City Water Stories:
Copenhagen

the international water association

Population
- Current Population: 600 000
- Expected to grow by 100 000 more inhabitants by 2025

Geography
- Coastal city
- 10 administrative districts
- Area: 88.25 km^2

Main challenge
- Urban densification and securing safe drinking water for growing populations
- Coping with impacts from a changing climate such as severe rainfall events

Main solution
- Affordable housing in a dense urban centre and flood proof infrastructure and drainage

Main challenges of this Harbour City

The capital of Denmark is a relatively small city – but it is a city that has a worldwide impact due to creative solutions and the constant aim to improve the quality of life for citizens.

Copenhagen today has 600.000 inhabitants and an expected growth of 100.000 more before 2025. This is a challenge as the city has to use all available land for building new homes in an area of around 10 square kilometres. The growing population is also a challenge to create affordable housing for the entire population.

"*Because we are growing we have to look at different ways of densifying the city – using old industrial spaces, but also building, higher, closer – and this is a challenge when we are also facing climate changes*" Lykke Leonardsen, Program Manager Green urban solutions, Municipal Development.

The water challenges are about continuing to secure high quality drinking water for a growing population, while also protecting the citizens and businesses from the impacts of climate change. Copenhagen has experienced a number of severe rainfall events – cloudbursts – the biggest in July 2011. The damages amounted to around 1 billion US-dollars, and climate projections expect more in the future.

The Vision for the Future

Working across sectors, Copenhagen is setting ambitious goals for the future. The city just approved a new vision called Co-Create Copenhagen, with three key pillars: A liveable city, a responsible city, and a city with an edge; enabling strong citizen participation along the journey.

Copenhagen is also addressing impacts from climate change through their Climate Adaptation Plan and a new Cloudburst Management Plan (CMP) launched in 2011, which is the world's first city wide plan for controlled storm water for a 100-year storm. The plan has been developed in a close partnership the Greater Copenhagen Utility, owned by a number of municipalities in the Greater Copenhagen Region.

The CMP proposes infrastructure levels to manage storm water in the city, with solutions that collect, delay and lead stormwater to final outlets in the harbour, preventing entry in the sewers. The city's vision for liveability is a key factor in implementation. The CMP will form the back-bone of the physical development of the city for the next 20 years. It emphasizes the role of citizens in the co-creation of their future city.

Case Study: Skt Kjelds - A Climate Neighbourhood

As part of the implementation of the CMP, the city selected Skt. Kjelds as demonstration neighbourhood, where some of the first projects are being implemented. This includes the first water park at Tåsinge Plads and tunnels for stormwater discharge into the harbour. The development involves local stakeholders in the design and function of the projects, including refurbishment of the buildings, courtyards and open spaces.

HOFOR

City of Copenhagen

Copenhagen's Journey to Become a Water-Wise City

A closer look at how Copenhagen is satisfying the IWA Principles for Water-Wise Cities

1 Regenerative Water Services

Replenish Water Bodies & their Ecosystems

✓ The Cloudburst Management Plan (CMP) is the backbone of future developments.

Reduce the Amount of Water & Energy Used

✓ Work on reducing to 100 liters per citizen per day.

✓ Become carbon neutral by 2025, also applied to utilities.

Reuse, Recover, Recycle

✓ Stormwater reuse for watering and over time in households.

Use a Systemic Approach Integrated with Other Services

✓ Utilities working on carbon neutral water supply and wastewater management.

Increase the Modularity of Systems & Ensure Multiple Options

✓ HOFOR CMP manages stormwater through local storage, infiltration and discharge through a parallel system.

2 Water Sensitive Urban Design

Enable Regenerative Water Services

✓ Cloudburst Management Plan.

Design Urban Spaces to Reduce Flood Risks

✓ Cloudburst Management Plan.

Enhance Liveability with Visible Water

✓ Cloudburst Management Plan.

Modify & Adapt Urban Materials to Minimise Environmental Impact

✓ Copenhagen no longer uses pesticides in the maintenance of public areas.

3 Basin Connected Cities

Plan to Secure Water Resources & Mitigate Drought

✓ HOFOR - abstraction from wells outside the city & collaboration with neighbouring municipalities.

Protect the Quality of Water Resources

✓ HOFOR - planting trees that can help the infiltration and reduce chemical substance in receiving waters.

Prepare for Extreme Events

✓ Climate Change Adaptation Plan – looks at the challenges from Rising sea levels, cloudbursts, extreme heat...

4 Water-Wise Communities

Empowered Citizens

✓ CMP involves citizens in the understanding of the new concept of storm water management – and how this has added benefits when it is not raining.

Professionals Aware of Water Co-Benefits

✓ Interdisciplinary work led to the city's urban nature strategy with the CMP (NGO's, universities and urban planners).

Transdisciplinary Planning Teams

✓ Engineers, urban planners, biologists, economists and more are involved in the adaptation planning of the City.

Policy Makers Enabling Water Wise Action

✓ Legislation to enable financing innovative solutions.

Leaders that Engage and Engender Trust

✓ Strong political leadership by the Mayor's Office and its administration.

5 Building Blocks for Copenhagen on the journey to water-wise cities

Vision

A strong vision for urban resilience with three pillars:

1. A liveable city;
2. A responsible city;
3. A city with an edge.

The city has for objective to become resilient towards future climate change while using this as an opportunity for improving the liveability for the citizens.

Governance

The CMP is the backbone of physical development in the city.

Requires strong coordination between sectors.

Open and transparent dialogue with local interests in the development of individual projects.

Knowledge & Capacity

Exchange and sharing through a number of international networks like C40, ICLEI and EU projects.

Bilateral collaboration agreements with cities like New York, Washington DC, Beijing and others.

Planning Tools

The Climate Adaptation Plan.

The Cloudburst Management Plan.

The Municipal Plan.

Implementation Tools

Implementation plan approved by city council in 2015.

Fully financed through water fees (HOFOR).

Expected implementation period 20 years.