



ENVIRONMENT

Sponge City: Berlin plans for a hotter climate

Heat waves and rainstorms will become common in northern Germany as climate change deepens. Experts envision heat- and flood-proofing the city of Berlin by making it into an "urban sponge," with green roofs and wetlands.



More trees and sidewalk awnings to provide shade; living rooftops covered in moss and grasses; light-colored buildings that reflect rather than absorb heat; special heat-resistant road surfaces to prevent tarmac melting on very hot days; urban wetlands and more permeable surfaces to absorb and store water during heavy rainfall.

Those are some of the most important among dozens of specific climate adaptation interventions a consortium of experts has recommended in a new report. The measures are meant to make the city of Berlin more resilient and liveable in the face of

[climate changes expected in coming years and decades.](#)

The experts' urban design ideas were solicited by the Senate of Berlin, the city's governing body, and published this week under the unwieldy moniker "StEP Klima KONKRET." The city has, since 2007, gradually developed

[substantial expertise in modelling](#)

how Berlin's cityscape will be affected by climate change. Now, it's pushing for tangibles moves towards long-term adaptation.



Scenes like this June 2016 flood in Altenburg could become more common in future.

Climate changes will hit some countries much harder than Germany, but northern Europe won't be exempt from tough impacts. In 2003, an extreme heat-wave lasting weeks caused numerous deaths in Germany. In years since, devastating floods were caused by days of unusually heavy rain in various parts of the country. Such events were highly unusual during the 20th century, but by the mid-20th century, as global warming gathers pace, they're expected to be commonplace.

The cityscape as a water-sponge

Heike Stock, the municipal official in charge of the program, told DW that water management will be key to mitigating the effects of climate change on the urban environment.

"We've been using the term '*Stadtchwamm*,' or 'sponge-city'," Stock said. "The key is to avoid sealing up too much of the ground surface with concrete or tarmac. Wherever possible, we want water-permeable surfaces. For example, parking areas and median strips can be resurfaced to allow water absorption into the ground."



Building owners are encouraged to "regreen" the inner courtyards typical of Berlin apartment buildings.

Rooftops planted with mosses or grasses can also absorb water, and then release it through evaporation later on. That results in an evaporative cooling effect, in the same way that sweat evaporating from the skin cools an overheating athlete.

"We also want to see more features like ponds, ditches and urban wetlands, as well as

[parks and green-spaces,](#)

including inner courtyard gardens and green strips along roads, capable of absorbing a lot of water during heavy rainfall events," Stock said. The goal is to retain rainwater within the cityscape, so that part of it evaporates and the rest of it releases gradually, rather than in an abrupt rush, into Berlin's rivers and lakes.

That helps prevent flooding of basements and sewer systems, and it also protects water quality in the capital's many lakes and rivers. Rapid runoff causes all kinds of urban dirt to get swept into surface waters. Even natural materials like pollen and flowerbuds dropped from urban trees can cause fish kills when they're swept into lakes, by overloading them with nutrients and using up the oxygen in the water, Stock explained.



More public drinking-water fountains should help keep citizens hydrated during future heat waves

Will real estate developers implement the recommendations?

The "StEP Klima KONKRET" report's recommendations don't have the status of regulations, so they're not binding on developers - though the proposed measures do have to be "considered" in development plans, Stock said.

"The city will use its powers to negotiate agreements with real estate developers over the details of projects subject to planning permissions to encourage climate-adaptive features like green rooftops," she said. "We really want to avoid new buildings that aren't adapted to a hotter climate, which would result in people installing electricity-hungry air-conditioning units during summers in future."

In addition, green building design competitions, citizen engagement strategies such as the city's existing, very successful tree-planting sponsorship programmes, and various subsidy programs will help encourage take-up of the recommended design features.

Retrofitting will be key

Although Berlin's population is in a period of sustained growth, the city wants to prevent urban sprawl. That means further increasing the density of residents per square kilometer, even as the city strives to maintain or improve liveability as well as resilience in the face of climate change.



New multifamily housing in Berlin Köpenick. Is it climate-proof?

Greening new building construction is part of the solution, but given that most of the city's land already has high-density buildings or roads on it, most of the opportunities will lie in retrofitting existing buildings.

The problem is that putting a planted garden on top of a building, for example, is significantly more expensive than a conventional roof. But Stock said that a business case can be made for green rooftops nonetheless.

"In cases where a building's roof is getting tired and needs to be replaced anyway, it can be a smart business move to replace it with a combination of solar panels, planted green surfaces, and a deck accessible to the residents," Stock said. "That enhances the value of the property and makes it more attractive to renters or buyers."



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