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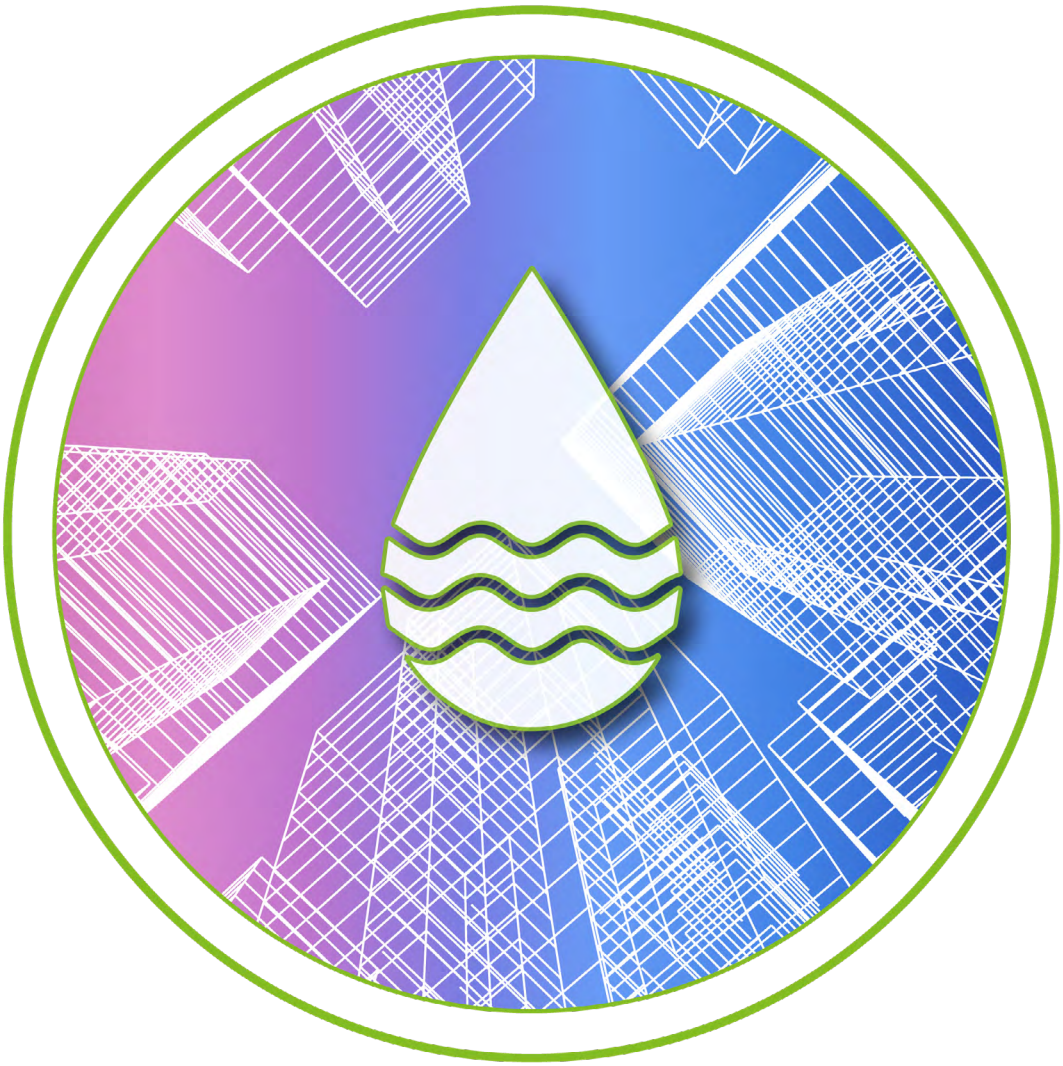

Smart Cities Start with Smart Water Handling

The Blueprint for Sustainable Urban Growth

Introduction

Population and climate change are reshaping how cities manage water. Rising demand, aging infrastructure and extreme weather make water not just a resource but a strategic priority. Smart cities need more than technology to achieve smart water management - they require integrated approaches that combine innovation, alternative water sources and nature-based solutions. Success depends on coordinated action across sectors and stakeholders, to overcome fragmentation and scale impact. This article explores why water must be central to smart city planning and how Deloitte's expert guidance can help cities turn water challenges into sustainable, future-ready solutions.

Why water must be strategic priority in your smart city

Water management has become one of the most critical challenges in urban development, as cities expand, populations change, infrastructure ages, and climate effects cause flooding, urban heat islands and prolonged drought periods.

However, a combination of smart water solutions and smart water management can help you turn these challenges into opportunities for sustainable urban growth. Whether you're planning new developments or revitalizing existing districts, water must therefore be a strategic priority for your smart city.

Real-time water insights driven by future-driven data and technology management

In a smart city, smart water means using data and technology to manage water and wastewater infrastructure and related municipal services more efficiently. Advanced sensors, with Internet of Things (IoT) connectivity, collect and transmit water data for remote monitoring, analysis and control, giving you real-time visibility across your city's water networks.

IoT-enabled sensors detect leaks or vandalism (e.g., fire hydrant tampering) quickly, predict flooding early, optimize distribution and monitor water quality. For you, this translates into fewer disruptions, lower operational costs, improved compliance and better service for residents.

Alternatives for a finite resource: harnessing rainwater and greywater

But smart water goes beyond technology - it is also about rethinking water resource management and transforming infrastructure and urban spaces. Freshwater is finite, but essential, not only for life but also for the data centers powering smart cities. Relying solely on traditional supply systems is no longer viable. Already, hundreds of millions populate cities where water demand often exceeds available supply. By 2050, with urban populations continuing to rise, urban water demand is projected to increase by nearly 80%.[1]Rainwater harvesting and greywater recycling offer alternative water sources to meet this demand.

Rainwater can be collected locally or through engineered surfaces like permeable pavements. Greywater (i.e., wastewater from sinks, showers and washing machines) can be captured directly at residential or industrial units. In both cases, capturing and reusing these sources reduces dependence on external supplies and lowers costs. Even better, they can irrigate urban green spaces, cool heat islands and improve city residents' quality of life.

[1] UN World Water Development Report 2023

Engineering meets nature: creating blue-green infrastructure

Alternative water sources address water scarcity, but cities might also suffer excesses. Flooding increasingly disrupts cities and damages urban real estate. With increasing extreme rain events, smart cities must engineer solutions proactively, in response to growing climate threats. One way to do this is by increasing your city's blue-green infrastructure. Blue-green infrastructure combines water features (blue) with natural elements (green), to manage stormwater and enhance resilience. Solutions like permeable pavements, green roofs and urban wetlands absorb excess water, reduce pressure on the existing drainage systems, filter pollutants and enhance urban biodiversity.

They also reduce reliance on costly gray infrastructure (pipes, concrete channels) and improve a city's "sponginess" (i.e., ability to absorb rainwater) - a key measure of climate resilience.

Both alternative water sources and blue-green infrastructure offer practical and scalable solutions that don't just solve pressing issues but also make city environments attractive for funding and stakeholder buy-in.

Coordinated action and collaboration as key to scaling smart water solutions

Although individual smart water solutions can already be found, they often remain unscaled and fragmented at city level. Why? Because water supply and drainage systems operate in separate systems, and control between end users and operators is divided - neither can directly influence the other.

Therefore, to implement smart water solutions and scale them successfully in your city, you need coordinated action across systems, sectors and stakeholders. This includes a targeted approach, to facilitate urban water connections and enabling mechanisms like permitting, investment and cross-sector platforms.[2]

[2] WaterBOOST: Innovation for Future Cities | World Economic Forum

Conclusion

Smart water solutions and smart water management are not optional, but should be integrated at the core of your smart city. They reduce costs, secure water supply, mitigate climate risks and create livable cities. By embedding them into your smart city design and urban planning, you can lead the way toward resilient, future-ready cities.

Implementing these solutions requires more than technology - it demands strategic planning, stakeholder alignment and tailored investment models. Deloitte's international expert team can support you to:

- Develop a holistic water strategy, aligned with your city's growth and sustainability goals.
- Design and implement smart water systems, using cutting-edge technology and infrastructure solutions.
- Facilitate cross-sector collaboration between utilities, developers and regulators, to overcome fragmentation.
- Secure funding and optimize ROI, through tested and proven financing and business models.
- Ensure compliance and increase resilience, by integrating regulatory requirements and climate adaptation measures.

With our guidance and support, your city can move from fragmented initiatives to a scalable and integrated smart water ecosystem that delivers long-term value.

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