



WRI AFRICA

Cities 4 Forests

Urban Climate and Water Resilience Across African Cities

Photo: William Bidibura/ARCOS Network

*Through WRI Africa's Cities Program and Cities4Forests, WRI supports rapidly growing cities to restore forests and nature, enhance water security and resilience, and improve health and economic opportunities. The **Green-Gray Infrastructure Accelerator** is our flagship initiative supporting 11 cities across the continent to rapidly scale resilient nature-based solutions (NBS) and green-gray infrastructure (GGI) by shaping policies and plans, providing technical assistance, and unlocking finance to deliver projects on the ground.*

The Challenge

Communities in African cities are grappling with an urgent challenge. Urban regions face significant climate vulnerabilities, including increased droughts, extreme heat, and more frequent and devastating floods, all of which jeopardize public health, disrupt livelihoods, and strain local economies. At the same time, the degradation of nature has driven substantial biodiversity loss, undermining the ecosystem services on which urban communities depend.

With the continent's urban population projected to double to 1.5 billion by 2050, cities must fill critical infrastructure gaps to safeguard vulnerable communities and ensure a climate-resilient future for all, including the **more than 60%** of urban dwellers who live in informal settlements and slums.

Current investments remain insufficient. A [joint analysis](#) by WRI, the World Bank, and the African Development Bank found that while the number of new NBS projects across sub-Saharan Africa has steadily increased since 2012, only 15% of these projects focus specifically on *urban* resilience. Given that urban areas will absorb 80% of Africa's population growth by 2050, expanding cities' support for GGI and NBS is critical to meeting the region's climate and development needs at scale.

Project geographies

Ethiopia

Addis Ababa
Dire Dawa

Kenya

Nairobi

Ghana

Kumasi

Republic of Congo

Brazzaville

Democratic Republic of Congo

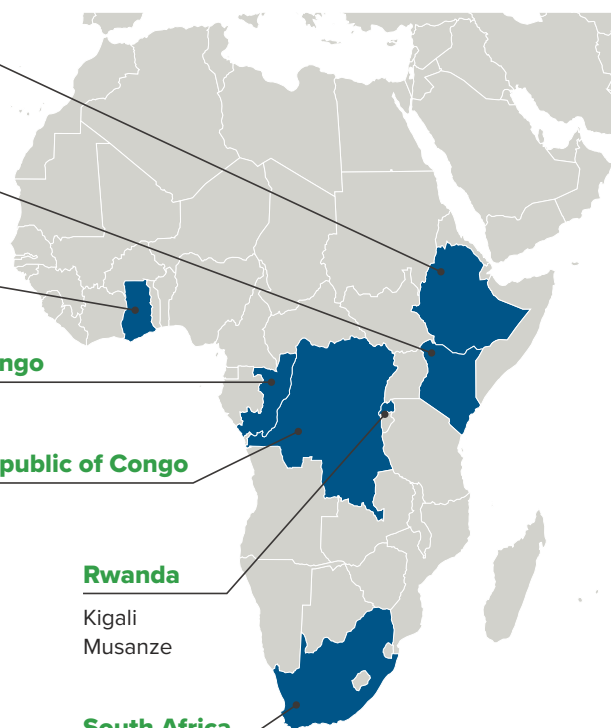
Bukavu
Uvira

Rwanda

Kigali
Musanze

South Africa

Johannesburg
Gqeberha



The Opportunity

Cities are increasingly combining “green” natural systems with traditional “gray infrastructure”. This GGI approach is an effort to address climate risks more effectively and affordably. Examples include pairing forests with erosion-control dams to reduce flooding, green roofs and canopy cover with existing structures to reduce heat impacts and regulate building temperatures, and bioswales with street drainage systems to improve stormwater management.

Increased investment in GGI can help African cities address urgent infrastructure needs while delivering cleaner air, improved water security, greater protection from floods and extreme heat, new

Compared to their counterparts in other regions, African cities contribute least to climate change, yet two-thirds of the continent’s cities are at *extreme* risk of climate- and water-related shocks.

green jobs, and long-term value that exceeds what gray infrastructure alone can provide. Community-led approaches can further advance gender and social equity outcomes by building local capacity and strengthening decision-making power among vulnerable groups.



Photo: ECC-SDOH, 2024

Our Approach

The GGI Accelerator works with 11 African cities across seven countries to address climate resilience challenges by delivering effective, context-tailored climate and infrastructure solutions. We offer cities technical assistance across the arc of project

development—from feasibility to financing, and from pilot implementation to scale and replication. Through the effective scaling of NBS and GGI, we can create cities that are more livable, equitable, inclusive, resilient, and vibrant.

The GGI Accelerator provides cities with comprehensive support in five key areas:

1. Policy Guidance & Institutional Development

We help cities embed NBS and GGI into their policies, governance, and planning through research, technical expertise, and engagement with decision-makers.

2. Project Development & Implementation

We support cities to design and deliver high-impact NBS and GGI projects by providing technical assistance to project developers—from feasibility assessments and species selection to monitoring and learning systems—turning resilient infrastructure ideas into scalable, community-supported solutions.

3. Funding, Finance & Economic Analysis

We assist communities to secure sustainable funding for resilient infrastructure by strengthening business cases and project bankability, incorporating plans into public budgets, advancing innovative financing strategies, and matchmaking with donors, investors, and financing partners.

4. Peer Learning & Capacity Building

We foster collaboration through peer learning exchanges that share proven practices to build long-term local capacity for planning, implementation, and maintenance while creating momentum for broader regional impact.

5. Communications & Stakeholder Engagement

We enhance visibility and build momentum for NBS and GGI adoption through outreach to policymakers, communities, and investors, helping cities secure critical buy-in and scale impactful solutions.

OUR IMPACT BY THE NUMBERS



\$23 MILLION

funding & finance unlocked
for project implementation



**4,452 HECTARES
(11,000 ACRES)**

of land under improved
management



9 POLICY

developments
advanced



13,000+ LIVELIHOODS

enhanced through jobs &
trainings



2.5 MILLION PEOPLE

with improved climate
resilience



Success Stories from Scaling Nature

Each city's success story showcases a different stage of one journey, from policy foundations to restoration at scale, toward the same goal: resilient, thriving cities powered by nature and GGI.

Photo: ECC-SDOH, 2024

Johannesburg's Jukskei River, once a vital lifeline, is now overwhelmed by pollution, sewage, invasive plants, and solid waste, threatening the health and safety of more than 6.5 million people, especially those in informal settlements along its banks. Invasive species displace native vegetation, destabilize riverbanks, damage drainage systems, and worsen flooding.

WRI is helping transform the degraded river corridor from a public health hazard into a resilient community asset. Through the GGI Accelerator and SUNCASA, the city is revitalizing a 15-kilometer stretch of the Jukskei River, creating a natural buffer against climate risks. This work is already benefiting more than one million residents and providing a model for scaling nature-based interventions across the wider catchment.

The SUNCASA project brings together local and global partners—including the Johannesburg Inner City Partnership, Water for the Future, Zutari, and the Alexandra Water Warriors—to restore the Jukskei catchment, reduce [flood risk](#), and create green jobs. Community-led efforts in Johannesburg's Inner City and Alexandra have rehabilitated more than 570 hectares of riparian land, clearing [invasive species](#) and reestablishing indigenous vegetation.

In [Soweto](#), Johannesburg's largest township, WRI is partnering with communities to reduce flooding and heat stress through NBS. Through the [Cool Cities Lab](#), WRI identified priority areas where green infrastructure can most effectively lower temperatures and improve quality of life for an estimated 200,000 people. With \$1.5 million from Amazon's Right Now Climate Fund, WRI and partners are planting 20,000 trees to cool streets and public spaces while restoring 130 hectares of degraded sections of the Klip River system.

A core feature of this work is its Gender Equality, Disability, and Social Inclusion (GEDSI) approach. WRI and partners have supported women-led nurseries to cultivate many of the 29,000 trees planted to date and engaged women leaders in planning restoration activities. The result is greater climate resilience alongside expanded economic opportunity and social inclusion.

The [Scaling Urban Nature-based Solutions for Climate Adaptation in Sub-Saharan Africa \(SUNCASA\)](#) project, funded by Global Affairs Canada and implemented by the International Institute for Sustainable Development (IISD) and WRI, supports urban communities in Dire Dawa (Ethiopia), Kigali (Rwanda), and Johannesburg (South Africa). The initiative helps cities implement gender-responsive and socially inclusive NBS that restore degraded river basins, reduce flooding, improve heat management and water security, create jobs, expand green areas, and remove waste. Local partners—including HCS Gender Desk in Dire Dawa, AVEGA-Agahozo in Kigali, and GenderCC in Johannesburg—design training and community engagement programs that address barriers to participation for women, youth, the elderly and people with disabilities.

WRI has supported the city in developing key policy tools, including the *Transformative Riverine Management Plan*, *Open Space and Urban Greening Strategy*, and an *Urban Forestry Strategy*. Together, these tools demonstrate the value of NBS and help institutionalize biodiversity restoration and open space development.

Building on this foundation, WRI is identifying strategic funders and investors to advance a portfolio of bankable projects, expand monitoring systems, accelerate catchment rehabilitation, and scale watershed restoration across the region.



Photo: Jenna Echakowitz/SUNCASA

Kigali, Rwanda's capital, contains 37 wetlands covering more than 10% of its area, which absorb rainwater across the city's steep terrain. However, informal settlements, agriculture, sand mining, brick-making, and unregulated industrial activity have degraded many wetlands and forests. Without natural vegetation to stabilize the landscape, the city is increasingly vulnerable to flash floods and landslides.

Through the SUNCASA project, WRI is collaborating with the City of Kigali, ARCOS, Rwanda Young Water Professionals, and AVEGA to restore tree cover and vegetation across more than 800 hectares of the city, stabilizing soil, reducing erosion and runoff, improving groundwater recharge, and increasing biodiversity. More than 1.2 million indigenous and fruit trees, along with buffer plants, have been planted to restore critical micro-catchments of the Nyabarongo River.

To ensure long-term impact, local communities are being empowered to protect and restore these areas while building resilient livelihoods. Thousands of community members, particularly women, youth, and people with disabilities, have been trained and employed in tree nurseries, plantings, and maintenance. The efforts deliver benefits for both people and nature: agroforestry trees provide fruit, medicine and fodder for farmers; [childcare programs](#) at tree nurseries enable parents, especially women, to participate in restoration work; and students across [17 schools](#) have been trained through Green City Clubs to care for newly planted trees.

These restoration efforts are focused in areas designated as forest and conservation zones under Kigali's *2050 Master Plan*. As the city grows over the coming decades, these landscapes will remain protected through municipal law and land-use regulations.



Photos: William Bidibura/ARCOS Network

Every time someone participates in NBS work, they gain experience, strengthen their resume, expand their knowledge, and build practical skills for working with nature. The project is transforming not only the landscape, but the reality of the community.

– Benigne MUGWANEZA, Project Manager, Rwanda Young Water Professionals

Dire Dawa, Ethiopia | River Rehabilitation and Water Security

Dire Dawa, Ethiopia's second-largest city, faces rapid urban growth, water and housing shortages, and escalating climate threats, including flooding, extreme heat, erosion, and severe groundwater depletion. A projected 50% population increase by 2037, coupled with the launch of a new Industrial Park and Free Trade Zone, will further increase water demand. Degradation of the Dechatu River catchment from deforestation and vegetation loss is compounding these challenges.

Working with Haramaya University and Hararghe Catholic Secretariat, the SUNCASA project is restoring the catchment by planting more than 1.3 million indigenous trees and rehabilitating

over 800 hectares of degraded land. As part of Ethiopia's Green Legacy Initiative, which promotes nationwide reforestation and ecosystem restoration, these efforts reduce flood and heat risks while strengthening livelihoods. A deliberate focus on gender equity and social inclusion ensures women and vulnerable groups are active participants and beneficiaries.

WRI will support Dire Dawa's next phase of climate resilience by embedding nature-based approaches into urban planning and investment policies, expanding locally led restoration efforts, and mobilizing sustainable sources of financing.



Photos: Eden Takele/WRI Africa

I used to cut trees to support my livelihood before the SUNCASA project, and sold them at the local market. Now, I'm saving from my monthly earnings, sending my children to school and renovating my house.



– Dahabo Abdoshe, who leads her village's seedling management group, describes the project's impact

Photo: Haramaya University/SUNCASA

Addis Ababa, Ethiopia | Urban Forest Policies and Species Selection

One of Africa's fastest-growing capitals, Addis Ababa faces increasing flood, erosion, and heat risks as urban expansion reshapes its rivers, hillsides, and green spaces. To combat these challenges, WRI is partnering with the city through the GGI Accelerator to strengthen urban greening efforts. In a region where low tree survival rates have hindered restoration, WRI delivered the city's first comprehensive tree cover assessment, providing critical baseline data to guide green space expansion, ecosystem restoration, and other NBS.

Since 2024, Addis Ababa has expanded an ambitious network of green corridors, transforming major thoroughfares and connecting parks, riversides, plazas, and restored landscapes. The city has upgraded more than 58 kilometers of green corridors—laid end to end, they would stretch the length of 552 football (soccer) pitches.

With WRI's technical support, the city developed an Urban Forest Strategy with species selection guidelines and reintroduced 80 indigenous tree species, laying the foundation for biodiversity recovery. As these trees establish and grow, the corridors are expected to deliver significant cooling benefits by 2030.

To scale this impact citywide, WRI partnered with the Ethiopian Institute of Architecture, Building Construction, and City Development (EiABC) to pilot a [rapid assessment tool](#), the [Strategic NBS Framework](#), identifying priority areas where NBS can reduce heat, mitigate flooding, and restore biodiversity. Addis Ababa will showcase its progress as the host of COP31, demonstrating how to build a greener, safer, and more resilient future. WRI is also exploring partnerships with the Addis Ababa Urban Beautification and Green Development Bureau to pilot demonstration projects in these priority areas.



Photos: Abener Eyuel/WRI/ICLEI

Nairobi takes its name from a Maasai phrase meaning “cool waters,” a reference to the Nairobi River, a vital natural asset with immense social and economic value. Yet recent catastrophic floods have devastated lives and livelihoods, displaced vulnerable communities, and exposed the limits of traditional infrastructure.

WRI is supporting the city’s transition from a costly, reactive disaster-response model to a [proactive, risk-reduction approach](#) anchored in NBS. WRI’s research shows that every dollar invested in Nairobi’s river ecosystems generate four dollars in avoided damages and economic benefits.

The foundation of this transition is the *Nairobi Rivers Nature-Based Solutions Strategic Framework*, a landmark roadmap that is guiding the restoration of Nairobi’s river ecosystems through sustainable, climate-resilient, and nature-based interventions. Developed by the Nairobi Rivers Commission with the City of Nairobi, Nairobi City County Government, WRI, and local stakeholders, the framework provides practical guidance, tools, and resources to design and implement GGI across the Nairobi River Basin.

The partnership with the Nairobi and Kenyan governments has deepened through years of policy guidance, institutional development, and technical support from WRI, the UN Environment Program and UN-Habitat, as well as collaboration with local implementation partners, such as Shack Dwellers International (SDI-Kenya) and Akiba Mashinani Trust Public Space Network (AMT-PSN). Together, these partners are advancing Kenya’s goal of growing 15 billion trees by 2032.



Photos: Schuyler Null/WRI

Bukavu, Democratic Republic of the Congo | Securing Water and Power by Restoring Nature

Bukavu, a rapidly growing city, sits where Lake Kivu flows into the Ruzizi River along the border with Rwanda. The city's steep hillsides turn heavy rains into fast-moving runoff that overwhelms drainage systems, damages roads, and threatens downstream communities. These pressures extend across the Ruzizi Basin, a watershed nearly four times the area of Greater London. Rapid in-migration, driven in part by people fleeing conflict, is accelerating urbanization beyond the capacity of infrastructure and public services.

Amid these pressures, Bukavu is turning to NBS to build a more resilient future. Working with local partners, WRI has restored 50 hectares of riverbanks and urban green spaces and planted more than 31,000 trees upstream of the Ruzizi I Hydroelectric Dam, helping protect critical water and energy infrastructure while stabilizing slopes and reducing flood risk. WRI worked with the DRC's National Electricity Company (SNEL), local associations, and families of military personnel living at Camp Saïo near the Ruzizi Dam to identify priority restoration areas.

To address solid waste challenges that block drains, pollute waterways, and worsen flooding during storms, WRI partnered with the recycling social enterprise Plastycor to train local women and youth in collecting and transforming plastic waste into products for resale, including waste bins, fishing platforms, and household items. Participants then shared their skills with community members, expanding the train-the-trainer model that ultimately reached 709 people, creating income opportunities while reducing waste in waterways and public spaces.

These investments are delivering both environmental and economic benefits. A community-based recycling network is improving waste management by removing plastic from waterways and drains and transforming it into income-generating products. Across restoration, urban greening, and recycling activities, more than 1,900 women, youth, municipal staff, and community members have participated in paid work and stewardship efforts, demonstrating how NBS can strengthen livelihoods while improving urban resilience.



Photos: WRI Africa (left), Elie Hakizumwami (right)

Deepening Impact in Africa's Emerging Cities

Through the GGI Accelerator, WRI is advancing analysis and strengthening the enabling conditions for future investment in five emerging cities: Brazzaville, Republic of the Congo; Kumasi, Ghana; Gqeberha, South Africa; Musanze, Rwanda; and Uvira, Democratic Republic of the Congo.

Working alongside local leaders and partners, WRI is advancing the research, planning, and partnerships needed to address urgent challenges, from water insecurity and climate risks to rapid urbanization. In Brazzaville, WRI helped the city launch its [Urban Forest Strategy](#), a first-of-its-kind strategy for both the city and the Congo Basin, where cities have grown with explosive speed, often without adequate infrastructure. In cities such as Gqeberha and Musanze, WRI has helped convene stakeholders and identify priority investments and actions to strengthen water resilience.

As these cities continue to grow, WRI is poised to deepen engagement, expand implementation support, and mobilize investment for high-impact projects that strengthen resilience, improve livelihoods, and create healthier urban environments for generations to come.



Photo: WRI Africa

About the Green-Gray Infrastructure Accelerator

The Accelerator is a flagship initiative of [Cities4Forests](#), a global initiative of WRI Ross Center for Sustainable Cities that collaborates with WRI's Food, Land and Water program. In Africa, the Accelerator is delivered through [WRI Africa's Cities program](#), advancing equitable and climate-resilient urban development across 11 cities. This work is made possible through the generous support of DANIDA, the French Development Agency (AFD), and the Caterpillar Foundation. Complementary restoration efforts in Dire Dawa, Kigali, and Johannesburg are delivered through the SUNCASA project, funded by the Government of Canada and implemented in partnership with the International Institute for Sustainable Development (IISD).

[Learn more at wri.org/GGIA](https://wri.org/GGIA)



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Photo: WRI Africa