# A policy hackathon for analysing impacts and solutions up to 20 metres sea-level rise

Marjolijn Haasnoot (1,2), Laurens Bouwer (1), Jaap Kwadijk (1,3)

(1) Deltares, Delft, Netherlands (marjolijn.haasnoot@deltares.nl), (2) Faculty of Technology, Policy and Management, Delft University of Technology, Delft, The Netherlands, (3) Faculty of Engineering Technology, University of Twente, Enschede, The Netherlands

We organised a policy hackathon in order to quantify the impacts accelerated and high-end sea-level rise up to 20 metres on the coast of the Netherlands, and develop possible solutions. This was done during one day, with 20 experts that had a wide variety of disciplines, including hydrology, geology, coastal engineering, economics, and public policy. During the process the problem was divided up into several sub-sets of issues that were analysed and solved within small teams of between 4 to 8 people. Both a top-down impact analysis and bottom-up vulnerability analysis was done by answering the questions: What is the impact of sea level rise of x meter?; and How much sea level rise can be accommodated with before transformative actions are needed? Next, adaptation tipping points were identified that describe conditions under which the coastal system starts to perform unacceptably. Reasons for an adaptation tipping point can be technical (technically not possible), economic (cost-benefits are negative), or resources (available space, sand, energy production, financial).

The results are presented in a summary document, and through an infographic displaying different adaptation tipping points and milestones that occur when the sea level rises up to 20 m. No technical limitations were found for adaptation, but many important decisions need to be taken. Although accelerated sea level rise seems far away it can have important consequences for short-term decisions that are required for transformative actions. Such extensive actions require more time for implementation. Also, other action may become ineffective before their design life. This hackathon exercise shows that it is possible to map within a short time frame the issues at hand, as well as potentially effective solutions. This can be replicated for other problems, and can be useful for several decision-makers that require quick but in-depth analysis of their long-term planning problems.