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Prevention instead of panic on “Day Zero” Strengthening resilience against water crises

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Cape Town was the first modern metropolis to nearly run out of water back in 2018. The same happened the following year in Chennai, India. São Paulo, Cairo, Jakarta, Mexico City and other cities are all threatened by similar scenarios. At the same time, water demand in urban areas will increase by up to 70%. As a result, the *World Economic Forum* considers water crises to be one of the top five risks. The key drivers behind this are economic development, urbanisation and climate change. “Day Zero”, the day on which the water will run out, has become a synonym for urban water crises.

Panic is not a good basis for long-term solutions

The most recent water crises saw politicians, public utility corporations and urban society enter into “panic mode”. Decision makers took radical and costly measures to restore water security for companies and the population at large. Such measures included supplying millions of tonnes of drinking water via trains and lorries, massive restrictions on water usage and the tapping of new water sources at pace. Shock events make it necessary to take short-term measures, but they can have a negative impact in the long term, not just from an economic perspective, but also from an ecological and social perspective too. Water infrastructure is indeed long-lasting and planned for the decades ahead. But how can cities replace panic with prevention?

What is “City Water Resilience”?

Urban resilience is defined as the capacity of individuals, institutions and companies within a city to survive, adapt and grow, no matter what kinds of shocks or stress factors they experience. *City Water Resilience* is an approach that has been heavily influenced by the *Rockefeller Foundation*. It puts the capacity of a city's water system at the centre, including all of the ecological, physical, economic and social aspects. It also takes into account the various functions of water as a resource; it is a foodstuff, a factor of production and an elixir for public health and urban quality of life.

Water resilience offers opportunities for resilient cities …

The principles of the *City Water Resilience Approach* offer opportunities for cities to remain liveable and develop in a sustainable manner in future as well:

– **Governance:** resilience examines the mutual dependency of urban players beyond residential water management, namely urban planning, energy, industry, ecosystems and citizens.

– **City-Basin Nexus**: the water security of many cities depends on catchment basins. The Resilience Approach takes into account the mutual dependency between the city and catchment basin and promotes the reconciliation of interests.

– **Alternative sources**: a secure supply needs redundant systems that take effect in crisis situations. Resources, such as rain water, the reuse of waste water or desalination, are key elements here.

– **Water-sensitive design solutions**: green infrastructure mitigates climatic risks and produces co-benefits. Thanks to seepage, green spaces transform the city into a “sponge”. This sponge helps to prevent heatwaves and drought. “Water features” are used to store water as well as for recreational activities.

… but there are prerequisites for it to be implemented successfully.

Various factors need to be considered in the implementation:

– **Data gaps:** there is a gaping hole in terms of climate data at a city level. This makes it difficult to understand shock and stress factors when there is climate-related uncertainty.

– **Cross-sector cooperation** as well as cooperation between the city and catchment basin can only succeed if there are shared visions and trust between the stakeholders. However, social capital needs time.

– **Political priorities**: numerous interests, such as housing, energy, mobility or the economy, are vying for attention on a day-to-day basis. Water risks, which are less noticeable, are lost from sight. An incorrect understanding of the probabilities of occurrence of extreme events leads to political miscalculations.

Conclusion: resilience as the recipe for combating the “Day Zeros” of tomorrow

The enormous demands placed on infrastructure offer an opportunity to plan the city of tomorrow in a water resilient manner. In Africa alone, the equivalent of 130 "new Berlins" will need to be built by 2050. Experiences gained from cities such as Dakar, Miami or Rotterdam, where green roofs and “water plazas” have been used for resilient urban development purposes, show that this is possible. But only if the necessary investments are made carefully in advance, as opposed to reactively during the course of a crisis. Having a strong approach will not suffice on its own. Political priorities, trust and visions need to be mobilised. A more “emotional” form of communication between scientists and infrastructure managers regarding water risk may be a step towards convincing urban policymakers and the general public to act with prevention in mind. Targeted messages, such as those associated with “Day Zero”, may be useful in this regard.■