

## Promoting the Three R's -Reduce, Recycle and Reuse- in waste Management in Kadoma, Zimbabwe



The photo on the left shows waste in Kadoma, T Dzinamarira 2023.

On the right, the photo shows using land reclaimed from waste to grow healthy foods L Muzenda, 2023

Waste management is a critical issue facing cities globally, particularly in low-income countries with limited resources. Responding to this challenge, the Abdullah Dzinamarira Foundation (ADF) and Young Men's Christian Association (YMCA) implemented a comprehensive waste management programme promoting the promote the three Rs - Reduce, Reuse, and Recycle- in Rimuka, a densely populated low-income suburb in Kadoma, Zimbabwe.

### Key messages

- Waste reduction strategies can be low-cost and high-impact. They call for increased education and awareness on how waste management can create new industries and jobs.
- This work in Kadoma set up forums and interventions to involve local people and involved stakeholders to build awareness of the opportunities that waste reuse and recycling provides for jobs and inputs to local food and product.
- The programme generated interventions linking waste recycling to food production, plastic waste collection to incomes and renewal energy to improved urban conditions
- Climate change affects health and is creating health inequalities. City efforts to reuse, recycle and reduce contribute to improved health climate change mitigation and adaptation.

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## Context and challenges

Rimuka is a densely populated low-income suburb in Kadoma, Zimbabwe. It faces a host of challenges, including limited access to resources and crowded living conditions, contributing to social problems like crime (Stewart et al., 2018). The suburb is grappling with severe water shortages and inadequate garbage management. While the city's main water source, Claw Dam, is generally full when there is no drought. However, the Blue Ranges Water Works often operates at 40% of its normal capacity, leading to water scarcity (Remigios and Never, 2010). These conditions are associated with diseases such as cholera and malaria, with the disease risks exacerbated by poor management of food waste, adding to vector breeding sites.

"Our community is facing a health crisis, due to the improper disposal of waste in our neighbourhoods."

Member of Rimuka community, 2023.

Given the water scarcity in the city, Rimuka residents practice urban agriculture where they can access water, including around sewage stations, where they can access water and organic fertilizers. Growing vegetables near wastewater effluent, while a response to water scarcity and a survival measure, can expose consumers to illness from harmful bacteria and viruses if contaminated and inadequately cooked vegetables grown near the effluent are eaten (Wear et al., 2021). To mitigate this risk, people need to practice proper hygiene, washing hands with soap and hot water before and after handling vegetables grown near wastewater effluent and washing the vegetables and not eating them raw or poorly cooked. At the same time treating effluents and not growing any products close to the soil or those eaten raw would also reduce the risk.



People grow vegetables near a wastewater effluent pose risks to public health. R Marara, 2023

Recognizing these risks and their the potential of urban farming to alleviate poverty, ADF and YMCA saw the need to develop strategies to support the community to move towards more sustainable, eco-friendly and healthier methods. This case study provides an overview of the areas of intervention and practices implemented to respond to these challenges, particularly linking reduced, reused, and recycled waste to improved conditions, improved food security and increased local incomes.

An EQUINET conceptual framework outlines the urban responses for food and waste management systems as key entry points to foster innovation, collaboration, accountability, literacy and system-wide change to support healthy people, healthy ecosystems and an inclusive, productive, regenerative and circular urban economy (EQUINET, 2023). Drawing upon the EQUINET conceptual framework, the Rimuka case study explores the areas of shared learning for how to implement integrated and sustainable approaches to improve urban health and wellbeing and its key drivers.



## Areas of intervention and practices implemented

The interventions in Rimuka covered in this case study began in April 2023, and continue to date. They encompass urban and peri-urban areas of the city, and involve a wide range of stakeholders, including households, commercial establishments, educational institutions, and public spaces, and different sectors of society. The activities encompass waste management, access to water, renewable energy and mechanisms for social dialogue to establish gardens to cultivate and produce a steady supply of nutritious food for the community, to improve incomes and ecosystems and enhance food security in Rimuka.

### Implementing a baseline assessment

ADF and YMCA conducted a baseline assessment in April, 2023 to understand the existing waste management practices and challenges in Kadoma. The assessment used focus group discussions on how people felt about the litter being thrown around their homes. Data collection was implemented through surveys, interviews, and drawing on existing research studies to gather a range of evidence that intended to be up to date, in-depth and relatively easy and quick to conduct. The analysis of the evidence and reports from the focus groups were discussed with key stakeholders from a range of sectors, including government, including Ministry of Youth, Sports, Arts, and Recreation, Ministry of Health and Child Care, Kadoma City Council, industry, civil society and community leaders in meetings and workshops.



Discussing the baseline assessment with community members, T Dzinamarira 2023

The approach used aimed to ensure that the voices of marginalized people were heard and respected, and that the proposed interventions were appropriate for the community. The meetings identified priorities that took into account the evidence, including from focus groups with community members, the environmental concerns, resource availability, economic feasibility, and social acceptability. During these consultations, open-ended questions were asked to encourage free and frank discussion, ensuring that all relevant perspectives were considered.

After completing the consultations, the priorities were analysed and ranked. YMCA, ADF, stakeholders, including Kadoma City Council, Environmental Management Agency, and the community used continuing meetings in April and May 2023 to discuss and develop an action plan based on the assessment findings in incorporating strategies for waste reduction, reuse and recycling. The stakeholder engagement brought input and buy-in for the strategies and plan. More direct meetings were also held with specific groups- residents, business owners, local government, waste management professionals Kadoma City Council and others- to obtain proposals specific to their area of responsibility and capacity. These proposals included, for example, a ban on littering, a mandate for businesses to provide recycling bins, encouragement for residents to recycle and interventions for collection, use and recycling of waste.

The primary focus that came from this phase was the three key areas of waste reduction, waste reuse, and waste recycling, where ADF and YMCA worked with the community, stakeholders, Kadoma City Council, the Environment Management Agency and Ministry of Health and Child Care. The interventions in these three areas are outlined below.

## Waste Reduction

Waste collection is normally done by Kadoma City Council, collecting garbage waste daily from different city locations. As the rising population generates rising levels of waste, waste reduction was identified as one stream of action. A multi-faceted approach for waste reduction included awareness campaigns, community engagement and partnerships with local businesses to provide litter bins at every shopping centre. Communities were educated on effective waste reduction techniques, such as emphasizing conscious purchasing decisions to minimize packaging waste. The initiative promoted the adoption of reusable bags and containers as sustainable alternatives to single-use items.



Engagement with community members on waste collection, T Dzinamarira 2023

The YMCA and the ADF conducted community engagement activities in June with the Environmental Management Agency, the Ministry of Health and Child Care, and the Kadoma City Council. These activities include door-to-door campaigns, workshops, and public meetings to educate residents about the importance of proper waste management and the benefits of reusing, recycling, and reducing waste. ADF and YMCA established recycling centres strategically located within the community, such as at the YMCA stand in Rimuka, to facilitate the sorting, collection, of recyclable materials, materials such as used tires, plastic bottles, for their processing into new products, discussed later.



Collecting plastic waste, S Nokya, 2023





Promoting eco-friendly use of products such as used tires for decorating trees instead of burning them.  
S Nyoka, 2023

## Waste Reuse

The project recognizes the importance of waste reuse and implements strategies to facilitate and encourage this practice. Community-based recycling centres are established by the community members in their homes. The type of waste that is re-used includes plastic bottles, and car tires. Serving as hubs for sorting and processing recyclable materials, plastic bottles are collected by community members to these community-based recycling centres. The project also actively promotes composting at both household and community level to effectively manage organic waste.

## Waste Recycling

To recycle waste materials such as paper, plastic bottles, glass containers, and metal cans through processing new products, the project established partnerships with recycling companies. This helped to ensure segregated collection of waste using 'dumpers,' or large industrial strength containers located at convenient locations in communities for residents to dispose waste. They are emptied regularly by the local authority. Community members were informed on what can and what cannot be recycled, where to take materials and on the processing of recyclable materials. Local entrepreneurs are being provided with training on recycling techniques by a nearby recycling company (FakTpak Recycling), empowering them to engage in local income-generating activities within the recycling sector. ADF and YMCA also facilitates composting practices at the YMCA stand as well as in community locations. Community members are trained on waste management and composting to convert organic food waste into nutrient-rich compost for urban agriculture.

By addressing waste reduction, reuse, and recycling, the initiative creates a holistic approach to waste management system that addresses environmental, resource issues and sustainable practice, establishing a cleaner and more environmentally conscious community. In addition to these interventions on waste, the initiative also addresses access to water and energy.



Residents of Rimuka, fetching water from borehole taps due to lack of supply of tap water in their homes. F Lembani, 2023

## Access to water

ADF and YMCA have implemented measures to address the water scarcity in Rimuka, recognising the key role that water plays in food security and health, and the challenges noted earlier.

The initiative is providing communal borehole water points to residents. As a reliable water source, this enables Rimuka households to meet their daily needs and sustain their agricultural activities. Addressing the challenge of water scarcity challenge was key for promoting sustainable urban agriculture, for the community to take control of their own food production. The initiatives are emblems of hope, offering practical solutions to the pressing water shortages, in Rimuka.

"It's been years since we got water from the city council of Kadoma and we really appreciate what ADF and YMCA are doing by making water available to us which is a necessity in our homes."

Female Rimuka resident, 2023

## Access to renewable energy

ADF and YMCA have also collaborated with technology providers such as Solar World to explore waste-to-energy conversion technologies, harnessing energy to pump water from boreholes to feed water tanks used by the community for domestic use and gardening.



Solar panels help to create a more resilient and sustainable power grid, S Nyoka, 2023

## Mechanisms for consultation, dialogue, co-production and review

These multiple actions framed around improved sustainable practices, environments and food security are driven by processes used for consultation, dialogue, planning and design, co-production, and review.

ADF and YMCA serve as the technical hub, working with key stakeholders noted earlier, including the Environmental Management Agency, Ministry of Youth, Sports, Arts and Recreation, the Ministry of Health Child Care and the community, and with guidance from local health workers.

As a collaborative approach, this brings community needs and perspectives into the planning and implementation of the initiatives, and supports community ownership and action, such as in the collection of waste materials for transfer to recycling companies.

The evidence gathering process detailed earlier was used to both gather evidence, build a comprehensive understanding of the local situation, risks and range of views and practices underway.

As earlier described, bringing this evidence and the information from different groups to local consultations also integrated different perspectives on what should be done and on the priorities, based on shared criteria of environmental concerns, resource availability, economic feasibility, and social acceptability. The dialogues again ensure that the range of voices were considered, built ownership and promoted interventions that were appropriate for the community.

Collaborative brainstorming sessions involving all stakeholders and communities were also used to design the interventions described in the case study.

“Being part of this waste management initiative has been a collaborative and empowering experience. Our inputs were valued, and we actively contributed to shaping interventions that address our community’s unique challenges. It is gratifying to see our efforts translate into actions that promote sustainable waste management practices.”

Stakeholder speaking on their involvement, 2023

To review progress, regular monthly visits were conducted every two months for six months to assess the implementation of the planned interventions, challenges faced and perceptions on areas for improvement.

Indicators such as waste reduction rates, recycling rates, cost savings achieved through reuse practices were also used to assess the outcomes of the initiative. The implementation of the ‘three Rs’ was tracked by assessing the percentage of households participating in recycling programs and the amount of waste being diverted through reuse and recycling.

The review visits involved AFDT and YMCA, community members and key stakeholders such as Kadoma City Council, Ministry of Health and Child Care and the Ministry of Youth, Arts, Sports and Recreation. The findings were also reviewed with stakeholders and community to refine and improve the interventions.

## Outcomes and future plans

The outcomes have ranged across social, environmental and waste management changes, all of which are important. The educational campaigns raised community and stakeholder awareness of the environmental consequences of food waste, the impact of food waste on climate change and the social and financial costs. As a result, a pre and post questionnaire found that individuals and businesses became more knowledgeable about and more motivated to reduce food waste (ADFT, 2023).

The initiative has fostered partnerships among community, organizations, authorities and other stakeholders. This partnership has facilitated the implementation of the eco-friendly activities and levered resources for them, such as the bins, boreholes, solar panels and other key inputs. Partnerships allowed for the pooling of resources and expertise to tackle such issues.

“Through the waste management project, I have gained valuable knowledge about the importance of food waste management. I now understand that if food waste is not properly controlled, it can have negative impacts on our health and well-being,”

Kadoma community member, 2023

When food waste is sent to landfills, it can decompose and release harmful pollutants such as nitrogen, phosphorus, and heavy metals into the surrounding environment. This contaminates water resources and causes disease. Incinerated food waste can release pollutants such as carbon monoxide, nitrogen oxides, and sulphur dioxide into the air.

The use of compost pits, composting and other waste management practices described have potentially helped to reduce these negative impacts, reducing pollutants and greenhouse gas emissions associated with food waste. As they have promoted largely local processes they have also reduced energy-intensive transportation and processing.

Reuse of waste, such as food scraps for composting or animal feed, and recycling for packaging have helped to reduce the level of waste in the community and its carbon footprint, contributing to climate change mitigation.

In the future, building on the successful initiatives, ADF and YMCA are committed to expanding efforts on food waste reduction and environments, while also sustaining existing interventions through continuous engagement with individuals and businesses, and educational campaigns.

ADF and YMCA also aim to expand collaborations with relevant stakeholders to share and exchange learning, expertise and resources on the practical implementation of innovative waste management interventions. There are plans to explore use of technologies such as smart bins and food waste processing systems, to optimize waste management efforts.

There is also a proposal to establish a robust monitoring and evaluation framework to track the progress and effectiveness of the initiative, as a feedback loop for continuous improvement and adaptation.



## Capacities, challenges and responses

Rimuka is a low-income community so resources are a challenge. Fostering knowledge and resource sharing among stakeholders and communities was, however, found to effectively address the barriers hindering progress in waste management.

Funding constraints, infrastructure limitations and challenges in community engagement were overcome in three ways. Firstly, building partnerships was critical. These partnerships enhanced resource sharing, expertise exchange, and implementation capacities. Secondly, engaging with the community was equally important.

Actively engaging with communities through awareness campaigns, workshops, and social interactions fostered understanding, cooperation, and a sense of ownership of the initiatives. Finally, setting clear goals and implementation plans was key. Clearly defined goals and comprehensive implementation plans provided direction, focus, and a framework for measuring progress and ensuring accountability.

The initiative demonstrated that raising awareness about the impact of food waste and encouraging behavioural change through education and outreach programs can lead to significant reductions in food waste generation.

There are specific areas that still require further knowledge and expertise. These relate to household-level food waste reduction, composting and waste management techniques, education and outreach and policies and regulations. More research is needed to determine the most effective strategies for reducing food waste at the household level, including storage practices, meal planning, and portion control.

However even these gaps can be addressed, including within the region, by sharing best practices, innovative techniques, policies and regulations. These also need to go upstream to waste producers in business. For example, regulating and incentivising businesses and industries to reduce food waste, such as through mandatory recycling programs and waste disposal fees, can also drive positive change.

## Features and learning for holistic, integrated approaches

Waste management and environmental conditions impact on health outcomes, as do the availability of urban land for local food production and the supply of clean and affordable energy. *Figure 1* overleaf shows the EQUINET conceptual framework, highlighting the areas that the Rimuka practices address.

Encouraging composting practices converts food waste into nutrient-rich soil amendments for urban agriculture and promoting sustainable food production and comprehensive waste management practices minimize environmental pollution. Promoting recycling initiatives to preserve natural resources improves green environments, and enhances the quality of public spaces. The initiative has further linked water and renewable energy to improve water availability through sustainable energy alternatives.



**Figure 1: A graphical representation of the EQUINET conceptual framework with areas addressed in Rimuka**

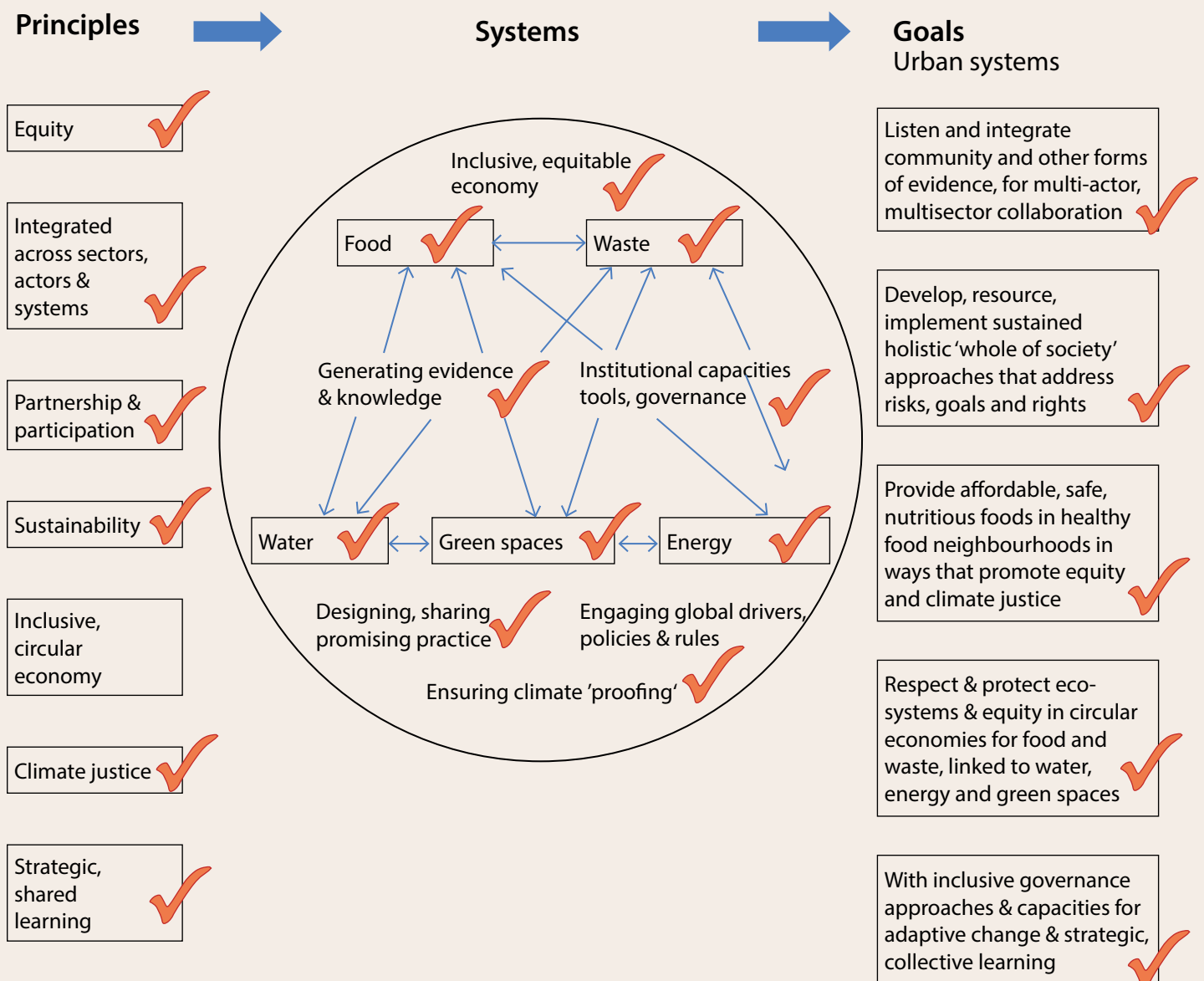


Figure source: EQUINET, 2023

The use of renewable energy sources also reduces reliance on fossil fuels and lowers greenhouse gas emissions, improving air quality, and mitigating the effects of climate change. The composting of food waste, dead leaves and garbage, wood chips and sawdust among other organic materials creates a nutrient-rich fertilizer used to maintain gardens and reduces the burden on landfills.

These interventions and the interactions between them indicate how the waste management initiatives in Kadoma create a more sustainable and environmentally conscious community, promoting resource efficiency and improving the overall quality of life for residents, with job opportunities created for those in the community maintaining the gardens, composting facilities, and recycling programs.

The case study underscores the importance of adopting holistic and integrated approaches to urban food systems, the interconnectedness of the drivers within the urban environment and the need for comprehensive and interlinked strategies and actors. GF4C includes smallholder farmers, women and youth in urban food chains under fair trading conditions, increasing the affordability, availability and acceptability of safe and healthy food for city-dwellers, reducing negative environmental impacts and increasing urban food system resilience to climate challenges. While yet to be explicitly integrated with other sectors in a circular economy, they provide entry points for this.

At the heart of its work, GF4Cs sets up participatory governance for diverse actors to collectively identify local solutions to their local food related challenges.



YMCA and ADFT working with young people for eco-friendly food production  
S Nyoka, 2023

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