Climate KIC

How strong innovation eco-systems can help create an inclusive **circular economy**

Key insights into the learnings from the Circular Economy Innovation Clusters in Bengaluru and Nairobi

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IKEA Foundation

How strong innovation ecosystems can help create an inclusive circular economy

Waste management poses a pressing challenge in Bengaluru and Nairobi, two vibrant and rapidly growing cities. The increasing volume and complexity of waste strain existing systems, impacting ecosystems, livelihoods, and community well-being while creating serious risks to human health and the environment. Current waste management approaches fail to keep up, making innovative and sustainable solutions urgently necessary.

Transitioning to circular economy principles—such as designing waste out of product lifecycles, keeping materials in use, and regenerating natural systems—offers a promising pathway to address this issue.

Yet, the scale and interconnectedness of these challenges go beyond the capacity of any single entity or group alone. Collaboration across diverse people and sectors, from businesses and universities to citizens and governments, is required to design and implement impactful solutions.

Climate KIC's Innovation Cluster-building concept is a powerful mechanism designed to meet this

need by bringing together dynamic, interconnected groups for collaboration, dialogue, learning and innovation to tackle systemic challenges at the local level.[1] By supporting new business models, fostering networks with a shared focus on the circular economy and promoting skill development, the Innovation Cluster approach is paving the way for lasting change.

The Circular Economy Innovation Cluster, an initiative by Climate KIC, GrowthAfrica, and SecondMuse and funded by the IKEA Foundation, addresses key challenges within the waste ecosystem in Bengaluru and Nairobi. By breaking down barriers that hinder innovators from scaling circular solutions, the initiative goes beyond recycling to focus on waste prevention and locally grounded interventions that empower vulnerable communities.

This report highlights three key insights from our journey so far on how innovation ecosystems can help create an inclusive circular economy in Bengaluru and Nairobi. It illustrates how we foster change through an adaptive approach, drawing on local contexts to transform mindsets, relationships and practices, all of which are essential ingredients for sustainable change. It also showcases impact results and features the voices of those involved in the Circular Economy Innovation Clusters in Bengaluru and Nairobi.

"Addressing climate challenges demands interconnected innovation and deep collaboration. Our Circular Economy Innovation Clusters initiative provides a structured approach to accelerate complex change—bridging the gap between ambition and action. The true power of innovation clusters lies in being locally led, ensuring that entrepreneurs, policymakers and ecosystem players co-create solutions that respond to local needs. By connecting innovators with governments, businesses and citizens, we foster an ecosystem where every actor plays a vital role."

Chris Roe

Director Entrepreneurship Solutions and Ventures, Climate KIC

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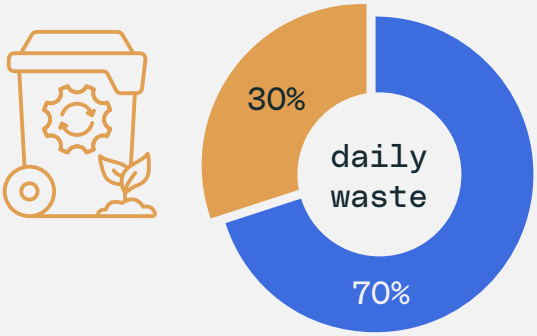
1 Innovation Clusters refer to a specific approach to building place-based innovation ecosystems.

Bengaluru

Despite Bengaluru's remarkable rise as the world's eighth-largest tech hub, its waste management infrastructure has struggled to keep pace with this rapid growth.

The city generates **over 5,000 metric tonnes of waste daily**, yet only 30 per cent is directly managed by the Bruhat Bengaluru Mahanagara Palike (BBMP), the municipal corporation responsible for city administration. The remaining 70 per cent relies on private contractors, leaving significant gaps in efficiency and oversight. Strengthening innovation and fostering connectivity within the ecosystem can play a pivotal role in advancing solid waste prevention in Bengaluru.

In collaboration with SecondMuse, we engage with key stakeholders in India's innovation ecosystem and public institutions to raise awareness and explore new ways to support upstream solutions for the circular economy.



managed by

- Bruhat Bengaluru Mahanagara Palike (BBMP)
- Private contractors

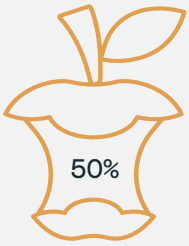
Nairobi

The dynamic business and innovation hub in East Africa, faces significant waste management challenges because of rapid urbanisation.

The city generates approximately **3,207 tonnes of waste daily**, around 20 per cent of which is plastic and 50 per cent is organic waste. Much of this waste remains uncollected, **with only 77 per cent managed effectively in 2021**. Low-income neighbourhoods in particular, are underserved due to the lack of waste management systems, poor integration between formal and informal sectors, limited financial resources and insufficient regulatory enforcement. As a result, waste is often burned or buried, leading to environmental degradation and harmful emissions.

In collaboration with GrowthAfrica, we engage with key actors in the Kenyan innovation ecosystem and relevant public institutions to co-design and implement this programme.

plastic waste



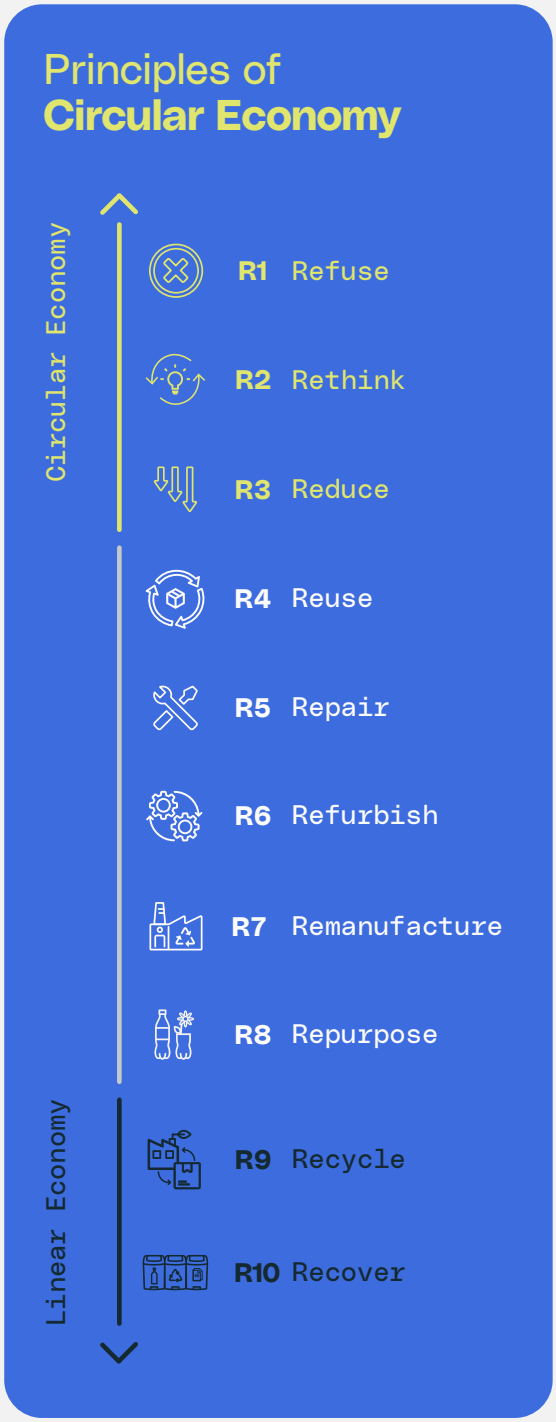
organic waste

CIRCULAR ECONOMY INNOVATION CLUSTERS

1. Upstream circularity remains largely untapped

A circular business model moves away from the 'take-make-dispose' approach of the linear economy. Instead, it keeps products, materials and resources in use at their highest value for as long as possible. This involves reusing, refurbishing, remanufacturing and recycling to extend product life cycles, ultimately reducing waste.

To better understand the complexities of circular innovation in Bengaluru and Nairobi, we commissioned two in-depth baseline studies with trusted local expert organisations, Yunus Environment Hub and Wasafiri. These studies revealed dynamic ecosystems where innovation in waste management is actively being pursued.



The emerging market of upstream innovation

Upstream circularity (refuse, rethink, reduce) remains largely untapped in Bengaluru and Nairobi, despite its potential to transform waste management. Unlike downstream circularity, such as recycling, refurbishing and recovery, upstream innovation prevents waste at its source by designing for sustainability and reducing material flows from the outset. Upstream innovation includes business

models that focus on product life extension, reuse and refill systems, and products-as-a-service models.

While both cities have made notable progress in downstream efforts, upstream circularity presents significant opportunities for innovation. However, as an emerging field, it also faces challenges, requiring shifts in regulation, consumer behaviour and targeted investment to create an enabling environment. By working with pioneering companies in this space, we help scale solutions that drive a more sustainable and forward-looking circular economy.

"One major takeaway of the Journey programme was the critical thinking that was encouraged. When you look at waste, it's not just about disposal. The programme taught us to consider how waste can be reduced and reused, and how to rethink design principles to address these issues more effectively. And, if I had to take out one lesson, you would have to take care of all the actors in the system. It's a system that brings change, not just one party at a time."

Khushboo Garg
Journey participant Bengaluru

Social impact in upstream circularity demands a just transition perspective

Informal waste workers play a key role in sustaining waste management systems. Their work, often overlooked and marginalised, supports the recycling and repurposing of key materials in the value chain.

By reducing the circulation of waste material, upstream circularity threatens informal waste workers' livelihoods. Ensuring a just transition requires involving waste workers from the start, in designing solutions and identifying sustainable livelihoods within this new space.

That is why we actively equip ventures with training, tools and the right mindset to ensure they actively involve waste workers in the just transition process. Additionally, through partnerships with social impact organisations like Hasiru Dala in Bengaluru and the Kenya National Waste Pickers Welfare Association and the Yunus Environment Hub in Nairobi, we provide access to waste worker networks, leveraging these organisations' expertise and connections.

Tailoring the project to local contexts is what sets our work apart. Addressing complex systemic challenges effectively requires first stepping back to understand the underlying barriers, interconnections and dynamics of the local ecosystem before implementing changes. This principle is key to our approach to building innovation clusters.

Three main things that are needed for a just transition:

1. Plastics hold value for waste workers, but many are designed for single use and cannot be recycled. At sorting centers, buyers often reject these plastics, making collection and sorting more challenging. As a result, single-use plastics end up being burned or littering the streets, posing serious health risks.

   We call for an Extended Producer Responsibility policy to ensure that all waste has value and can be collected by waste pickers.

2. Producer Responsibility Organisations and companies must work directly with waste pickers. Policies often fail because they exclude waste workers, despite their vital role.

3. As we move to a circular economy, waste workers need a just transition–from hazardous landfills to safe, organised workplaces like Material Recovery Facilities (MRFs) and sorting centres.“

Brian Gisore Nyabuti
General Secretary
Kenya National Waste Pickers Welfare Association, Nairobi

2. Informal waste workers bring knowledge, skills and opportunities for social impact to the transition towards circularity

In Bengaluru and Nairobi, as in many other cities around the world, informal waste workers play a pivotal role in waste management and circularity, supporting the everyday collection, sorting and disposal.

Their role goes beyond keeping the city clean; they possess invaluable expertise and skills that can significantly benefit the economy. However, these workers often operate in unsafe, unhealthy conditions, without regular income and they suffer discrimination from various levels of society.

Circular businesses can improve the working conditions of informal workers by creating regular and safer working opportunities in waste collection and sorting. This can be done as part of material recovery processes, upskilling workers to increase the value of their work, integrating them in new areas of the value chain and creating awareness among citizens and other key players about the essential role these workers play.

"Waste workers have skills and knowledge that we can leverage for business and livelihoods. They also contribute significantly to the economy. For example, a study we conducted showed that because of the work of 15,000 waste pickers, Bengaluru saves about 840 million rupees (over 9 million euros) annually in waste collection and transportation costs. I want people to recognise the economic contribution of waste workers, not just their role in keeping the city clean."

Nalini Shekar

Executive Director

Hasiru Dala - a social impact organisation working with waste workers in Bengaluru

“Nairobi City County Government is dedicated to advancing circularity in waste management and strengthening Assisted Compliance as we transition towards more sustainable practices. Our goal is to ensure that all activities align with the existing legal framework, while collaboratively addressing any gaps with our stakeholders. By creating greater awareness and embracing a holistic approach, especially with waste separation at the source, we can make significant strides towards a cleaner and more sustainable Nairobi.”

Christine Kivuva

Assistant Director

Environmental Monitoring, Compliance and Enforcement Green Nairobi, Nairobi City County Government

“While there are small to medium enterprises and grassroots organisations in Bengaluru that have made commendable progress in integrating local communities and informal sector groups into the circular waste management value chain, many still struggle to access the resources and assistance needed to significantly scale the impact of their initiatives. The Circular Economy Innovation Cluster aims to help bridge this gap by identifying promising solutions and providing support to not only catalyse long-term growth, but to also improve their capacity to drive greater environmental, economic and social benefits for communities within their respective spheres of influence.”

Titus Loh

Programme Manager

Circularity, SecondMuse

Supporting circular innovation and social inclusion

In 2024 we supported **17 early-stage start-ups** through the Circular Economy ClimAccelerator (ten in Nairobi, seven in Bengaluru). ClimAccelerator is a global programme giving start-ups access to innovate, catalyse and scale the potential of their climate solutions.

"The ClimAccelerator enabled me to understand my problem of not retaining women as my support staff for long periods of time. Instead of paying them by the day, I switched to paying them by the job and introduced incentives for the best performers. As a result, I have been able to attract more women to work on the site. I have also set up a training department for sorting and separating plastics so that I have a pool of skilled women and youth."

Charles Kanyoi
Founder
Rware Waste Dealers, Nairobi

17
start-ups

927
informal workers

Through their work, these start-ups support 792 informal workers in Nairobi and 135 in Bengaluru. Beyond social inclusion, their innovations advance circularity and hold a significant combined potential for CO^2 reduction of over 21 $ktCO^2eq.$ per year. By conducting assessments, we ensure that climate impact and circularity is considered across multiple levels, from livelihoods to material flows to emissions reductions, so that investments are directed where they can drive the most meaningful change. This also helps start-ups articulate their value more clearly from both commercial and impact perspectives.

13 of the 17 participating start-ups indicated that their social inclusion strategy improved as a result of their engagement with the ClimAccelerator. Improvement aspects include a broader value chain view on including informal workers, social impact measurement and understanding the relationships between circularity and social inclusion.

3. Meaningful collaboration requires navigating complexity

At the heart of the Circular Economy Innovation Cluster initiative lies meaningful collaboration.

For us, this means that collaboration goes beyond linear and transactional interactions; it's about building deeper, more impactful relationships among diverse people. True collaboration emerges when individuals and organisations recognise that the challenges they face, such as transitioning to a circular economy, are larger than any single entity can solve alone.

The initiative is designed to create a collaborative ecosystem where diverse groups of people can connect, share insights and co-create solutions tailored to local contexts. Whether in-person or online, these interactions unite ecosystem actors, allowing them to identify common pain points and define shared goals. This demand-led approach enables groups to pinpoint areas within the system requiring collective action and leverage each partner's strengths to drive change and inspire mindset shifts.

Scaling circular and demand-led innovation:

As part of our ongoing commitment to strengthening circular innovation ecosystems, we are launching a series of locally driven initiatives in 2025. These projects, identified and designed by local actors, aim to deepen impact and address key systemic challenges:

- Improving access to finance for circular innovators, enabling them to scale their solutions.
- Building capabilities in circularity among entrepreneur support organisations (ESOs) and fostering a community of practice.
- Engaging vulnerable groups in circular innovation through community-led initiatives that promote inclusion.
- Strengthening public sector partnerships, tailored to the specific needs and opportunities within each ecosystem.

Adapting to complexity

Creating collaborative ecosystems is easier said than done. Key aspects of navigating this complexity include:

- Addressing the complexities of waste management in Bengaluru and Nairobi requires tailored solutions, not one-size-fits-all approaches. Each city presents unique challenges, opportunities and social dynamics.

- It requires openness to learning from challenges, shifting strategies when necessary and embracing change to address complex realities. Collaboration requires time, the right incentives and local ownership to ensure the community of actors are committed to working together over the long term.

- Collaboration involves managing discomfort, taking leaps of faith and fostering trust among diverse actors. Through these efforts, we build the capacities of delivery partners to experiment, innovate and implement solutions.

Creating an innovation ecosystem for an inclusive circular economy in Bengaluru and Nairobi requires constant adaptation, experimentation and learning. Our approach emphasises gathering feedback on our actions, learning and improving as we go. By working closely with partners and ecosystem actors, we gain a deeper understanding of the scale and complexity of key challenges. This enables us to tackle them in a way that is both effective and inclusive.

Innovation clusters have the power to strengthen innovation ecosystems which in turn can transform not just systems, but also the relationships between their components. They unlock the collective capacity needed to address systemic challenges, ensuring that the transition to a circular economy is inclusive, equitable and impactful.

Patrica Jumi
Managing Director
GrowthAfrica

"Creating a collaborative ecosystem for circular economy innovation in Nairobi requires recognising the complexity of waste management and embracing diverse solutions. One size does not fit all—innovation can come from anywhere. Our approach prioritises inclusive stakeholder engagement, continuous adaptation and systemic learning. By involving private and public sector leaders, informal groups, investors, entrepreneurs and passionate young changemakers, we break silos and harness Nairobi's unique challenges and opportunities to drive impactful, scalable solutions."

“The problem of waste is complex, and it’s impossible for a single solution to address everything. Many people work on the same problem from different perspectives, offering unique solutions. Collaboration is essential because it brings these diverse perspectives together, making it easier to solve the puzzle. Without collaboration, we can’t effectively tackle the challenges we face.”

Priya Plan

Global Alliance for Mass Entrepreneurship, Bengaluru

“Humans generate a significant amount of waste, and it’s essential for us to change our approach. As start-ups, we need to shift from competition to collaboration, which can only happen if we come together. Through the ClimAccelerator, we learn about other companies working with waste. At Carbon Craft, we procure waste to make final products, such as tiles, and we need support for waste segregation, sizing and composition. By collaborating with experts, we form a cohesive, symbiotic relationship, much like those found in nature, and apply that in real life”

Tejas Sidnal

Founder

Carbon Craft, Bengaluru


CIRCULAR ECONOMY INNOVATION CLUSTERS

What’s coming up in 2025?

Building on our progress, we are expanding our efforts in 2025 to further strengthen the circular economy innovation ecosystem in Bengaluru and Nairobi:

- **Doubling down** support to circular businesses and improving access to capital for early-stage circular ventures.
- **Enhancing** the capacities of companies and entrepreneurship support organisations (ESOs) to demonstrate their positive impact on circularity and climate.
- **Engaging** with the public sector to identify key entry points for long-term collaboration and systemic change.

We work with different partners and institutions to build innovation clusters. Contact us to see how you can become a partner.

Contact:

Chris Roe
chris.roe@climate-kic.org

climate-kic.org

Climate KIC