

Session DD 4.2: Climate change and climate proofing urban areas: flood risks and water management in the urban environment

Chair	Prof.dr. Tejo Spit, Utrecht University, the Netherlands
Keynote speaker	Prof.dr. John Handley, University of Manchester, United Kingdom
Speakers	Ellen Tromp, Deltares, the Netherlands Eric Luyendijk, Grontmij Nederland BV, the Netherlands Berry Gersonius, UNESCO-IHE, the Netherlands William Veerbeek, Deltares, the Netherlands Anika Narsa Haque, Erasmus University, the Netherlands Tom van der Voorn, University of Osnabrück, Germany
Rapporteur	MSc. Berend van Zeggeren, Climate changes Spatial Planning, the Netherlands

Following the millennium ecosystem assessment, the number of floods worldwide is rising, and urbanization is a large contributor to flood risk, says John Handley in his keynote speech on “Water and the city: Risk, Resilience and Planning for a Sustainable Future”. The nature of flood risk is changing and these changes alter our flood risk management strategies from ‘defending the line’ towards management of floods (acceptance). The question now is how to deal with uncertainty and Handley mentions that we should therefore separately look at hazard, exposure and vulnerability. Handley gives the example of the greater Manchester region, where a social vulnerability analysis was conducted and vulnerable groups were identified. The identification of these vulnerable groups leads to a more effective evacuation plan for the region. Handley concludes that given the level of uncertainty regarding climate change effects, city planners will be our flood managers of the future. Multi-actor engagement is needed to make all this happen.

To enable decision makers to identify and choose from solutions for problems with flooding and heat in the city Eric Luyendijk introduces a three step approach for water robust building. Eric mentions that there are a lot of solutions readily available. Multiple stakeholder processes however often make it difficult to define the appropriate measures, the three step approach helps to identify these. First, a vulnerability assessment is done by using a layer approach (subsoil, network and occupational layer), then a strategy to reduce the vulnerabilities is defined. Thirdly, the appropriate measures are selected. The most important experiences Eric has had with this approach are a) local knowledge must be available for all parties and b) all parties should be involved in all steps. Ellen Tromp elaborates on the three-step approach and focuses on waterrobust building for vital and vulnerable objects in the province of Utrecht. In this Dutch province vital and vulnerable objects are located throughout the province. The three step approach helps in defining which of these sites and objects will be protected and which measures are needed to accomplish that.

Berry Gersonius introduces us to the MARE project, where Dordrecht, Hannover, Bergen and Sheffield worked together in a community of practice to develop a multi-level safety concept (in line with the EU flood directive) with 3 p’s: protection (dike system), prevention (spatial lay-out of the city) and preparedness (development of an emergency/evacuation plan). The implementation of this concept was done by the development of a risk map, the development of an area perspective map which was followed by the identification of measures, the assessment of measures by making a cost benefit-analysis and finally the selection of measures was done. As one of the most appropriate measures Berry introduces the concept of overtoppable (Delta) dikes.

William Veerbeek and his colleagues worked together in Rotterdam to estimate flood damages on Noordereiland. Amongst other research methods William used Google Streetview to do this. Historical sites are often under threat from extreme events. One of the Interesting findings of the project is that furnishing of a house makes up about 50 percent of potential damage. Anika Nasra Haque assessed flood measures in Dhaka. She states that an early warning system for floods in East Dhaka is the best option. The biggest challenge for implementing this system is lack of funding. “We have options enough, but because of lacks of budget these are still on paper” Anika says.

Linking to John Handley's keynote speech, Tom van der Voorn states that the command-and-control paradigm with in which we have worked regarding flood risks has problems with the uncertainties of climate change effects. Tom stresses the need for a guiding vision (not a fixed goal). To make this a reality Tom introduces the method of back casting, defining a desired outcome on the long term and then define the needed steps to achieve that outcome. He gives the example of New Orleans where this has worked out well.