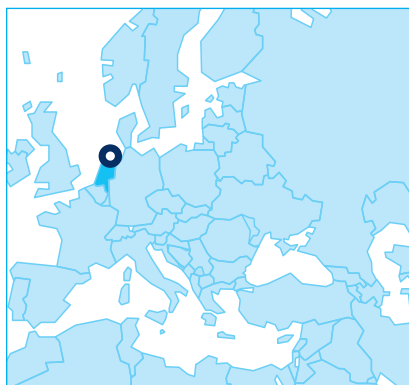


City Water Stories:

Amsterdam



Population

- 840.000 (2016) - Largest city of the Netherlands.
- Fast population growth: prognosis is 906.000 inhabitants in 2025.

Geography

- 32 municipalities & Area: 220 km².
- Main water supply: Amsterdam Water Supply dunes, which since 1957 are artificially recharged with water from the river Rhine and are famous for ecological value.

Main challenges

- More intense rain events.
- Resilience of critical infrastructure.
- Water in the circular economy.

Main solution

- Mainstreaming adaptation in all public and private urban activities through a network approach.

Every drop counts!

Amsterdam has lived with water for more than 700 years. The city was founded in a strategic location on the edge of the river Amstel and the sea in the low-lying delta of the Netherlands. Coping with water challenges is in the DNA of the Netherlands and its capital city Amsterdam. The city has been able to grow to a safe, attractive and economically healthy urban area because of smart investments in control of flood risks and water quality, and in robust water infrastructure. Amsterdam and the Regional Public Water Authority Amstel, Gooi and Vecht have entrusted all their water management in Waternet, a public integral water cycle organisation, for management of drinking water, waste water, surface water and flood control, working in an efficient, sustainable and customer-oriented manner.

Waternet takes the lead in new collaborative platforms working across urban challenges such as climate adaptation and the circular economy. The Amsterdam Rainproof platform is a unique collaborative network of public administration entities, entrepreneurs and citizen initiatives. Together, they are committed to make Amsterdam more resilient to extreme rainfall, both on small and large scales in buildings and gardens as in public areas.

Key challenges for this delta city

Amsterdam has a very robust protection and emergency control system for floods from the sea and river, as well as from extreme rain events. Better protection of critical infrastructure to flooding is key to the resilience strategy of Amsterdam. Since a cloudburst in the summer of 2014 and many more severe cloudbursts since then in other regions of the Netherlands, the urgency for Amsterdam Rainproof has grown and mainstreaming this program in all planned physical activities is a major challenge for the city. To start the Rainproof network, Waternet initiated a special programme, which from 2014-2017 actively facilitates and supports all relevant stakeholders. Through dialogues and events, demand driven tool development and coaching, more than 60 stakeholder organisations are committed and more than 50 physical rainproof projects have been realized.

Contributing to the circular economy from the water cycle is the second key challenge in Amsterdam. Many opportunities for recovery and recycling of energy and resources from waste water, drinking water or surface water exist, yet depend on collaboration and implementation between and among other urban stakeholders. In a city with a quickly growing population and rebounding housing market, it is difficult to make circular ambitions come true.

Case Study: The Polderdak, a Unique Dutch Invention!

The Polderdak, a Dutch invention from the Dakdoctors, is a roof garden which also serves as an efficient space for water storage. It is surrounded by a small wall ("dike") with a remote controlled weir. Water can be stored in crates, on which the vegetated layer rests. Unique to the Polderdak is its multifunctionality. Co-benefits are 10 to 30% energy savings; biodiversity and urban farming opportunities; cooling urban heat and capturing particulates. The Polderdak South Axis pilot project (2013), with a 1200 m² and 84 m³ minimum water storage capacity, has inspired other bigger polder roofs in the same part of the city with many more to follow.

Amsterdam's Journey to Become a Water-Wise City

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

1 Regenerative Water Services

Replenish Waterbodies & their Ecosystems

- ✓ Amsterdam Water Supply Dunes.

Reduce the Amount of Water & Energy Used

- ✓ Lowest water leakage in the world (< 4%).
- ✓ Energy use savings part of Climate Neutral water cycle 2020 programme.

Reuse, Recover, Recycle

- ✓ Programme Climate Neutral watercycle 2020.

Apply a Systemic Approach for Integration with Other Urban Services

- ✓ Amsterdam Rainproof network. Collaboration with Waste to Energy Company and Spatial Planning and Sustainability department.

Increase the Modularity of Systems and Ensure Multiple Options

- ✓ Two resource areas Amsterdam Dune Water Supply and Bethunepolder and even linkage to other neighbouring drinking water regions.

2 Water Sensitive Urban Design

Enable Regenerative Water Services

- ✓ Rainproof mainstreamed in all urban activities: streets, roofs, parks, buildings, gardens. Platform with knowledge, inspiration and professionals for fast upscaling.

Design Urban Spaces to Reduce Flood Risks

- ✓ Rainproof materials and street profiles in Street Design Manual.

Enhance Liveability with Visible Water

- ✓ World famous city for liveability and visible water.
- ✓ South Axis: watervertragende groenstrook, polder-roofs.

Modify & Adapt Urban Materials to Minimise Environmental Impact

- ✓ National regulations in building act.

3 Basin Connected Cities

Plan to Secure Water Resources & Mitigate Drought

- ✓ Regional fresh water strategy as part of the National Delta programme.

Protect the Quality of Water Resources

- ✓ River Rhine agreements under the European Water Framework Direction.

Prepare for Extreme Events

- ✓ New national flood standards agreed under the National Delta Programme.
- ✓ Strategy for resilient critical infrastructure for flooding of the Westpoort harbour in development.
- ✓ Up-to-date crisis management organisation.

4 Water-Wise Communities

Empowered Citizens

- ✓ Public events and activities: Rainproof Rave & Ride, FABcity, ROEF festival, etc.

Professionals Aware of Water Co-Benefits

- ✓ Close collaboration in resilience and circular economy with urban planning, energy services, waste services and mobility.

Transdisciplinary Planning Teams

- ✓ Water professionals part of all major urban planning teams.

Policy Makers Enabling Water-Wise Action

- ✓ Amsterdam Sustainability Agenda, Green fund in which Rainproof is a criteria.

Leaders that Engage and Engender Trust

- ✓ Leaders support innovative approach of Amsterdam Rainproof.

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



Vision

Amsterdam Rainproof: Mainstreaming resilience against extreme rainfall following a unique network approach based on shared responsibility and an attractive, liveable city.

Amsterdam Sustainability Agenda shows political will for circular economy

Circular Innovation Programme 2016-2018 works in a public private collaboration to an Economic Sustainable Region 2030.



Governance

The unique integrated water governance in Amsterdam is based on efficiency, sustainability and customer care. Resilience and GHG reduction targets are based on collaborative public and private efforts. Rainproof network governance is best fitting for the shared public-private ownership of this challenge.



Knowledge & Capacity

Amsterdam is an international leader working on knowledge exchange (C40 cities, IWA), social responsibility, and market-development.

The biennial Amsterdam International Water Week (AIWW) brings together key players worldwide from utilities, businesses, and cities.



Planning Tools

Water asset management is integrated in the asset management coordination system of the municipality.

Structural Vision 2040 as a cross-sectoral framework for the city.

Rainproof: Sewerage plan 2016-2020. Green agenda and fund.



Implementation Tools

Amsterdam's water finance system is 100% cost recovery (for the life cycle costs). A new financial incentive to promote less water use is proposed for 2017: to make sewerage tax higher for big water users and lower for households.

Mainstreaming Rainproof in all planned city activities values co-benefits. The Rainproof community manager links initiatives with knowledge, partners and tools.