

Study shows making cities greener doesn't just capture carbon—it reduces it

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Creating more agreeable environments for walking and bicycling not only helps capture carbon, but a new study shows how it can help reduce emissions. Pictured, Karlavägen in Stockholm. Credit: David Callahan

Dozens of European cities could reach net zero carbon emissions over the next 10 years by incorporating nature into their infrastructure, according to a new study.

Published in the journal, *Nature Climate Change*, the analysis shows the ways cities can orchestrate a wide range of green solutions like parks, streetscaping and roof gardens to not only capture [carbon emissions](#), but help reduce them.

The study was undertaken by researchers from Sweden, the U.S. and China. It recommends the most effective approaches for natural carbon sequestration in 54 cities in the EU. And it shows how blending these steps with other climate actions can enable cities to reach net-zero carbon and actually reduce emissions by an average of 17.4 percent.

Zahra Kalantari, an associate professor in Water and Environmental Engineering at KTH Royal Institute of Technology, says the researchers focused on the indirect ways that so-called "nature-based solutions" can contribute to carbon neutrality.

"Nature-based solutions not only offset a proportion of a city's emissions, but can contribute to reduction in emissions and resource consumption too," Kalantari says.

The results are based on integrating data from previous studies on the effects of nature-based solutions. These include [urban farming](#), permeable pavements which enable rainwater absorption into the ground, narrower roads with more greenery and trees, wildlife habitat preservation, and creating more agreeable environments for walking and bicycling.

For example, [urban parks](#), green space and trees promote more walking, bicycling and other environmentally positive habits that replace

automobile driving. Combined with other solutions like [green infrastructure](#), these measures can further improve urban microclimates by absorbing heat and cold, and as a result reduce energy use in buildings.

It also provides guidance on which measures should be prioritized and where to locate them for the best effect, she says. For example, in Berlin the study recommends prioritizing green buildings and [urban green spaces](#), which could result in an emissions reduction rate of 6% for residences, 13% in industry and 14% in transportation.

"There are many studies that examine the effects of individual nature-based solutions, but this merges all of them and analyzes the potential systemic effect," she says. "That's new."

More information: Haozhi Pan et al, Contribution of prioritized urban nature-based solutions allocation to carbon neutrality, *Nature Climate Change* (2023). [DOI: 10.1038/s41558-023-01737-x](https://doi.org/10.1038/s41558-023-01737-x)

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