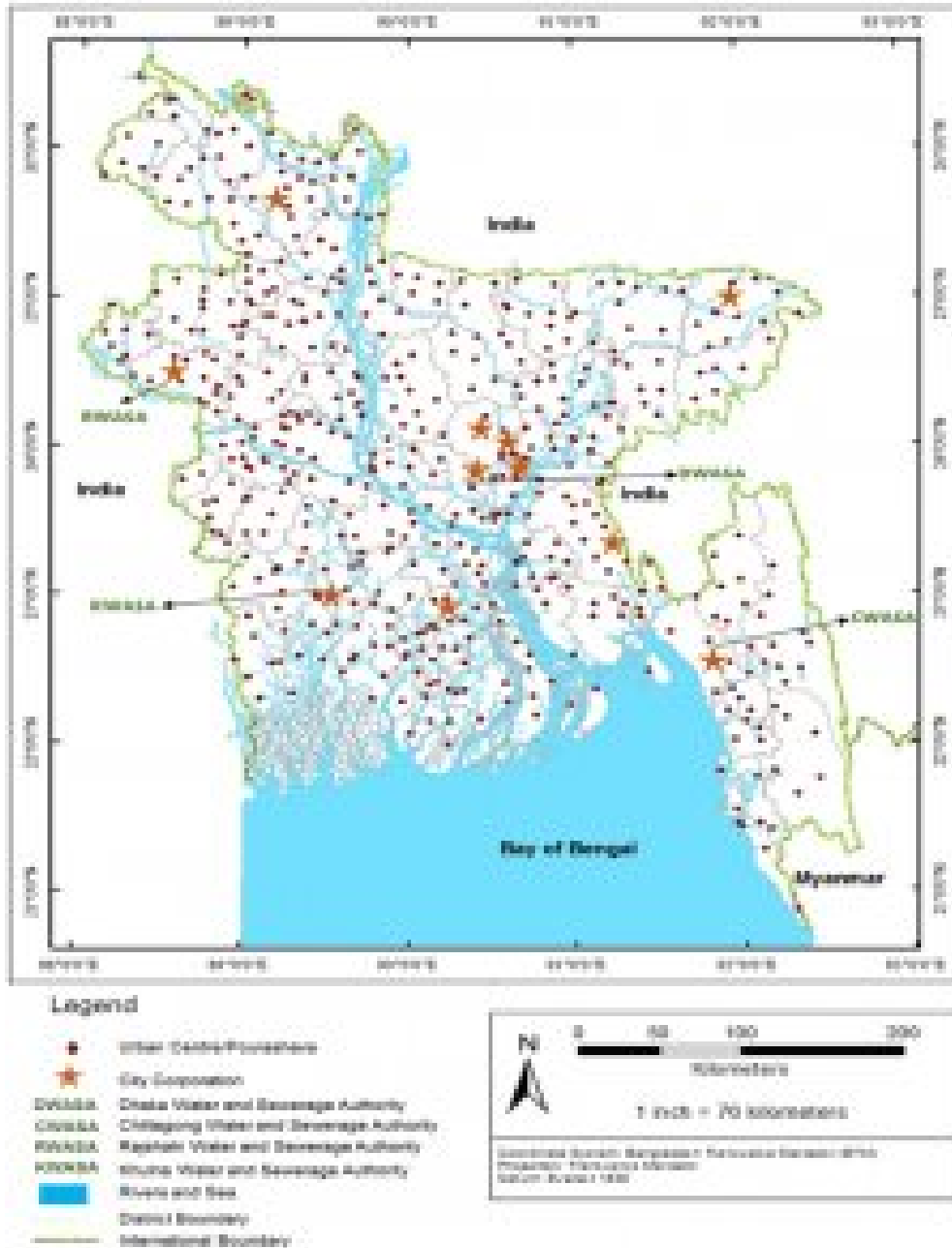


Tahmina Yasmin, Dr Megan Farrelly, and Dr Briony Rogers, Monash University, Melbourne, Australia

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In the Global South (GS) mega-urbanisation is the new normal. For the first time in history more people are living in urban areas than rural areas and many cities are facing challenges relating to the provision of urban utility services, such as water and sanitation services. Bangladesh with its estimated total urban population of 38 million, including 7 million living in informal settings, is no exception.

Although Bangladesh has made progress towards achieving the Sustainable Development Goals¹, questions remain about whether its progress in increasing access to water and sanitation services will be maintained and what levels of (adaptive) capacity have been developed to deal with increasingly complex challenges associated with urban water systems.



Existing water and sewerage management authorities in Bangladesh (map is produced by the author)

Conceptual framings

This paper aims to address these questions by examining the evolution and key shifts within

urban water governance in Bangladesh using a multi-level perspective (MLP) framework.² The MLP comprises of three analytical scales in a nested hierarchy: landscape, regime, and niche. Each scale represents a heuristic used to understand the diversity in actors and institutions that are connected through different roles, times and space and that collectively define or redefine transformation processes.³

Niches refer to the 'protected spaces' where individual actors, alternative technologies and local practices that deviate from the status quo manifest themselves as new ideas, initiatives or innovative techniques. The 'regimes' are typically more prevalent and stable, consisting of dominant, rigid patterns of institutions, physical and material infrastructures, routines, actor-networks, power relationships and regulations.⁴ The regime structure guides decision-making and individual actor behaviours to perform economic and social activities, which are interrelated with niches. Finally, the 'landscape' represents broad societal, climatic, economic and political trends, among others. Change at the landscape scale is relatively slow, with natural disasters being an exception.⁵

Methods

In order to understand the sustainability and (adaptive) capacity of Bangladesh's urban water system we conducted an in-depth analysis of dominant governance patterns over time. We examined five governance periods between the establishment of formal urban water systems in 1757 and 2016 to understand each period's key governance development. Additionally, we also looked into the gaps and lessons learned from deploying diverse governance strategies and approaches for guiding urban water sustainability transformations in Bangladesh.

The MLP framework was used to guide the structure of questions, while the oral history data collection technique was used for conducting face-to-face interviews. In addition, extensive secondary documentary and media analysis was undertaken alongside the seventeen oral histories. Media content analysis of primarily newspaper articles (dated from 1878 to 2016) assisted with capturing insights and reflections on key events, which ultimately helped frame the temporal discourse.

The articles were arranged chronologically to generate a timeline of key urban water developments within Bangladesh's water sector and articles were reviewed to identify key actors, management approaches and emerging technologies related to urban water development.

Drawing on the conceptual framing of the MLP, the analysis of primary data focused on institutional changes over time, technological advancements, key stakeholders and processes contributing to changes, evidence of network developments, description of collaborative initiatives, general public opinion, priorities, visions and goals, political motivations and external influences.

The data analysis was completed over two phases. The first phase established a chronology of water resource developments focused on urban spaces to identify, distinct time-periods that were based on dominant governance approaches within the evolving socio-political systems. The second analysis phase examined each distinct time-period to identify the landscape pressures, explain how the regime changed in response to pressures, and how these changes provided a platform (or otherwise) for niche development.

The objective of looking at multiple scale interactions was to capture the overall patterns of change and urban development pathways, as well as to examine the role of actors and institutions within the regime and niche development.

Results

Analysing historical and contemporary water resources management in Bangladesh identified five major governance shifts in urban water between 1757 and 2016 (Table 1). These periods unfolded against a backdrop of three major socio-political contexts, which also shifted and shaped water resource management.

| Periods of development | System Initiation and Development Era (1757-1947) | Planning for Water Resource Development Era (1948-1971) | Sectoral Interconnection and Joint Initiatives (1972-1992) | Introducing (RWS) & (MRO) (1994-2004) | Complexity and Sustainability (2004-2016) |
|-------------------------------------|---|--|--|--|---|
| SOCIO-POLITICAL CONTEXT | BRITISH COLONY | PART OF PAKISTAN | BANGLADESH | | |
| SYSTEM LEVEL | LANDSCAPE | Public health | | | |
| | | Increasing urban population | | | |
| | | Poverty reduction | | | |
| | | Heavier economic pressure | | | |
| | | Environmentalism | | | |
| | | Adaptation strategies | | | |
| | | Sustainable Development Goals | | | |
| REGIME VISION AND APPROACHES | <ul style="list-style-type: none"> - Engineering based solution - Sector specific interventions | <ul style="list-style-type: none"> - Engineering-dominated - International multi-lateral organizations assistance - Long-term planning - Multipurpose projects aiming towards integrating water and energy | <ul style="list-style-type: none"> - Rehabilitation and economic stability - Sectoral interconnections - Joint management initiatives | <ul style="list-style-type: none"> - Economic growth - Environmental stability - Integrated Water Resource Management - Participatory learning | <ul style="list-style-type: none"> - Develop sustainable and adaptive pathways to climate change and disasters and focus on the sustainable use of natural resources. - Mainstreaming adaptation in national planning and implementation guidelines - Establishing Government and NGOs partnership for development projects - Industry partnerships - Three strategic time-frames for development project (short-term, medium-term, and long-term) |

Table 1: Landscape pressures and regime responses in managing Bangladesh's urban water system from 1757 to 2016

The governance approaches in each of the five periods reveal distinct characteristics and interlinkages across the landscape, regime and niche scales as denoted by the MLP. For example, the analysis identified increasing niche (innovation or new ideas) activities as each time-period progressed and (re)defined the regime transformation.

It also showed that landscape pressures at system level related to public health crises, such as cholera, led to windows of opportunity for regime (re)development and ultimately the development of water supply and sanitation niches. Likewise, natural hazards (e.g. flooding) led to the development of flood control/drainage initiatives.

Overall, the system level landscape pressures directed regime transformation towards

mirroring European water management systems (state-led engineering-based urban water systems), while in later periods the management systems were shaped by international development organizations and international frameworks (i.e IWRM; MDGs & SDGs). As the regime continues to (re)define its responses to landscape pressures these pressures have revealed windows of opportunity for varied niche development.

Conclusion

Analyzing more than 250 years of governance improved our understanding of the processes that have shaped the contemporary water governance regime in Bangladesh. These change processes have contributed to the development of governance approaches that can support adaptive capacities within the system including long-term planning, participatory and bottom-up learning, multi-level interactions and diverse actor engagements, all of which are currently visible in different water related activities.

Given the scale at which this research was undertaken, it remains unclear how these processes are individually, or collectively, guiding the pathway to sustainability transformation, however. As mentioned earlier, niche activities are currently focusing on small scale and local contexts, yet there remains ambiguity about how these are contributing towards a sustainability transformation of the urban water system in Bangladesh.

Nevertheless, this study reveals how the Bangladesh urban water sector has exhibited scope for adopting a new governance model based on adaptive capacity. A more nuanced and detailed understanding of the contemporary ingredients for change is now needed to support a sustainability transformation within Bangladesh's water sector. It would also be valuable to consider the opportunities and constraints for emerging secondary cities in relation to advancing more sustainable urban water practices as an additional further research direction.

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Yasmin is a doctoral researcher within the School of Social Sciences – Human Geography at Monash University, Melbourne, Australia (email: tahmina.yasmin@monash.edu).

M.A. Farrelly is an associate professor within the School of Social Sciences – Human Geography at Monash University, Melbourne, Australia. She is leading various projects in urban water governance within the CRC Water Sensitive Cities and acting as a chair for International Working Group for Water Sensitive Urban Design. (email: megan.farrelly@monash.edu).

B.C. Rogers is a senior lecturer within School of Social Sciences at Monash University, Melbourne, Australia. She is also Associate Director, Monash Water Sensitive Cities and Project Leader, WSC Visions and Transition Strategies (IRP1), CRC for Water Sensitive Cities. (email: briony.rogers@monash.edu).

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