

# Land of Rivers

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## A level playing field for intervention planning in lowland rivers

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### Keynote abstract

Adapting a densely populated delta to the combined impacts of climate change and socioeconomic developments presents a major challenge for the sustaining multiple functions throughout the 21st century. The primary function of flood conveyance requires interventions to convey higher discharges from upstream, while taking the rising sea level into account that determines the downstream boundary condition. The ecological function requires a diverse natural wetland with suitable habitat for all taxonomic groups of species that are characteristic of the fluvial area, which contrasts with the agricultural function that thrives by dry meadows and agricultural fields. Lastly, navigation requires harbours and deep channels, and housing and industries also need additional space. The conflicting demands for space require evidence-based decisions making.

Decisions on the interventions require an overview of cost and benefits immediately after the implementation of the measure and a solid understanding of the temporal development regarding morphology, vegetation succession, biodiversity, and costs. An extensive overview of interventions and their development over time gives insight in the possibilities and limitations interventions. Therefore, the objective was to automate the intervention planning and evaluation to create an overview of costs and benefits of common landscaping measures within the context of increasing discharge and sea level rise. Seven intervention types were evaluated on their efficiency in flood hazard reduction, potential biodiversity, number of stakeholders as a proxy to governance complexity, and measure implementation cost. Clear trade-offs were revealed between evaluation parameters, but no single measure represented the optimal combination on all aspects. The multidimensional evaluation space provides the frame for the co-creation of adaption paths for future-proofing the delta and a level playing field of information and boundary conditions. This lecture calls for continued integration of scientific insights in decision making to maximize the accuracy of projections of landscape development.



### About the keynote speaker

Dr. Menno Straatsma works as an assistant professor on natural hazards and geocomputation at the Department of Physical Geography of Utrecht University. He focuses on the integration of remote sensing, geo-information systems and ecohydrological modelling.



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