work with urban water managers to design sustainable practices in the face of climate change and sea level rise
- Coordinate a broad range of STEM-based programs toward a climate-smart workforce
- Advance public climate literacy toward understanding climate vulnerability and making scientifically informed and environmentally sound decisions

FCI Working Groups

The FCI has formed 6 working groups which include representatives from all 7 universities, agencies, and industry in the state. The aim of the FCI is to position Florida to become a center of excellence and leader in climate change and variability adaptation technologies, strategies, and expertise

- I. Climate and Sea Level Rise Information for Florida, region
- II. Beach and Coastal Resilience
- III. Urban Water Management
- IV. Ports and Navigational Channels
- V. Agriculture and Forestry
- VI. Public Health Impacts



FCI 2014 Working Group Goals

These groups will each

- Produce a set of Frequently Asked Questions and answers for the state of Florida about the climate impacts and potential economic impacts on these various sectors
- Develop key partnerships for research and outreach activities to which state \$ will be allocated
- Develop a budget for institutional support along with criteria for prioritization of projects likely to be of interest to state leaders
- Build a compelling argument for the appropriation of state funds to benefit the state of Florida and its economy



Each Working Group will partner with industry and agencies through an idea-driven iterative process to:

- 1) Identify economic and environmental vulnerabilities
- 2) Assess and identify needs for research and education, including ideas for specific projects that would:
 - a) Identify and employ best practices to reduce risks to our economy, natural resources, and infrastructure
 - a) Capitalize on opportunities associated with anticipated changes in climate

Draft Criteria for Selecting Activities

- Clear target outcomes and pathway to achieve impacts in Florida's economy, workforce, environment
- Project has external support from external partners through in-kind, \$, or personnel commitments.
- Project is well represented across partner universities; at least two FCI institutions must be involved
- Project activities are aligned with Florida's identified priorities and advance major economic sectors in Florida (Trade, Tourism, Ag)
- Project has explicit plan for use of research for the benefit of the state. Include plan, mechanism, and people who will assure project results are shared with stakeholders (business, agencies, and citizens) and not only other researchers



We're trying to address many questions....but need your help

**HOW CAN WE DESIGN & BUILD MORE
RESILIENT URBAN WATER SYSTEMS**

**How do we design our urban water
systems to deal with uncertainties**

**How should our urban water systems
respond to tighter GHG emission targets**

**HOW CAN WE DO 'MORE WITH LESS' (RETHINK
THE WAY WE USE AND REUSE WATER)**

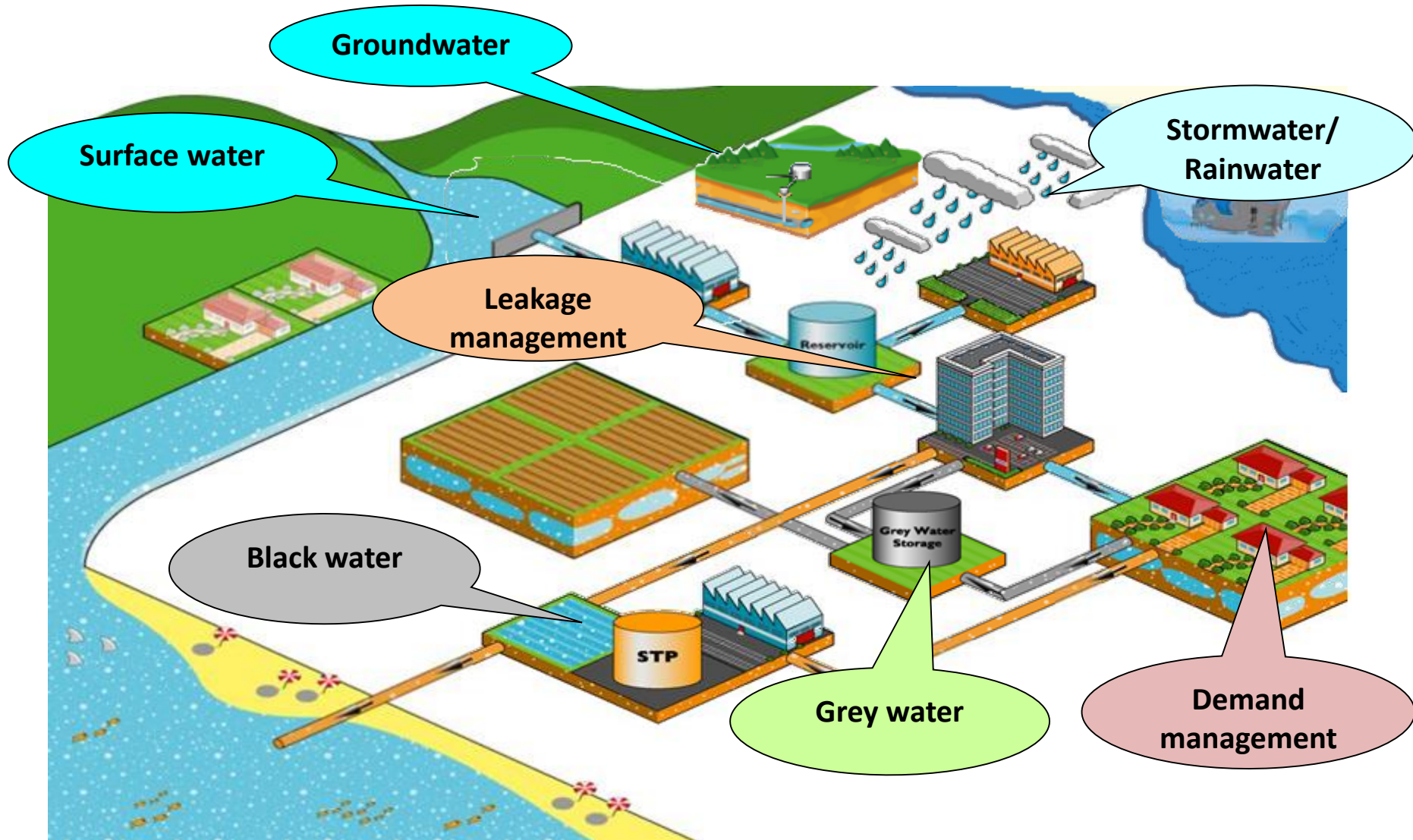
**How do we transition our infrastructure to make
it 'fit for purpose' to deal with climate change**

It's clear that our 19 c. approaches are not suited to deal with these challenges?

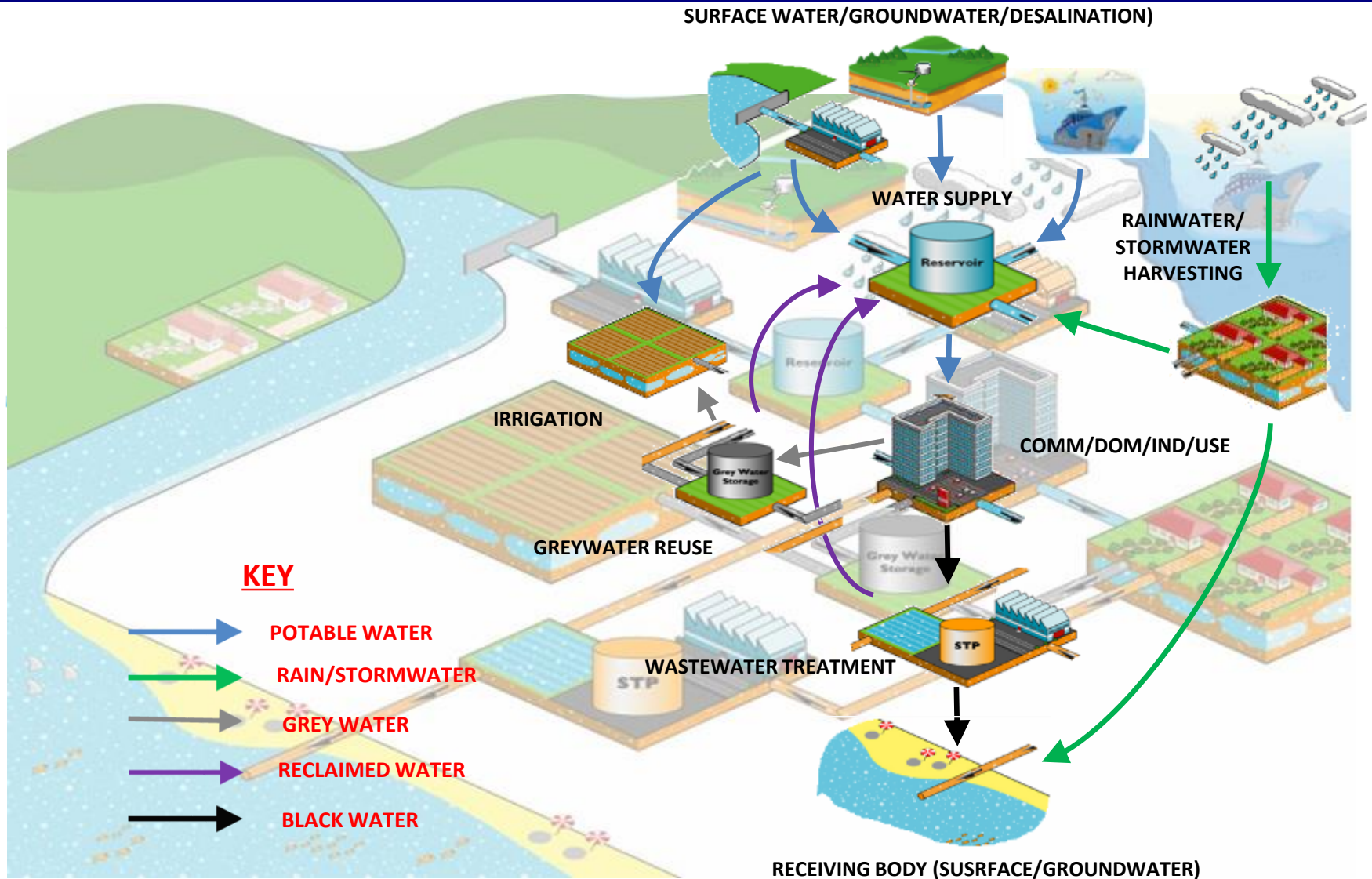
- Linear systems – use once and throw away
- Drinking water used for all purposes
- Systems centralized and fixed (no adaptive capacity)
- Stormwater viewed as a waste (not a resource).
- Institutions not conducive for integrated thinking
- Regulations stall innovation, are inflexible
- Urban form - no input from water professionals



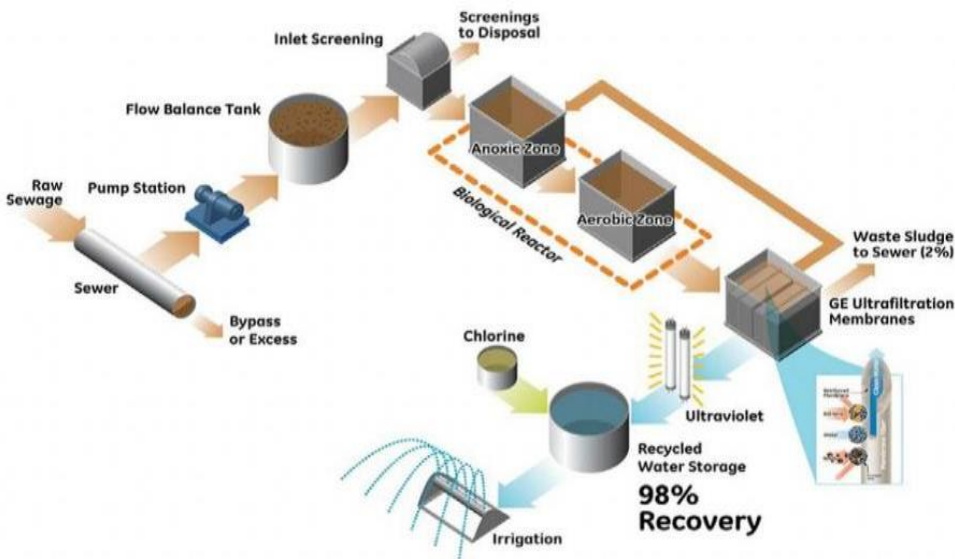
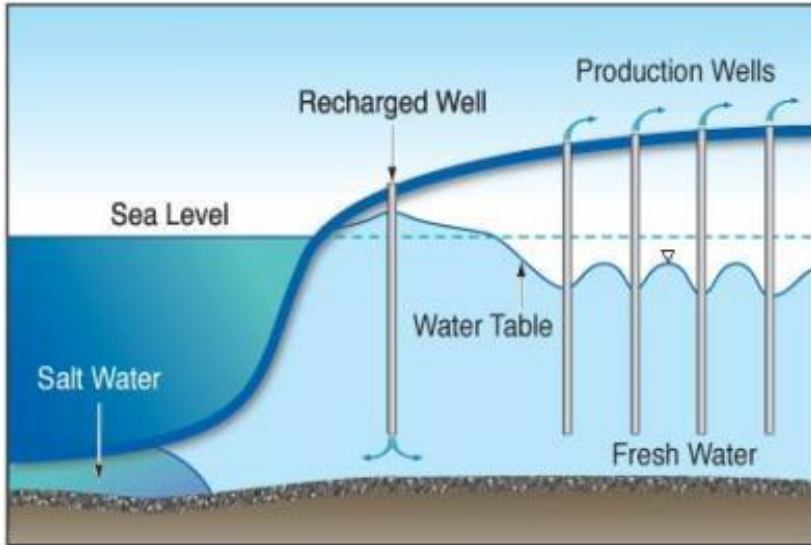
Productivity requires an integrated perspective of the urban water cycle



Integrated modelling allows us to connect all flows with productive uses



Change in perspectives leads to new thinking...that makes us more resilient



Tertiary: **Irrigation**



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



Nitrified: **Cooling**

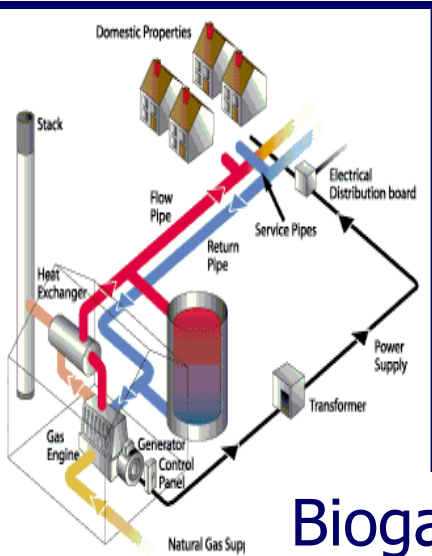


RO: **Refinery**

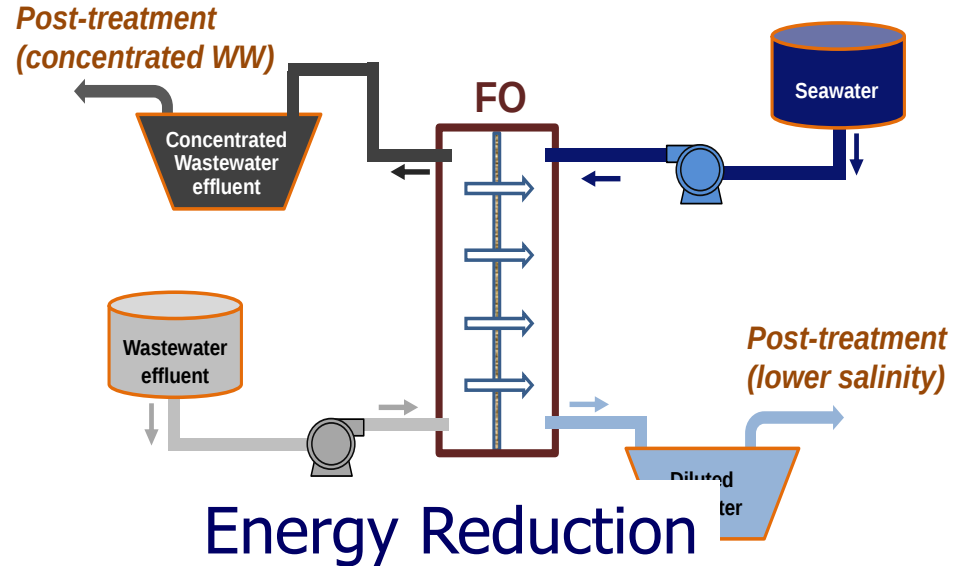


RO(x2): **Refinery**

Change in perspectives leads to new thinking...that makes us more resilient



Biogas/CHP



Energy Reduction

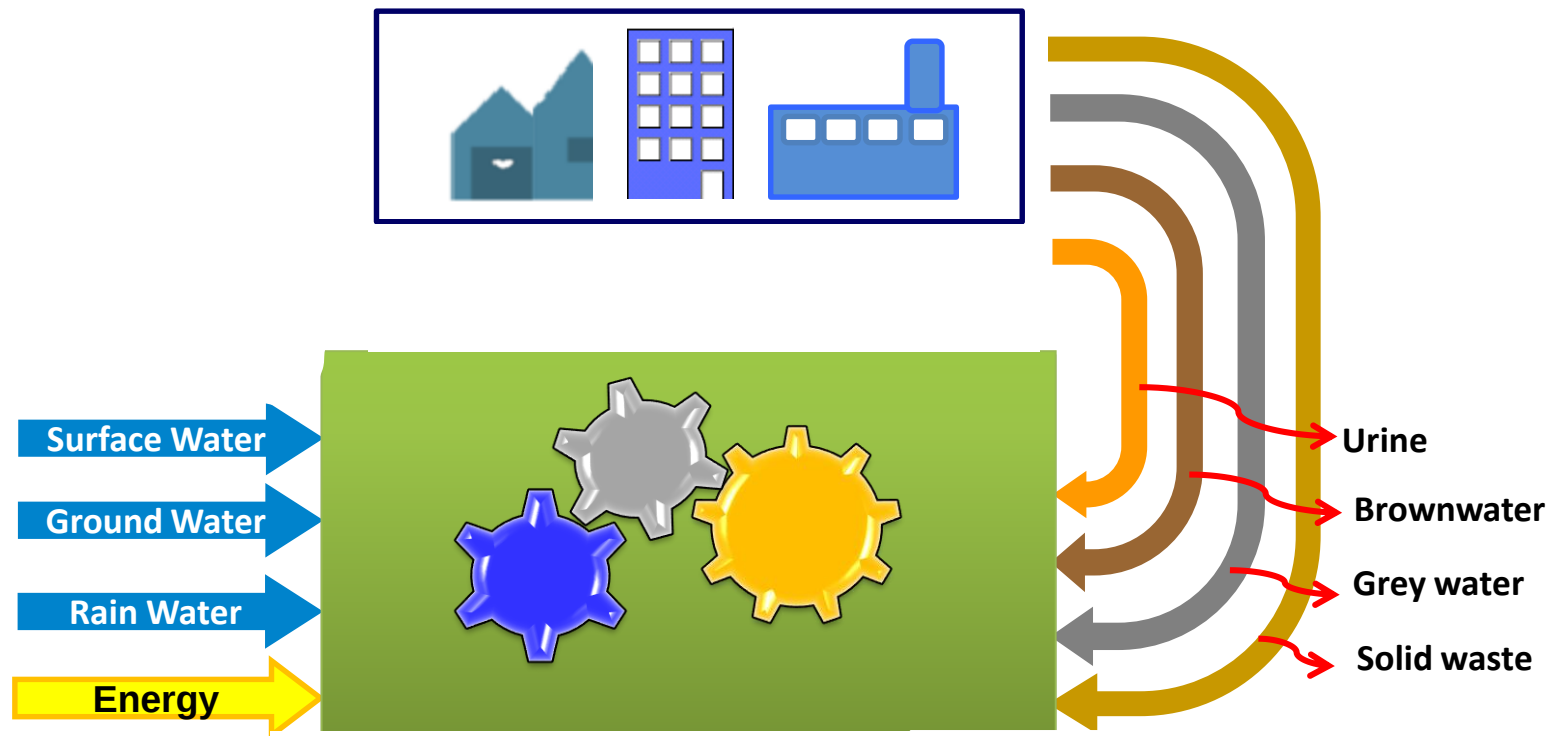


Nutrient Recovery



Heat Recovery

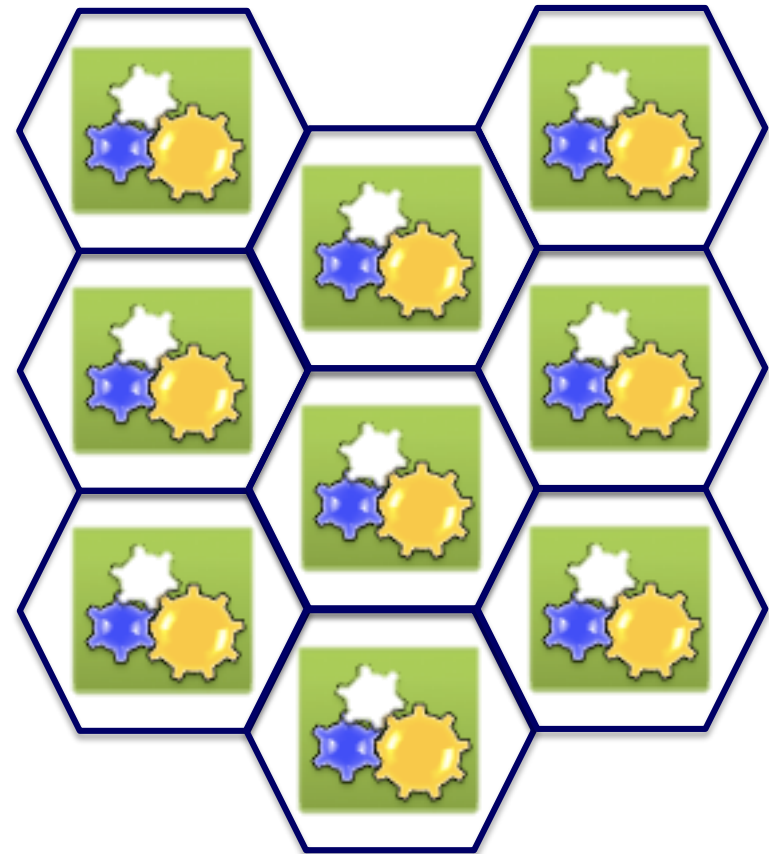
Change in perspectives leads to new thinking...that makes us more resilient



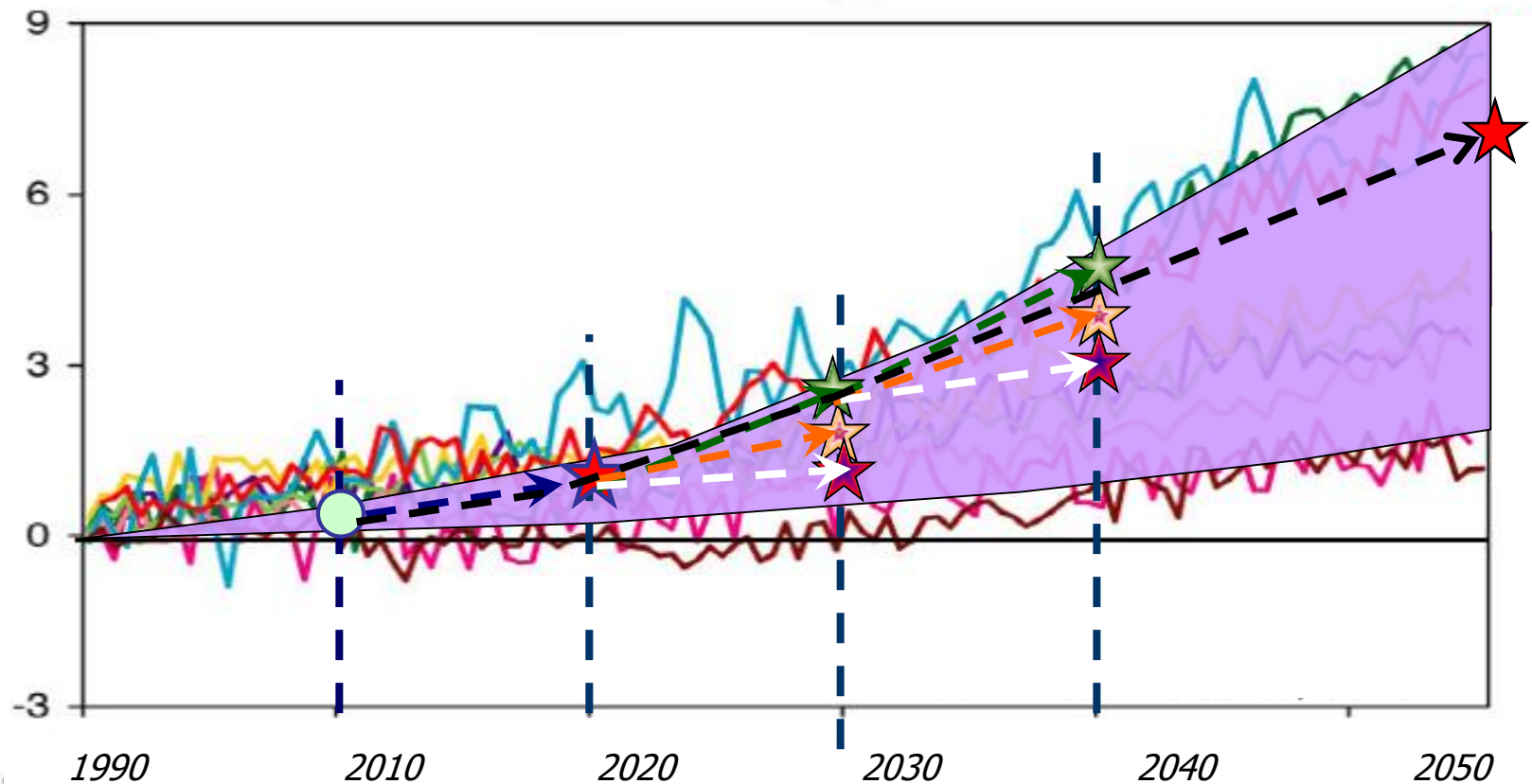
These perspectives lead to a more decentralized type of thinking?

Decentralization well suited for:

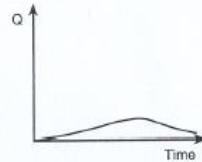
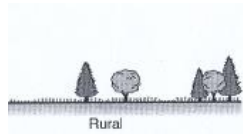
- Energy recovery (heat recovered and used close to source)
- Minimizing energy consumption (for moving water)
- Source separation (to maximize nutrient recovery)
- Adjusted growth (to deal with rapid growing cities)
- Increased resiliency (dampens the propagation of failures)



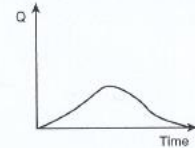
We need to be adaptive in an uncertain world



Modular systems gives you adaptive capacity



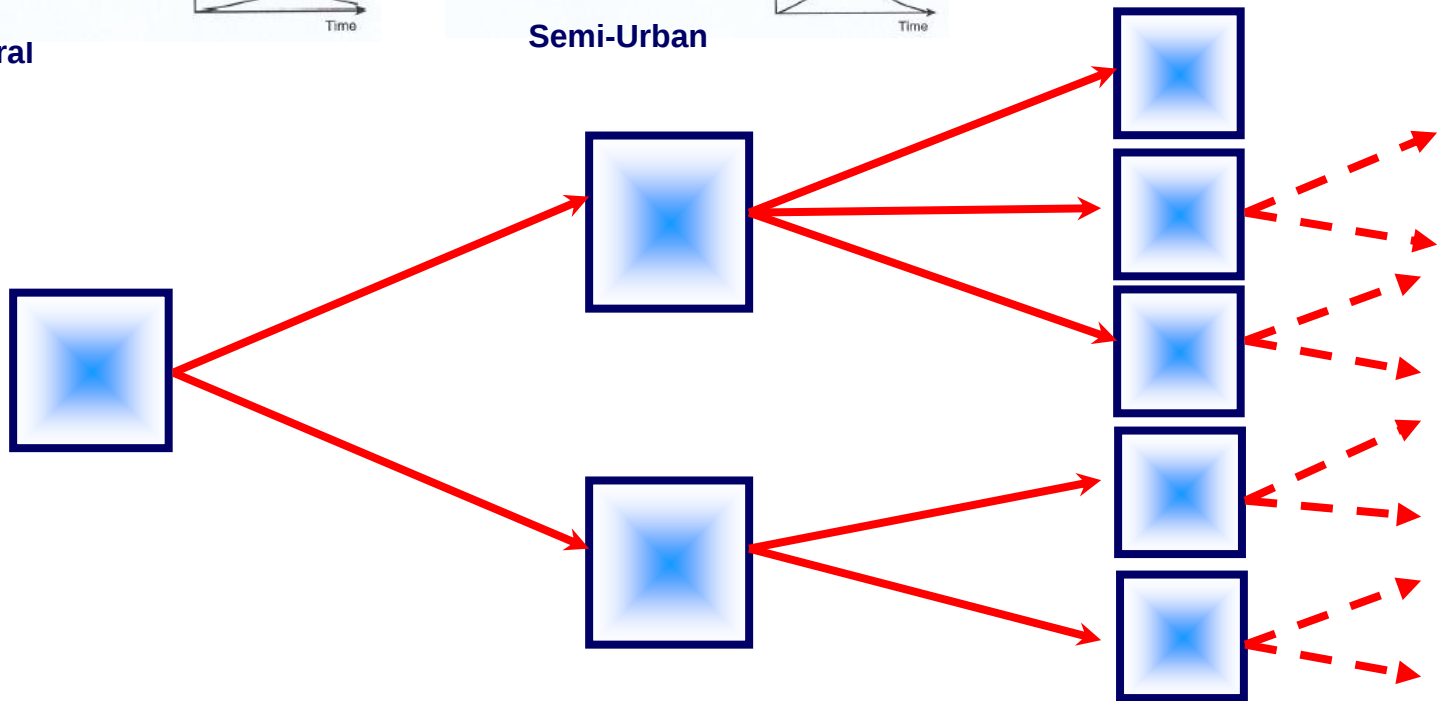
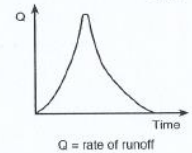
Rural



Semi-Urban

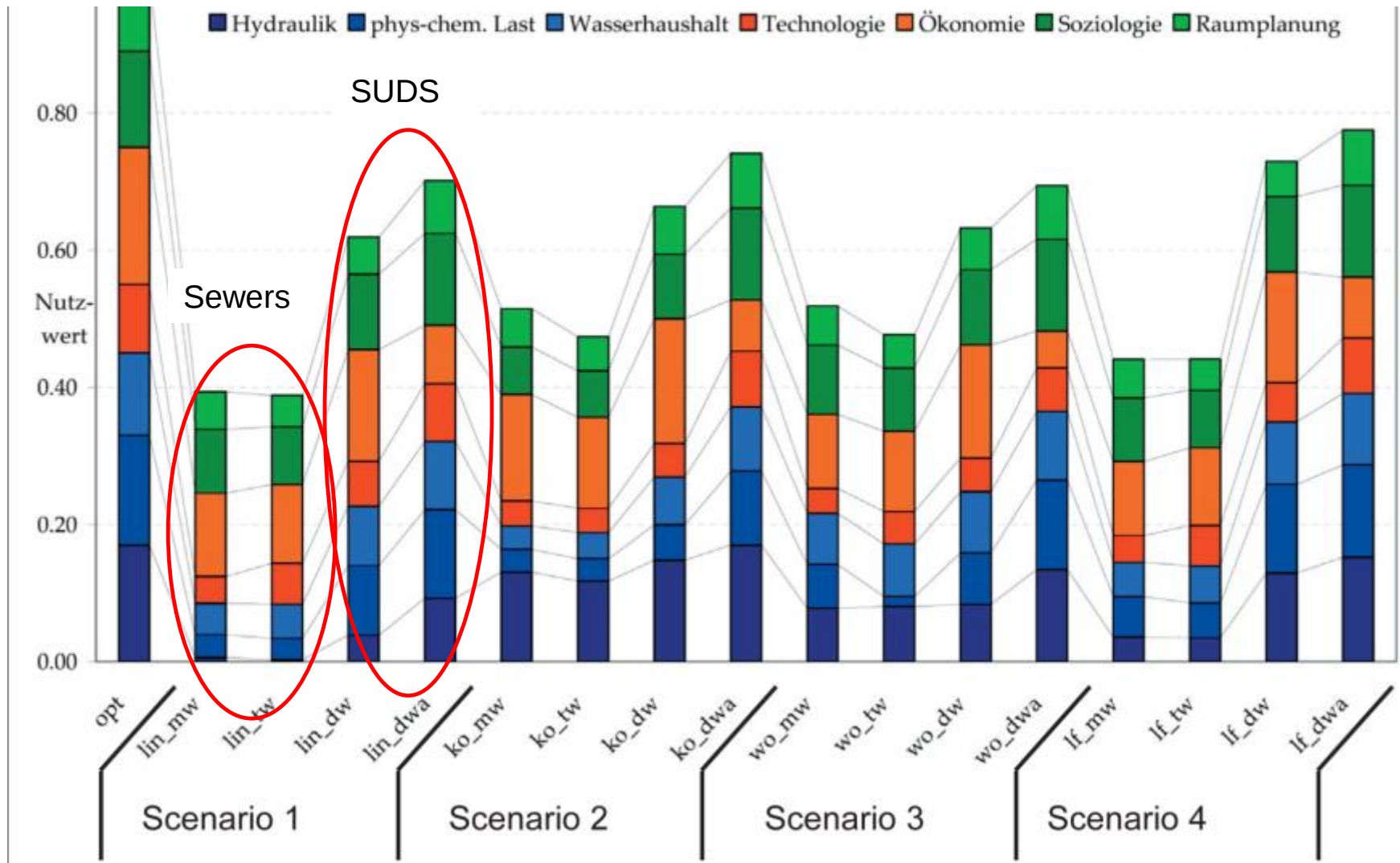


Urban



Case Study: Kupferzell Germany

SUDS provide higher flexibility than sewers



Choices Before Us

Stay in Lane -
Business as
Usual

Try Harder,
Spend More for
Traditional Sys

Truly Different
Approach



Questions for Discussion

1. What research and education projects are needed to help water utilities obtain the climate and sea level information they need to manage water supplies and make more “climate smart” decisions?
2. How can FCI work with WCA members to bridge the gap between researchers, innovators and the water sector in order to maximize the uptake of research and innovation to influence practice and policy.....describe possible mechanisms to operationalize this?
3. What critical needs and problems are you facing that the LBR support can help to develop solutions for AND support the continuing evolution of WCA?
4. What benefits can be accrued in relation to climate resiliency by changing our perspectives of urban water management (i.e. productive use, integration, beneficiation)?