

ENVISIONING

A

GREAT



GREEN



CITY

OUR VISION FOR A SUSTAINABLE URBAN CENTURY





Urban nature is not a luxury, it's critical infrastructure. Residents enjoy the green space in Brooklyn Bridge Park in New York City.

What Defines a Great Green City?

Mark R. Tercek, President & CEO, The Nature Conservancy

“Investing in healthy reefs, wetlands, and other natural systems can significantly reduce the impacts of flooding, storms, and wildfires. And in many cases green infrastructure can be more cost effective than traditional gray infrastructure. **These investments won't just help rebuild communities today—they will help to build resilience for the future.**”

Imagine cities that are not apart from nature, but a part of nature. We can aspire to cities where people and nature both thrive; truly flourishing communities where green space is not seen as a luxury—but as critical urban infrastructure that effectively addresses some of urban planning's biggest challenges.

By 2050, two of every three people on Earth will live in a city. This human migration from rural to urban lives is unprecedented and is projected to result in the rapid urbanization of a land area greater than the size of France and Germany combined; driving habitat loss, as well as the degradation of lands that we rely on to protect our drinking water and grow our food. Poorly planned urban growth could even interfere with cities' best defense against a changing climate – natural lands for climate adaptation.

Rather than embracing nature, however, we've built our cities and towns to work against it. Concrete buildings and streets trap and amplify heat, resulting in the death of tens of thousands of people each year. Impermeable surfaces cannot absorb rainwater, causing stormwater flooding and contributing to pollution in rivers and oceans. Treeless streets exacerbate the impact of pollution from nearby traffic and factories, leading to higher asthma rates and cardiovascular disease. And climate change is only making these challenges more difficult for cities.

But cities are far more than a problem to be solved. As centers of innovation and inspiration, filled with a diversity of people who want to change the world: Cities can be our solution.



Pascal Mittermaier,
Global Managing Director for Cities,
The Nature Conservancy

LEFT: © KEVIN ARNOLD



Working with neighborhoods to plan for more urban nature can help strengthen a community. A sidewalk bioswale (above), like this one in New York City, can clean stormwater runoff, reducing pollution in rivers and bays. Harvesting greens at the Brooklyn Grange Rooftop Farm, which grows more than 50,000 pounds of organically cultivated produce per year.



Our solution:

PEOPLE

+ NATURE

With nature as our ally, we aim to improve the quality of life for more than a hundred million people in cities around the world by 2025 and build a movement for nature-based solutions so that both people and nature thrive.

BY TAKING our direction from local residents and working side-by-side with community leaders we can make nature a valuable asset for every neighborhood.

BY TESTING solutions at the community level, then sharing best practices globally through partnerships and networks, we can replicate successes and avoid inefficiencies.

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BY DEVELOPING innovative collaborations, financing mechanisms and policy strategies, we can change how municipal leaders look at nature.



Joel Paque, Global Cities Program Director, The Nature Conservancy

Pitting people against nature offers a false choice.

We need not decide between people in cities and the natural systems that we all need to survive. Rather, by bringing more nature to cities and managing our collective resources well, we can help achieve the United Nations' Sustainable Development Goals and meet The Nature Conservancy's ambition to conserve the lands and waters on which all life depends.

SDG No. 11, Sustainable Cities and Communities, aims to "Make cities and human settlements inclusive, safe, resilient and sustainable." It is not only engineered solutions for urban development that will help the world achieve this goal—natural systems have a critical role to play. And the Nature Conservancy believes that biodiversity can be protected and enhanced while serving the needs of the billions of people around the world that live in cities.

Nature has a clear and significant role to play in SDG No. 11, and a path to success is laid out in the New Urban Agenda, a global declaration of "cities for all," that was codified at the 2016 Habitat III conference in Ecuador. The New Urban Agenda acknowledges and articulates the connections between greener cities and healthier cities; between greener cities and more resilient cities; and calls for the benefits of nature to be equally accessible to all residents.

This collective vision for "well-planned urbanization" that accounts for how the built and natural environments work in tandem, not in opposition, to make our cities more livable will be key as cities around the world swell to adapt to growing human populations. Creating and protecting safe, inclusive and accessible green spaces can bring myriad benefits to cities.

But nature can do more. As cities grow and resources are strained, nature can improve human health and well-being by reducing particulate matter in the air we breathe (SDG No. 3), can contribute to clean water and sanitation by protecting source water (SDG No. 6) and when plans incorporate the needs of local residents, access to nature can help address some of the impacts of inequality (SDG No. 10).

Urban conservation isn't a separate goal for city leaders to add onto their already busy agendas. It's a series of tools that can help city leaders meet their existing goals across many sectors – economic growth, public health, waste management, thriving neighborhoods that attract residents and businesses.

Cities need nature. And cities can lead the world.

Working collaboratively via networks including ICLEI, 100 Resilient Cities and C40, mayors and their staff can drive policy on biodiversity protection, climate adaptation and mitigation and wastewater management to solve national and global challenges.

Together, we can make life in cities better for all of us.



Children play soccer on a permeable field in Shenzhen, China. Permeable surfaces help manage rainwater drainage and flow. The Sinolink Primary School in Shenzhen, China has implemented a number of sponge city features including permeable surfaces in their sports grounds. Sinolink students also participate in a 'young naturalists' class taught by TNC China employee Chen Haomiao in Shenzhen, China, who attended the school as a child.



A Great Green City Is ...

RESILIENT

Resilient to the impacts of climate change. Green spaces and trees cool neighborhoods in the face of increasing heat. Local rivers and watersheds are healthy and provide access to clean drinking water and recreational opportunities for everyone. Green infrastructure like rain gardens and swales helps mitigate flooding by absorbing excess stormwater. Abundant coastal habitats such as oyster reefs and seagrass beds buffers coastlines against erosion and storm surge.

Benefits of Urban Nature

Research has linked the presence of urban nature to...



INCREASING
neighborhood property values



PROTECTING
coastlines and reducing storm surge



COOLING
city streets by 2-4°F, reducing deaths from heat and cutting energy use

© THEODORE KAYE



Laura Huffman, Texas Regional Director and North America Cities Committee Chair

“Urban green spaces can mitigate heat and air pollution, manage storm water and protect against climate impacts while stacking benefits like enhancing city life, promoting recreation and improving public health. **Nature can help create thriving, resilient cities—that’s a huge return on investment.**”

PLANNING FOR GREEN Melbourne, Australia

Working with Resilient Melbourne, The Nature Conservancy is helping to develop an urban forest plan that identifies opportunities to maintain and restore natural areas in a fast-growing metropolitan area. Melbourne is frequently ranked among the world’s most livable cities, and as its suburbs expand to meet the needs of a growing population, municipal leaders are looking to urban nature to protect wildlife habitat, provide green space for recreation and ensure that trees are available to manage the effects of climate change, including heat.

COASTAL STORM RESILIENCE New York, USA

The Nature Conservancy analyzed several coastal infrastructure options, ranging from purely nature-based solutions to one consisting of only gray defenses. In the case study community of Howard Beach, Queens, the analysis shows that a hybrid approach using a combination of natural and gray defenses could result in avoided losses of up to \$244 million from the current 1-in-100 year storm event. Demonstrating the benefits of a hybrid approach in terms of future cost-avoidance provides a strong basis for making investments that use both nature-based and gray systems in community resiliency that are critically needed today.

WATER SECURITY São Paulo, Brazil

This decade, São Paulo suffered its worst drought since records were first kept in 1930. Low rainfall and high rates of evaporation have caused the volume of water stored in the regional water system, which served 9 million people, to dip to less than 10 percent of its total capacity. The Conservancy is a part of the Water Movement for São Paulo, a partnership aiming to help businesses and governments incorporate strategies that seek to preserve rivers and springs as essential tools of sustainable water management. This collaborative water fund initiative is based on the principle that the availability of water is an irreplaceable component in the operation of companies that are interested in achieving sustainability within their own businesses.

SPONGE CITIES Shenzhen, China

The Nature Conservancy’s China program is leading on the “Sponge Cities” initiative, an effort developed by the Chinese government to use nature as a solution to water management challenges, including storm runoff and flooding. In Shenzhen, a fast-growing megacity in Guangdong Province, we’ve supported efforts by the Tencent Corporation to use permeable pavers, green roofs and smart design to manage water at their high-rise headquarters. We’ve worked with a local school to build a garden that filters water, and with an innovative “sponge city” park to invite neighborhood residents into a conversation about the role of nature. And we’ve built a model green roof, designed to retain and use 65% of the rainwater that lands on the roof of a residential building in a densely populated neighborhood. Each of these pilot projects demonstrates the potential of urban nature so others can adopt our solutions.



A Great Green City Is ...

HEALTHY

Healthy and vibrant, with abundant urban greenery that filters pollution and provides clear health benefits to people. Strong local investments in source water protection supply clean, safe drinking water. Stormwater and flood solutions improve wastewater management. Residents have easy access to nature; and green spaces provide healthier, more abundant habitat so native plants and wildlife can thrive safely in cities with room to roam.

Access to clean air and water, local food and green spaces make communities healthier. A riverside park in Louisville includes pollution-filtering trees. Volunteers plant trees in Louisville, KY. Akshay Arora at Union Square Greenmarket in New York City stocks up on local produce.

CLOCKWISE FROM BOTTOM LEFT: © DEVAN KING/TNC; KEVIN ARNOLD

Rob McDonald, Lead Scientist for Global Cities



“The scientific evidence is increasingly clear: interacting with nature is associated with multiple health benefits, from reducing stress, increasing concentration, and decreasing the incidence of diseases like asthma. Beyond our personal health, nature in cities helps keep our air cool and clean, and is a cost-effective way to manage stormwater. **Smart cities are planning for nature as a crucial type of infrastructure to provide to their citizens.**”

GREEN HEART PROJECT Louisville, USA

The Nature Conservancy is a founding partner in the Green Heart Project, landmark study that will examine the link between neighborhood greenery and human health. Louisville is losing more than 50,000 trees each year, and experiences significant public health impacts from air pollution, including high rates of cardiac disease. We believe nature can help. The Conservancy is partnering to plant more than 8,000 trees and plants to help clean the air in a Louisville neighborhood, where medical researchers will conduct a controlled study to test the degree to which urban trees can help filter pollution and improve health and wellbeing at the neighborhood level.

WETLAND RESTORATION Chennai, India

For more than a decade, Chennai has been experiencing erratic weather events such as storms, floods and droughts, with impacts exacerbated by unplanned and rapid development, which is adversely impacting the health of wetlands and lakes built long ago to manage the city's water. We are working in partnership to revive Keelkattalai Lake, which drains into a marshland that is critical for the city's water resources.

URBAN HEAT MITIGATION Dallas, USA

The Nature Conservancy is working with partners to plant trees with school-aged children and volunteers in the Oak Cliff community, an underserved area that has been identified as one of the most pressing places in the city to address urban heat, air pollution and lack of access to parks and green space. Plans are also underway to engage local youth in the monitoring and evaluation of trees in their communities.

NATURE'S COOLING Phoenix, USA

Natural solutions can be a key component of local government efforts to plan a response to increasingly unhealthy temperatures. We're working with local leaders, partner and researchers to integrate environmental planning into heat-mitigation planning in one of the United States' hottest cities, where average highs soar to 105 F or more during July and August. The effort, called Nature's Cooling Systems, is focused on the neighborhoods that will see the greatest benefit from investment. Wealthy areas boast more green space and tree cover in many cities across the world, and our project is investigating ways to even the playing field, so that everyone can experience the benefits of urban nature.



REDUCING RATES
of cardiac disease, strokes, and asthma due to improved air quality

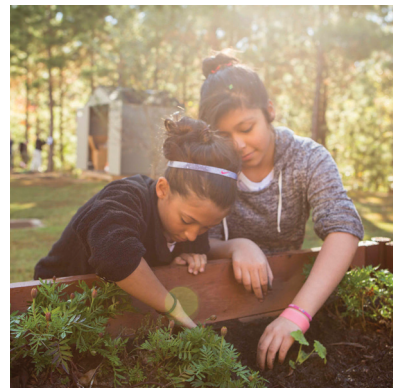


REDUCING OBESITY LEVELS
by increasing physical activity including walking and cycling



REDUCING STRESS
by helping interrupt thought patterns that lead to anxiety and depression

Equal access to nature's benefits, and protection from challenges like air pollution and flooding can make cities more livable. Access to nature improves mental and physical health. Green roofs manage water and create urban habitat. Introducing children to nature near home, like this school garden in Chamblee Middle School in Atlanta, Georgia, can start a lifetime of learning.



A Great Green City Is ...

EQUITABLE

Equitable and accessible so that all residents benefit from clean water, fresh air and nearby nature. Neighborhood leaders and residents are active participants in designing and implementing the best nature-based solutions for their neighborhoods. People in cities feel connected to nature and take responsibility for protecting the planet, now and in future generations.

Meera Bhat, North America Cities Network Director, The Nature Conservancy



“We work at the intersection of conservation and the needs of underresourced communities. **At the heart of our approach is our strong emphasis on building relationships** in communities where we work, our focus on diversity and community, and our aim to measure the social impact of our projects.”

NATURAL STORMWATER MANAGEMENT

Philadelphia, USA

Philadelphia aims to be the first city in the US to manage all its stormwater pollution with natural infrastructure, saving billions of dollars in more traditional sewer system development and drastically reducing water pollution. In total, the city's project aims to convert 10,000 acres of land to natural infrastructure, designed to manage and filter stormwater. The Nature Conservancy is partnering with the city's water department to develop and test new conservation, policy and financing strategies for natural solutions that also serve community needs, bringing investment to neighborhoods where it's needed most.

EASTERN MARKET EXPANSION

Detroit, USA

The Nature Conservancy is working to improve water quality in the Detroit River and Lake Erie by reducing the number of combined sewer overflow discharge events and flooding, via the introduction of natural solutions. At Eastern Market, a vibrant neighborhood that houses the city's oldest farmers' market and a small-business development incubator, the Conservancy is helping design green solutions as the market expands, making it possible for more people to experience nature's benefits.

BUILDING A GLOBAL VOLUNTEER COMMUNITY

Shanghai, China

Volunteers have helped the Conservancy achieve conservation goals across the United States for decades. Now, we're launching our first international volunteer program in Shanghai, working with local partners to build and maintain neighborhood gardens and pocket parks so that city-dwellers can meaningfully engage with nature in their neighborhoods.

WATER SECURITY

Cape Town, South Africa

The risk of running out of water is very real for cities across the globe, and Cape Town is leading in developing strategies to ensure access to drinking water for all its people. The city has led a successful campaign to reduce household water use by nearly 50%, while The Nature Conservancy is partnering with local leaders to develop a water fund that will provide financial support to help protect the resource over the longterm. The watersheds that serve the city's needs are overrun with invasive plant species, including acacia trees, which are unable to promote aquifer recharge as efficiently as native plants. Alongside local partners, including The City of Cape Town, we're hiring local people to restore the landscape, providing jobs while protecting the regional water supply.

CLOCKWISE FROM BOTTOM LEFT: © ISTOCK.COM/VUK8691; JENNIFER EMERLING



PROTECTING BIODIVERSITY
including habitat for migrating birds and pollinators



FILTERING
up to a third of fine particle pollutants within 300 yards of a tree



MANAGING STORMWATER
keeping pollutants out of waterways, and reducing urban flooding

Putting Cities on the Map

For decades, cities were literally a blank place on Nature Conservancy maps: Places without nature.

But cities, and the people who bring them to life, can be part of nature. The challenge communities around the world currently face is the ever-escalating pace and scale of development. Many global cities are growing faster than local leaders can plan, and policymakers aren't always aware of the benefits of nature. We believe, however, that growing cities, as centers of innovation and creativity, have the power to create momentum, inspire action and drive the transformational change required to create a more sustainable future.

The Conservancy has a history of addressing the most pressing challenges at the largest scale. Our conservation solutions are developed using good science, made possible by our non-confrontational, pragmatic approach, and executed in partnership with communities, businesses, governments, corporations, multilateral institutions and nonprofits.

We are now putting this experience to work in urban communities to make nature an essential part of the solution to the challenges facing cities. We are field-testing strategies to develop best practices and working to build community demand for nature while enabling the financial and political conditions to achieve lasting success.



Jayden Louis holds onto a red maple he planted in his backyard as part of a community-TNC collaboration to increase urban tree cover in urban neighborhoods of Bridgeport, CT.

Cities, and the people who bring them to life, can be part of nature.

© LUCAS FOGUJA



As cities grow, using science, scale, collaboration and innovation to add green space that manages air and water while protecting biodiversity and increasing people's access to nearby nature can make cities truly flourishing places. A jogger enjoys the Brooklyn Bridge Park looking towards Manhattan. Dense cities can be a strategy for environmental sustainability, if we incorporate nature, like New York City's Central Park, into urban planning.

Greening Urban Spaces Through...

Science

Many of nature's benefits in urban areas need more research to establish effective and scalable best practices. The Nature Conservancy brings more than 60 years of expertise in data-driven planning and applied science to our emerging work in cities. We are an organization founded by ecologists, and we employ more than 500 scientists, including economists, whose expertise can be marshalled to show how conservation can solve urban challenges.

Innovation

Our history of developing innovative partnerships, financing and policy mechanisms – from conservation easements to water funds to reef insurance – drives our efforts to pursue smart policy in cities that will put market forces to work to improve environmental outcomes while reducing costs and promoting innovation.

Scaling

Cities benefit from learning and sharing of best practices to develop scalable, replicable solutions to their shared challenges. The Nature Conservancy's global presence and partnerships with international networks can facilitate communication and spur the exchange of ideas, ensuring that best practices are shared to benefit cities large and small.

Collaboration

We also bring decades of experience in convening leaders and stakeholders to develop and implement shared solutions. We recognize the importance of engaging all stakeholders, early and often, to understand how environmental issues affect various communities differently. Dialogue and transparency are particularly important ingredients in empowering communities to navigate urban challenges. We will form collaborative relationships in cities, co-create solutions and measure impacts to ensure that community leaders and local residents are informed decision-makers in the development of nature-based solutions.



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Runners exercise along the Charles
River Esplanade, a popular park in
Boston, MA



The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends. Our vision is a world where the diversity of life thrives, and people act to conserve nature for its own sake and its ability to fulfill our needs and enrich our lives.

For more information

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Cover: A Great Green City is healthy, resilient and equitable. Clean energy and tree cover can help reduce air pollution. Chonggyecheon Stream in South, South Korea is a restored urban river that meets ecological and human needs. Sustainable transportation planning, including bicycle infrastructure, can make cities more livable.