



Urban Water Management Enabling Delta Life in Cities

Most deltas and polders in the world are undergoing rapid urbanisation. They are home to hundreds of millions of people, in cities and villages that are constantly expanding. Deltares contributes to a safer, healthier, more sustainable, and climate-robust environment. Above all, our aim is to safeguard an agreeable living and working environment for everyone living near rivers and in deltas throughout the world.

Looking for better solutions

Deltares does this by developing knowledge and innovations in different fields: water management and water supplies, and the management of soft soils. We also contribute improvements to urban planning and to the process of organisation at the institutional level. We elaborate new techniques and new policy; we help with spatial planning, the development of new urban areas and the redesigning of public space. We also help to apply new concepts and techniques in practice; we make risk analyses, and monitor and evaluate new systems to identify possible improvements.

Partners and clients

We develop knowledge for and with all the parties involved in creating and managing urban areas. Ultimately then, our partners and clients are you and your fellow citizens. We work for and with water boards, government authorities, engineers and consultants, project developers, housing corporations, financiers, lobby groups, construction companies, landscape architects, architects, engineers and management consultants in the Netherlands and abroad. Our paradigm is the sustainable, climate-robust Dutch city on the water; we propagate this model throughout the world.

The added value of Deltares

With our unique expertise and our combination of disciplines, we contribute in essential areas to projects and processes. We have an in-depth knowledge of urban water systems, water chains, the soil and sub-surface, urban water challenges, monitoring and ecology. That is a solid foundation for integral policy development,



plan development and management. We draw on our professional know-how for the ongoing development of existing systems, but also for the creative design of new solutions and as support for your negotiations with other parties. We engage in those processes: from the first steps towards the establishment of a vision and the spatial plan, up to and including design and management.

FIVE OPPORTUNITIES

To make the most of all your opportunities and possibilities, Deltares has selected five specific target areas. We want to work as your partners on boosting technical know-how, furthering your knowledge of social and economic issues, and enhancing your control over processes of change, and other organisational and institutional arrangements.

1. Improving the urban living environment

Urban water is still seen too much and too often as an independent component of the urban living environment. Urban water can be developed more than presently as the carrier and driver of a more pleasant and sustainable living environment, and of all sorts of economic activities. To exploit those opportunities, Deltares focuses on:

- the development and application of new concepts for the urban water regime, water supplies and wastewater treatment;
- the limitation of water flows through towns, of energy consumption and of the burden on the surrounding country;
- Building with Nature: the encouragement of natural treatment processes in urban waters and in groundwater in order to enhance water quality, allowing water to be used for more purposes;
- the improved integration of urban design and technical design; models that provide urban planners with support in the form of analyses and designs.



2. Climate-robust towns

Climate change requires new concepts for urban planning that can cope well with more extreme weather conditions. So we are working on measures for climate adaptation and mitigation to make towns more climate-robust; our aim is to establish a beautiful and agreeable living environment, and competitive locations for business. To achieve that aim, we:

- conduct research into the effects of climate change (more extreme precipitation patterns, drought and more extreme high temperatures) on urban dewatering, water management, area development and green facilities;
- develop processes and instruments for more climate-robust urban planning; the use of water, green roofs and water gardens as ways of cooling towns;
- make analyses of the probability and the severity of urban water problems and flooding, produce risk maps, and generate operational predictions, warning systems and crisis management.



3. Cities without falling land levels

Every year, numerous pavements, streets, access ramps and gardens have to be raised because of the settlement of the subsurface. The correct design measures and the effective management of public space can yield major savings. Deltares supplies knowledge about the subsurface and we have experience with administrative practice in urban planning and design:

- a clear picture of the public costs of settlement, of the technical and administrative arguments, and the obstacles to tackling the problem;
- monitoring and analysis of soil and subsurface properties, modelling of falling land levels; and models for risk assessment and management;
- new concepts and methods for limiting falling land levels and new building methods for the improvement of infrastructure, cables and pipelines.



4. Water and soil: sources of energy

Urban groundwater and surface water provide enormous opportunities to save energy and costs for heating and cooling homes and business premises. The demand for heat and cooling can be linked in smart ways to the collection and storage capacity of urban groundwater and surface water, allowing us to make a considerable contribution to the reduction of CO₂ emissions:

- predictions of the possibilities and impact of storing heat and cold in groundwater and surface water;
- research into the use of surface water as a heat collector and/or cold facility;
- ways of combining soil and groundwater remediation;
- a clear picture of technical and administrative arguments and obstacles to energy transition.

5. Towns in relation to the river basin

Every town is part of a river basin system. Downstream, the impact of a town can be undesirable, or actually beneficial. Or the town may suffer from problems as a result of measures elsewhere in the river basin. So urban water management always has to be viewed in conjunction with water management in the river basin in question:

- an understanding of the impact of ongoing urbanisation on the quality and drainage of urban water into streams and rivers; water-positive urbanisation;
- the exploration of the impact of the re-design of urban water systems on the quantity and quality of the water flowing out of the town;
- the assessment of risks from the sea to which coastal towns are exposed and the impact on urban water management.





*Deltares is the
Dutch institute
for national and
international water and
subsurface issues*

Deltares

info@deltares.nl
www.deltares.nl

Further information on urban water management

Dr. Frans van de Ven
Coordinator for Urban Water Management
+31 6 5183 5010
Frans.vandeVen@deltares.nl