



## **Planning for rapidly accelerating sea-level rise for the Dutch coast**

Marjolijn Haasnoot (1,2), Laurens Bouwer (1), and Jos van Alphen (3)

(1) Deltares, Delft, The Netherlands (laurens.bouwer@deltares.nl), (2) Faculty of Technology, Policy and Management, Delft University of Technology, Delft, The Netherlands, (3) Staff Delta Commissioner, The Hague, The Netherlands

The main objective of the Dutch Delta Programme is to protect The Netherlands against floods and droughts, for present and future generations. Consequently, the Delta Programme has adopted a long term approach, towards 2100 and beyond, to develop adaptive strategies which can handle uncertainties in projected climate change and socio-economic conditions. The current Delta Programme assumes an increase of 1 meter as an upper boundary of sea-level rise by 2100. Recent observations and model projections however indicate that an acceleration of sea-level rise from the second half of this century onwards is possible, and could result in a rise of 3 meter in 2100 and eventually 5 to 8 meter in 2200. We make use of projections by Le Bars et al. (Environmental Research Letters, 2016). Such scenarios have serious consequences for the required planning and timing of investments in protective infrastructure and land-use, and ultimately the future liveability of The Netherlands.

An assessment has been made to clarify the potential impact of this accelerated sea-level rise for the adaptive strategies for the Netherlands, with regard to coastal and river flood protection and fresh water supply, and impacts on agriculture, navigation and estuarine habitats. We present here the results of this first assessment that details impacts on these systems. Tipping points for three rates of sea-level rise are compared, for coastal protection, sand nourishment, and fresh-water supply. Possible directions for adaptation solutions at these rates of sea-level rise are presented.