

# Editorial: Governing Hybrid Urban Infrastructure - The Co-Production of Decentralized, Nature-Based and Localized Solutions

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*Submitted to Journal:*  
Frontiers in Sustainable Cities

*Specialty Section:*  
Innovation and Governance

*Article type:*  
Editorial Article

*Manuscript ID:*  
1185354

*Received on:*  
13 Mar 2023

*Journal website link:*  
[www.frontiersin.org](http://www.frontiersin.org)

Review

### *Conflict of interest statement*

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest

### *Author contribution statement*

We have written the editorial in collaboration

### *Keywords*

hybridized governance, decentralized sustainability, participatory integration, just solutions, Innovative governance

### *Contribution to the field*

In this editorial we frame the research theme and find commonalities between the papers. This Research Topic aims to enhance our understanding of the implementation and governance of sustainability agendas on the ground in various contexts because the governance of such decentralized solutions is often characterised by ambiguity as to who should manage and maintain them, as well as by a lack of skills on how to successfully navigate hybrid governance configurations. A common thread running through all papers is that of 'participatory integration'; that is, an exploration of the extent to which processes and/or solutions are pursuing or achieving just and democratic outcomes and how different values and rationalities play out in the governance of hybridized solutions. The papers in this research topic point to the dual considerations of technical and governance aspects often found within the hybridization of conventional infrastructures with alternative solutions at different scales. Within these considerations, the values informing the operation and governance of infrastructures are key factors in the extent to which outcomes of hybridization are just and sustainable.

This Research Topic aims to enhance our understanding of the implementation and governance of sustainability agendas on the ground in various contexts – and specifically those pertaining to hybridized water management and green space. With the progression of climate change impacts and other sustainability challenges, there is general agreement amongst practitioners on the need to reconsider the trajectory of urban and regional water systems towards more adaptive, sustainable configurations that build on decentralised, localised, water sensitive or nature-based solutions to produce hybrid infrastructure landscapes. However, the governance of these decentralized solutions is often characterised by ambiguity as to who should manage and maintain them, as well as by a lack of skills on how to successfully navigate hybrid governance configurations.

While much research focuses on the technical feasibility of decentralized, nature-based and localized solutions worldwide, few studies engage with the lived realities of the governance of these and their hybridization with larger urban infrastructures. The papers in this special issue all give insights to the implementation and hybridized governance of such decentralized sustainability actions across different contexts and scales. Cutts *et al.* (2022) address the relationship between ecosystem-centred governance modes and environmental justice in their paper on governing the catchment-scale ecosystems of a waterway on the US-Canadian border, while Tippet *et al.* (2022) introduce the notion of hybrid rationalities as a complement to existing scholarship on hybrid governance and infrastructure in their article on landscape transformation in the Mersey Belt in the UK. Other papers consider governance and participation arrangements more broadly; e.g. the governance of groundwater in the water-stressed city of Cape Town (Faragher & Carden, 2023); and examinations of the implementation and governance of local-scale nature-based solutions in the Netherlands (Kuitert & Buuren, 2022), Copenhagen (Jørgensen *et al.*, 2022) and Nairobi and Dar es Salaam (Diep *et al.*, 2022) respectively. Lastly, Moretto *et al.* (2023) provide a cross-city comparative study of the co-production of water services in Dar es Salaam, Bolivia, Ethiopia and Vietnam, whilst Remme & Haarstad (2022) consider the notion of participation in hybridized infrastructure.

A common thread running through all papers is that of ‘participatory integration’; that is, an exploration of the extent to which processes and/or solutions are pursuing or achieving just and democratic outcomes and how different values and rationalities play out in the governance of hybridized solutions. The review paper by Remme & Haarstad (2022) brings forward the idea of commoning to rethink and increase the democratic and transformative potential of Nature-based solutions. Kuitert & Buuren (2022) explore approaches to integration of different values in NbS projects, while Diep *et al.* (2022) zero-in on community perceptions of NbS designs, concluding that communities’ own valuation and involvement in NbS is crucial especially in contexts with a justice-deficit such as in post-colonial cities. Tippet *et al.* (2022) highlight the complexity that accompanies the hybridization by illustrating how imaginaries can be used to create environmental soft spaces and how the roles and rationalities of different stakeholders have become blurred within hybrid governance configurations. Jørgensen *et al.* (2022) show that while NbS projects for climate action might seem local, they are often embedded in larger urban visions and strategies for better or for worse. Additionally, Cutts *et al.* (2022) show how participation is often only defined institutionally (state, market and civil society) rather than by racial and socio-economic inclusivity and propose measures to cultivate environmental justice leadership in ecosystem-centered governance arrangements. Moretto *et al.* (2023) track the evolution of coproduced practices in water and service delivery strategies and, like Tippet *et al.* (2022), also find that actor categories are often blurred and that the coproduction of water services is often a process of both technical and governance hybridization in practice. Finally, the policy and practice review provided by Faragher &

Carden (2023) highlights the need for significant governance reform to support an emergent hybrid groundwater system that contributes to a resilient urban water system.

The papers in this research topic point to the dual considerations of technical and governance aspects often found within the hybridization of conventional infrastructures with alternative solutions at different scales. Within these considerations, the values informing the operation and governance of infrastructures are key factors in the extent to which outcomes of hybridization are just and sustainable. Explorations of innovative governance solutions are needed to enable collaboration between practitioners and other stakeholders, especially local communities. This is required in order to optimize the use of resources, enhance multifunctionality and adaptation to local contexts but also to understand social and environmental justice as well as political implications. With its theoretical as well as empirical work on the realities, roles, and agendas of different institutions and actors such as public service providers, civil society and end-users in policy planning, design, operation, and management of hybrid systems, this Research Topic therefore provides insights into the conditions for, and opportunities of, enabling successful hybrid system configurations as well as some of the constraints thereof.

In review