# Editorial

## Actors and adaptive planning in water management

Butsch, Carsten; Hermans, Leon M.; Farrelly, Megan A.; Zandvoort, Mark

**DOI**
10.3389/frwa.2022.991338

**Publication date**
2022

**Document Version**
Final published version

**Published in**
Frontiers in Water

**Citation (APA)**
Butsch, C., Hermans, L. M., Farrelly, M. A., & Zandvoort, M. (2022). Editorial: Actors and adaptive planning in water management. *Frontiers in Water*, *4*, Article 991338. https://doi.org/10.3389/frwa.2022.991338

frontiers | Frontiers in Water

TYPE Editorial
PUBLISHED 18 August 2022
DOI 10.3389/frwa.2022.991338



OPEN ACCESS

EDITED AND REVIEWED BY
Scott Cunningham,
University of Strathclyde,
United Kingdom

*CORRESPONDENCE
Carsten Butsch
butschc@uni-koeln.de

SPECIALTY SECTION
This article was submitted to Water and Human Systems, a section of the journal Frontiers in Water

RECEIVED 11 July 2022
ACCEPTED 21 July 2022
PUBLISHED 18 August 2022

CITATION
Butsch C, Hermans LM, Farrelly MA and Zandvoort M (2022) Editorial: Actors and adaptive planning in water management. *Front. Water* 4:991338. doi: 10.3389/frwa.2022.991338



# Editorial: Actors and adaptive planning in water management

Carsten Butsch[1,2]*, Leon M. Hermans[3,4], Megan A. Farrelly[5] and Mark Zandvoort[6]

[1]Department for Geosciences, Institute for Geography, University of Cologne, Cologne, Germany, [2]Department of Geography, University of Bonn, Bonn, Germany, [3]Multi-Actor Systems Department, Delft University of Technology, Delft, Netherlands, [4]Land and Water Management Department, IHE Delft Institute for Water Education, Delft, Netherlands, [5]Faculty of Arts, School of Social Sciences, Human Geography, Monash University, Clayton, VIC, Australia, [6]Landscape Architecture and Spatial Planning Group, Wageningen University, Wageningen, Netherlands

KEYWORDS

**water management, adaptive planning, governance, pathways, actors**

Editorial on the Research Topic
Actors and adaptive planning in water management

The central idea of this Research Topic is to explore actors' agency in adaptive water planning. We seek to address three shortfalls that have previously contributed to a failure of planning processes: (i) planners' tendency to focus on the technical aspects of water management, ignoring the practices and different kinds of knowledge of water users, (ii) planning processes are often understood as human interventions transforming environments or technical systems from a given state to a desired state in a rational, linear process that is fully controllable and manageable (Furlong et al., 2016), an understanding of planning that is deeply rooted in the modern, anthropocentric worldview (Franco-Torres, 2021); (iii) planners face several difficulties when engaging with actors to match their ideas with the task to find workable, adequate and financially sound technical solutions for the near and far future.

The advancement of climate change science made clear that nature is not static but responds to anthropogenic influences. Combined with a paradigm shift from government to governance which led to a demand to accommodate the uncertain future in water system design choices with, not despite actors. With regards to water, several authors stressed the reciprocal relationship of water-infrastructure and water-related practices (Bakker, 2002; Sivapalan et al., 2012; Budds et al., 2014). This relationship calls for a non-static view on water and urges for a deepening of the understanding of water users' practices and the structural factors affecting them—which go well-beyond the infrastructure for water provision. Water managers, however, simultaneously need to offer system-based, technical solutions, adequately addressing a contested future (Zandvoort et al., 2019).

Adaptive planning approaches have (re-)emerged in order to address these earlier shortfalls and deal with a non-static, and hence much more difficult to predict future. Recent model-based work in this area was conducted on planning for climate change and for water management in delta-regions, which are highly affected by sea-level rise (Lempert and Groves, 2010; Haasnoot et al., 2013, 2018). Here, water infrastructure

planning takes place in a setting where external factors like sea-level rise cannot be controlled regionally and so impose uncertainty about the future. Thus, planning needs to be geared toward accommodating multiple futures with clear options of shifting between pathways when responding to different scenarios. Contestation, however, arises when planners adaptively plan without integrating actors' perspectives on future development and setting clear signpost to trigger deviating paths together (Zandvoort et al., 2017).

Yet, despite a growing recognition and attention for actors in adaptive planning, the majority of contemporary scholarship in the water domain continues to use (integrated) *technical* system perspectives. While acknowledging that actors and policy processes decisively influence the functioning of water systems, they do not adequately include the specific challenges arising from this influence into their calculation. A recent review by Werners et al. (2021) of pathways planning approaches showed a similar pattern; although there are some explicitly "multi-stakeholder" approaches, the majority of approaches falls in the "system"-domains. With this Research Topic, we hope to contribute to further close this gap.

The collated five articles address influences of various actors on water planning and management at very different scales ranging from individual users (Otaki et al.) *via* the local level (Versteeg et al.; Luft and Butsch) to the level of river basin planning and management (Almazán-Casali et al.; Srinivasan et al.). On the individual level, Otaki et al. focus on behavioral change of individual water users. Their study seeks to explore how to influence water consumption of end users through detailed and timely feedback, with the ultimate goal to sustainably change consumption practices. However, their intervention study was for various reasons only partially successful. This reinforces that designing effective feedback mechanisms remains a challenging, yet not impossible task, and that tools like this can be future building blocks of adaptive strategies for water management.

In the two papers working on the local level, Luft and Butsch and Versteeg et al. work with local communities and experts to develop adaptive pathways toward desirable futures. Versteeg et al. apply adaptive planning to increase the benefit of water-related development projects in Bangladesh. They use adaptive planning to prevent planning failures and the creation of "white elephants"—visible and costly malinvestments of official development aid. Luft and Butsch work with local communities and experts to design pathways toward a sustainable future for a periurban village in India. The village is located in a transition zone where different interests and pressures from various actors battle over the village's future development pathways. In this setting, adaptive planning works as a tool for communicating and balancing different interests. At the same time, this study also showcases the potential of adaptive planning for empowering marginalized groups when they are adequately represented during the planning process.

Almazán-Casali et al. and Srinivasan et al. work at the scale of the river basin. This necessitates the engagement of a broader suite of actors in planning processes to reflect the specific nature of water e.g., in upstream–downstream connections of actors, which makes planning a challenging task. Srinivasan et al. focus on the institutional mechanisms in polycentric water-governance organizations and how they respond to various types of external disturbances. Informed by resilience thinking they identify anticipatory resilience capabilities and adaptive capabilities in organizations in charge of river restoration. The institutions' capacities to adapt are the focus of their research. Likewise, Almazán-Casali et al. analyze how and why institutions succeed or fail in changing and adapting. They show how planners' framing of problems limits their capacity to react to new challenges for managing water bodies. Especially the orientation toward technological systems results in specific ways of reacting to crises, which creates path-dependencies and prevents the establishment of other adaptation strategies.

Together, the papers of this Research Topic not only show the potential for adaptive planning but also illustrate the limitations of the approach and the difficult, yet necessary, task for water planners and managers to involve actors. Without the necessary institutional and governance arrangements and with competent actors involved, adaptive planning will remain a technically limited approach to adapt with future challenges ahead. Yet, given the multiple crises we face and the uncertainties they produce, adaptive planning that does help to keep several—ideally sustainable—pathways into the future open, is a planning paradigm that fits the great transformations needed today.

## Author contributions

CB drafted the first version of the text. LH, MF, and MZ revised the text and added to the argumentation and also provided further literature. All authors contributed to the article and approved the submitted version.

## Conflict of interest

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.

## Publisher's note

# References


Bakker, K. (2002). From state to market? Water mercantilización in Spain. *Environ. Plan. A* 34, 767–790. doi: 10.1068/a3425

Budds, J., Linton, J., and Mcdonnell, R. (2014). The hydrosocial cycle. *Geoforum* 57, 167–169. doi: 10.1016/j.geoforum.2014.08.003

Franco-Torres, M. (2021). The path to the new urban water paradigm – from modernity to metamodernism. *Water Alternativ.* 14, 820–840. Available online at: https://www.water-alternatives.org/index.php/alldoc/articles/vol14/v14issue3/646-a14-3-9/file

Furlong, C., De Silva, S., Guthrie, L., and Considine, R. (2016). Developing a water infrastructure planning framework for the complex modern planning environment. *Utilities Policy* 38, 1–10. doi: 10.1016/j.jup.2015.11.002

Haasnoot, M., Kwakkel, J. H., Walker, W. E., and Ter Maat, J. (2013). Dynamic adaptive policy pathways: a method for crafting robust decisions for a deeply uncertain world. *Glob. Environ. Change* 23, 485–498. doi: 10.1016/j.gloenvcha.2012.12.006

Haasnoot, M., Van 'T Klooster, S., and Van Alphen, J. (2018). Designing a monitoring system to detect signals to adapt to uncertain climate change. *Glob. Environ. Change* 52, 273–285. doi: 10.1016/j.gloenvcha.2018.08.003

Lempert, R. J., and Groves, D. G. (2010). Identifying and evaluating robust adaptive policy responses to climate change for water management agencies in the American west. *Technol. Forecast. Soc. Change* 77, 960–974. doi: 10.1016/j.techfore.2010.04.007

Sivapalan, M., Savenije, H. H. G., and Blöschl, G. (2012). Socio-hydrology: a new science of people and water: invited commentary. *Hydrol. Proces.* 26, 1270–1276. doi: 10.1002/hyp.8426

Werners, S. E., Wise, R. M., Butler, J. R. A., Totin, E., and Vincent, K. (2021): Adaptation pathways: a review of approaches and a learning framework. *Environ. Sci. Policy* 116, 266–275. doi: 10.1016/j.envsci.2020.11.003

Zandvoort, M., Campos, I. S., Vizinho, A., Penha-Lopes, G., Lorencová, E. K., Van Der Brugge, R., et al. (2017): Adaptation pathways in planning for uncertain climate change: applications in Portugal, the Czech Republic and the Netherlands. *Environ. Sci. Pol.* 78, 18–26. doi: 10.1016/j.envsci.2017.08.017

Zandvoort, M., Van Der Brugge, R., Van Der Vlist, M. J., and Van Den Brink, A. (2019): Dealing with uncertainty in collaborative planning: developing adaptive strategies for the IJsselmeer. *J. Environ. Plan. Manag.* 62, 248–265. doi: 10.1080/09640568.2017.1409196