

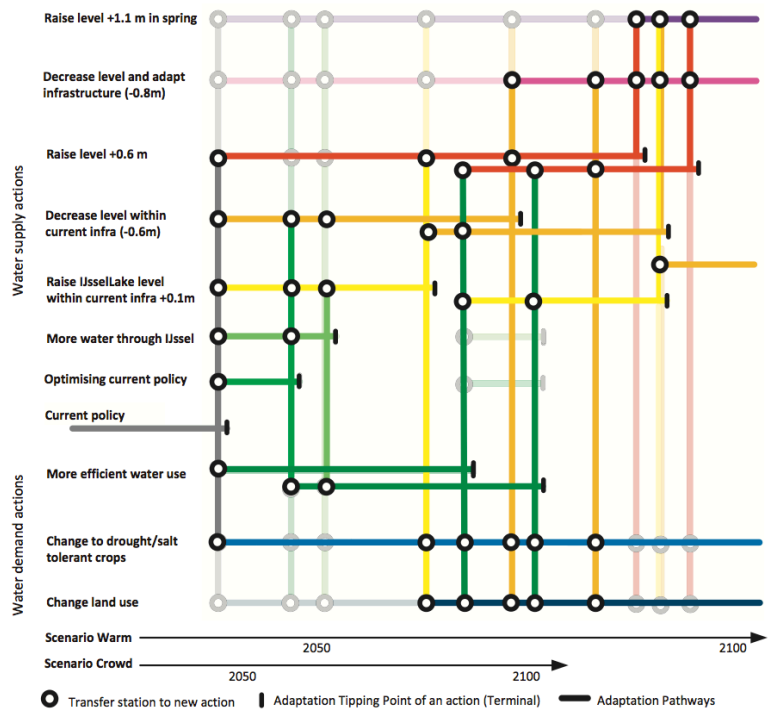
Exploratory modeling for designing adaptation pathways

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Abstract The Netherlands aims to proactively adapt its water system to climate change. The Dutch Delta Program, which ran from 2010 to 2015, resulted in the adoption of a new Delta Plan for protecting the Netherlands from both draughts and floods. At the hearth of the delta plan are adaptation pathways, which are pre-specified sequences of actions to be taken over time in response to how the future is actually unfolding. In this way, the Netherlands is adapting to climate change in a flexible manner. Instead of having a fixed plan that will only be effective in a limited number of futures, adaptation



pathways enable the Netherlands to adequately respond to a wide range of future climatological conditions and plausible socio-economic and land use changes. Designing adaptation pathways is a hard problem. Many of our existing models and model-based decision support approaches are ill suited for this task. A variety of model-based approaches such as robust decision making and decision scaling have in recent year been put forward to address this challenge. Common to these approaches is that they rely on an exploratory use of models. This presentation will introduce the basic ideas of exploratory modeling and demonstrate how these ideas can be used to support the design of adaptation pathways.

Jan Kwakkel is an associate professor in the faculty of Technology, Policy and Management of Delft University of Technology. His research focuses on the treatment of uncertainty in model-based decision support for long-term infrastructure planning. He has worked in various domains including energy, transport and water. Most of his recent work has been on climate adaptation in the water sector. He is also the lead developer of the exploratory modeling workbench, a Python open source library for exploratory modeling, scenario discovery, and (multi-objective) robust decision-making.

