

Session DD 4.4: Urban adaptation in Rotterdam and other Dutch cities

Chair	Prof.dr. Tejo Spit, Utrecht University, the Netherlands
Keynote speaker	Prof.dr. Chris Zevenbergen, Unesco-IHE, Institute for Water Education, the Netherlands
Speakers	Dr. Jaap Kwadijk, Deltares, the Netherlands Maya van den Berg, University of Twente, the Netherlands Sandra Junier (instead of Eric van Nieuwkerk, dr. Marleen Maarleveld), Delft University of Technology, the Netherlands Judit Bax, City of Dordrecht, the Netherlands Dr. Lisette Klok, TNO Built Environment and Geosciences, the Netherlands Dr. Bert van Hove, Wageningen University, the Netherlands
Rapporteur	MSc. Berend van Zeggeren, Climate changes Spatial Planning, the Netherlands

When we look at the Roofpark in Rotterdam, we see a multiple use, climate proof building. However, Chris Zevenbergen adds, the design of this building dates from 1999: we must understand that we live in cities that we designed years ago. In his keynote speech on “Adaptation tipping points and pathways for Rotterdam on different spatial scales” Chris touches upon some recent structural shifts. First of all, when look at the EU framework programs we see a shift from ‘assessing the problem’ towards ‘managing the problem’. In water management we see a change from flood defence towards the management of flood risks. We are leaving the prediction and control regime and moving towards an integrated and adaptive regime with learning environments and working together with stakeholders. Furthermore Chris mentions a structural change in driving forces in our economy. New driving forces are the knowledge and social economy, instead of the classical drivers (retail, construction, leisure).

Jaap Kwadijk coins the concept of adaptation tipping points. By defining tipping points for different scenario’s decision makers are able to take longer term decisions. Jaap mentions that we shouldn’t ask the question “How much sea level rise can we expect?” but instead “How much sea level rise can I handle?”.

Maya van den Berg has done research into the Dutch civil protection system and whether or not climate change has been taken into account by the Dutch safety regions (of which there are 25 in the Netherlands). For the safety region Rotterdam-Rijnmond she concludes that the civil protection system is not inspired by climate change and its (possible) effects.

The urban water system and the possible effects on this system were analyzed by Sandra Junier and colleagues. Parts of the city were modeled for flood risks of surface water and sewer systems. For the southern part of the city high surface water levels are expected and in the community of Spangen it was calculated that 1,5 times the amount of rain means 3 times as much water in the streets. Citizens, as appears from the network analysis that was carried out, are absolutely unaware of climate change effects. Sandra concluded that water management and climate change and its effects should be incorporated in urban development and that tailor made solutions and public support are needed.

In the Urban Flood Management Project of the City of Dordrecht, Judit Bax worked together with the city of Saint Louis in Senegal. The two cities, although different, have a lot of similarities when it comes to flood protection and water management. During this project an effective exchange of ideas and methods has taken place which leads Judit to conclude that the tools we use in developed countries are equally useful in developing countries.

Sabine Jansen and Lisette Klok are involved in research on urban heat in Rotterdam and its effects on public health. Effects of heat are increased risk of heart stroke, excess mortality, sleep disturbance and loss of work productivity (decreased wellbeing). Possible no regret measures for Rotterdam are e.g. small scale green and sprinklers on roofs.

Bert van Hove and his research team have been working in Rotterdam on the order of magnitude of UHI in the city and whether or not thermal comfort will become a problem. To measure temperatures throughout the city cargo bikes were used that carried all kinds of meteorological equipment. On a hot day in 2009 three runs of two loops in the city were biked by the team. The measurements show that there are no large differences in temperature in the city and surroundings during the daytime, but at night the city centre and other built environments are significantly warmer than the surroundings (up to 6 or 7 degrees Celsius). These observations were also made by hobby meteorologists. Bert concludes that nocturnal Urban Heat Island effect is substantial in Dutch cities. This research has a follow-up in the Dutch research program Knowledge for Climate which will render more substantial data. To be continued.