

Planning and Governing Nature-based Solutions in River Landscapes

1 Introduction and relevance

Across the world, many river landscapes have been substantially transformed to enhance navigation, to produce energy and to enable agricultural production and settlement in former floodplain areas (Posthumus et al., 2010). While these changes have led to generally more uniform flow conditions, constant water tables and sharply defined embankments, they have given rise to several unintended challenges for society, for instance exacerbating floods, diminishing water quality and biodiversity loss (Bunn and Arthington, 2002; Malmqvist and Rundle, 2002). Nature-based solutions (NBS), i.e. activities inspired and supported by ecosystem processes to fulfill human and societal needs (European Commission, 2015), are rapidly gaining popularity in science and policy as better alternatives for alleviating challenges and simultaneously creating co-benefits for people and nature today and in the future (Davis et al., 2018; European Commission, 2015; IUCN, 2012).

However, substantial knowledge gaps still exist, particularly on planning and implementation practices, effectiveness and monitoring, as well as on governance aspects (Albert et al., 2019). Practice examples are needed that showcase under which conditions NBS contribute to overcoming environmental, social and economic challenges and how such solutions can be successfully planned and realized in different ecological and societal contexts (Cohen-Shacham et al., 2016). Also, insights are required how collaborations between different disciplines, stakeholders and decision-makers can be established and fostered to develop successful governance and business models for implementation (Sekulova and Anguelovski, 2017).

2 Aim and key research questions

The aim of this Special Issue is to explore frontiers of planning and implementing NBS in river landscapes. The Special Issue will welcome contributions that provide insights and innovations regarding principles, barriers, and strategies for making NBS work in practice. This focus is thus well aligned with Ambio's scope concerning links between anthropogenic activities and the environment, and the journal's interest in multi- or interdisciplinary submissions with management and policy recommendations.

More specifically, we seek contributions to the special issue addressing four key research questions:

- I. What definitions, concepts and theories are applicable to NBS, or how do existing concepts and theories need to be further developed when applied to NBS? Contributions should also specify if and how approaches to planning and governing NBS differ from those that have been developed around related terms (e.g. adaptive management) and how approaches developed for NBS could contribute to research gaps in established scientific fields.
- II. How effective are NBS towards achieving ecological, social and economic outcomes? We are interested in ex-ante and ex-post evaluations of impacts of NBS, case studies and reviews of NBS benefits and costs, and comparisons between NBS and technical alternatives. Perspectives on distributional effects of NBS benefits across different actor groups are of particular interest as well.
- III. How can we plan, design and implement NBS, in particular in inter- and transdisciplinary efforts to identify, spatially design and implement NBS at local and regional scales? We welcome studies that show how different knowledge systems can be integrated in NBS planning processes, and how results from NBS analyses can be communicated and

mainstreamed to provide useful knowledge for relevant stakeholders. We are also interested in contributions that reflect which planning and governance instruments can hamper the establishment and performance of NBS. Finally, we would like to learn about unforeseen and unanticipated effects that may have arisen in the governance and planning process, and how they have been addressed.

- IV. Which governance and business models can facilitate NBS implementation in different governance contexts and actor constellations? For instance, studies are welcome that demonstrate strategies to ensure adequate financing and funding schemes, showcase how benefits and costs of NBS can be fairly distributed, and provide insight into approaches on how government, civil society and business actors can cooperate for NBS. In addition, we welcome articles focussing on issues related to transboundary river basin management, as well as discussing the implications for sustainable management at a time when economic and demographic pressures are affecting the world's rivers.

3 Planned implementation and time table

With the aim of exploring the frontiers of planning and implementing NBS in river landscapes, the Special Issue will comprise a curated set of innovative and high quality contributions. To do so, a selection process and independent peer review according to the standards and procedures of Ambio will be applied to ensure thematic fit and high scientific quality. Manuscripts will be prepared according to the [Submission Guidelines](#) and accepted papers will be celebrated and widely shared via social media. Cross-cutting insights from the completed Special Issue will be presented at various scientific and practice-related conferences, thereby further upscaling the dissemination.

The envisioned time schedule is as follows:

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| – Expression/confirmation of interest to submit (to be send to schmidt@umwelt.uni-hannover.de): | January 31, 2020 |
| – Manuscript submission deadline: | March 31, 2020 |
| – Online first publication: | Shortly after manuscript acceptance |
| – Special Issue completion and publication: | June, 2021 |

4 Outcomes and benefits to readers and potential spin-offs

The readership of Ambio, including researchers as well as decision-makers and citizens, will benefit from the Special Issue as a volume that will provide an overview some of the best available and most current scientific knowledge on NBS in river landscapes. This knowledge will be of relevance for further scientific studies, to advance policy, but also for planning and implementation in practice.

Potential spin-offs of the special issue will include various dissemination activities of the Special Issue results at meetings of scientific, policy and practice communities, and eventually the development of joint research proposals around the theme together with interested author teams.

Special issue editors and contacts

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