



## SUFC Research Funding Rationale

### Introduction

The Urban and Community Forestry (U&CF) program has seen historic investments through federal funding and state and local initiatives over the past year. Most recently the U.S. Forest Service (USFS) announced \$1.3 billion in funding through the Inflation Reduction Act (IRA) for all 50 states, the District of Columbia, two U.S. territories, three U.S. affiliated Pacific islands, and several tribes for projects relating to the planning, protection, and maintenance of urban tree canopies nationwide.

While much of this funding goes toward programs to put trees in the ground and maintain them, there is also an urgent need for research funding to establish benchmarks that can be used to scientifically measure impacts from these investments, including urban heat reduction, public health, climate resilience, and mitigation of environmental injustices. Urban forestry research funding sources are currently limited, resulting in research that is too often stuck in a permanent “pilot study” mode. Dedicated research investment is therefore needed to build evidence and develop strategies that will boost the effectiveness of urban and community forest investment and maximize benefits to residents.

The SUFC Research Working Group has identified the following research areas in need of support for long-term monitoring and analysis that will identify and advance effective action in planning, planting, and maintenance of urban forests:

- **Human Health:** What are the best practices in urban forestry that will sustain and enhance proven human health benefits, such as improved birth outcomes, mental health, respiratory illness, cardiovascular disease, and reduced heat-related illness and death?
- **Climate and Resilience:** Where and how best can trees be protected, restored, and managed as effective nature-based solutions that will reduce storm damage, erosion, and sedimentation while moderating extreme heat events?
- **Environmental Justice:** How can urban forest planning be improved to help address historic racial and socio-economic bias in urban policy and lower pollution exposure,

improve quality of life, and expand walkability and access to green space for all communities?

## **Previous Research Findings**

### Human Health

Research to date has found that urban forests and greenspaces simultaneously promote better [human health](#) in many ways, leading to much lower rates of disease for those living nearby. Additionally, urban forests help in [reducing levels](#) of resident heart disease, hypertension, diabetes, [asthma](#), and [mental and psychological distress](#). Trees also support increased pedestrian activity and exercise, improving mental health, while reducing air pollution, hospitalization rates, and heat-related illness and death. For example, [a 2010 study](#) found tree canopy avoided 670,000 acute respiratory incidences and 850 deaths nationwide. Roughly translated, these benefits equate to [significant reductions in individual](#) healthcare expenditures, driven by reduced hospitalization and emergency department visits.

### Climate and Resilience

As community infrastructure, research has long demonstrated that trees are [a uniquely cost-effective method of reducing greenhouse gasses](#) and [stormwater erosion](#) to slow the impacts of climate change; however, trees alone cannot possibly mitigate the entirety of human emissions. More recent findings have demonstrated the efficacy of forestry in helping human populations adapt to and mitigate climate disasters, such as extreme heat, drought, flooding, erosion, and other impacts.

### Environmental Justice

All people benefit from experiences of nearby nature; however, [studies](#) reveal that socioeconomically disadvantaged individuals and communities benefit more from greenspace interventions than advantaged communities. Despite the evidence, significant disparities remain in tree canopy distribution that favor wealthier and predominantly white communities that were not subject to federal redlining and other discriminatory practices over multiple decades.

## **Research Needs**

### Human Health

\$4.1 trillion is [spent annually](#) on healthcare costs in the U.S., yet medical advances have slowed, improvements in disease rates have stagnated, and costs have risen sharply. With political gridlock on most public health expenditures, [improvements to environmental quality have been identified as one of the only avenues to make large-scale advancements in the health of Americans](#). However, further regulations on pollution and urban development are not politically feasible in most jurisdictions. Urban forest and greenspace investments are one of the few infrastructure interventions that improve the health of Americans and ease the burden of the healthcare crisis.

Urban growth policies and programs are beginning to incorporate the benefits of greenness on public health, but additional research is needed to understand exactly how and what types of greenness lead to the most significant human health improvements. Scientists estimate that [research-informed greening interventions](#) could exponentially expand the health benefits of greenness. Health benefits and costs could also be quantified to understand the extent of return on investment.

Maximizing human health co-benefits using evidence-based greening programs could be one of the greatest health improvement campaigns of our generation. To ensure success, research is needed on how to effectively energize and engage the public in support of community planning, monitoring, and maintenance of the urban forest.

### *Climate and Resilience*

Total inflation-adjusted [expenditures on climate disasters](#) have more than doubled over the past decade and continue to increase. Imported invasive forest pests and diseases alone have cost homeowners and local governments more than \$4.5 billion annually for control and mitigation. Urban and community forests can help to mitigate this climate-related damage and save lives; however, climate change is making forests more vulnerable to drought, wildfire, insect threats, and disease, putting forest health and sustainability at risk.

Science can inform best practices to mitigate climate change while sustaining a broad array of societal benefits through nature-based solutions such as protecting and managing urban forests and greenspace. Research is needed to help communities develop effective strategies for using trees to accomplish their climate mitigation goals, and to help them effectively detect and control pests and diseases that may slow progress.

### *Environmental Justice*

Disparities in [prevalence and access to urban forests](#) and greenspace represent a major component of environmental inequity. The consequence is [poorer health outcomes in disadvantaged, low-income, vulnerable, and minority communities](#) across the United States as the absence of trees and greenspace limits potential health benefits of walkability and active living, mental health, and recreational access. Communities that are overburdened with environmental degradation also have less protection from air and noise pollution, urban heat, crumbling infrastructure, flooding, and climate disasters.

More research is needed to understand how to design programs that benefit local communities without further burdening them. This research would help planners and managers understand community perceptions and more effectively implement interventions that improve the environmental quality of overburdened and underserved communities. Resulting tools can help these decision-makers to evaluate the co-benefits when compared to other interventions and to understand how the interventions address the communities' most pressing needs.

## **Federal Funding**

The [ten-year action plan](#) for Urban and Community Forestry published in 2016 by the USDA Forest Service recommended roughly \$50 million annually (\$500 million total) for research and analysis over 10 years. Priorities included urban forest and greenspace management and planning, insect and disease control, and human and environmental health. The recommendation is substantially more than what is currently being spent by the federal government.

Expanded and innovative funding programs are needed. Research in urban and community forestry is complex, despite assumptions that it may only be about the trees. Success in research about human health, climate, and environmental justice depends on long-term and direct collaborations with state, local, and community partners. Their needs and interests must be addressed when developing research questions and sharing results. Social and environmental scientists must work together in multidisciplinary teams over long periods of time to achieve complete knowledge of the approaches needed to sustain existing urban forest conditions and promote expanded canopy.

The SUFC Research Working Group has identified four potential federal funding sources to expand funding for urban and community forestry research. These potential federal funding approaches include:

- Increasing ongoing annual appropriations to the USDA Forest Service and its six regional Research Stations and long-term ecological research (LTER) studies to expand urban research;
- Encouraging major federal research funding entities, such as the National Institutes of Health and the National Science Foundation, to promote and accept proposals for urban and community forestry on the issues presented in this paper;
- Urging all federal agencies that address human health and welfare, such as Health and Human Services, Housing and Urban Development, and the Department of Transportation, to review programs for research opportunities in urban and community forestry; and
- Engaging the White House to recognize and support research that addresses urban and community forestry as a critical component of nature-based solutions.

## **Need for Investment**

Investment in research that informs and supports urban and community forestry will exponentially increase the effectiveness and benefits of greening interventions. Trillions of dollars are expected to be invested into nature-based solutions over the coming decades, and investing in research now will multiply the effectiveness of budgets and spending, resulting in a healthier, happier, and more equitable society.

Note:

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