Green infrastructure plans need to consider historical racial inequalities, say researchers

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Urban planners increasingly are interested in green infrastructure projects for the health and climate benefits they bring to cities. But without attention to historical development patterns and existing power

structures, such projects may not benefit all residents equally and may exacerbate social and racial inequalities, says a group of researchers and practitioners of nature-based solutions for urban areas.

The researchers outlined their recommendations for a justice-oriented approach to urban greening projects in a paper published in the journal *Urban Forestry and Urban Greening*.

"For the environmental and ecological questions, we have a pretty good handle on what we need to do. The questions that are the hardest and the most important for people to tackle are how to work well with communities, particularly marginalized communities," said Rebecca Walker, a co-lead author of the paper and a professor of urban and regional planning at the University of Illinois Urbana-Champaign.

The other lead authors of the paper are Kate Derickson, a professor of geography, environment and society at the University of Minnesota and the co-director of the CREATE Initiative to address equitable access to environmental amenities; and Maike Hamann, a lecturer in development and sustainability at the Centre for Geography and Environmental Science at the University of Exeter in the United Kingdom.

Green infrastructure can benefit the ecosystem in multiple ways, such as flood and heat mitigation, carbon storage and sequestration, and opportunities for recreation and improvement in mental and physical health, said the researchers. But urban landscapes are unequal in the distribution of environmental benefits and harms.

For example, water quality standards for rivers in St. Louis, Missouri, reflect the city's racial geographies, with waterways in white neighborhoods historically managed for recreation and those in Black neighborhoods historically managed for industrial uses. Today the water quality standards for bodies of water in white neighborhoods remain

higher than for those in Black neighborhoods, according to the paper.

"Plans must contend with the histories of discriminatory policies and practices that produced underlying inequalities, and be attentive to the ways that contemporary efforts might reproduce or undermine the structures driving inequities in urban greenspace. This is true for new greenspace developments, as well as changes to existing urban nature," the researchers wrote.

A variety of disciplines need to contribute to urban green infrastructure, including those that ask questions about the social implications of ecological and economic projects, they said.

"If they are already disproportionately located near more advantaged communities, as we invest and expand in those areas, the inequities get doubled down," Walker said.

Among the factors that planners should consider is the scale of a project and how a particular community might be affected by a project, the researchers said. For example, a wetlands mitigation program in Mississippi allowed developers to fill in wetlands in one location while buying wetland mitigation credits elsewhere. Residents of the small, Black community of Turkey Creek, Mississippi, argued that the practice harmed their neighborhood, which was hit hard by Hurricane Katrina, by removing wetlands that could absorb stormwater.

"This suggests that … attempting to address large-scale issues (such as global climate change) cannot be done equitably without careful attention to local-scale issues (such as neighborhood flooding)," the researchers wrote.

Their research emphasizes the importance of building relationships with communities and accepting uncertainty about the outcomes of their

work. While Derickson and Walker were working with a community on water quality and flooding issues, the community members repeatedly raised concerns about gentrification related to green infrastructure solutions.

The researchers shifted their focus and developed an anti-gentrification toolkit offering ways to invest in urban greening without driving displacement of residents. Being open to ambiguity in defining a problem led to a new opportunity for their work to lead to justice-oriented policies, they said.

Finally, the researchers advocate for an approach that promotes modest projects that address the needs and priorities of a community's residents and allows them to help shape the projects over large developer-oriented infrastructure investments.

"While the uptake of urban green infrastructure represents a promising development in urban sustainability and development practices, it cannot be assumed that these projects will benefit all residents or promote urban equity. Indeed, the history of urban development and infrastructure projects shows that there is a tendency for such projects to consolidate benefits for powerful groups, often at the expense of the vulnerable or marginalized," the researchers wrote.

More information: Kate Derickson et al, The intersection of justice and urban greening: Future directions and opportunities for research and practice, *Urban Forestry & Urban Greening* (2024). DOI: 10.1016/j.ufug.2024.128279

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