

Flowing forward: 5 strategies for cities to become water-wise

— by Tatiane Martins Carrer & Valeria Andrade

If society currently organizes itself in cities, it is primarily thanks to water resources. Since the first cities emerged 5,000 years ago in the alluvial plains of the Middle East, precisely due to their fertility and water availability for agriculture, society has increased the consumption of water year by year.

The increase in the global population, together with current socioeconomic development models and water consumption patterns, is driving a worldwide rise in water use. The reality nowadays is that, according to United Nations' World Water Development Report 2023¹, an average of 10% of the world's population lives in countries with a high or critical level of water stress.

But if, on one side, some cities must be prepared for a future where water scarcity is a stark reality, on the other side, others must face water surplus and prevent more intense, destructive, and frequent floods. According to UNESCO's United Nations World Water Development Report², extreme weather events, as a consequence of climate change, will affect the availability, quality, and quantity of water for basic human needs. More than ever, cities must prioritize water-wise management for the future. While short-term solutions can help rebound from water-related crises, the focus should now shift towards prevention more than ever.

So, the question extends beyond immediate fixes to ponder: **What measures can cities implement** to address the water crisis?

How can cities prepare for a future of water stress?

In our experience advising cities worldwide at Anteverti, we understand that **tackling urban challenges, especially the more complex ones, requires a multifaceted approach**, blending different strategies that fit the unique situations and capacities of each community, region, and government. Here, we outline **five actions to prevent water stress and flooding**, and some practical cases from cities around the globe that prove efficient water management develops in livable and sustainable urban environments.

1 | Adopting a circular water economy approach

The traditional one-way method of water management causes the loss of tons of water, apart from harming the habitat and impacting the quality of the resource. **Applying a circular economy approach would maximize the process of reducing water consumption** and giving a second life to this precious asset through reuse and recycling. In addition, allows the protection and recovery of the environment, the

1. <https://digitalfuturesociety.com/report/towards-a-meaningful-human-oversight-of-automated-decision-making-systems/>
2. <https://unesdoc.unesco.org/ark:/48223/pf0000372985>



regeneration of natural capital, and resilience from water-related shocks and stresses, such as drought or flooding.

The city of **Gothenburg in Sweden** has extensive experience in circular water economy. Originally established under a different name in 1787, the department now known as the **Sustainable Waste and Water Department** has been responsible for the production and distribution of drinking water since its inception. It is also in charge of stormwater collection and drainage, wastewater treatment, and the collection and treatment of domestic waste. Additionally, the city is home to the Ryaverket Wastewater Treatment Plant, a comprehensive facility that utilizes mechanical, chemical, and biological treatment processes.

2 | Developing nature-based solutions for water security

Numerous environmental consequences, climate change and extreme weather events are reducing the quality and accessibility of the water conserved in grey-robust infrastructures such as cement dams or stormwater drainage systems. This is the reason why **future water management plans ask for more natural or semi-natural systems to increase the water infiltration and storage capacity**, help clean polluted water, and improve its quality for both human and natural use.

A city that holds the leadership on blue-green infrastructure is **Copenhagen**, which since 2012, has a **Cloudburst Management Plan underway to adapt to the unpredictable extreme weather events of the future**. The City Council was already aware of the rise of stormwater volumes and the risk of stronger and more frequent downpours. Still, it was after experiencing the most destructive cloudburst in its

history that Copenhagen accelerated the deployment of **300 projects over 20 years combining blue and green infrastructure city-wide**, befitting the city with smart and sustainable water management, but also impacting positively on the economy and the quality of life of the Danish capital.

3 | Considering holistic approaches to water sanitation

Access to safe drinking water, proper sanitation, and clean water for hygiene are crucial to human health and well-being, and for the environment, therefore **it is central in water management strategies to find solutions to prevent water deterioration and, consequently, water shortage**. Some examples include pollution control, improving sewage treatment, enhancing green agriculture free of fertilizers and other chemical products, and properly managing stormwater. Also, **endorsing collaborative and non-traditional approaches could ensure sustainable sanitation for all residents**, much more so in overcrowded areas where inadequate water supply provokes inequalities among their inhabitants.

This was the case in **Kampala, Uganda**, where the lack of sanitation in new informal neighborhoods resulted in a polluted and deadly urban ecosystem. In the early 2000s, the Kampala Capital City Authority (KCCA) and other city stakeholders and citizens collaborated to **implement various projects that address sustainable urban water systems**. In addition, the KCCA supports innovative alternatives to pit latrines created by individuals, to complement the sewerage connections in areas where collection and treatment services are not guaranteed.



4 | Incorporating advanced tech for more efficient water management

Introducing technology to water management is key to helping cities better understand water demands and flows and identify better solutions for planning, conservation, treatment, and water use. Increasingly, **cities are incorporating advanced technologies such as real-time monitoring, predictive analytics,** and decision support systems to improve water conservation, prevent water loss, and reduce consumption. But this is not the only purpose: **data-driven approaches contribute to improved efficiency and effectiveness,** to conceive more resilient water systems to face shocks and stresses —droughts, floods, and climate change—, and **increased transparency and accountability** that give governments the reason to perform their action plans.

The city of **Los Angeles** is a great example as it has adopted different **data-driven technologies to improve water conservation, prevent water loss, and reduce consumption.** By installing sensors in its water distribution system, the city can monitor water flow and pressure, and detect and repair problems. They can also predict water use and weather patterns to forecast future water demand. And lastly, they

can optimize the operation of its water treatment plants, to reduce energy consumption and improve water quality.

5 | Placing water governance and management as a national priority

In addition to implementing concrete solutions and circular strategies for water management, **efforts must transcend urban design and planning decisions and become a national priority** in all areas of governance. In this sense, attempts must be broad and holistic, ranging from the formulation of public policies to, for example, subsidizing the collection of fines and «smart use» tariffs, to the development of educational campaigns to raise awareness among citizens about the increasingly prevalent issue of water scarcity. In **Bolivia**, for example, the ‘**National Policy for the Efficient Use of Drinking Water and Adaptation to Climate Change for Living Well**’ is a nationwide engagement requiring mandatory compliance from all authorities, as well as from Drinking Water and Sanitary Sewerage Utilities and the general population. The policy aims to promote low-water consumption artifacts and alternative technologies, guarantee quality management and water loss reduction, and tackle actions to foster rational water use, using communication and information.





Our conclusion: cities at the core of global efforts toward a water-wiser planet

Driven by the direct or indirect impacts of climate change on global water seasonal cycles, alongside the accelerating spread of freshwater pollution, **water surplus, and water scarcity are increasingly becoming global endemic issues.**

According to the C40 projections³, **the urban population facing water scarcity will increase from 933 million people in 2016 to between 1.69 billion and 2.37 billion in 2050.** At the same time, according to the Journal of Environmental Management⁴, the recent scenarios indicate that **by the year 2030, the number of flooding events could rise to 7,800, 2.7 more than the registered in the period between 1998-2008.** Halting and reversing this trend is urgent and imperative for society as a whole, and **cities can drive this change.**

Tackling water challenges requires the **collaboration of all societal stakeholders.** Still, cities can lead the implementation of **sustainable, responsible, and efficient water management practices,** driving significant impacts to reverse current water scarcity projections and promote a future where this valuable resource is indeed accessible and a right for all. ●

3. <https://www.c40knowledgehub.org/s/article/How-to-manage-water-scarcity-and-adapt-to-drought>

4. <https://www.sciencedirect.com/science/article/abs/pii/S0301479723013452?via%3Dihub>

→ About the authors



Tatiane Martins
Senior Consultant
Anteverti



Valeria Andrare
Senior Consultant
Anteverti

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