



Delft University of Technology

Circular Communities as a Driver for Nairobi's River Regeneration: an urgent call for climate adaptability through multiple value creation

Smit, Mo; Delgado Medina, Fátima; Leclercq, Els; Barake, Bosibori ; Nyagaya, Stephen ; Mwau, Diana; Fransen, Jan; Spierenburg, Marja

Publication date

2025

Document Version

Final published version

Citation (APA)

Smit, M., Delgado Medina, F., Leclercq, E., Barake, B., Nyagaya, S., Mwau, D., Fransen, J., & Spierenburg, M. (2025). *Circular Communities as a Driver for Nairobi's River Regeneration: an urgent call for climate adaptability through multiple value creation*.

https://www.researchgate.net/publication/396271268_CIRCULAR_COMMUNITIES_AS_A_DRIVER_FOR_NAIROBI'S_RIVER_REGENERATION_an_urgent_call_for_climate_adaptability_through_multiple_value_creation

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/396271268>

CIRCULAR COMMUNITIES AS A DRIVER FOR NAIROBI'S RIVER REGENERATION: an urgent call for climate adaptability through multiple value creation

Research · July 2025

CITATIONS

0

8 authors, including:



Mo Smit

Delft University of Technology

9 PUBLICATIONS 4 CITATIONS

[SEE PROFILE](#)

READS

18



Fatima Delgado

Delft University of Technology

4 PUBLICATIONS 0 CITATIONS

[SEE PROFILE](#)



Els Leclercq

Delft University of Technology

20 PUBLICATIONS 189 CITATIONS

[SEE PROFILE](#)



CIRCULAR COMMUNITIES AS A DRIVER FOR NAIROBI'S RIVER REGENERATION: an urgent call for climate adaptability through multiple value creation

July 2025

CIRCULAR COMMUNITIES AS A DRIVER FOR NAIROBI'S RIVER REGENERATION: an urgent call for climate adaptability through multiple value creation

Project Team

Mo Smit	A&T - TUDelft/ CCF
Fátima Medina Delgado	DCE - TUDelft
Els Leclercq	Circular Community Foundation
Bosibori Barake	Nuvoni Research Centre
Stephen Nyagaya	Nuvoni Research Centre
Diana Mwau	Nuvoni Research Centre
Jan Fransen	IHS - EUR
Marja Spierenburg	Leiden University

This project has been funded by LDE Global - September 2024/25



Contents	3
Introduction	5
2. Circular Value Flower	9
3. Community Initiatives	11
LEMWO	13
Easy Urban Green Growers	15
Youthprinua	17
Tempo Arts Centre	19
4. Multi-stakeholder workshop - an introduction	21
5. Results: valuescape	23
6. Results: interventions	29
7. Conclusions	33
8. Reflection + Next Steps	35
9. List of participants	37

Introduction



This report provides a clear and accessible overview of the multi-stakeholder workshop that was held on 28th of March 2025 in Nairobi. The workshop was organized by Nuvoni Centre for Research, Leiden Delft Erasmus universities (Netherlands) and the Circular Community Foundation and funded by LDE Global. This workshop is part of a wider research project called “The Nairobi River as a driver for Circular Communities – an urgent call for climate adaptivity and social resilience.” The aim of the workshop was to:

1. demonstrate the multiple value creation by local community-based initiatives,
2. map the values of circular and regenerative resource systems in the Nairobi riparian river landscape,
3. to co-create interventions centred around the 4 initiatives that enhance the circular and regenerative character of the social-ecological riparian river landscape.

The Circular Value Flower method (CVF) has been used to support both the analysis of the initiatives and the collective design of interventions. Illustrated with photos, visuals and testimonials of participants, this booklet aims to inform local, national and international audiences about project ambitions and methodology, initial outcomes and practical next steps to widen the network of circular communities in Nairobi and include them as essential seeds of social, economic and

ecological transition in wider policies related to resilience, climate adaptivity, sustainability, poverty reduction and circularity.

Community based organisations

Numerous Nairobi based community organisations have implemented initiatives on and thereby making use of the riparian zones of Nairobi's seven rivers. These organisations have in common that they strive to create sustainable entrepreneurial business plans, making not just themselves but also their communities more resilient by developing circular management systems for their resources (water, nutrients, energy, and building materials) through which they create multiple value. Within this research project, we collaborate with four initiatives – Lewmo, Easy Urban Green Growers, Tempo Arts Centre and Youthprinua – who incorporate waste recycling, urban farming, education and learning, creating green and social spots, and community & youth engagement in their daily activities that take place in the riparian zone.

The riparian land constitutes of a 30-meter legal buffer zone intending to protect Nairobi's communities from floods, but as Nairobi's population has been steadily growing in the last decades (due to both demographic growth and migration from rural to urban areas) lack of affordable housing forced people to build informal settlements, including within this dedicated



flood zone. In May 2024 extreme rainfalls caused floods, landslides and the collapse of dams and bridges. More than 220 people died as a consequence and 23,000 people have been displaced in the aftermath. As is often the case, less fortunate communities that resided on the riparian land were disproportionately affected¹. Unfortunately, this tragic event must be seen as part of a re-occurring pattern of droughts and heavy rainfalls.²

In 2023, the Nairobi Rivers Commission (NRC) was established to mitigate the consequences of climate change and make Kenyan regions more climate adaptive. It aims “to coordinate the initiatives (...) fostering inclusive and sustainable urban development and quality of life for all by 2030”³. In addition, Nairobi City County Government (NCCG) is developing a masterplan of Nairobi’s riparian areas, as part of their climate mitigation strategies⁴, which includes enforcing the 30-meter wide no-building zone on the riverbanks. In the weeks following the flooding in May 2024, the National Government took action and resorted to mass eviction of residents living within riparian land along the Nairobi river, leading to the displacement of over 127,000 evicted citizens.

¹ 'I've only the clothes on my back': lives swept away by floods in Kenya (May 7th 2024): People living in Nairobi's Mathare slum fear that if catastrophic flooding does not bring down their homes, the government will.

² see African Climate fund report
<https://www.theguardian.com/global-development/article/2024/may/07/floods-kenya-2>

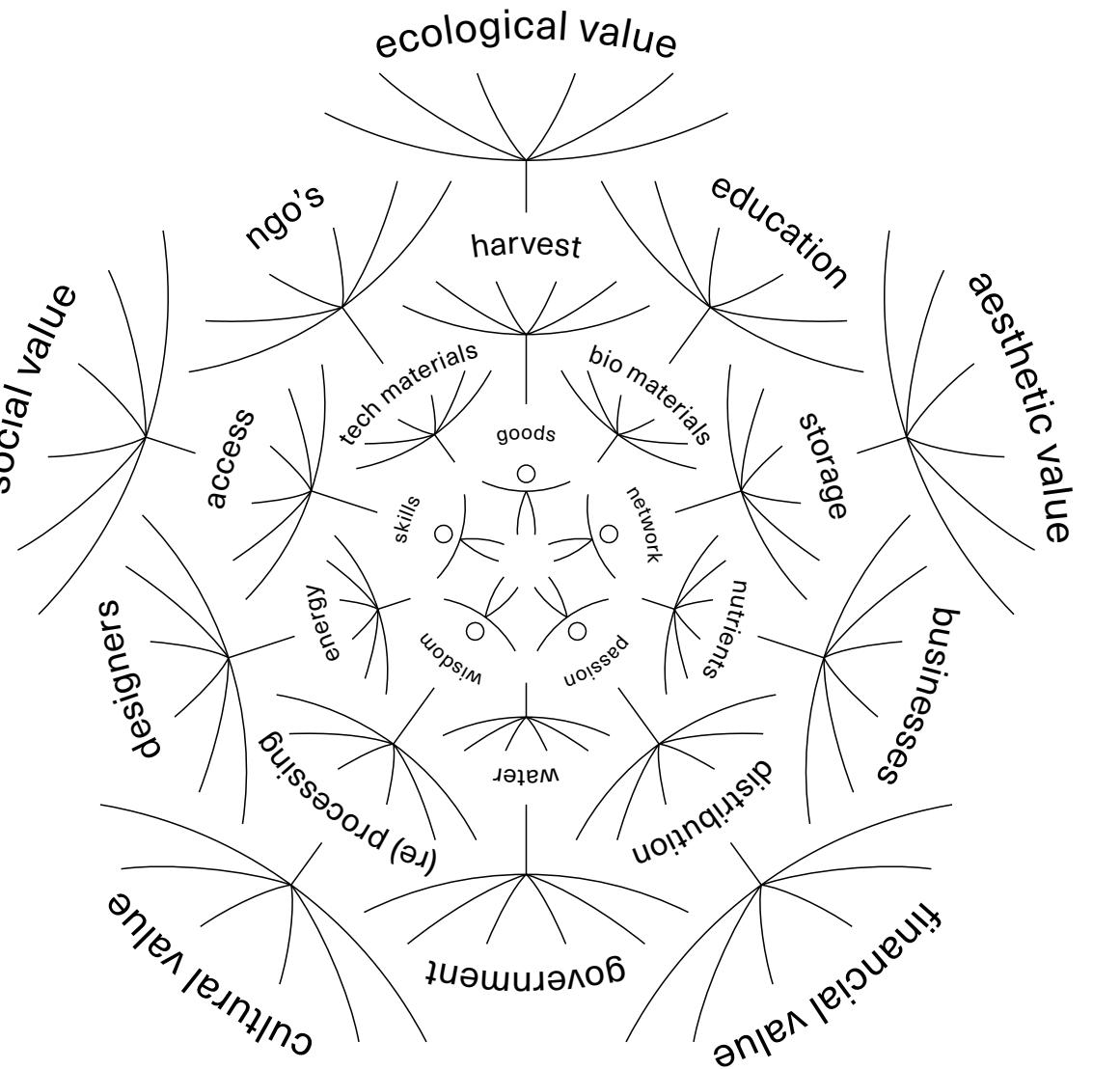
³ <https://nrc.or.ke/mission-vision-core-values/>
⁴ Nairobi City County Climate Action Plan 2020-2050

These top-down actions destroyed informal settlements' livelihoods, social capital, and community initiatives.

Within this research project we aim to:

- Explore the multiple value that those four community initiatives create by closing resource loops and to demonstrate that these initiatives contribute through this multiple value creation towards overarching goals of climate adaptivity, economic and social resilience and ecological sustainability.
- Facilitate a co-creative process with the local initiators of the selected initiatives and representatives of government (NRC, NCCG), NGOs (SDI, Public Space Network) and global organisations (UNhabitat, WRI) to collectively develop interventions to enable a holistic approach to multiple value creation, both through scaling up the (number of) initiatives as well as inclusion of these initiatives as valued contributors to various Sustainable Development Goals and national objectives in national and local policy briefs and plans.

2 Circular Value Flower method



The Circular Value Flower (CVF) method is based on ecosystem thinking that facilitates an alternative approach to current economic models, predominantly based on financial value creation. The CVF model offers a holistic approach to value creation, including social, ecological, aesthetic, and cultural value appreciation. The method centres around community initiatives and is based on the Commons theory (Ostrom 1990) where commoners manage one or more resource flows collectively. This way of managing resources and creating value sits next to the currently dominant state - market paradigm and hence provides an alternative to other ways to organise society where individuals strongly relate to the collective and to nature.

The CVF has been developed as a value-based co-design and development method for circular initiatives by communities at the neighbourhood level. The method enables multiple value creation by unravelling the complex totality of ambitions, challenges, actors, technical, spatial and social possibilities when it comes to collectively closing resource flows. The Circular Value Flower is visualised by a layered diagram which has the ambitions and enablers of the community at the heart, followed by a layer of enabling capital, essential resource flows, the accompanying system parts of a supply system, collaborating actors and eventually by a layer of multiple values.

This method has been successfully applied in the Netherlands, Africa, India, Indonesia. In these places, participating communities have implemented circular initiatives resulting in positive environmental impact while creating new jobs, economic income and increasing social interaction and capital.

<https://books.open.tudelft.nl/home/catalog/book/62>

3 Community Initiatives



The project explores four grassroots initiatives located along the Mathare River, a tributary of the Nairobi River and one of the most ecologically challenged areas due to its proximity to the Dandora dumpsite, East Africa's largest landfill. These initiatives were intentionally selected based on their geographic location along the Nairobi River and the presence of circular economy practices within their core activities. Their positioning not only places them in a physically strategic yet vulnerable area but also highlights their critical role in responding to the pressing environmental and socio-economic challenges facing urban informal and semi-formal settlements.

Each of the initiatives began as a youth-led collective, formed around a common goal. For example, waste management, talents development, community empowerment, or urban agriculture. Members come from diverse educational, cultural, and economic backgrounds and are often involved in multiple income generating activities, reflecting the complex livelihood systems found in informal and semi-formal settlements. While their focus areas vary, ranging from acrobatics to tree planting to digital literacy, all incorporate waste recovery and reuse into their everyday operations, showcasing different entry points into grassroots circularity.

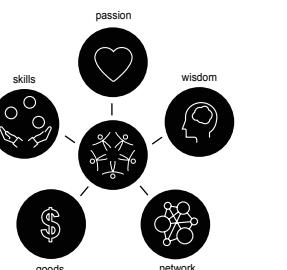
Organizationally, these initiatives are often structured around available capacities, with leadership and roles distributed

based on role and members availability. Collaboration and mutual support are also key strengths; for instance, all four are active members of the Mathare River Regeneration Network which aims at restoring the Nairobi River Basin. Through both individual efforts and partnerships, these initiatives work closely with residents, designing activities that are tailored to immediate community needs. Their collective action emphasises the possibility of locally driven, socially embedded, and ecologically responsive waste management practices in contexts of deep infrastructural marginalization.

LEWMO: Lucky Summer Environmental & Waste Management Organisation – Nairobi, Kenya



Lucky Summer Environmental & Waste Management Organization, Nairobi, Kenya
2024 - ongoing
<https://www.lewmo.org>



Enablers

LEWMO was founded in 2017 with the aim to address the dual challenges of environmental degradation and youth unemployment. By focusing on regenerating rivers and promoting waste management, it provides structured work opportunities for local youth and drives community-wide environmental conservation. The organization makes room for buyback of valuable waste by the community, engages in door-to-door waste collection campaigns, and promotes recycling through initiatives such as "Football for Plastic." Training and support from organizations like KEPRO and partnerships with NGOs such as SHOFCO further enable their work. Financially, LEWMO sustains its activities through small contributions from households and money from selling the waste at the market, as well as grants and funding from various organizations.

LEWMO is a community-based organization in Lucky Summer, Nairobi, that aims to create environmental, social, and economic value through circular waste management and community empowerment. By addressing local challenges like pollution and youth unemployment, LEWMO transforms waste into resources, creates job opportunities, reduces crime and fosters a cleaner and greener community.



Resources

LEWMO leverages a range of natural, biological, and technological resources to support its initiatives. Groundwater is utilized for aquafarming projects, while organic waste is converted into animal feed. LEWMO has planted a lot of trees and plants, they play a vital role in restoring local biodiversity. Recycling tools, machines, and transportation vehicles support waste separation and collection processes.

Actors

The success of LEWMO depends on its network of local and external actors. KEPRO played a key role in spreading awareness and training on waste management practices. NGOs like SHOFCO, VSO, and Nuvoni provide additional resources and support. While LEWMO engages with local leaders and climate-focused agencies, there is no support from the government; recent actions, such as the demolition of the buyback center, have hindered the organization's progress. Businesses and households partner with LEWMO for waste collection and recycling efforts.

Spatial Elements

LEWMO's activities are closely tied to the physical and spatial elements of Lucky Summer. Buildings such as the 'LEWMO school' and waste storage facilities provide key operational spaces. However, these spaces are not owned by LEWMO, which creates a risk that the MCA (Member of County Assembly) may reclaim them. Public areas like dumpsites, green parks, and riparian zones are transformed into clean, safe, and functional spaces. Infrastructure improvements focus on cleaning polluted rivers (Mathare and Nairobi river) and creating waste collection points.

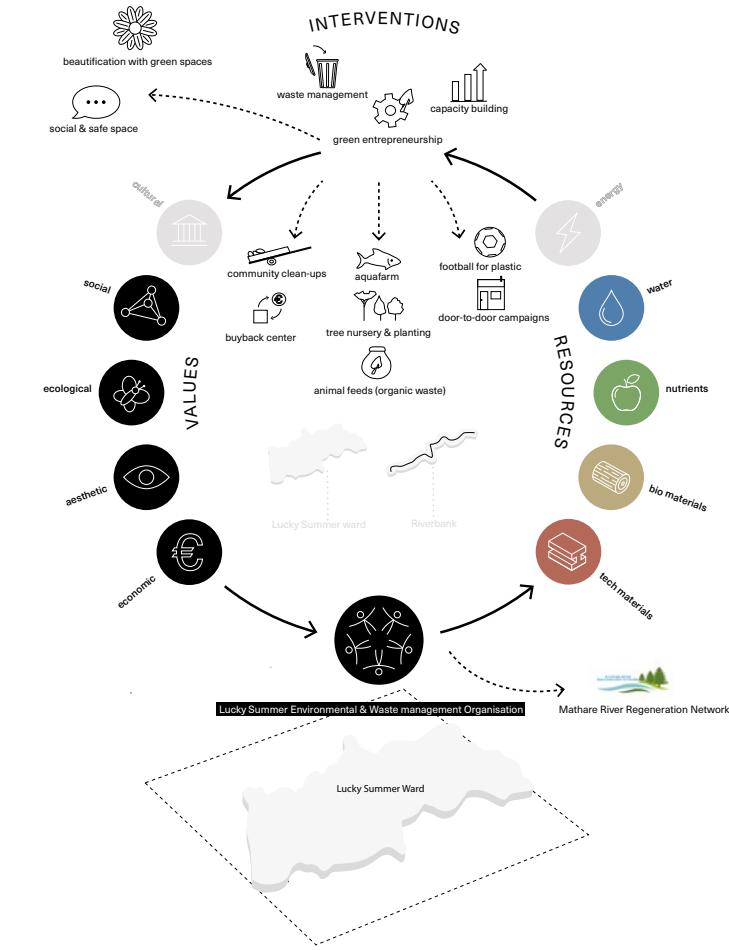
Values

LEWMO's work creates significant social, ecological, aesthetic and economic value. Socially, the organization empowers youth, improves public health, and fosters stronger community bonds. Ecologically, it reduces waste, restores biodiversity, and promotes sustainable practices like recycling and tree planting. Economically, LEWMO turns waste into resources, creates jobs for over 120 individuals, and generates income through waste collection and recycling. Aesthetically, they make the neighborhood greener and more beautiful. Culturally, there is not yet enough awareness and implementation of sustainable and waste management practices in the community.

Lewmo

Founded in 2017, LEWMO is a youth-led environmental organization located in Nairobi's Lucky Summer ward. Its mission is to merge environmental conservation with youth employment, as shown in its slogan: "Taka Langu, Jukumu Langu" (My Waste, My Responsibility). It's a consortium of 15 organized groups which empowers local residents ages 18 to over 50, with the majority being under 35 years, to tackle solid waste management and environmental conservation together. LEWMO coordinates weekly door-to-door waste collection, segregation and incentivizes recycling through buy-back schemes via its SACCO and "Football for Plastic" program.

They transform previously polluted riparian riverbanks into community green open spaces. LEWMO does community awareness on waste and environment by conducting regular cleanups where they invite non members to participate. LEWMO capacity building programs offer members of the community enough tools on waste management practices and building businesses. Their capacity-building initiatives show LEWMO's dual role as environmental guardians and social entrepreneurs. LEWMO exemplifies a holistic circular economy model rooted in community engagement, education, and economic empowerment.



Easy Urban Green Grower – Baba Dogo Ward, Nairobi, Kenya

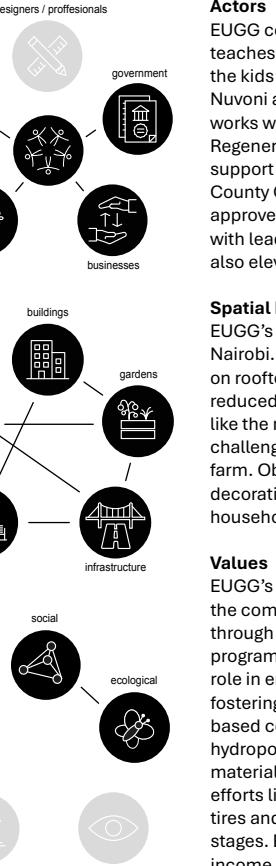


Easy Urban Green Grower, Baba Dogo Ward, Nairobi, Kenya
2024 – ongoing
Instagram: easyurbangreengrower

Easy Urban Green Grower (EUGG), founded by Davis Thuo, is a community-driven initiative in Nairobi focused on urban agriculture, education, and environmental conservation. By mentoring children and engaging the community, EUGG promotes sustainable urban farming practices while addressing food insecurity and fostering environmental awareness.

Enablers
EUGG was founded to teach children and communities the importance of agriculture, sustainability, and staying positive. Davis Thuo, who holds a certificate in agriculture production (Level 4), plays a central role as a mentor and educator. Tools like cone gardens, sack gardening, and hydroponic systems enable small-scale farming with limited space and resources. Partnerships with NGOs such as Nuvoni, Voices for Change, and Growth for Change, as well as collaborations with local schools and research centers like ICIPE, provide additional support. Government entities, including the Nairobi City County Government and the Nairobi River Commission, allow EUGG to use riparian land for farming and tree planting, provided no permanent structures are built.

Resources
EUGG relies on various natural and technological resources to sustain its operations. Water is sourced from the county government (3 days a week) and supplemented by rainwater. Nutrients come from organic waste, silkworms fed on mulberry leaves, black soldier fly farming, and poultry compost. Bio-materials include vegetables, trees, mulberry fruits, and poultry farming, though flooding has caused setbacks. Technological resources such as incubator machines, pipes, metals, and recycled materials like tires, shoes, and bags are creatively repurposed for farming and beautification.



Actors

EUGG collaborates with a wide network of stakeholders. Davis teaches at six local schools about agricultural and also educates the kids in Baba Dogo while doing enjoyable activities. NGOs like Nuvoni and Growth for Change support the initiative. Davis also works with local organizations like LEWMO, Mathare River Regeneration Network, and Green Youth Group. Government support is limited, but with collaboration from the Nairobi City County Government and the Nairobi River Commission they approve farming activities on riparian land. Davis's engagements with leaders like the former deputy president and president have also elevated EUGG's visibility.

Spatial Elements

EUGG's activities are closely tied to available spaces within Nairobi. Farming takes place on limited space in Baba Dogo, also on rooftops and school grounds. However, space has been reduced due to increased housing developments. Public areas like the nearby dump site and the unsafe river infrastructure pose challenges, while floods have caused significant damage to the farm. Objects such as tires are repurposed for safety and decoration, and kitchen garden installations support small-scale household farming.

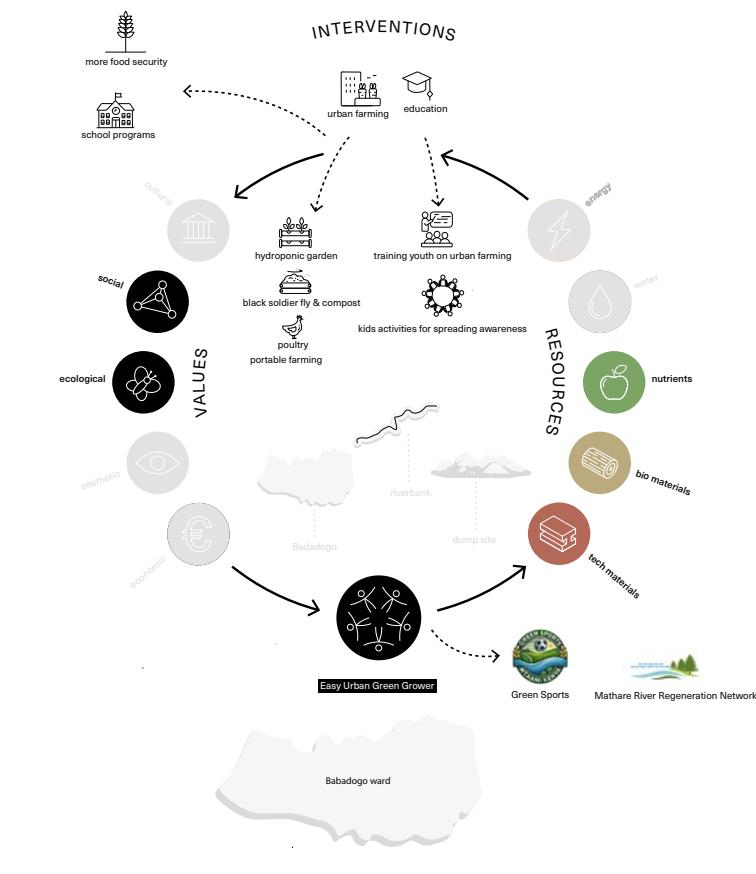
Values

EUGG's work primarily creates social and ecological value within the community. Socially, the initiative brings people together through activities such as Sunday art workshops, green sports programs, and mentoring sessions for children. Davis plays a key role in engaging the community, helping to address food theft and fostering peace and unity. Ecologically, EUGG focuses on nature-based conservation through activities such as tree planting, hydroponic systems, and recycling organic waste as raw materials. While aesthetic value is being developed through small efforts like the creative use of repurposed materials—such as tires and old shoes for decoration—this remains in its early stages. Economically, EUGG struggles to generate significant income, with limited revenue coming from the sale of farm produce and portable farms. Culturally, the initiative has begun to shift mindsets around urban agriculture, but there is still significant progress to be made in fully embedding sustainable farming practices and reducing crop theft on a larger scale.

Easy Urban Green Growers

Easy Urban Green Growers advocates for community-led urban agriculture, environmental education, and food security initiatives. The initiative is located in Babadogo ward in Nairobi. Their core activities are operating nursery sites and hydroponic kitchen gardens. EUGG promotes low-cost, sustainable food production modelled for densely populated settlements. One of the notable innovations is reusing recycled containers (e.g., plastic cans) for balcony kitchen gardens. The group engages children and households, teaching cultivation techniques using the recycled containers, thereby transforming domestic waste into productive green spaces and reducing food insecurity.

Their workshops extend into schools and markets, fostering a culture of environmental responsibility and economic innovation grounded in practical skills. They educate children on farming methods in space constraint environments like babadogo. EUGG also mentors budding urban farmers in business practices, supporting nursery ventures, poultry farming, and tree-planting campaigns. EUGG contributes to Nairobi's ecological and social resilience by showcasing the potential of community led circular activities.



Youthprinua - Babadogo Ward in Ruaraka Sub-County, Nairobi, Kenya



Youthprinua, Babadogo Ward
Ruaraka Sub-county,
Nairobi, Kenya
2020-ongoing
<https://www.youthprinua.org/>



Youthprinua is a grassroots organization based in the Babadogo ward within the Ruaraka Sub-County. With a community resource centre at its heart and digital tech hubs centred within the community, Youthprinua focuses on youth empowerment and education, digital literacy, environmental conservation efforts as well as sexual health and reproductive hygiene. Through its environmental conservation efforts that they simultaneously leverage for value creation from waste, Youthprinua aims to create social, economic and environmental value. Its commitment to the youth, entrepreneurship and prinua itself meaning to uplift can be seen from the name itself.



Enablers

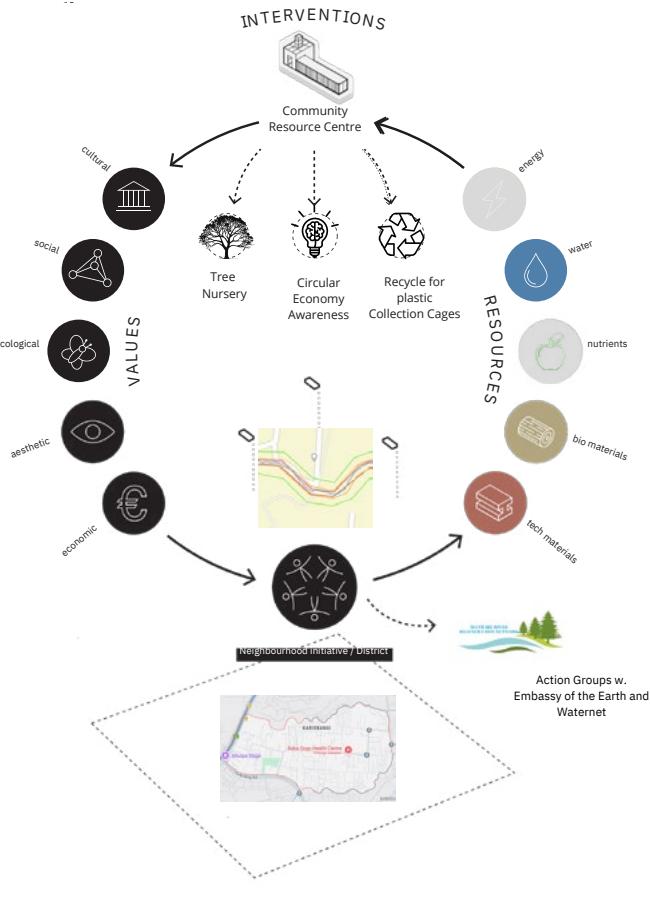
Youthprinua was founded in 2020-2021 by a group of 11 co-founders who came together to address gaps that they identified within their communities. Having faced challenges themselves while being firmly embedded within the community, allowed them to see where there was potential to make a positive change. Through trial and error they've identified ways in which they can contribute to their communities and are now developing it further so that the initiative can continue to grow and scale their existing projects as well achieve self-sufficiency.



Youthprinua

Youthprinua is a vibrant youth-led organization in Babadogo, focused on community empowerment through environmental conservation, digital inclusion, and creative expression. It integrates themes of education, health, climate action, and art. Youthprinua spearheads innovative initiatives like "Waste-for-Water," enabling residents to exchange solid waste for clean water. This directly addresses both sanitation and water shortages in the area and waste collection challenges. This reciprocal system encourages household recycling while incentivizing participation through essential utilities.

Youthprinua also delivers health education, tech awareness, and arts programming as part of its approach. Youthprinua leverages informal sector networks and digital platforms to mobilize volunteers, share environmental information, and co-design interventions with residents. By centering youth voices and encouraging multi-disciplinary action, the organization exemplifies grassroots leadership and circular innovation in underserved urban environments.



Tempo Arts Centre - Luckysummer in Ruaraka Sub-County, Nairobi, Kenya



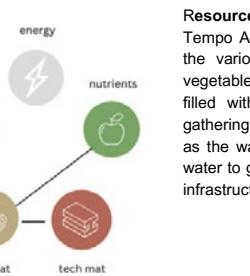
Tempo Arts Centre,
Luckysummer Ward
Ruaraka Sub-county,
Nairobi, Kenya

Located at the intersection between the Nairobi and Mathare rivers, Tempo Arts Centre provides an expansive open space where the arts can flourish. Starting out as a place for youth to learn the art of acrobatics, it has since expanded to different fields of arts and the quarry it was initially inhabiting was transformed into a communal space where community members can practice their arts as well as do gardening, farming and other land regeneration efforts.



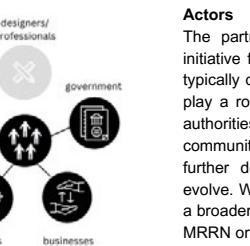
Enablers

Founded in the 80s as an acrobatics troupe, Tempo Arts Centre has gone through many evolutions since. In the 2000s additional arts activities found their home here as well as more environment centred activities started taking place. The troupe has made a name for themselves and the other artists have also spread awareness about the centre beyond the settlement. Having a long history within a specific space has allowed it to build relationships and become a space where people from different communities can come together for a shared sense of purpose. Being so centrally located helps achieve exactly this.



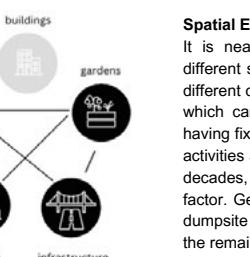
Resources

Tempo Arts Centre leverages the space it finds itself in and optimises the various possibilities accordingly. Mixed tree farming, an urban vegetable garden, an amphitheatre made of tires and an otherwise area filled with bushes transformed into an open space for communal gathering. This is still ongoing as well. There are ponds where fish swim, as the water source is clean this is now being connected to allow for water to get to the seedling nurseries and farm better. There is no fixed infrastructure within the centre which allows it to be flexible.



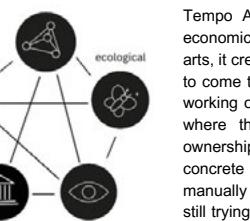
Actors

The partnerships and collaborations are at a needs basis. As an initiative focused on the cultivation of arts, the actors that the initiative typically comes into contact with are those that are clients or those that play a role in allowing their existence to continue as is such as local authorities. It is primarily a space where individuals from different communities come together and then themselves contribute to the further development/beautification of the centre as it continues to evolve. When collaborating with other initiatives it is also typically under a broader umbrella that provides a shared sense of purpose such as the MRRN or an arts festival in 2022.



Spatial Elements

It is near the intersection of two rivers, centrally located between different settlements, allowing it to become a space where people from different communities can come together. It is close to the riparian zone, which can lead to uncertainty regarding its continued existence. Not having fixed infrastructure and focusing also simultaneously on greening activities along with the arts, as well as their reputation over the last few decades, has allowed the space to remain but this uncertainty is a risk factor. Getting to the centre can be a challenge, on one side there is a dumpsite you come down and on the other along the river there are still the remains of the demolitions that happened.



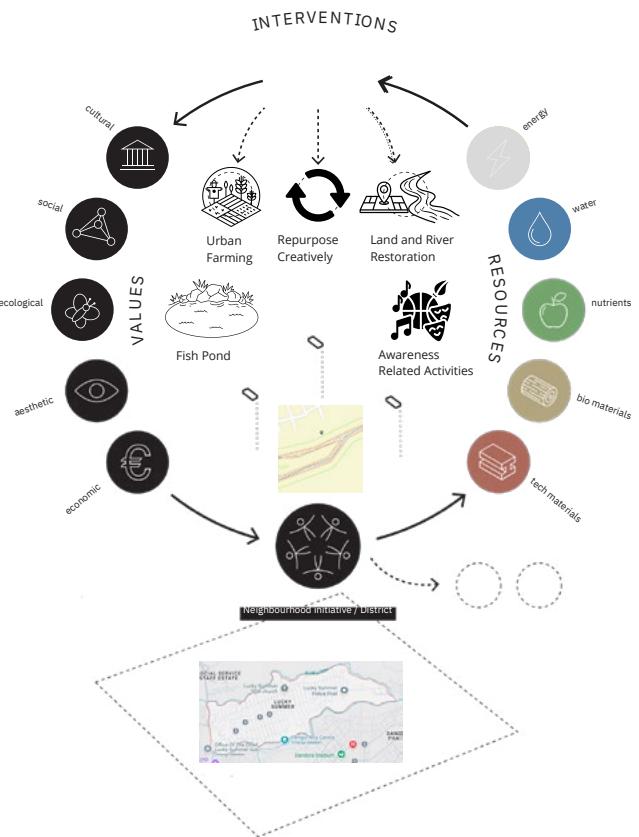
Values

Tempo Arts Centre's work creates clear social, cultural, ecological, economic and aesthetic values. As a space focused on fostering the arts, it creates multiple values simultaneously. Offering a space for youth to come together, learn, train and contribute back to the space through working on the ground. This further builds a connection with the space where they come together, building a sense of connection and ownership over the space seeing the hard work directly translate into concrete changes within the landscape. Whether this is through art or manually working on the farm/beautification of the land. The initiative is still trying to diversify their income sources further so they are no longer dependent on the income from the acrobatics troupe.

Tempo Arts Centre

Tempo Arts Center occupies a reclaimed quarry at the confluence of Mathare and Nairobi Rivers, serving residents of Lucky Summer, Korogocho, Baba Dogo, Ngomongo, and Dandora. Originally a practicing ground for youth acrobatics, the center has evolved into a multifunctional arts center and community park. It provides a secure space for performance arts, visual art creation, gardening, and riverbank restoration. Through creative reuse, Tempo has transformed an abandoned dumpsite into a vibrant venue, using recycled tires and reclaimed materials in its theatre and communal facilities.

Community led programming, including arts workshops, environmental clean-ups, and youth mentorship positions Tempo beyond just a cultural space. They also organise events aimed at raising awareness on environmental conservation. The organization prioritizes social cohesion through shared cultural experiences and fosters environmental awareness by integrating art with ecosystem restoration. Tempo demonstrates how creative expression can be paired with environmental stewardship to yield meaningful community transformation.





What WISDOM is present in the riparian landscape?

RESOURCES

How is this WISDOM related to the different resources?

bio materials, tech materials, water, energy, nutrients



How is a WATER resource system related to the riparian landscape?

SYSTEM PARTS

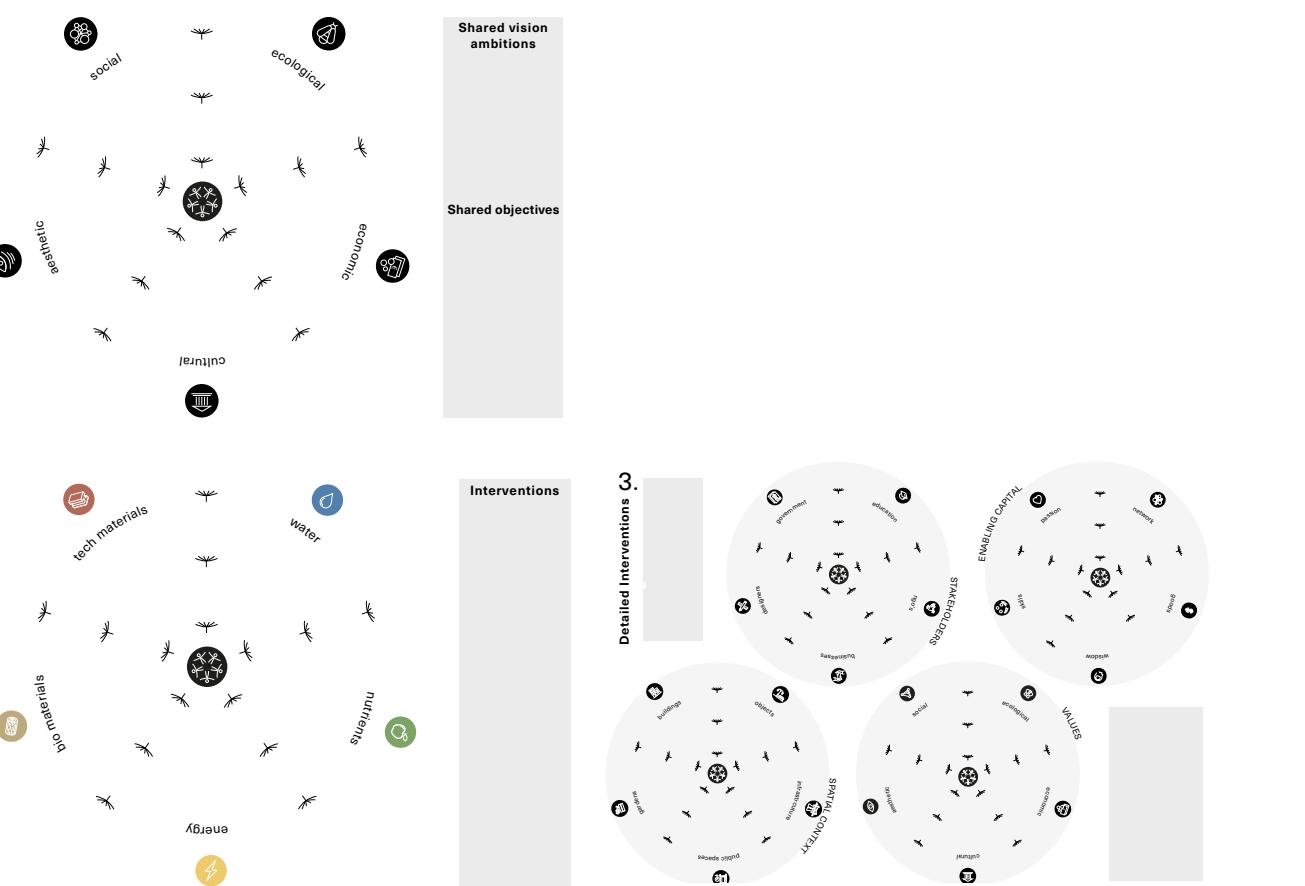
How are the system parts present, and where?

harvest, storage, conversion, processing, access



VALUES

What value does this system create?



More than 50 participants registered for the multi-stakeholder workshop, including representatives from local government(s), NGOs, UN Habitat, SDI, businesses, and community based organisations.

The main objectives of the workshop as stated in the introduction:

1. demonstrate the multiple value creation by local community-based initiatives
2. map the values of circular and regenerative resource systems in the Nairobi riparian river landscape
3. to co-create interventions centred around the 4 initiatives that enhance the circular and regenerative character of the social-ecological riparian river landscape

What did we do:

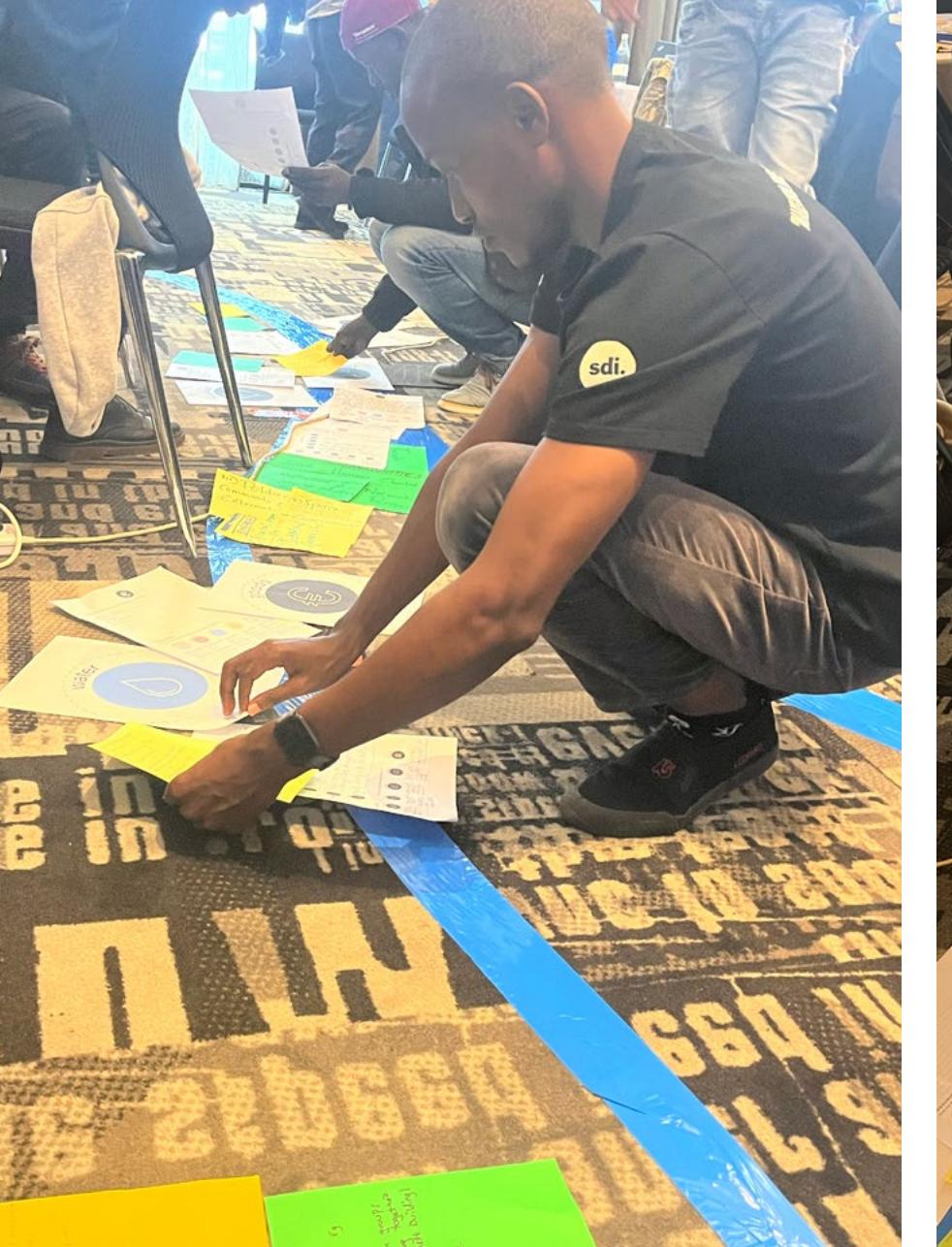
- Morning session: mapping the values of circular and regenerative resource systems in the Nairobi riparian river landscape (round 1 & 2)
- Afternoon session: co-designing an intervention (round 3)

For each round we prepared a set of exercises to guide the participants. The day ended with a plenary discussion on the following question: "How can each stakeholder group contribute to community initiatives in order for them to be able

to enhance multiple value creation through establishing circular and regenerative resource systems in the Nairobi riparian landscape?

The participants highlighted the need to protect and restore the river provided their ardent connection with the riparian land. Thus, the workshop sought to highlight and discuss how different community-led initiatives generate multiple values out of their circular activities. In details, the following were the objectives of the workshop:

1. To describe and discuss enabling capital and resources that flow into the riparian landscape,
2. To describes how resources are used to create multiple values from the circular initiatives along the rivers,
3. To discuss the opportunities and barriers that hinder the success of the initiatives,
4. To develop and discuss circular interventions from the four community-led initiatives that would inspire sustainable regeneration and restoration of the rivers.



What did we want to do?

The goal of this part of the workshop was to collectively map how various resource systems (nutrients, bio materials, tech materials, energy, water) are currently embedded within the riparian zone of the Nairobi River and to explore the different types of value they carry and generate. In relation we aimed to understand which community capital is available that can be used to further enhance the circularity and regenerativity of the Nairobi river landscape.

What did we do?

We first gave a presentation about the Circular Value Flower method and explained the logic of how a circular resource system is organised and how its parts and related activities are connected with the five values of the Circular Value Flower: ecological, social, cultural, aesthetic, and financial.

We envisioned the riparian zone of the Nairobi River as a valuable, regenerative landscape and ecosystem. We explored the potential of this zone as fertile ground for local food and material production, biodiversity and community value.

We organised the value mapping workshop in the morning in 2 rounds of exercises:

5 Results: Value Scape morning session

Round 1:

Participants acted as a capital type and explored the relationship with the riparian landscape, they mapped this and linked it to resource flows.

- Map the stories and examples of your capital type
- Link them to the different resource types

They started by mapping the existing capital of the Nairobi river community, whereby every group represented one of the five capital elements of the Circular Value Flower methodology:

- **Goods** (available resources, facilities and machines)
- **Networks** (social connections and collaborations)
- **Wisdom** (local knowledge, expertise and values)
- **Skills** (practical abilities and craftsmanship)
- **Passion** (intrinsic motivation and commitment)

In addition we wanted to understand how these capital forms are currently related to resource value chains within the riparian zone of the Nairobi river and which values they have for both the community and the river landscape as an integrated eco-system. We explored how these forms of capital can be leveraged to regenerate the river landscape and make it resilient for the future.

We divided the large participant group into five smaller groups of approximately 10 participants, each seated around a round table. Each table was assigned specific roles within the workshop.

Questions raised in this round were:

- Which **networks, passion, wisdom, goods and/or skills** are present in the riparian landscape?
- How are these **networks, passion, wisdom, goods and/or skills** related to the different resource systems?

Round 2

Participants acted as a resource type (**water, energy, nutrients, bio-materials, tech materials**), explored their circular/regenerative relationships with the river and the potential values that could be generated.

- Map current initiatives/projects of their resource flow by:
 - Describing an initiative/project/process shortly
 - Relating this to the system parts (harvest, storage, distribution, (re)processing and access.
 - Describing the values that are generated (5 values)
 - Identifying barriers and opportunities

For this exercise of the workshop, we developed an additional layer within the Circular Value Flower (CVF) methodology, focusing on the physical needs of circular resource systems and value chains. This layer distinguishes five interrelated system parts that trace the journey of a resource within an ecosystem:

- Harvest
- Process
- Store
- Distribute
- Access / Use

The additional layer provided participants with a clear framework to analyse the spatial and functional dimensions of existing value chains within the specific context of the riparian zone of the Nairobi river. At the same time, it offered insight into the activities required for circular resource handling, and helped to identify and articulate the value potential of each step in the chain.

Each value chain activity represents not only a physical action, but also a social and cultural moment where community, ritual, and meaning converge. For example:

- Harvesting may be tied to seasonal rituals
- Processing to craftsmanship and the sharing of knowledge

- Storing to collective memory and care
- Distributing reflects local practices of exchange and sharing
- Accessing touches on questions of justice and (shared) ownership

Questions raised in this round were:

- How is a **water, energy, nutrients, bio-materials, tech materials** resource system related to the riparian landscape?
- How are the system parts present, and where?
- What value does this system (potentially) create?

In the afternoon round 3 took place: co-creating interventions around the four initiatives, finding synergies and enhancing the circular and regenerative character of the social-ecological riparian river landscape. See the next chapter for a report of round 3.

How did the method work in the morning session?

The CVF method and the overall workshop setup proved highly effective in mapping the various dimensions and values of the resource systems present within the riparian zone of the Nairobi River. By assigning specific roles to each participant group, the workshop generated a remarkable richness and diversity in the responses. Within just one morning, a comprehensive

landscape was mapped for five distinct resource systems—across multiple dimensions.

The CVF framework and the accompanying templates also helped raise participants' awareness of the value potential of circular resource management. All input was documented on worksheet templates, which worked well as a means of structuring and capturing the insights. One idea to improve accessibility and usability of the data is to synthesize the results into a graphic matrix or visual overview.

One point of critique concerns the sequence of the workshop rounds. Several groups found it challenging to reflect on the relationship between community capital and resources without first having a clear understanding of the full resource system. Based on this insight, we propose to reverse the order of Round 1 and Round 2 in future workshops. Starting with the exploration of the resource system and its inherent values will create a stronger foundation for understanding what forms of capital are needed to enhance its circularity.



6 Results: Interventions afternoon session

- Aquaponics
 - Insectfarming

Intervention(s)

- Awareness creation & Sensitization on sustainable waste management through media
 - Using locally available materials for beautification
 - Establishment and management of public toilets along river riparian lands
 - Clean and affordable cooking energy
 - Upscaling smart farming
 - Lewmo TV
 - Nurturing talent: water and land sports
 - Establishing Buy Back centre

ng the afternoon was centred around collectively designing interventions for each initiative, based on the outcome of morning session and the earlier analysis.

an CBO had its own table and workshop material and all stakeholders found a seat at one of the different tables. The conversations were structured following a free brainstorm method, listing ambitions, shared objectives and potential interventions.

wmo

Options

ing Lucky Summer Ward for human settlement within a city
2 rivers.

Objectives

- Buyback centre
 - Waste reduction
 - Awareness creation

Green tourist destination

 - Recreational activities
 - Waterfalls conservation
 - Green spaces

Smart farming

 - Hydroponics

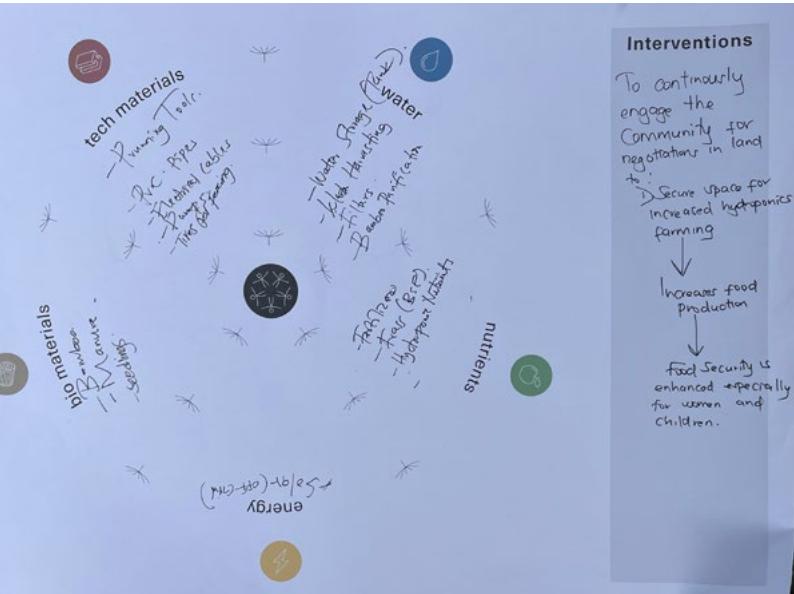
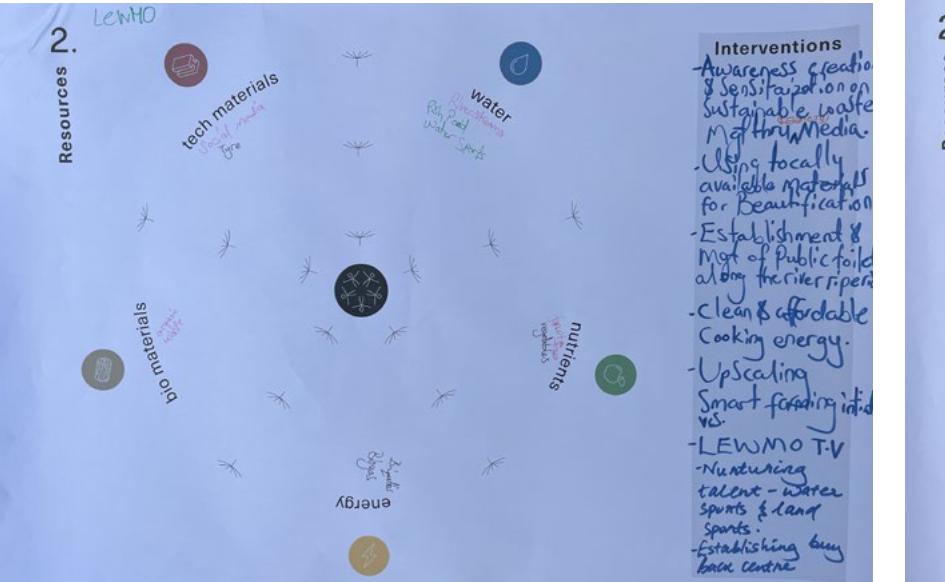
Easy Urban Green Growing

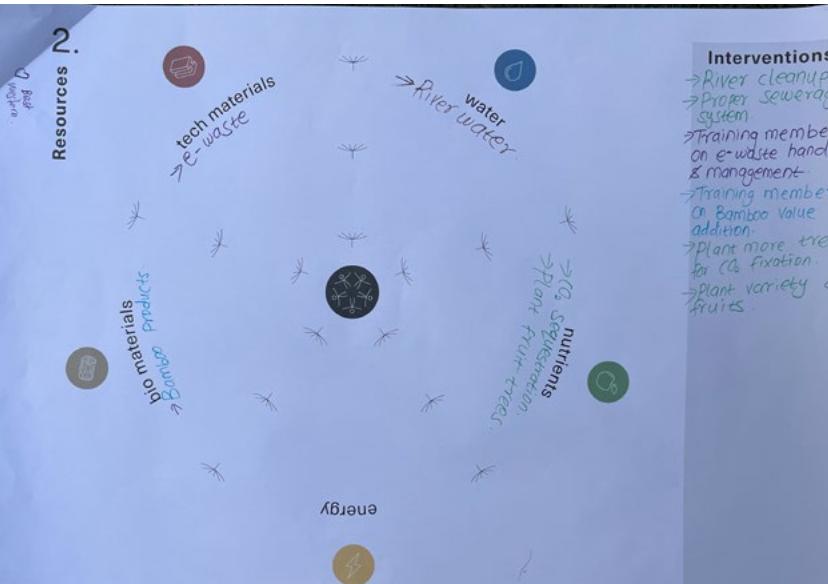
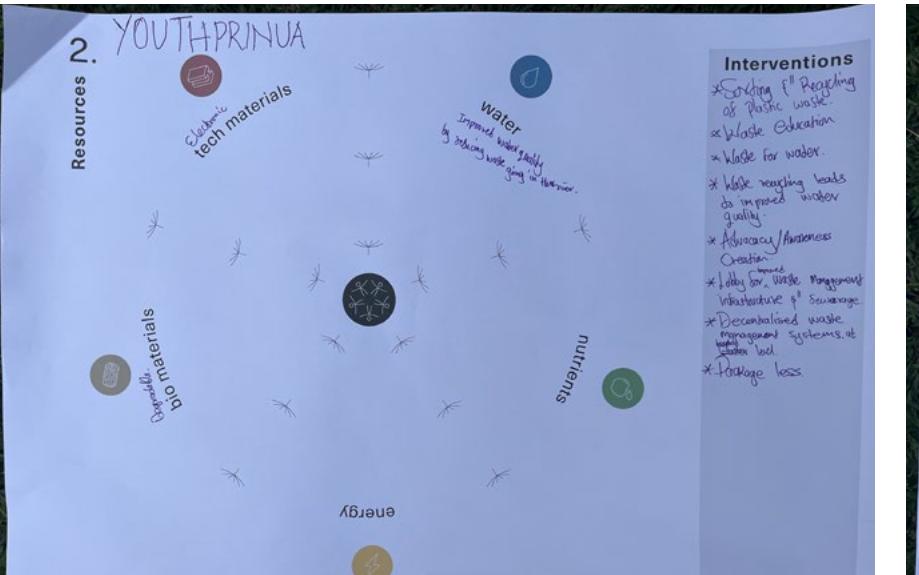
Ambitions

- Creating a more cohesive eco-system
 - Reaching more people in the community through regenerative agriculture

Shared objectives

- Focus on employment
 - Business model that can be replicated in other settlements





OUTHPRINUA

-

Power

ENA

-

- Increase the food security
 - To promote NBs through regenerative agriculture
 - Collaboration with County Government to inform policy

Interventions

- To continuously engage the community for negotiations in land to:
 - Secure space for increased hydroponics farming à increased food farming à food security is enhanced especially for women and children

Youthprinu

Ambi

- Diversification of income generating initiatives
 - Restoration of the river to its original glory

Shared objectiv

- Waste management education
 - Building collaboration and partnership
 - Improving public health
 - Employment opportunities for decent income
 - Community empowerment

Interventions

- Sorting and recycling of plastic waste
 - Waste education

- Waste for water
 - Waste recycling leads to improved water quality
 - Awareness creation
 - Lobby for waste management infrastructure and sewage
 - Decentralised waste management systems at household level
 - Less packaging

Tempo Arts Centre

Ambitions

- Sustainable and inclusive urban environments
 - Empower communities through education

Shared objective

- To have ecofriendly and safe spaces
 - To foster social and cultural engagement in public spaces

Interventions

- River clean up (see eg. <https://theoceancleanup.com>)
 - Proper sewage system
 - Training members on e-waste management & handling
 - Training members on bamboo value addition
 - Planting more trees for CO₂ fixation
 - Plant variety of fruits

7 Conclusions



- Think holistically about how the various elements of the riverside eco-system are interconnected, throughout spatial and governmental scales.
- Collaboration of CBOs is essential to have a larger impact. The 363 initiatives that are there at the moment need to find ways to work together, overcome the barriers that disconnect them at the moment and find ways to create a wide interconnected network in order to have both a powerful voice and to create substantial multiple values.
- In most cases, the government overrides community initiatives because they do not seem impactful at a larger scale. The CVF method enables riverside communities to demonstrate how well they contribute to the larger urban community's socio-ecological, economic, aesthetic, and cultural values. Further, policy advocacy is needed to demonstrate how well the community contributes to the broader ecological system.
- The Circular Value Flower method calls for us to think broader, more holistically; towards our own initiatives but also how our initiatives are linked to the wider river eco-system and to the wider ecological and societal urgencies at play.
- Firstly, the CVF method also provides us with a tool to provide an insight into the complexity that community initiatives inherently bring. Secondly, it gave us guidance through demonstrating value gaps for which we collectively can design and develop future interventions.
- National and county policies should acknowledge that the multiple value creation of a wide and dense network of CBO's create contributes towards their own and global objectives of climate adaptivity, poverty reduction, circularity and social cohesion. Therefore, they should support and facilitate these initiatives through policies, plans and funding opportunities.
- Nairobi Rivers Commission (NRC) should uphold and use locally available knowledge, experience and resources. They should plug into the existing ambitions of the community, capitalize on the available resources, and ride on the existing frameworks and processes to generate impact that is locally relevant to the lived realities of the communities.

Calls to action:

- Committing to a holistic approach to regeneration the river eco-system
- Committing to a clean river
- Action is doing and learning from what is done

8 Reflection + Next Steps



The CVF method involves quite an intensive process, with several reflection and design rounds. As mentioned above, several groups found it challenging to reflect on the relationship between community capital and resources without first having a clear understanding of the full resource system – reversing rounds 1 and 2 may help participants in coming to grips with what they actually have to work with, and work towards. Despite the complexity, the groups worked with great enthusiasm, and were sometimes surprised about the outcomes. Taking people out of their daily routines – including working on already ongoing project activities – helped in reflecting on how they implement their projects, and in analyzing the feasibility and sustainability of future projects. As one participant remarked *“The CVF helped us see things differently, to analyse ourselves and come with new paths for the future”* (Easy Urban Green Growers).

Analyzing obstacles and possibilities allowed the initiatives to determine more clearly what the possibilities are within their own sphere of influence, and identify more structural obstacles and opportunities. While the participants were grouped according to the initiative they are involved in, the process also allowed for cross-initiative learning. The groups were joined by stakeholders from government, civil society and international organizations, which helped in expanding horizons. The mapping exercise as well as the reports back to the groups equally allowed participants to learn from other initiatives and the stakeholders represented. The initiatives encountered sometimes similar opportunities and obstacles, and benefited from sharing ideas about to tackle these. As another participant remarked: “/

learned a lot during this workshop day, very good to meet other community leaders and to hear different stakeholders about their insights and ideas.”

Based on the CVF, the four initiatives have developed plans for strengthening and/or expanding their interventions. These will be discussed further with Nuvoni during visits to each of the initiatives, aimed at developing concrete actions plans and/or business models, including budgets needed. Funding from the LDE project will serve as seed funding to kick-start the initiatives and develop funding strategies.

Sharing the workshop report and the documentary made on the initiatives and workshop, with (and beyond) a wider group of stakeholders involved in managing the Nairobi rivers and riparian landscapes, will contribute to sharing the lessons learnt regarding the positive impacts of community-led initiatives. The aim is to show the benefits of engaging with these initiatives, rather than counter-productively enforcing top-down solutions on local residents. During the workshop, representatives from the initiatives as well as other stakeholders invited, shared the feeling that within the NRC there is a lack of awareness of what the community initiatives actually have to offer in terms of protecting the river and the riparian landscape. The team will hence prepare a presentation, with input from the initiatives (including input provided during the workshop), to the NRC to show the immense value of the local contributions to increasing community resilience and a more sustainable management of river landscapes.



List of attendees

Name	Organisation	Name	Organisation
Alice Menya	Nuvoni	Karstern Pawelleh	UN Habitat
Alvin Omondi	LEWMO	Marja Spierenburg	Leiden University
Bosibori Barake	Nuvoni	Michelle Koyaro	SDI Kenya
Bulenza Sirezi Mulezi	SDI Kenya	Mike Wera	SDI Kenya
Charity Mwangi	WRI Kenya	Milla Menga Dominic	Easy Urban Green Growers
Charles Ongutu	National Government	Min'goni Muga	Youthprinua
Charlotte Schenk	Leiden University	Mo Smit	Circular Community Foundation/ TUDelft
Cynthia Wainaina	KEPRO	Nancy Njoki	Muungano wa Wanavijiji
Davis Thuo Watiri	Easy Urban Green Growers	Naomi Hoogervorst	UN Habitat
Deborah Wanjugu	Public Space Network	Orioki Samuel	UN Habitat
Diana Mwau	Nuvoni	Paul Otieno	Tempo Arts Centre
Dorothy Aseyo	Green Belt Movement	Pauline Waigumu	Ghetto Foundation
Edwin Muigai	Public Space Network	Phanice Atieno	LEWMO
Els Leclercq	Circular Community Foundation	Priscillah Musumbi	
Elsie Osongo	Nuvoni	Ruth Mwende	NCCG
Eric Ochieng	Tempo Arts Centre	Sam Dindi	Mazingira Yetu
Fidelis Owino	Easy Urban Green Growers	Sam Ndindi	Mazingira Yetu
Flavia Biri	UN Habitat	Sammy Gathanga	Mathare Social Justice Centre
Fredrick Owino	LEWMO	Samuel Kiriro	Ghetto Foundation
Gathanga Ndungu	Mathare Social Justice Centre	Shakespear Awiri	Easy Urban Green Growers
Grace Wambui	Youthprinua	Shuib Lwasa	ISS
Hellen Mandela	NEMA	Stephen Nyagaya	Nuvoni
James Odongo	KEPRO	Sylvester Njue	LEWMO
Jan Fransen	IHS – Erasmus University	Tabitha Wakesho	
Jane Njoroge	SDI Kenya	Tobias Orao	Ghetto Foundation
Jared Onyango	Tempo Arts Centre	Washington Mboya	Youthprinua
Jesse Chanery	LEWMO	Yvonne Njeri	NEMA
Joseph Kimani	SDI Kenya	Zakaria Sharif	Easy Urban Green Growers
Joseph Kinyua	Showbeat org		