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China is building 30 'sponge cities' that aim to soak up floodwater and prevent disaster

LEANNA GARFIELD

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Yanweizhou Park in Jinhua, eastern China.

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- **The Chinese government is building water-absorbent projects in 30 cities as part of its "sponge city initiative."**
- **To date, the cities have received more than \$12 billion for sponge projects.**
- **The effort faces several challenges, including China's burgeoning municipal debt crisis and its current urban planning system.**

Like many places around the world, Chinese cities are considering ways to combat flooding in the face of climate

change. Increased [urban development](#) has made flooding worse, and has turned some neighborhoods into vulnerable waterfront locations.

In 2010, [landslides from flooding killed](#) approximately 700 people and left over 300 missing in three-quarters of China's provinces. Just this July, [heavy rains pummeled southern China](#), flooding towns, destroying homes, and killing at least 56 people.

In recent years, fatal floods like these have become regular occurrences. The number of Chinese cities struck by floods has [more than doubled](#) since 2008, according to The Economist. [Some scientists say](#) that rising global temperatures are making rainfall from storms more destructive and frequent.

The Chinese government is now pursuing an idea that could alleviate the problem: sponge cities.

Launched in 2015, the Sponge City Initiative invests in projects that aim to soak up floodwater. The projects are being built in 30 cities, including Shanghai, Wuhan, and Xiamen. By 2020, China hopes that 80% of its urban areas will absorb and re-use at least 70% of rainwater.

To date, the cities have received more than [\\$12 billion](#) for sponge projects, according to China Daily. The central government funds around 15% to 20% of costs, with the remainder funded by local governments and private developers.

Lingang, a planned city in Shanghai's Pudong district, hopes to become China's largest sponge city project. As CNN notes, in the past two years, the city government has spent [\\$119 million](#) planting greenery on rooftops, building wetlands for rainwater storage, and constructing permeable roads that store runoff. In early 2016, Shanghai announced the construction of 4.3 million square feet of rooftop gardens throughout the entire city.

In April, [utility company Suez](#) started installing a new 7-square-mile drainage system in Chongqing. The system's embedded sensors will allow local officials to monitor their sewer and stormwater networks to mitigate the risk of flooding, [according to](#) the company.



A semi-fantastical rendering of what Chongqing, China will look like with Suez's new drainage system.

Suez

Many of the projects incorporate green space, like wetlands and bioswales, which naturally help absorb water. The efforts seek to reduce the amount of rainwater runoff.

Though the Yanweizhou Park in Jinhua, eastern China, opened in 2014 (before the initiative began), it serves as a model for the type of flood-resilient, green infrastructure the country wants to continue building.

Featuring a series of winding pedestrian paths, it's designed to exist with floodwater during heavy rainfall. The images below show what the park looks like before and after monsoons, respectively:



Yanweizhou Park in Jinhua, eastern China.

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The initiative is facing some challenges, according to [a 2017 report](#) from the China Institute of Water Resources and Hydropower Research, a research institution under the country's Ministry of Water Resources. After surveying all 30 cities, the researchers noticed several roadblocks, including "ambitious goals without sound

research basis," unavailable green materials, and planning models that are too homogeneous and not locally specific. China is also in the middle of [a growing municipal debt crisis](#), making funding some of the projects difficult.

Still, the researchers remain optimistic, but only if cities continue to invest in research, development, and coordination among stakeholders, governments, and citizens.

"While significant challenges remain, important opportunities are opening for safer, greener, more holistic urban environments," the researchers wrote.

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