

06 CLOUDBURSTS AND FLOODING - A CATASTROPHE OR AN OPPORTUNITY?

HOW IT IS DONE

With the change in weather patterns caused by climate change, many cities experience heavy and unexpected rain storms, at times causing flooding. However, any city can benefit by considering the following tools in order to build resilience to the climate changes:

- Climate change adaptation should not only focus on minimising negative impacts. Turn it around to capitalise on possible opportunities such as converting rainwater into a valuable resource to benefit urban life.
- Create blue and green infrastructure where trees, plants and water are incorporated and integrated in the city planning. This can build resilience and innovative, aesthetically pleasing recreational areas that improve quality of life for the residents and increase the cities' global value.
- Plan and build for health, recreation and water management at the same time. This makes it possible to ensure that the handling of stormwater will be part of infrastructure and building projects as well as the overall city planning.

How can city water drive growth and resilience?

Rising sea levels, heavier and more unpredictable rain patterns and inland flooding are just some of the climate change related issues that will have an effect, and that are already now beginning to make a huge global impact on urban areas. Causing damage to infrastructure and buildings, prompting a reduction of property values, and even causing loss of human lives, the consequences and costs are severe for individuals, municipalities, regional and national governments.

Most cities are planning for climate change adaptation, but it can be difficult to choose the right approach that matches the cities' individual needs while at the same time creating more value for the city and its residents.

As facilitators of this process, cities need to establish a common ground and understanding between different parts of the governing bodies, i.e. municipalities, utility companies, and developers and ensure that the handling of climate change events such as heavy rainfall is part of all city and infrastructure planning.

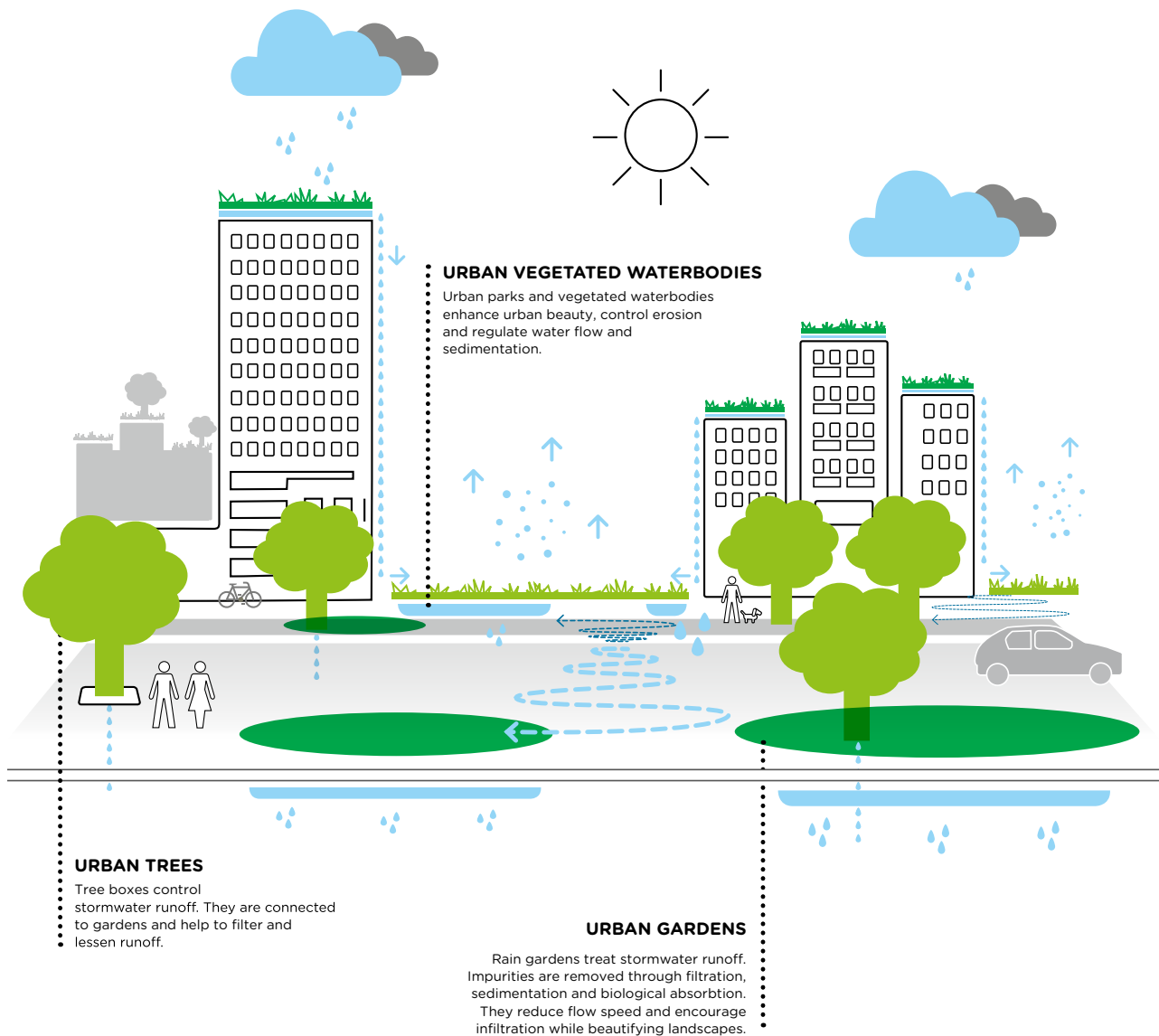
Blue and green infrastructure is the answer

Addressing urban climate challenges is possible if you apply the principle of building with nature -the blue green infrastructure approach. With this approach it is possible for cities to add an extra layer of water, trees and plants that branch out through the streets, between and on top of the city landscape. This adaptation method strengthens the ecosystem, enhances social cohesion, improves well-being and increases property prices.

Furthermore, it is necessary to consider the opportunity to use the rainwater for different purposes:

- Deploying it for livestock
- Irrigation
- Garden watering
- Indoor heating/cooling.

URBAN BLUE GREEN SOLUTIONS



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Each element in an adaptation strategy can offer great value to the city on top of building resilience. And through strategically planning and designing for the individual elements to have more than just one function, cities can obtain the highest possible value for money:

- By adding layers of water, trees and greenery, a city that is suffering from heat and/or lacks recreational options can create both resiliency and aesthetically pleasing recreational areas, e.g. by establishing a rainwater basin that is designed to create recreational value for residents and at the same time control storm water.
- Trees and greenery can provide shade and cool the air by evaporating water.
- A dike can prevent flooding but if designed smartly can also serve as a road, combining infrastructure solutions and adaptation.

A holistic approach to building resilience

Building with blue and green infrastructure brings about potential solutions that address and benefit a city's strategy towards stormwater management, climate change adaptation, less heat stress, more biodiversity, food production, better air quality, sustainable energy production, clean water and healthy soils. It is a holistic approach to building resilience that at the same time creates more liveable cities and gives residents the opportunity to be close to nature in a highly urban environment.

With thorough planning and collaboration between the governing bodies, the blue and green infrastructure approach has proven to be highly cost effective:

- Natural surface adaptation will most likely be less expensive than extending sewers.
- Lots of the elements provide double value and can alleviate congestion issues, increase property prices and provide more liveability.
- Planning ahead and creating blue and green infrastructure in areas where construction work is already being carried out saves money and reduces inconvenience for residents.

THE IDEA BROUGHT TO LIFE

A blue and green garden city, Denmark

The town of Kokkedal has undertaken Denmark's largest climate adaptation plan to date, a project that safeguards against water damage and capitalises on stormwater by using it for aesthetic, social, and health-promoting purposes.

The dilapidated area of town is grappling with more than the severe consequences of heavy rains as the town is socially divided and has a reputation of suffering from juvenile crime. To address these issues, the town has made social cohesion and safety a crucial element of its climate adaptation plans, using water and greenery to establish outdoor areas that can bring people together and give the area a much-needed boost.

Crucial parts of the adaptation plan is the expansion of an existing stream, the restoration of the original water cycle, and the creation of a delta formation to make the water flow through the town. Together this forms a strong connection between the water, the parks, and the buildings as the water branches out and creates social and visual connections.

Building resilience in Asian cities

Inhabitants in coastal regions of Asia could face some of the worst effects of global warming. Hence, a new study funded by the Asian Development Bank has been launched to identify the most effective adaptation and funding options to create the strongest resilience possible in six Asian cities.

The goal is to invest efficiently in a comprehensive low carbon adaptation plan that focuses on people and health, thus reducing carbon emissions and increasing resilience.

Despite economic growth, much of Asia continues to grapple with an infrastructure deficit and is struggling to provide power, water, and transport systems to meet population needs. For this reason, the study prioritises solutions that include infrastructure and buildings needs as part of the overall adaptation process.

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TONNES
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