

Dutch Cities Rain-Proof: A Governance Analysis for the Best Way Forward

Woerner, Rebecca; LL.M. Candidate; Dai, Dr. L.; Postdoctoral researcher; and van Rijswick, Prof. Dr. H.F.M.W.; Professor in Dutch and European Water law, Research leader, Utrecht Centre for Water, Oceans and Sustainability Law, Utrecht University, Netherlands, r.worner@uu.nl, L.Dai@uu.nl

In the wake of several incidents including major river floods and exceptionally heavy rainfall in the 1990's, a new focus on urban inundation took place in Dutch water governance and city planning. Different initiatives have been introduced on national and municipal level to make Dutch cities rain- and ultimately climate-proof in the form of innovations in technology and governance.

A three-Step Plan of 'delay, store and discharge' as a coordinated strategy was first officially referred to in 2000. The novelty of this approach lies in the first and second step: instead of discharging rainwater straight away through the drainage system, it is stored by means of for instance green roofs and water plazas. Such installations embody more functions than merely discharging the water - as for instance for Rotterdam's water plazas create added recreational value for society by combining a playground with underground water storage capacities through smart technology. These multi-functional innovations are a typical example of integrated water management in the Netherlands.

In this paper we refer to three of the largest Dutch municipalities' strategies for dealing with pluvial flooding (Amsterdam, Rotterdam and Utrecht), with the aim of assessing the current governance approaches in order to identify governance gaps and further enhance the capacities in terms of governance and technology. It also provides best practices for developing urban disaster resiliency and adaptation to climate change.

We select Amsterdam, Rotterdam and Utrecht as case studies because they are - next to The Hague - the cities that undergo the most visible urbanisation in the Netherlands. All three cities experienced incidents of exceptionally heavy rainfall in the last decade, which underlined the urgency of introducing climate adaptation measures. In response, each of the municipalities introduced a comprehensive programme with a different approach. For instance, Amsterdam uses its resources to communicate with its inhabitants in order to jointly set up a large amount of small-scale projects. Rotterdam on the other hand applies its climate strategy for city marketing. By presenting a selected number of large show-cases such as the 'Benthemplein' - one of the city's water plazas - Rotterdam brands itself as a front runner in climate adaptation to the outside world.

In the assessment of the respective strategies, we apply a multidisciplinary testing framework by M. Van Rijswick et al. entitled 'Ten building blocks for sustainable water governance: an integrated method to assess the governance of water' with the main objective of building a bridge between a conceptual approach to building climate-proof cities and the implementation in practice. The framework consists of benchmarks which

are drawn from different disciplines. Our findings are based on the scrutiny of policy documents, legal sources and in-depth expert interviews with policy-makers, landscape architects and academics.

* Utrecht Centre for Water, Oceans and Sustainability Law, Department of Law, Utrecht University, Utrecht, The Netherlands