Institutional Issues for One Water Management

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Residents of urban areas are demanding a whole-society water approach, in which water systems are designed and managed so that all the needs of the urban landscape are addressed. At the same time, looming capital investments required to refurbish aging infrastructure and upgrade existing infrastructure are putting financial strain on utilities and local government institutions. In response, urban water managers and policymakers around the world are struggling to transition to a sustainable and integrated urban water management paradigm. This paradigm, termed "One Water," integrates planning and management of drinking water, wastewater, and stormwater systems to minimize environmental impacts and maximize potential social and economic benefits.

The Water Research Foundation (WRF), Water Environment Research Foundation (WERF), and Water Research Australia (WaterRA) collaboratively funded project #4487, "Institutional Issues for One Water Management," to define and examine how institutions have worked around the barriers to achieve integrated water management programs.

Institutional Challenges

Aspects of the One Water approach have largely been driven by regulatory activities and resource constraints, but an overall systems approach is still missing. This project found that institutional efforts to expand the One Water concept across all aspects of the urban water cycle have been very limited. Most case studies reveal that water institutions are primarily engaged with the delivery of basic water, sanitation, or stormwater services. Some are beginning to consider waterway protections, but even fewer take a whole water cycle approach.

Institutional challenges to One Water management exist at the strategic, tactical, and operational levels. These challenges limit the ability of organizations to collaborate with each other vertically and horizontally, to integrate activities within their own organizations, and to move forward with new systems that optimize green-grey infrastructure and resource recovery. This lack of a unifying culture ensures reliance on existing institutional silos and perpetuates inertia in the water industry.

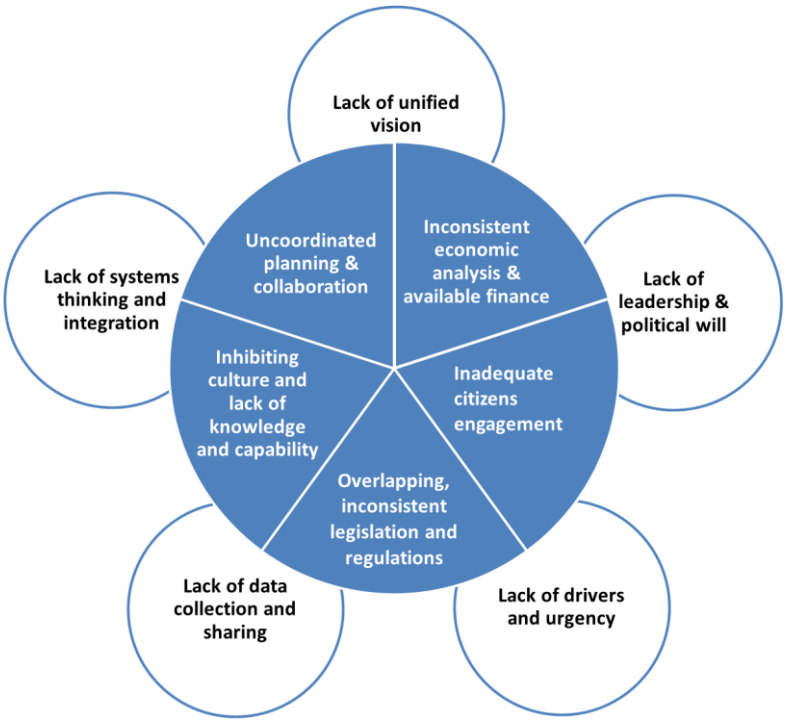
The research team grouped the institutional challenges to One Water management into five broad categories:

- Uncoordinated planning and collaboration
- Overlapping, inconsistent, and prescriptive legislation and regulations
- An absence of holistic and consistent economic analysis frameworks and hence project finance

- Inflexible organizational and professional cultures and a lack of systems knowledge and capacity
- Uncoordinated and uninspiring citizen engagement

Further analysis of these challenges revealed some underlying factors that could impede the transition to One Water management:

- Absence of an agreed unifying vision
- Lack of leadership and political will due to short-term political agendas
- No clear drivers or sense of urgency
- Poor systems thinking and integration between water systems, other utilities, and urban planners
- Uncoordinated methods and processes for data collection, information sharing, and messaging

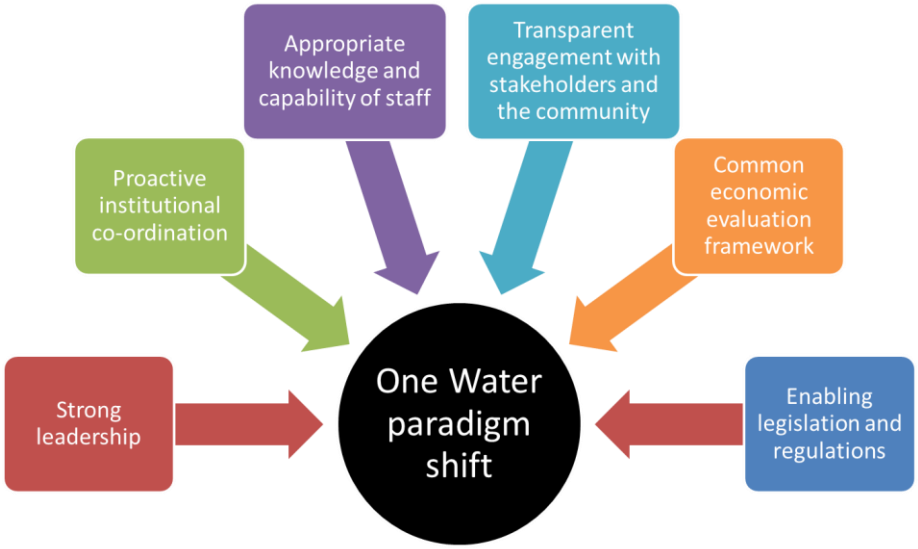


Transitioning to a One Water Approach

This project gathered 28 case studies from the United States, Australia, and the United Kingdom. The table below lists high level drivers that the One Water paradigm seeks to achieve (these could also be described as needs or goals). The table also shows the challenges that are often encountered when trying to reach these goals. Case study participants are placed on the chart depending on the goals they pursued and the challenges they faced.

Table 1. Snapshot locations as they relate to the challenges and drivers

	Challenges				
High Level Drivers:	Planning & Coordination	Legislation, Policy, & Regulations	Economics & Finance	Knowledge, Culture, & Capacity	Engagement
Water Supply-demand management	Victoria state Warrnambool Los Angeles Pinellas County	Ku-ring-gai		Melbourne	Albuquerque
Stormwater and flood management	Los Angeles		Santa Monica Seattle – C Regional stormwater	Melbourne	Michigan Philadelphia
Wastewater management, Recycling and resource recovery	Cincinnati Los Angeles Pittsburgh region	Northern Kentucky	Marsden Park East Bay MUD	Melbourne Minnesota	Rebranding utilities
Green infrastructure (WSUD, SUDS)	Victoria state Cincinnati Los Angeles	Battery Park Northern Kentucky			Philadelphia
Water and energy efficiency		Battery Park San Francisco Seattle – B	East Bay MUD	Melbourne	
Environment and waterways protection	Victoria state Los Angeles Seattle – A Pittsburgh region		Austin Santa Monica Seattle – C	Melbourne Scottish Water	Michigan Philadelphia



Strong leadership: It is evident from the case studies that strong leadership and vision from senior positions is key to driving a One Water approach to service delivery. At a political level, public funds must be made available to incentivize the transition to One Water management. At the institutional level, executives and boards must drive implementation of One Water strategies and address institutional capacity requirements.

Proactive institutional coordination: Public organizations must pursue long-term, mutually-beneficial relationships with a broad range of agencies, including the private sector. This will foster the collaboration and data-sharing needed for development projects to be aligned with the One Water strategy and implemented in a coordinated fashion. This coordination should be driven at both the state and city levels.

Changing organizational culture: It is useful to identify what One Water "success" would look like in an organization and then work backwards to identify the steps necessary to build professional capacity. Getting buy-in from senior level executives is important so that they "walk the walk" and support One Water initiatives. To incorporate the One Water approach into everyday practices and thinking, it may be necessary to set up a dedicated team to implement the strategy and manage related projects.

Transparent stakeholder engagement: Involving both the private and public sectors is key to confirm the vision and support the implementation of the strategy. This could include dedicated public involvement and staff education; customer awareness, satisfaction, and values surveys; and online public engagement tools. Use of clear branding and vocabulary helps convey the benefits provided by utilities (e.g., from "treated wastewater" to "clean water"). This fosters worthwhile conversation with customers, stakeholders and policy makers. Early consultation with these parties avoids confusion and can often aid acceptance of required rate increases, fees, or costs.

Consider economic impacts: Considering One Water management approaches in urban planning decision-making and investment would ensure that economic, environmental, and social costs and benefits are included in the analysis. Financial constraints have been cited as a challenge to innovation, however, as illustrated by some of the case studies, a number of strategies have been deployed to ensure that the business case stacks up. In some cases, public capital funding has been allocated to key bulk infrastructure schemes to create an enabling infrastructural environment, which encourages the private sector to invest in decentralized infrastructure. New pathways for cost-effective revenue generation should be explored, as they provide multiple benefits to customers and could cross-subsidize the creation of livability benefits. Stormwater improvements can be funded through separate stormwater utilities or segregated funding mechanisms. Subsidies for on-site treatment and use could be an incentive for decentralized systems, which relieves the need for expensive network upgrades.

Enabling legislation and regulations: Regulations that encourage integrated water management are rare, and legislation that is consistent across government agencies is even rarer. Many of the case studies showcase local government leadership through the enactment of ordinances or guidelines to encourage or require One Water approaches. A streamlined permitting process (e.g., for non-potable recycling) makes the compliance processes for design, construction and operation of these schemes more attractive to operators and owners.

To support planners and policymakers, this project produced a Framework for Transitioning to a One Water approach, which outlines the actions required to begin your transition if you are at the knowledge, planning, or implementation phases (WERF web link to be confirmed).

Comment [PM1]: This will depend on whether WERF have uploaded the final report by the time this article goes out.

Acknowledgements

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