

SESSION DESCRIPTION

ID: S5

Beyond water: Understanding the role and co-benefits of NBS used for water management

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Abstract:

Nature-Based Solutions (NBS) have gained considerable popularity in the past years, as they are thought to be a reliable tool in the transition towards greener, more resilient and socially inclusive cities, while contributing to overturn the dominance of urban grey infrastructure (Lafortezza et al., 2018 and Castellar et al, 2021). According to Nika et al., (2020), NBS for water management have received a particularly high scholarly attention. NBS devoted to supporting urban water cycle include “units” dedicated to promoting water purification (e.g., constructed wetlands and vertical gardens), sustainable urban drainage (e.g., swale, ponds, rain

gardens) among others. Moreover, NBS constitute a promising approach for onsite water treatment and reuse in cities. Even though NBS for urban water management are considered as multifunctional and capable of providing plenty of “co-benefits” – i.e., benefits adjacent to their main purpose of purification, storage, preventing runoff, etc. (Castellar et al, 2021) – there is still no agreement on how to measure or estimate these co-benefits.

The ecosystem services concept and methods, developed and continuously improved by its active community, might provide useful tools to assess and measure such NBS' benefits and to contribute to a sustainable environmental management. In this regard, the ESP Working Group S5 – ES in Water Management has recently published a special issue on “Incorporating ecosystem services into water resource management” in *Environmental Management*, Springer. The issue highlights the important role of ecosystem services in integrated water resource management as A) flexible concept and a way to connect with stakeholders, B) useful tool to engage in participatory processes and capacity building, C) assessment method for reflecting the plurality of values of the environment, D) decision-support system for environmental analysis (Vollmer et al. 2022). Still, the uncertainty under which the decision-making process operates makes it challenging to accept and rely on the implementation of innovative concepts and methods, including nature-based solutions, less engineering and less centralised approaches. There is significant uncertainty brought about by assessment tools (incl. ES assessments) and decision-making support models (Hou et al. 2013). Furthermore, externalities such as the uncertainty of the socio-economic (incl. pandemic, war, geopolitical hegemonies, political priorities) and environmental (incl. climate change impacts, biodiversity loss) factors influence the prospects of the future, under which decisions should be taken.

Goals and objectives of the session:

In this session we aim to discuss how the ecosystem services or related concepts and their application can be operationalized to assess and estimate the co-benefits of NBS for water management and address the plurality of uncertainties under which the decision-making process operates. We invite innovative contributions on topics broadly relate to:

Evidence on how NBS for water management provide co-benefits and deliver ecosystem services beyond water management, such as climate mitigation, governance, social justice, air quality, urban regeneration among others.

Innovative methodologies to measure any of above-mentioned NBS' contributions or to address uncertainties in existing methodologies.

Case studies and approaches to address, assess and communicate uncertainties in water resource management through ecosystem services as a system analysis tool.

Planned output / Deliverables:

A draft conceptual framework of uncertainties related to the application of ES methods and NBS in IWRM.

In addition, depending on the session participants' interests and the quality of contributions, we could explore the possibility of a collaborative paper, based on the session conclusions and a metanalysis of evidence gathered therein.

Session format:

Standard session (presentations)

Voluntary contributions accepted:

Yes, I allow any abstract to be submitted to my session for review

Related to ESP Working Group/National Network:

[Sectoral Working Groups: SWG 5 – ES in Water management](#)