Hixon Center for Urban Sustainability

CASE STUDY

Green Roof Distribution in New York City

Green City | **Built Environment**

Climate Issue: Carbon Sequestration

Cities around the world are turning towards new infrastructure designs to sequester atmospheric carbon. One popular strategy is greening building roofs. Well designed green roofs can provide additional benefits, including:

- Food access
- Air filtration and cooling
- Enhanced urban biodiversity
- Reduced stormwater runoff
- Energy savings for host building
- Mental health benefits for users
- Community-building opportunities.

Green Roofs: Unequally Distributed

- A case study of New York City (NYC) revealed that green roofs are not distributed equally
- The science showed that the largest concentration of green roofs are privately owned and located in more socioeconomically privileged areas
- Because of the environmental benefits of green roofs and its unequal distribution, this is an environmental injustice
- To address this injustice, cities must prioritize equitable distribution of green roofs.

City-Level Action for Change

- The 2019 NYC Climate Mobilization Act requires the installation of solar panels and green roofs on all new buildings and major renovations
- As of 2023, NYC reported a growing total of 735 green roofs
- The law is expected to reduce emissions from large NYC buildings by at least 40%

Local policy can contribute **to more equitable green roof distribution.**

Green Roof Design Considerations

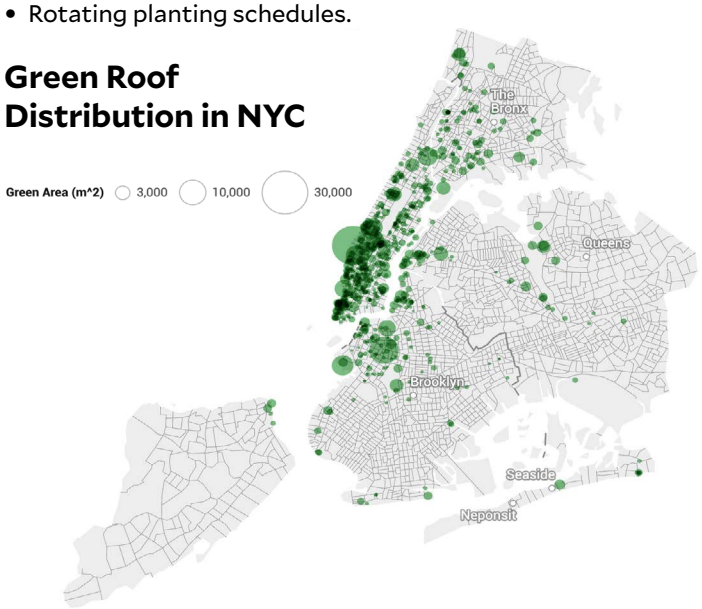
Key features to be considered when designing a green roof include:

- Weight-bearing infrastructure
- Irrigation systems
- Roof sunlight exposure
- Accessibility to the public.

Certain management practices can increase the stability of the carbon sequestered in soil, such as:

- No-till farming
- Cover cropping in off seasons
- Rotating planting schedules.

Green Roof Distribution in NYC



WHAT CAN YOUR CITY DO?

APPROVE policy that expands green roof access to everyone

ENSURE equal green roof distribution

EDUCATE communities on the benefits of green roofs, such as cooling and food access

MAKE green roofs multipurpose, such as using them for community gardens and public events.

To find out more information on this case study, contact **Lily Fillwalk** at **lily.fillwalk@yale.edu**. This research was supported by a Hixon Fellowship. Data for figure from Treglia, M. L., McPhearson, T., Sanderson, E. W., Yetman, G., & Maxwell, E. N. (2022). Examining the distribution of green roofs in New York City through a lens of social, ecological, and technological filters. Ecology and Society, 27(3).