

Promoting sustainable wellbeing in urban food and waste management systems in east and southern Africa:

Learning from case studies of promising practice

EQUINET DISCUSSION PAPER

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Executive summary

Rising urbanisation in east and southern Africa (ESA) is associated with both opportunities and risks for health. The intersect of multiple risks in urban areas calls for holistic area-based and multi-sectoral approaches, that link food, waste, water, energy and waste management within regenerative, circular urban economies, that also respond to climate change. In 2023, the community of practice on urban health in EQUINET identified value in documenting case studies of initiatives that reflect features of such holistic approaches, particularly around food systems and waste management, to point to features of existing practice that may be amplified in the region. Analysis of such holistic approaches pointed to five key features that, with a more detailed conceptual framework, was used to gather evidence in 2023/4 in seven case studies in four ESA countries. The case studies came from (i) Bembeke, Malawi; (ii) Korogocho and Viwandani informal settlements in Nairobi, Kenya; (iii) Kampala and Mbale in Uganda; (iv) Kibuye I Parish, Kampala, Uganda (v) Rimuke, Kadoma, Zimbabwe; (vi) Kariba, Zimbabwe and (vii) Kwekwe, Zimbabwe. While the seven urban settings ranged in size, they all had a high degree of insecure, informal settlements and economic activity, with poor infrastructures, and inadequate waste management and food security. The case studies were individually published. A grounded thematic meta-analysis was implemented by Training and Research Support Centre. It included all case studies and followed the five areas of the conceptual framework to identify the common and different features and areas of shared learning across the seven case studies.

The report describes the measures taken to integrate community evidence and voice, and to bring this and other mapping and auditing of the urban situation to collaborative planning. Most sites initiated their plans by **gathering and using evidence** from routine data, rapid appraisals, surveys, key informants, focus groups and photography. These local exercises brought disaggregated evidence often missing in national data systems. Evidence was fed to **multi-actor forums** involving authorities, non-state and community actors to discuss and use the findings to set priorities and plan interventions. **Coalition building** and the sharing of vision, skills, ideas, disciplines and capacities helped to frame and implement integrated approaches. Collective responsibility in multi-actor forums and links in international networks helped to bring diverse ideas, resources and local skills to approaches, breaking siloes to link social, health, economic and ecosystem actions and benefit.

The initiatives segregated, reduced, recycled and reused food and other urban waste. The recycled waste was used to generate organic fertilisers and renewable energy, and to expand urban green spaces. The initiatives applied **'One Health'** and **'whole-of-society' approaches** that particularly involved low income and vulnerable communities, schools and school children. Waste collection reclaimed land from waste dumps, converting land into community nutrition gardens, reducing vector breeding sites and pollution from waste burning. Through innovative urban agriculture models and practices, including micro-gardening, development of local technologies, and links made between diverse actors in the food chain, the initiatives improved local availability, affordability and consumption of a diverse range of nutritious, safe, accessible and culturally relevant health promoting foods. In some sites, climate-proofed markets for informal vendors also improved food hygiene.

Synergistic links made across food, water, energy, waste, and green spaces generated income in more **equitable urban circular economies**. Initiatives progressed in iterative steps, and built learning and confidence from simpler, less resource-demanding steps to more complex approaches. The processes were convened by the local authority or non-government organisations, using innovative mechanisms like 'Community Led Agriculture Banks' as demonstration sites for households and schools to learn techniques and to access inputs. Collaborative forums enabled review of progress and dialogue on challenges. There was also evidence of horizontal outreach from the initiatives to other settlements within the city and to other cities, facilitated by local authorities, lead institutions and networks.

The experiences were not without **challenges**. Many settings lacked a national **policy or legal framework** governing key operations, or that would bring domestic financial support for the activities, including for local technology development, urban agriculture or waste processing activities. They generally depended on local 'bottom-up' efforts.

Interventions on food and waste systems can potentially benefit livelihoods and a local circular economy. However, they can also generate resistance to change from those stakeholders who are actively benefiting from the current urban systems, such as those marketing imported ultra-processed foods. While the initiatives assessed and discussed progress in implementation and impact, **evidence from routine monitoring** was less well developed, limiting possibilities for wider scale up of good practice. There was less apparent uptake of learning from these local initiatives by policy actors at national, regional and global level, including in making changes to policies, regulations, financing systems or institutional procedures. There is need to make better links between national investments in and local access to technologies, such as those for renewable energy. Some sites noted large companies polluting environments and being non-compliant with, or exempted from rules controlling harmful practices. This disheartens communities and is perceived to be an unfair distribution of the burden of climate change and its management.

Inadequate and inconsistent funding was a barrier to sustaining and scale-up of initiatives, especially in low-income communities, where it takes time and inputs to break the disadvantage of poverty. International funding contributes, but 'project' funding often has time frames that are too short to achieve sustainable results. Fitting funding within longer-term strategic plans helped to link more limited resource pockets to sustainable processes. The initiatives require innovative financing, however, such as blending government budgets with resources from international agencies, business, or technical agencies; and national options for innovation funds that can be devolved to local authorities. They also need public tenders and procurement contracts that provide opportunities for such bottom-up initiatives.

At the same time, the initiatives supported **equity** by linking often precarious communities with sources of technical expertise and authority, bringing opportunities for marginalised groups to transform their lives, ecosystems and wellbeing, to apply adaptive responses to climate change, and strengthen their confidence, and power to produce change. **Social participation and partnerships**, sometimes supported by formal agreements, and convened in a range of mechanisms, levered resource contributions and raised trust, ownership and accountability. Building relationships and co-creation was, however, noted to take time and required trusted facilitators.

In terms of the learning on building an **inclusive circular economy as a contributor to health equity**, the case studies reflect productive linkages, inter-connectedness and interdependence of different social determinants of health (waste, food, energy, water and green spaces) that are contributors to a circular economy. Iterative implementation in phases/steps, with monitoring and strategic review, helps to assess impacts and adjust processes; to build capacities, confidence and experience; and to test technologies and methods. A range of locally developed **technology innovations** were used, linking with communities for feedback on their relevance. However, investment in innovation and on R&D within countries is still inadequate to nurture new forms of practice and to generate, test and apply new, locally relevant and affordable technologies that improve social, ecological and economic wellbeing. Sites also noted the need to regulate and incentivise change in business processes, such as through assessing and planning for health impacts, and by requiring mandatory recycling and charging fees for disposal of waste that could be recycled.

The initiatives provide learning on enablers and measures for and factors in **sustainable development and just measures for climate change**. The recovery and recycling of solid waste and wastewater helps to conserve resources, energy and prevents environmental water and air pollutants. It feeds waste into circular economies rather than causing environmental degradation and climate-related risks. Providing practical ways for local people to protect natural resources and biodiversity within urban areas promotes respect for ecosystems and biodiversity. People were reported to visibly experience the benefit of this in reduced respiratory, gastro-intestinal disease and improved nutrition, and in better urban environments.

Some case studies started with a holistic integrated paradigm, vision or approach as an explicit entry point. Others built understanding of this paradigm shift in the course of the intervention. In both cases, in settings that are often cast into the periphery of wealth and benefit, these experiences and the learning from them show the reality and possibility of alternatives that build more synergistic links between urban economic, social, health and ecological wellbeing.

1. Introduction

Urbanisation in east and southern Africa (ESA) is associated with rising, and often conspicuous wealth in some groups, increasing digital access and more geographically available health services and infrastructures. However, it also involves many dimensions of urban stress, often in close proximity to wealth, and cost barriers to health and essential services, especially when privately supplied. More educated urban women are, for example, reported to have a higher risk of reported interpersonal violence in some ESA countries, as their male partners use violence to resist these women's challenge to the traditional status quo (Wado et al, 2021).

Table 1 provides recent urban data for health and its determinants. The table shows levels of outcomes that represent gaps, often significant, in achieving Sustainable Development Goal (SDG) targets for 2030. Table 1 shows the advantage that urban residents have over rural counterparts in water, sanitation, handwashing and electricity services. The gap is closing, however, in part due to high levels of residence in informal settlements, and deficits in public health infrastructure and services as urban populations increase (Sidze et al., 2022). These conditions increase the risk of disease. For example, the odds of developing TB are nearly five times greater in urban slums compared with national levels (WHO, The Global Fund, 2021).

Table 1: Health and social determinants indicators related to urban wellbeing

Health/ SDH indicator		Levels
% employed population 15yrs+ below poverty line (2022)	East Africa	39%
	Southern Africa	8%
% with moderate or severe food insecurity (2021)	East Africa	67%
	Southern Africa	25%
% undernourished (2021)	East Africa	28%
	Southern Africa	10%
Under 5 year mortality/1000 (2021)	East Africa	53%
	Southern Africa	35%
Deaths from air pollution (2019)	Ambient pollution, SSA	65/ 100 000
	Household pollution, SSA	130/ 100 000
% population using basic drinking water (2022)	East Africa	27%
	Southern Africa	75%
	Urban: rural ratio	2.0:1
% population with basic handwashing facilities (2021)	East Africa	27%
	Southern Africa	75%
	Urban: rural ratio	2.0:1
% population with access to electricity (2021)	East Africa	47%
	Southern Africa	86%
	Urban: rural ratio	2.7:1
% population living in urban slums	2016	53%
	2018	51%
% individuals using internet (2021)	East Africa	21%
	Southern Africa	71%
Universal Health Coverage Index * (2021)	East Africa	43
	Southern Africa	69

Sources: UN DESA, 2024;

(*) 1 (worst)-100 (best), based on average coverage of selected essential services

Table 1 shows limited improvement in the share of people living in slums between 2016 and 2018. A 2020 survey of 25 SSA countries found that 46% of households lacked in-house access to any one of water, sanitation and handwashing facilities, and only 8% accessed all three. Even where infrastructure exists, water supplies are often inconsistent, and ageing infrastructure and lack of treatment chemicals undermines their safety (Ekumah et al., 2020). Urbanisation and poor waste management has also increased risks of flooding and burning of waste. A combination of unhealthy cooking fuels, ground water contamination, air and water pollution; traffic injury, employment and income insecurity, consumption of poor-quality food and sale of harmful products all affect urban health (Loewenson and Masotya, 2018; WHO AFRO, 2017).

Health promoting food systems and waste management are critical for health and wellbeing in east and southern African (ESA) urban areas, yet urban food insecurity is rising in many ESA cities. In terms of child stunting, a 14 country study in Sub-Saharan Africa (SSA) identified increased risk of stunting to be associated with inequality (gini coefficient), urbanization and low birthweight (Argaw et al., 2019). FAO note that food systems lie at the heart of the SDGs (FAO, 2018). Globalisation of food chains and diets shifting to fast foods are adding new risks from early ages for non-communicable diseases. Demographic and health survey data in SSA show a double burden of malnutrition as both overweight and underweight among women of reproductive age, with urbanisation and a global economy-led nutrition transition towards commercial foods affecting obesity, raising risks of cardiovascular disease and diabetes (Hasan et al., 2022; Victora et al., 2021). Urban agriculture and processing of locally grown foods can provide healthy alternatives, and turn waste sites into urban green spaces if they also protect local environments and natural resources. However, urban agriculture is not always formally supported, particularly where cultivation takes place near water sources.

Urbanisation is increasing waste generation and dumping, raising risks of communicable disease. In SSA, only about 44% of waste is collected, with 53% of total waste in low and middle income countries (LMICs) generated from food (World Bank, undated; Bessa et al., 2021; Turpie et al., 2019). Municipal solid waste and the decomposition of organic waste in open waste dumps contributes to global warming through the emission of greenhouse gases. According to the Inter-Governmental Panel on Climate Change, solid waste and waste water management generate about 2,7% of the global greenhouse gas emissions (IFEU, 2009). These emissions decrease when strategies are applied to reduce, recycle, re-use waste (Nassour et al., 2016).

Energy and water are critical in the 'farm to fork' food chain- with food systems estimated to consume 30% of the world's total energy and agriculture to consume 70% of the world's total fresh water resources (Seif et al., 2023; FAO, 2014). Climate change raises challenges for both energy and water. It has contributed to food waste and losses, threatened agroecosystems and made agriculture less predictable, and excessive heat has undermined food storage (Safdie, 2022, IIED and Hivos, 2020).

Approaches that are holistic, sustained and that address multiple determinants and dimensions of wellbeing would seem to be more likely to address this range of often intersecting challenges and risks for ill health. Prior document review in the region suggests that holistic approaches are more likely when:

- Area-based rather than disease-based approaches are used, with participatory processes that bring together communities, wider stakeholders and diverse disciplines and activities.
- Interventions pivot from a focus on a single problem to acting on the multiple determinants through multiple interventions, linking household level interventions to service inputs, and linking interventions for social improvement to activities that bring income and economic benefit for disadvantaged groups (Loewenson et al., 2022)

The urban health risks inherent in food, environment and waste point to the intersect between them as key entry points for innovation and system-wide change for such holistic, area-based and multi-sectoral approaches, linking healthy food systems and ecosystems, including green spaces, energy, waste management and water within regenerative, circular urban economies, that contribute to a just response to climate change. Analysis of paradigms for and experiences of such holistic approaches points to key features for such holistic approaches (FAO, 2014, 2018; IIED and HIVOS, 2020; Rasul and Sharma, 2015; Storey et al., 2017; Interreg Europe, 2020; Carvalho et al., 2022; Loewenson et al., 2022) . These are summarised in *Box 1*.

BOX 1: Holistic food and ecosystem approaches ...

1. Listen and respond to and integrate community evidence and ideas with other forms and sources of evidence, and that generate multi-actor, multisector interactions and collaborations in planning, designing, implementing and reviewing processes.
2. Develop, resource and implement holistic, area-based and system interventions with a 'whole of society' approach to build capacities to sustainably and equitably address intersecting risks and challenges and realise longer-term rights and goals.
3. Provide affordable, safe, nutritious foods in healthy food neighbourhoods and green spaces for all living in urban areas, in ways that promote equity and climate justice.
4. Respect and protect ecosystems and provide an inclusive, poverty-reducing and equity oriented circular economy, that reduces, recycles and reuses urban food and other waste to support needs, including for water, energy and green spaces.
5. Involve governance approaches, capacities and measures for implementation, for adaptive change and for strategic and collective learning (EQUINET, 2023)

With a context of resource scarcity often generating caution over innovation in ESA countries, the community of practice on urban health in EQUINET identified value in documenting case studies of initiatives that reflect features of such holistic approaches, particularly around food systems and waste management, and especially features that have potential benefit for health equity, inclusive economies and just responses to climate change, to point to options and features from existing practice that may be amplified in the ESA region.

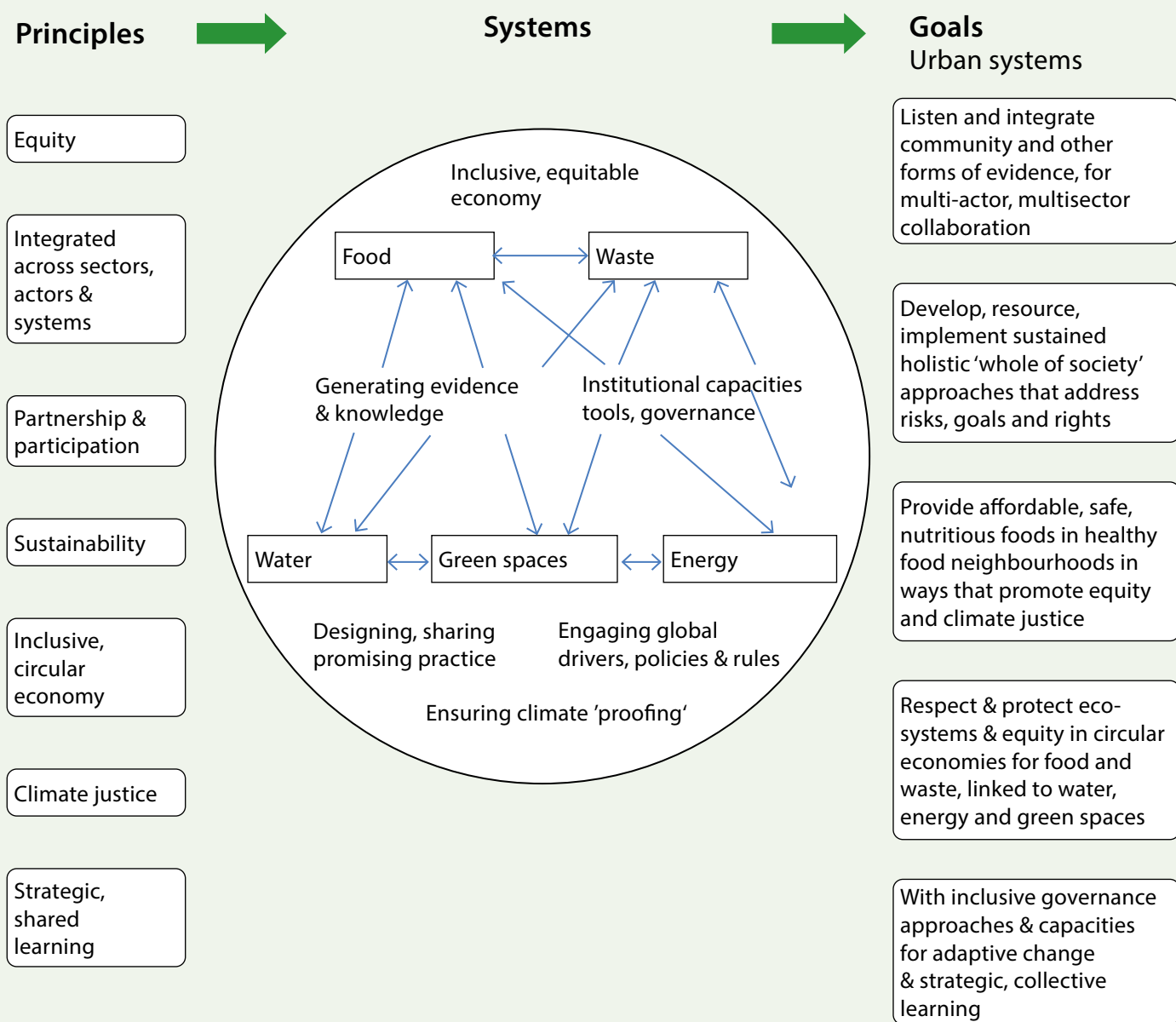


Managing waste at the Longacres food market, Lusaka, Zambia, BORDA, 2022

2. Methods

The framework for gathering case study evidence drew on a more detailed conceptual framework developed in EQUINET that built on the five areas in *Box 1*, identifying elements of principles, systems and goals, as shown in *Figure 1* (EQUINET, 2023).

Figure 1: A graphical representation of the EQUINET conceptual framework



Source: EQUINET, 2023

A call was made online and through various email lists for examples of practice in food and waste systems that demonstrated linkages and at least three of the five key features in *Box 1*. The summary of work underway, CVs and institutional profiles in the 13 applications received were reviewed by 3 peer reviewers. The reviews used criteria from the conceptual framework, the capacity of applicants to implement the work, and their base in the ESA region. Seven case studies were identified for inclusion.

Case studies were provided with background material and an online briefing on the framework and the common process to use for the case study work. Case study authors were also mentored on writing and photography skills by a professional photojournalist. Technical review and copy edit support was provided for drafts. The seven case studies are shown in *Table 2*, with their lead institutions, and broad area of each. The published seven case studies are included in the reference list and available online.

Table 2: The seven ESA case studies

Case study and site	Lead institution	Brief outline of case study focus
Bembeke, Dedza, Malawi	CMPD	A waste management initiative to turn organic waste into fertiliser, reducing waste, and improving food security and livelihoods.
orogocho, Viwandani, Nairobi, Kenya	TalkAB[M]R	Urban health and demographic site surveillance in 2 slums generating evidence needed to strengthen action on healthy food systems and environments.
Kampala, Mbale, Uganda	FRA with Rikolto and Global Consumer Centre	A Good Food for Cities programme forging multi-stakeholder coalitions and promoting inclusive, resilient and healthy food environments.
Kibuye I, Kampala, Uganda	AcTogether Uganda, UAUA	A waste management and small-scale urban farming initiative for urban food security, sustainable management of the environment and local incomes.
Rimuke, Kadoma, Zimbabwe	ADF, YMCA	Comprehensive waste management promoting the three Rs - Reduce, Reuse, and Recycle- in a low-income suburb, addressing urban wellbeing.
Kariba, Zimbabwe	Municipality of Kariba	Integrated multi-stakeholder interventions on urban waste link to food, energy and other urban needs.
Kwekwe, Zimbabwe	Kwekwe City	Participatory interventions harnessing waste applying local knowledge and assets to protect environments, and enhance food security and climate adaptation.

Source: CMPD et al., 2024; ADFT et al., 2024; AcTogether Uganda et al., 2024; FRA et al., 2024; Municipality of Kariba et al., 2024; KCC et al., 2024; TalkAB[M]R et al., 2024.

A grounded thematic meta-analysis was implemented of the seven case studies using, capturing and adding as relevant to the elements in the conceptual framework shown in *Figure 1*, organised within the five major areas in *Box 1*. A cross-cutting content analysis was also made of factors affecting practices and of key learning. After a discussion of the settings of the case studies, the report presents the findings within these key areas.

As **limitations**, drawing analysis from seven case studies in four ESA countries may be viewed as a limited sample. However, the case study approach was used to enable depth of information and have identified common and unique features, both noted in the findings. That the case studies had different contexts is an issue that needed to be taken into account in cross cutting findings. The settings and their shared and different features are thus captured in the next section. A common framework and structure used across all seven case studies enabled common and different features to be identified across case studies, and where context affects the work and outcome this is noted in the report. There was limited monitoring and analysis of quantitative outcomes in many of the experiences reported, and some key outcomes were reported as qualitative process outcomes. We record both types of evidence.

3. The settings

The settings of the seven sites are outlined below to provide the context for each.

Bembeke, in Dedza district in central Malawi is a 45-minute drive from Malawi's capital city, Lilongwe. Situated at the heart of a productive farming zone, the local economy draws on small-scale irrigated farming that demands high-cost fertilizer throughout the year to address soil infertility. Bembeke is a busy business and trading center for farm products, including for people from neighbouring countries. The resulting accumulation of waste and littering in Bembeke is at levels that have exceeded the management capacity of the local authority, posing public health and environmental threats (Dedza District Assembly, 2019).

Local authorities manage only 12% of the waste generated, with private waste collectors filling the gap (UNDP, 2021). While plastic waste disposal is regulated, with a ban on the importation, manufacture, trade and commercial distribution of specific plastics, they continue to be present in the market (Turpie et al., 2019; Pensulo, 2020). Malawi's total waste generation is projected to triple by 2050, with waste management systems and public awareness on waste management inadequate to cope with these trends (Turpie et al. 2019). Less than 42% of waste in the country is collected and taken to open dumpsites, 12% is thrown on roadsides, 9% thrown on river-sides, and 9% thrown in dumpsters (Kasinja and Tilley, 2018; Turpie et al. 2019). This situation called for approaches to manage the waste, while also addressing the needs of local farmers and traders.



Bembeke Market, CMPD, 2020

"The piling of waste at the market was not just an eyesore but it kept taking up more market space. The smell was unbearable, affecting air quality and business."

Bembeke, Dedza, 2023

Kwekwe City, Zimbabwe is the country's seventh largest city, with a growing population reaching 119863 in 2021 (ZimStat, 2022). Over half of the city population is self-employed and engages in gold panning and vending. Households in the district have nutritional challenges, with a 28% prevalence of child stunting and 17% of the urban residents identified as food-poor in 2018 (ZimStat and UNICEF, 2019). The city generates approximately 1100 tonnes of solid waste monthly, or 3kg for each person weekly (Chatsiwa, 2015). Half (51%) of this waste is reported to be organic, with 15% paper, 11% plastic, 5% glass, 4% metal and the rest other materials. The city's 60 year-old Amaveni Dumpsite is the only dumpsite for industrial and domestic waste disposal. It is still operating as the finances needed to develop a new site are unavailable. Several informal sector groups and individuals gather solid waste from the dumpsite, recovering cans, plastic containers, glass, paper, and cardboard for sale to cycling companies. In addition, the city's Northern Sewage Works treats over 11 mega-litres of the sewage produced daily and some farmers use this effluent to irrigate urban agriculture, with potential risks of microbial contamination (Loboguerrero et al., 2019). The city authorities recognise the contribution of urban agriculture to food security and the risks from unmanaged waste and have set a plan and strategies to divert 25% of the waste generated to recycling and revenue generating activities.

Rimuka, in Kadoma Zimbabwe is a densely populated low-income suburb of Kadoma city. It faces a number of challenges, including limited access to resources and crowded living conditions, severe water shortages, inadequate waste management, including of food waste, and many vector breeding sites (Stewart et al., 2018). While the dam supplying the city's water is generally full when there is no drought, the Water Works often operates at 40% of its normal capacity, leading to water scarcity for residents (Remigios and Never, 2010). These conditions have been associated with water- and vector-borne disease, including cholera and malaria.

Kariba, Zimbabwe is a small tourist resort town of about 30 000 residents near the border with Zambia, located in a National Parks area (ZIMSTAT, 2022). The district experiences hot, dry weather throughout the year, not suitable for crop farming or animal husbandry. It is also far from major commercial centres and farming areas. The town has high levels of unemployment, with about half (51%) of the population working in the informal economy (Kariba Municipality, 2020). It's location in a wildlife area limits the land for housing, and solid waste management faces engineering and technical constraints, and challenges due to rapid unplanned urbanization, an outdated solid waste service delivery model and equipment, and limited recycling and composting (Mwesigye et al., 2009; IWM, 2017). This has led to littering of streets, alleys, open spaces, undeveloped stands and game corridors. Significant volumes of waste are washed into the lake, animals consume plastic waste from food packages, and storm water drains are blocked by litter, the latter leading to urban flooding. The situation motivated the municipal authority to develop a Kariba integrated solid waste management programme (Municipality of Kariba, 2016).



An elephant feeding on waste from a broken down truck, WK Munemo 2012.

Uganda's rate of urbanisation is projected to increase by 50% by 2040, with projections that by 2050 the country will be among the most urbanized in Africa (Bertram de Rooij, 2020; GOU, 2017). Urbanization is a key driver of changes in food demand, systems and diets.



Aerial view of urbanization in Kampala city M Freeman, Flickr under CC, 2021

Kampala and Mbale, Uganda are densely populated cities with many unregulated activities. This includes sale of unsafe food, responding to an increased demand from a growing urban population. Urban food systems are poorly integrated in urban planning, with prime agricultural land used for building houses and restrictions on urban agriculture (Brown, 2022). The situation motivated a Good Food for Cities Programme (GF4Cs) in both cities.

Kibuye 1 Parish, also in **Kampala, Uganda** is a low-income residential area of 120 000 people, adjacent to both a slum and the business suburbs. The parish is dominated by informal housing, currently hosting socio-economic migrants, refugees and low-income slum dwellers. Waste is collected by private waste collection companies and a few locally based individuals at a negotiable cost (ACTogether Uganda, 2021). While the informal sector in the area is an important buffer against livelihood shocks, the sector does not access government loans and tax benefits, generating social inequality and exacerbating poverty and vulnerability (Development Initiative, 2020).

The COVID-19 pandemic affected women and youth food vending and hawking in the markets and along the roadsides, reducing residents' access to affordable food. The impacts of the lockdown stimulated community attention to improving local environments and livelihoods. A group of local youth innovators thus formed the Sustainable Community Initiative for Empowerment (SCINE) Uganda to address household food security in 2019, with support from Kibuye1 Parish and Wasswa zone LCI local leadership and with approval from the Kampala City Council Authority.

Nairobi, the capital city of Kenya, and the setting for the final case study, has experienced an almost 12-fold increase in population from 1960 to about 3.4 million people by 2010. Between 60% and 70% of Nairobi residents live in informal settlements with challenges in living standards and livelihoods, and limited infrastructural improvements (APHRC, 2002, 2020; UN Habitat, 2008; TalkAB[M]R et al., 2024). Korogocho and Viwandani, two areas selected for demographic surveillance, comprise villages neighbouring slums. While Korogocho had poor health and socio-economic status, Viwandani had a youthful, migrant and employed population. Both faced challenges in living and social conditions affecting health.

"For close to a whole week, the pipes that bring water to this area of Korogocho were dirty because they leak when it rains. It was terrible, even the water smells like sewage. Many people cannot buy clean water and do not have kerosene to boil it. It causes sickness and many people have diarrhoea."

Korogocho resident, 2023

In general, while these urban settings range in size, they all experience a high degree of insecure, informal settlement and economic activity, with poor infrastructures, inadequate waste management and challenges in meeting household food needs. While some faced unique issues, such as a location on country borders or in wildlife zones, rising urbanisation meant all faced a demand to 'do things differently'. Recognition of these problems in some areas was by sections of the community and in others by the local authority. Appreciation of a need for change was triggered by pandemic and climate impacts, by environmental impediments to quality of life and business, and by levels of communicable disease and nutritional ill health.

4. The findings

The findings in *Section 4* are presented within the key areas of the conceptual framework, aggregating common findings/experiences and noting any diversity. *Section 5* provides a subsequent cross-cutting discussion on factors affecting practice and shared learning.

4.1 Integrating community evidence and implementing collaborative planning

The framework points to processes to listen, respond to and integrate community evidence and ideas with other forms and sources of evidence, and identifies the role of multi-actor, multisector interactions and collaborations in planning, design, implementation and review.

Four of the seven sites initiated their plans by **gathering and using evidence**. In Kariba, recognising the need to collect information beyond routine data, a rapid appraisal was implemented of water supply and sanitation services in 2019. This appraisal, a prior 2013 report on water and sanitation services and a 2013 study on solid waste implemented by the municipality provided evidence on the situation, community knowledge and views, and the level of urban readiness to implement waste recycling (Johnson, 2013). In Kadoma, ADF and YMCA conducted a baseline assessment in 2023 through surveys and interviews, and used existing research to understand existing waste management practices and challenges. They used focus group discussions to include evidence on community views. In Malawi, from June 2012, a CMPD civil society 'Eye on the Environment' initiative used participatory methods, photography and videos in annual audits to expose environmental degradation and waste management problems.

The evidence was shared with stakeholders and authorities in **multi-sector and multi-actor forums**. In Kariba, for example, the reports were disseminated to Council management and Councillors in 2013 to guide decisions and policy formulation and to plan, design and implement feasible solid waste interventions. With the study showing about 92% of the waste to be recyclable, and more than half of the solid waste to be biodegradable, recycling and composting were identified as feasible options (Hoornweg and Bhada-Tata, 2012; Simelane and Mohee, 2012). To add to the assessments, the municipality mapped the various solid waste stakeholders, integrating survey data with local knowledge and ideas, including on promising practice in other cities from across and beyond the region. Stakeholders were gathered to review findings in dialogue forums that included local communities. This helped to build local ownership and participation in planning an integrated solid waste management initiative (KISWM).

Similarly in Kadoma, the evidence from the assessments was discussed in meetings with key government ministry, local authority, industry, civil society stakeholders and community leaders. The meetings identified priorities for waste reduction, reuse and recycling that would address links across economic, social and environmental issues. They included the voices of marginalized people in the process to ensure that the proposed interventions were appropriate for the community. Similarly in Malawi, dialogue was held on the findings of the audit in brainstorming sessions with authorities and stakeholders, leading to proposals to link interventions in win-win cross sector proposals for food security, such as producing fertiliser from waste.

The most comprehensive and sustained evidence gathering was found in the Nairobi Urban Health and Demographic Surveillance System (NUHDSS) in Korogocho and Viwandani informal settlements. The NUHDSS was the first African urban health and demographic site surveillance based in a slum, initiated by the Africa Population and Health Research Center (APHRC) in 2002. It filled a gap in a more disaggregated understanding of the socio-economic and health status of the urban slum residents than what could be gleaned from national surveys, particularly given the poor conditions, health outcomes and limited local authority presence in these areas.

The NUHDSS generated evidence on the conditions in urban informal settlements. It also provided longitudinal evidence on the impact of interventions in these areas. This information informed dialogue on and proposals for improved health and livelihoods, including in relation to food and waste management.

Every year, interviewers recruited from the local communities captured information on a range of livelihoods, environmental, social, and health measures. In 2020, paper-based data collection was replaced by electronic data capture (APHRC, 2020). The evidence was used to strengthen the voice and involvement of residents of the two slum areas in planning processes with stakeholders, local leaders and community representatives, where initiatives were designed to respond to the findings. From July 2010, this process was formalized as a Community Advisory Committee (CAC) (APHRC, 2020). The information has triggered various initiatives to improve health and wellbeing, such as skills activities for young people, women self-defence, annual community activities such as school upgrades, building toilets, organizing school-fee funding events for needy students, events for youth to showcase their creativity and free health camps (APHRC, 2020).



Korogocho,
Public Space Network, 2020



Using data for change: Korogocho people's park,
Nairobi News, 2019

The case studies thus demonstrated numerous features of holistic approaches. Initial situation assessments gathered disaggregated evidence from inception on conditions, stakeholders, ideas and views on interventions. They used a range of quantitative and participatory qualitative methods, both of which have the potential to catalyse dialogue with local communities and key stakeholders, bringing evidence to multi-stakeholder local forums for inclusive dialogue across all sectors and actors. A mix of methods integrated community-generated evidence and voice in these processes, adding to the richness of the information and dialogue on it.

The Malawi annual 'Eye on Equity' audit and the NUHDSS provide examples of **more sustained, institutionalised evidence gathering**. The NUHDSS provided a unique longitudinal assessment informing planning and monitoring implementation. While its methods are more quantitative, including using digital tools, training local interviewers strengthens community roles in the process, adding the useful dimension of capacity building in the process.

There are other more sustained and institutionalised forms of evidence gathering not found in the seven sites. They include preference and satisfaction surveys, and health impact assessments (HIA), food and water testing, or cost-benefit analysis. Routine data was not widely used and was observed in two areas to miss the detail and disaggregation needed for more informed responses, while testing of samples and cost benefit analysis may draw on skills and equipment not widely available in these areas. Both may however be useful, including for more quantitative evidence on changes achieved. Simpler technologies for food, air and water monitoring can, for example, be used by community monitors.

The four sites gathering evidence all fed this to multi-actor forums involving authorities, non-state and community actors to discuss and use the findings to set priorities and plan interventions. The processes for priority setting are important and were not always elaborated. However, the sites demonstrated, including in resource poor settings, the value at inception of fusing evidence and dialogue as key inputs to setting shared vision, initiatives and priorities in planning.

4.2. Resourcing and implementing holistic, area-based and system approaches

Holistic, area-based and system initiatives resource and implement ‘whole of society’ approaches, to address risks and drivers, build capacities to sustainably and equitably address challenges, to realise longer-term rights and goals. The case studies demonstrate this in different ways, including in their approaches to waste management and food systems, discussed later.

A holistic process involves **coalition building**. For example, Food Rights Alliance in Kampala and Mbale are supporting city-regions to implement policy and practice to tackle the inter-related challenges of food insecurity, climate change, biodiversity and economic inequality as key for more sustainable, fair and healthy food systems. The process, described in more detail in *Section 4.4*, builds local coalitions of businesses, consumers, local authorities and other food system actors working together. This implies building bridges between groups. For example, in Mbale city, the initiative brings together local researchers, local and city government authorities, food transporters and processors, market vendors, non-government organisations, schools, hotels, media, cultural institutions, consumers and farmers that work and live in Mbale City.

Building coalitions enables the **sharing of skills, ideas, disciplines and capacities for more integrated approaches**. In Kariba, for example, convening all stakeholders to discuss solutions for the solid waste challenges benefited from diverse experiences and insights, including from other cities in the Connective Cities Network. Stakeholders across all sectors agreed to adopt an integrated solid waste management strategy that would ensure Kariba’s natural environment for eco-tourism, while also protecting residents and wildlife from toxic pollutants and waste. Healthy green spaces were seen as a sink for greenhouse gas to support climate mitigation, with water for animal and human consumption and energy production. The strategy thus hinged on technical and social dimensions of waste reduction, recycling and reuse, composting, training, awareness and research and development. A multi-stakeholder interim steering committee was set up to transition the different dimensions of the process towards a fully integrated solid waste management system, the KISWMP (IWM, 2017). Similarly in Rimuka, Kadoma, a wide range of stakeholders, including households, commercial establishments, educational and public institutions combined ideas and capacities to build linked approaches that connect waste management, access to water, renewable energy and food availability.

Making **direct links across stakeholders helped to build integrated approaches**. In Malawi, for example, the forum designing the initiative involved CMPD, the Environmental Affairs Department, Dedza District Council, health authorities, agricultural extension workers, the Bembeke market leadership, the traditional authority, the Kamenyagwaza Youth Network and the Farmers Association. This combination of actors brought diverse skills and experience to integrate waste management, food security and poverty reduction in a ‘waste-to-wealth’ idea, turning waste into locally-made fertilizers to improve soil fertility, farm production and food security, and using this to generate improved incomes. With all around the table, direct links could be made across actors for the design or training activities. Key stakeholders such as traditional leaders were engaged to sensitise communities on waste collection and segregation, and joint civil society and health official public campaigns held on the income and health benefits. Cross sectoral processes helped to clarify collective responsibilities, overcome challenges, and sustain processes.

There is evidence from these examples and from approaches in the other case studies that these initiatives are **designed as sustained processes**, rather than as short-term time-limited projects, breaking siloes and addressing multiple issues at once. The case studies explicitly aim to build links between social, and ecosystem benefit and economic or social enterprise opportunities. Convening and designing across authorities, technical and commercial actors, and communities is critical for such integrated designs. In Kariba, Kampala, Mbale and Bembeke, having links with regional/ international networks also brought ideas to the design.

The next subsections explore how far these designs invested in locally appropriate, climate sensitive technologies and infrastructures (solar energy, water, public green spaces).

What was less clear in the case studies were the processes used to secure impact and innovation funding, and what budget, collective/pooled savings, community contracting, social tendering and public procurement measures were used to support collaborations. Such funding plays a role in testing, demonstrating and scaling up holistic innovations. There is some indication that gathering different actors brings diverse resources to the mix, and some areas were supported by international agencies for new work. This would need to be further explored.

In the settings noted in *Section 3*, while waste management and food system laws are in place, there are various constraints to their implementation. There are also gaps in policy and law, such as for urban agriculture. The legal systems are siloed, raising the issue of how far promising practice is able to inform and generate new policy, financing and legal frameworks.

4.3 Reducing, recycling and reusing urban waste in a circular economy

Working towards an inclusive, poverty-reducing, health equity promoting and ecologically sustainable circular economy is noted in the conceptual frameworks to call for urban systems that respect and protect ecosystems, reducing, recycling and reusing urban food and other waste (in the ‘three Rs’) to support incomes, wellbeing and responses to climate change, including in relation to energy and green spaces.

The case studies give evidence of measures to implement these changes, moving away from old systems that take unsegregated waste to dump-sites and that face challenges due to the rising populations and waste levels noted earlier, towards waste segregation and recycling for local use in food and other systems. These measures connect well with ‘One Health’ approaches, linking different actors and integrating practices across sectors in waste management systems, and reducing the disease risks from illegal waste dumping and informal waste scavenging.

Across the case studies there are efforts to **turn waste into health-promoting assets, often opening green spaces for urban agriculture**. In Kibuye I Parish Kampala, Uganda, poor waste disposal and management in the informal settlements is linked to a lack of designated communal garbage collection points, with littered waste clogging the existing drainage channels, gullies and wetlands exposing the slums to frequent flooding. A small-scale urban farming initiative by SCINE Uganda, detailed in the next subsection, uses the waste to fertilise urban agriculture, improving the local environments.

In 2022, SCINE Uganda through the heads of five selected schools in Kibuye I, established and trained primary school children in four environmental protection clubs on using waste plastic bottles for small scale urban farming, and on mixing fertilizers for sustainable farming at school. The initiative has also trained interested local people, school teachers and street food vendors to sort organic from inorganic waste at household level for reuse as fertilizer for sale to small-scale urban farmers. This has improved the availability of fertilizers in Kibuye I. Water bottles, polythene bags and old car tires are also sorted and re-used as containers for small scale urban farming in Kibuye I.

In Kwekwe, Zimbabwe, for example, waste pickers, mostly women collect waste aluminium cans. They sell them to small-scale smelters based in local home industries where they are moulded into traditional pots for local sale. This ‘waste-to-asset’ recycling activity in the city brings income to the local community. Residents and the local authority clear areas of waste dumping. The reclaimed space is converted into community nutrition gardens, managed by residents. This prevents these areas from being used to dump waste, and reduces vector breeding sites and the air pollution from the burning of dumped waste.

In Kariba interventions proposed by different groups across the urban area each develop their own strategic and implementation plan and budget. The plans are assessed and pilots implemented, with stakeholders and council choosing the best performing options for wider scale-up.

All the interventions are integrated into one solid waste management programme in Kariba, the KISWMP. Members of community registered local ward-based community-based organisations are sensitised and trained on recycling, entrepreneurial skills and use of relevant technologies. The actions taken include ward-based clean-ups, recycling waste beverage cans and plastic; composting the plentiful organic waste for local fertilizer, and reusing waste to create products for local sale to the public. Three community groups in Kariba are recycling organic waste for compost for communal gardens, despite limited land and almost all open spaces being reserved as game corridors. The composting programme established in 2017 reduces waste disposed at the municipal dumpsite. Group members collect grass, leaves, tree cuttings, food waste, soil, ash, cow and elephant dung, and maize stubs in bin liners provided by the council. They compost the waste in tumbler composters, producing enough organic fertiliser from this for the farming season. The compost is used in vegetable gardens, creating urban green spaces and providing affordable, nutritious food.

"It is actually funny to imagine how much money one can get from recycling waste."

Recycling project member. 2018



Communities opening green spaces by collecting litter in Kariba S. Makunda, 2015



Tumbler drum composter at the Zimbabwe federation garden S.Makunda, 2015

Bembeke, Dedza in Malawi was transformed from one of the worst dumping sites to one of the cleanest urban sites in Malawi through a state, civil society and stakeholder partnership that turned abundant biodegradable waste into fertilizer for food production. Community members, wearing protective equipment, segregate, collect and pile waste away from Bembeke market to local fertilizer-from-waste-production sites using wheelbarrows, shovels, sacks and ox carts. The waste is sorted, segregated and unwanted content removed. Usable organic wastes, such as food waste, crop and gardening residues are loaded into plastic bags and mixed with animal dung, fertilizer, urine and ash and tightly shut. Microorganisms break down the organic waste. After 21 days the organic fertilizers are ready and taken by farmers to their fields or to storage.



Dumpsite in Bembeke, Dedza, CMPD, 2020
fertilizer from



Local farmers have a bumper harvest using waste, CMPD, 2020

In Rimuka, Kadoma, multiple approaches were used to reduce waste, including awareness campaigns to minimise packaging, partnerships with local businesses to provide litter bins at every shopping centre, the adoption of reusable bags and containers and the establishment of recycling centres located within the community. These measures facilitated the sorting and collection of recyclable materials, such as used tires and plastic bottles. In partnership with recycling companies, local entrepreneurs process the collected waste into new usable products. Community members also convert organic food waste into compost for urban agriculture.

The actions draw on and widen **local experience, expertise and knowledge**. In Kariba, for example, the initial interventions were simpler and less resource-demanding, followed by more complex options that build on experience and demand more resources. Community based organisation members are trained and further cascade information within residents, churches, schools and the public. In Malawi, local agricultural extension workers trained urban farmers on local fertiliser production from waste to address poor soils. With commercial fertilizer a cost barrier to farming, the agricultural extension workers shared eye-opening information with farmers on how purchased inorganic fertilizers do not supply nutrients to the soil but rather to the crops, while fertilizers locally made from waste nourish the soil and address soil infertility in the longer-term. As the fertiliser from waste was more affordable, some families who had stopped farming due to high costs resumed farming, improving local food supplies.

The **local authority plays an important convening role**. In Kwekwe, the local authority registers those involved to formalise the allocation of reclaimed land, while residents organise in themselves community-based organisations. The local authority fosters links between recycling companies and waste pickers. It has also linked with other state sectors and international non-state agencies to expand boreholes and solar energy to facilitate water for use in homes and community gardens, street lights to improve community security and solar power for processing and services. In Kariba, the town council mobilised resources to provide community organisations with shovels, hoes, wheelbarrows, garden forks, litter pickers, gloves and face masks, shoes, hats and branded T-shirts for a clean-up programme, launched by the Mayor. The council negotiates training and technology inputs from local companies, such as for baling plastics and crushing beverage cans. The council documents and reports on progress to monthly project steering committee meetings, which then report quarterly to the community and stakeholders.

Connecting waste management, urban agriculture and environmental greening promotes health, but also protects eco-system, equity and circular economy goals. The linkages provide opportunities for unemployed, low income residents to earn a living in the circular economy, while improving health and environmental conditions. In Kwekwe, for example, reducing the burning of solid waste from waste management initiatives has reduced the level of airborne contaminants from dioxins, furans, carbon, sulphur, and nitrogen oxides that are harmful to health and that increase greenhouse gases. Opening green spaces provides recreational places and improved food security from urban agriculture. Council clinics report levels of watery diarrhoea to have halved over the last four years (Ngwenya et al., 2023).

In Kariba, in a partnership between the council and an international agency, a recycling shed was built at the municipal dump site, housing technology for plastic baling and can-crushing to compact recyclable waste for easier transport for processing. The equipment and pumping of water used in the process are powered by both hydro-electric and solar energy, linking energy to waste recycling. The water used to clean waste materials is disposed in a septic tank that services the recycling shed, and returns to the hydrological cycle through artificial ground water recharge and evaporation.

The recycling links efforts to apply affordable technologies, smart energy, less mechanisation and natural processes with improved incomes in a circular economy. Using bio-degradable waste for organic composting of community gardens links waste to food security, with green spaces acting as carbon sinks. The activities use affordable technologies and locally available materials, creating a demand for local goods.

In Kadoma, civil society leads have collaborated with technology providers to explore waste-to-energy conversion technologies, harnessing the energy to pump water from boreholes to feed water tanks used by the community for domestic use and gardening. Integrating waste reduction, reuse, and recycling creates a holistic approach to waste management, linking waste to water, energy and food, and generating a cleaner and more environmentally conscious community. In Kibuye I, Uganda, school environmental club initiatives on urban farming and waste management are linked to an information campaign for 'climate-smart' agriculture and economic benefit, with most households reached in the community establishing at least one small back and front yard garden, producing nutritious green foods for home consumption and sale, at the same time improving the quality of air in the community. A climate change awareness campaign dubbed "Caravans" reaches out to local people, including refugees, in eleven zones in the parish, taking into account the different levels of understanding and cultures in the different social groups that shape their responsiveness to community interventions.

The case studies thus exemplify urban systems and social organisation that ensure that food by-products and other forms of urban waste circle back into the system, contributing value rather than waste. The initiatives are explicitly holistic and integrated, and link urban food, water, energy, waste, and green spaces in synergistic interactions, generating income in more equitable urban circular economies. Across the different case studies there is evidence of different public, private and community actors in the system forming new links and understanding to segregate, reduce, recycle and reuse food and other waste, to generate renewable energy, to manage waste water and conserve clean water and green spaces, using waste for value-added products in ways that have environmental, social, economic and climate-related benefits.

In many of the settings there is no **policy or legal framework** governing the operations, material conditions or financial support for waste-pickers and those involved in urban agriculture. With a gap in law and policy supporting these approaches, many initiatives are generated 'bottom-up.' Local authorities play a key role in convening and co-ordinating across sectors and stakeholders for this. While there are examples of local technology development and links with domestic companies to support the activities, there appears to be scope for significantly more investment in innovative business models and approaches to test, research, and demonstrate sustainable options, and to share these to amplify within the region.

There is some evidence of residents and local authorities gathering, monitoring and discussing evidence on the situation to identify priorities, to assess feasibility of and co-design interventions, and to evaluate and discuss progress in implementing interventions and their impact. However, this too appears to be less well developed or communicated beyond the local level, limiting possibilities for wider scale-up of good practice.

4.4 Providing affordable, nutritious foods in healthy food neighbourhoods

Working towards an inclusive, poverty-reducing, health equity promoting and ecologically sustainable circular economy is noted in the conceptual frameworks to call for urban systems that provide affordable, safe, nutritious foods in healthy food neighbourhoods for all living in urban areas in ways that promote equity and climate justice.

All seven case studies give attention to food systems and their support of health and nutrition, in ways that connect to other dimensions and determinants of wellbeing. They respond to the reshaping of urban food systems resulting from urbanisation and the changes in demand, increased unregulated activities and unsafe food practices it brings.

The various interventions take **challenges generated by urbanisation as opportunities to establish more sustainable, local production and marketing in fair and healthy food systems, linked to waste management, climate adaptation and strengthened inclusive local economies.**

For example, Mbale City's Good Food for Cities (GF4C) Programme, Uganda does this by forging coalitions across businesses, consumers and producers and authorities to promote and implement a three tier intervention strategy. The strategy aims to support and improve 'regenerative' urban agriculture that is resilient to climate change, and promote the local production for sale of nutritious foods, fruit, vegetables, and pulses in local markets. In Mbale, this has included use of organic fertilizers from market waste to minimize use of synthetic fertilizers, and promotion of urban farming technologies such as sack gardens to grow food in places where space is limited.



Stalls in Mbale Central Market reorganized by Partners with health promoting foods and well-maintained hygiene standards, L Brian, July, 2023

In Kwekwe, Zimbabwe, the private sector and city residents contribute through several initiatives to improving healthy food systems. Instead of discarding or burning food waste from brewing, for example, some local brewing and malting companies sell the waste to residents and farmers, who then feed it to their poultry, goats, cattle, and pigs. Residents use animal excreta, such as chicken droppings and cattle dung as a fertiliser/soil conditioner. As in Malawi, use of nutrient-rich organic or animal waste instead of mineral fertilizers is improving urban farm incomes. In Kadoma, recycling food and other waste reduces waste sent to landfills, their emissions and the local carbon footprint, as a contribution to climate change mitigation.

In Kibuye I Parish Kampala, Uganda, SCINE Uganda with support from international partners engaged local leaders in 2021 to locate strategic places for and establish Community Led Agriculture Banks in the parish. These banks target local people, especially pupils, students, youth, women and school drop-outs to provide information on innovative techniques for urban farming in small spaces. The beneficiaries interact with technical expertise from the SCINE initiative, Kampala City Council Authority and with other farmers to share their experiences and obtain advice to support their small-scale urban farming practices. The Community Led Agriculture Banks function as demonstration spaces and training centres for households and schools to learn techniques for urban farming and for production of organic fertiliser from biodegradable waste. They also access free quality seeds and equipment such as watering and pesticide cans, gloves, gumboots and fertilizers at the Community Led Agriculture Banks.



The Sustainable Community Initiative for Empowerment (SCINE) Uganda transforming a residential backyard into a demonstration garden for schools, community learning and for household farms to acquire food seedlings. SCINE, 2022

In Kariba, Zimbabwe, the collection of waste has had environmental benefits, such as improving green spaces and reducing waste clogging storm drains. The use of biodegradable waste for compost for vegetable production has also improved the production of locally produced affordable, nutritious and tastier food, substituting the ultra-processed foods that are increasingly being advertised and consumed. The reduced waste has also reduced the prevalence of vector-borne diseases that were undermining nutritional gains from diets (Municipality of Kariba, 2018). The KISWMP has stimulated regenerative agriculture and improved green spaces and bio-diversity, both of which act as carbon sinks and strengthen responses to climate change.

The **link between and understanding across stakeholders and in communities** is vital. It engages local assets and sustains the changes for healthy food systems. In Mbale, Uganda, a Good Food Council and Good Food Parliament as multi-stakeholder platforms widen shared understanding of food system issues and its various drivers and actors, including in local communities through their representation and engagement in both forums. Having an informed community and stakeholders is an asset for the processes involved. For example, different groups are represented in a market management committee and self-regulate food safety and compliance with food standards.

In 2022 SCINE in Kampala Uganda liaised with local authorities and primary school managements to obtain the land in the school vicinities for the urban greening space initiatives in the Community Led Agriculture Banks. Since then, SCINE Uganda with local school teachers have carried out knowledge-sharing and training sessions for primary school children in Kibuye I to build their understanding of the advantages of urban agriculture and proper waste management. Children visibly see the result of this in the food they eat at the school.



Engaging school children on community agriculture for nutritious food, greening and environmental management in Kibuye I, SCINE Uganda, 2021.

The activities have become embedded in the community, sustaining and expanding innovation. For example, beyond the activities in the 'Wealth in Waste' campaign, community members themselves began to collect waste materials such as bottles and plastics for sale, reuse and re-cycling.

"The school is able to acquire varied and dietary food for pupils, students and teachers at an affordable cost. The children did not know where the food is bought or coming from and how smaller scale urban farming is done... [but] are now aware that it is possible to grow food using smaller spaces, and are familiar with various techniques for urban farming."

(Teacher, Golden Times Primary school, Kibuye I, October, 2023)

As noted in the various examples, the interventions work in a comprehensive way to **strengthen incomes, food security in and service links in low income, often marginalised communities**. For example, in Kariba, the Padare garden in one high density suburb is run by 15 men living with HIV. A second initiative with the Zimbabwe Homeless People's Federation Garden is run by 21 home-seekers and low income residents, who supplement their income through gardening and herbs. A third initiative with 13 farm workers in a peri-urban banana farm collects and uses organic waste generated in the area to grow vegetables for consumption and for sale. While the municipality and non-state partners provide support for land, water, vegetable seeds and composting in tumbler drums, the programmes have strengthened health literacy, public health, food security and ecosystems and reduced waste-borne diseases in these communities (Municipality of Kariba, 2018).

As for the interventions on waste, the **interventions on food systems are implemented in stages that build relations across stakeholders, capacities and learning from innovation**. In Kadoma, partnerships enabled a pooling of resources and expertise to tackle challenges. In Mbale, Uganda, for example, in a first tier of intervention, the programme supports pilots with partners to set up innovative governance mechanisms to develop and implement local multi-stakeholder food strategies that build relationships between and urban retailers and peri-urban farmers on supply chains; with schools to adopt healthy, safe catering practices; and with communities and authorities to strengthen healthy food choices by consumers and mechanisms. As one innovation, food courts are trialled for street food vendors to improve food safety and reduce food wastage. The learning from these innovations is shared in a one-stop learning center for the different actors involved.

Interventions are encouraged by providing **training, incentives, new business relationships and other forms of support**. In Mbale, Uganda, for example, incentives are applied to encourage behaviour change across all stages of the chain, including facilitating the arrangement and renovation of 70 stalls with improved hygiene standards in Mbale Central market; facilitating the use of local transport and a community-based food distribution system; training vendors on safe food handling as a means to better access local and national markets; and showing the business case for regenerative agricultural practices. Vendors who vote for and receive awards for their compliance with food standards have reported increased sales, as many consumers choose their stalls. A reward mechanism of this nature has built consumer confidence and increased vendor sales.

By 2023 in Kibuye I, Uganda, SCINE Uganda had given out over 15 500 seedlings to 253 community small-scale farmers, while 50 local people and over 6 schools have adopted the small-scale subsistence and commercial urban farming model due to increasing high market demand for the variety of nutritious food production. The initiative has incentivised the availability and uptake of nutritious foods for home consumption and local sales. It has also increased production of a variety of foods in small-scale gardens in schools, at Community Led Agriculture Banks and in Kibuye I households. This has improved diets and also incomes for producers (SCINE Uganda, 2023).

In Bembeke, Malawi, as noted earlier, turning waste into fertilizers meant that many local people resumed urban farming.

"I thought of going back into farming after two years because there are prospects of bumper harvests and value for my labour as compared to previously when we worked hard in our fields but always getting poor harvests. This project gives me hope."

(Bembeke farmer, 2020).

With more farmers resuming farming, crop production increased by 120%, and availability of legumes, maize, potatoes and vegetables increased (CMPD, 2022). The benefits have been visible to residents in changing Bembeke to a bustling economy and a more livable environment, and in the contribution to the urban food basket.

As for waste, these processes call on the **convening authority of local government**. In Mbale, Uganda, urban food issues have been raised in the City Authority agenda and the city leadership have participated in the Good Food Parliament and sought regular reports to actively participate in planned interventions. The authority hosts the Good Food Council and Parliament meetings in the council chambers, and has started to develop a local *Food Ordinance* to address food safety. The council has also constituted multi-disciplinary technical teams in the city. SCINE Uganda in Kibuye I through its field workers collaborates with heads of schools, local leaders, local people and the Kampala City Council Authority.

The initiatives show gains, but **still need to be institutionalised in law and policies of authorities at national level, for wider expansion**. The SCINE Uganda initiative has, for example, created employment opportunities for young men and women, and has improved individual and household incomes for those engaged in the waste and urban farming activities that have become embedded in the community (SCINE Uganda, 2023).

SCINE Uganda and the stakeholders involved are building on their experience to expand the initiatives in and outside Kibuye I Parish, noting the need to lobby authorities to scale-up the best practices and techniques of urban farming to other communities including marginalised groups. While they see their work as a comprehensive strategy to contribute to SDG2 on freedom from hunger by 2030, they also note that this demands strengthened collaboration with state sectors and other development partners.

In Bembeke, the local authorities are engaged to provide designated safe dumping sites away from residential areas, for safer waste disposal, and efforts are being made to source investment for local recycling of plastics and other waste. The initiative sees the need to reach out and share practices to link with other urban areas in the region.

The various initiatives indicate the range of methods and approaches stimulated by civil society, authorities, communities, local businesses, international agencies and others in the food system. They not only improve local availability and consumption of health promoting foods, especially in lower income households, they also link food to waste management, to urban public green spaces and to improved local production and processing. The initiatives engage widely — individuals, families and neighbourhoods — improving access and affordability of a diverse range of nutritious, safe, accessible and culturally relevant food, including indigenous foods.

The initiatives show common features of connections made across different actors in the food chain, including local food producers, processors, retailers, communities and authorities, in approaches that generate local jobs, incomes, appropriate local technologies and innovation across the food supply and value chain. People, especially women and marginalised communities, are empowered with information, knowledge, skills, resources and appropriate technologies and processes, and with access to land, seeds, technologies for production of organic fertilisers to produce and market healthy and safe food in an ecologically sustainable way, to eat well and to reduce food waste.

Locally grown food is sold in accessible, hygienic and climate change-proofed markets for communities, schools, health services and other use. The practices demonstrate various innovative urban agriculture models and practices, including micro-gardening, as a means to increase local food production, food security and to improve livelihoods. They are implemented in circular economy models and regenerative practices that also support healthy ecosystems and promote green public spaces in urban areas.

Some features documented elsewhere may also be considered in follow up discussion. They include water harvesting and other water conserving approaches to support urban farming, and the use of waste-water in ways that do not pose harm to health or environments. The examples show innovation in local technologies, especially in waste management, and could extend to local technology development for food processing and storage, including to support refrigeration using solar energy or energy generated from bio-waste to extend food storage times and reduce food wastage, as is for example implemented in Longacres market in Lusaka (Phiri, 2023).

There is also scope to strengthen measures to gather, integrate and collectively review evidence on the distribution of food, nutrition and food-related disease, including chronic diseases, and on the impact of initiatives on these health outcomes. This is necessary to inform system design and implementation, particularly given the potential for such initiatives to support local food security during emergencies and to provide local healthy alternatives to the promotion and consumption of harmful, unhealthy, unsafe and ultra-processed foods. Strengthened evidence from both process and impact monitoring would help to scale-up such practices that demonstrate creative local initiative, and to contribute to enabling local and national law and policy in the region.

4.5 Capacities and measures for adaptive change and strategic learning

The previous sections highlight the governance approaches, capacities and measures for implementation that are used in the case studies, and those applied for adaptive change and for strategic and collective learning. Beyond the specific practices and technologies, these social, institutional process and procedural elements commonly appear in the case studies and appear to be important to achieve positive outcomes.

Community participation, partnerships and setting up collaborative mechanisms for collective decision-making and learning brings in local knowledge and assets for activities. Collaborative, participatory processes engage the range of actors involved for the practices described in the case studies. In Kwekwe for example, the waste reuse and recycling activities involve the local authority, government departments and agencies, churches, schools and colleges, Environmental Management Agency, non-government organisations (NGOs) and companies, who are involved in regular planning discussions. In Malawi, local committees were elected to strengthen local ownership of the initiative and involve communities in decisions in quarterly stakeholder meetings. The initiative has thus been structured as a collective responsibility of different stakeholders at all levels, including the local level and communities.

In Bembeke, the local committees involve CMPD, the Environment Agency, Dedza District authorities, agricultural extension workers, health authorities, farmers' representatives, the Bembeke market leadership, the Kamenyagwaza Youth Network and traditional leaders. The SCINE initiative in Kibuye I Uganda is designed and implemented through strategic consultations with existing local leaders, opinion leaders, local residents and schools' management. The Kampala City Council Authority staff, local council leaders, local artisanal experts, opinion and cultural leaders, women, youth community groups, school children are involved through one-on-one engagement, community meetings and forums.

The KISWMP in Kariba is anchored on multi-stakeholder participation across sectors, actors and systems. It involves recycling groups, often as community volunteers, the local authority, manufacturing companies and the Environmental Management Agency. The initiative shares roles, fostering collaboration, solidarity, organisation and community leadership and ownership of the processes, and generating solutions to challenges. The partnerships and collaboration, also convened by the local authority, as in Kwekwe, have levered expertise and resources. The KISWMP demonstrates a **'whole of society approach'**, breaking silos to establish a system-wide, holistic approach to urban waste management.



A unity dialogue meeting on KISWMP in Kariba S. Makunda, 2017.

The collaborative mechanisms facilitate sharing of skills and expertise. In Kibuye I, SCINE Uganda and local experts, including agronomists, weather or environment consultants and trainers in financial literacy co-create the initiatives, linking technical expertise with urban farming learning exchanges, and using information inputs in interschool competitions in local schools to select promising practices integrating waste reuse and urban farming practices for wider uptake in and outside Kibuye I. The community cross learning exchanges and interschool competitions exchange local and wider knowledge, amplifying both and sustaining the initiative. The group learning exchanges and experience of changes made have not only changed public mindsets in Kibuye I, they have also built strategic partnership and strong networking for solving challenges and sharing opportunities for integrated small scale urban farming practices. After the establishment of our school garden in the compound close to the road side, it eventually became a community learning stop over. We usually receive passersby local community members inquisitive to find out the owner of the garden, how it was established so that they can replicate the same at their households (Director, Emen Memorial school, 2023).

"After the establishment of our school garden in the compound close to the road side, it eventually became a community learning stop over. We usually receive passersby local community members inquisitive to find out the owner of the garden, how it was established so that they can replicate the same at their households."

(Director, Emen Memorial school, 2023).

Some of these mechanisms are integrated within forums already convened by the local authority. Others **create new innovative mechanisms to enable and widen dialogue, review and accountability**. The Mbale GF4C's initiative employs two such new mechanisms, the Good Food Council and the Good Food Parliament, with relationships between them. The Good Food Council involves 19 members selected by stakeholders to develop action plans and strategies, and to technically support and improve the implementation of the programme. The members include political and technical officials from Mbale City Council, vendors, farmers, businessmen and women, media, researchers, cultural institutions among others. The issues discussed emerge from local evidence gathering, training sessions with vendors and traders, and programme monitoring. These issues, such as programme improvement or regulation of unsafe foods, are taken for debate to the Good Food Parliament, a wider multi-stakeholder platform involving over 70 food systems actors in Mbale City. The Good Food Parliament brings different viewpoints and experience in a forum for diverse actors to collectively explore conditions to shape the desired food system, to discuss how to address the challenges faced and to share experience and knowledge. Both mechanisms foster transparency, inclusivity and accountability and make clear the shared responsibilities.

Local 'brokers' or mediators help to facilitate and foster the mechanisms and exchanges. For example, the civil society leads in SCINE Uganda built a strong relationship with the Kampala City Council Authority and its Division councils to register as a community-based organization, as required to work with communities in Kampala City. This and the collaboration with leaders and government departments enabled local groups to implement the range of activities described earlier. The Food Rights Alliance in Kampala, the Country Minders for Community Development in Bembeke, the APHRC in Nairobi and the ADF and YMCA in Kadoma and council officers in Kariba and Kwekwe play similar facilitating roles. In Kadoma, ADF and YMCA serve as a technical hub, working with the key stakeholders, 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.



'Best vendors' compliant with hygiene standards in the market awarded by Rikolto during the Food Safety Campaign, L. Brian, 2023

The collaborations are **supported by information gathering, monitoring and review of evidence** to assess progress, adapt to challenges and review and communicate changes. In Kariba, for example, stakeholders in the KISWMP set up a Programme Management Committee involving the different groups and institutions, with a Monitoring and Evaluation team that brings sectoral knowledge into managing the processes. The steering committee meets monthly and the wider stakeholders meet quarterly, with recommendations made and reports provided to stakeholders and the community (IWM, 2017). As a small town, Kariba has close links with the community and its shared concerns, and beyond regular meetings, participants also use social media like the WhatsApp groups to share information and discuss issues more widely. In Mbale’s GF4C programme, regular consultations are conducted with stakeholder groups, especially vendors and traders in Mbale Central Market, to actively solicit their input and feedback on specific urban food system issues. Key issues related to food safety handling and storage are documented and presented before the monthly meetings of the Good Food Council.

The NUDHSS in Nairobi’s Korogocho and Viwandani communities has been guided since 2010 by convening stakeholders in a Community Advisory Committee that includes representatives from villages in the two sites, from APHRC and from special interest groups including youth, women, media, people living with disabilities, older persons, religious groups, educators, community health workers as well as the local administration. The committee has met regularly to discuss NUHDSS implementation and findings, with information presented in different formats for different groups, interests, and levels of technical skills, including reports, articles, research, graphics, radio programmes, education and communication materials and community radio. The stakeholders involved have used the data to assess progress in informal settlements on the SDGs and have shared Information and analysis in jointly produced reports. As one example of this, *Discourses of illegality and exclusion: When water access matters*, presents how residents of Viwandani and Korogocho dealt with water access challenges, with the information used in slum upgrading initiatives (APHRC, 2020). This exchange and active use of evidence and analysis has increased appreciation in the community of the link between evidence and better decisions and outcomes, and of the value of learning from each other and from others to find and initiate potential solutions to challenges.



Korogocho Before

Streets of Korogocho; Nairobi, Kenya- Korogocho Slum Upgrading Program (KSUP) - [The Street Upgrading Project. Global Design Cities Initiative.](#), undated.



Korogocho After

The learning draws in and shares wider experience within the region and internationally. As part of a regional east African programme, GF4C also supports city-to-city exchanges, storytelling, learning journeys and training courses. Participants share learning in international networks and conferences and are supported to document innovative practices. These processes enable the sharing of evidence and practice to leverage changes in policy and political agendas in favour of sustainable food systems, contributing also to discussions on the New Urban Agenda and the SDGs. In Kariba, the design and implementation of the KIWMP has benefited from exchanges with the international Connective Cities network, while the work in Malawi has drawn on methods and exchanges in EQUINET. As noted in Kadoma, bringing evidence and information from different groups to local consultations integrates different perspectives on what should be done and on the priorities for action, using shared criteria of concerns, resource availability, economic feasibility, and social acceptability. Integrating the range of voices builds ownership and promotes appropriate interventions. 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 (Kadoma stakeholder, 2023).

"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."

(Kadoma stakeholder, 2023).

The case study processes show how diverse forms of information, knowledge, evidence are brought together and analysed to design, support and improve the features of the food and waste management systems described earlier. Information is exchanged and shared in a range of ways, depending on audience and issue, both in person, in publications, visuals, media and digitally. They demonstrate the sharing of expertise in collaborative mechanisms and dialogue forums and the increase in awareness, knowledge, skills, and capacities in various levels of exchanges, training and health literacy, including with youth and schoolchildren.

There is evidence of local actors engaging government at higher levels and of links with other cities nationally and internationally to exchange and engage on knowledge, approaches, ideas and practices. Links with international networks help to bring ideas to the design and improvement of local initiatives, and to share information on global processes, such as the SDG monitoring, climate and urban agendas. There is also evidence of mechanisms and processes to support exchanges and learning, and of wider outreach to build shared understanding and analysis across different actors. This has helped to change mind-sets and build confidence in the ability to produce change.

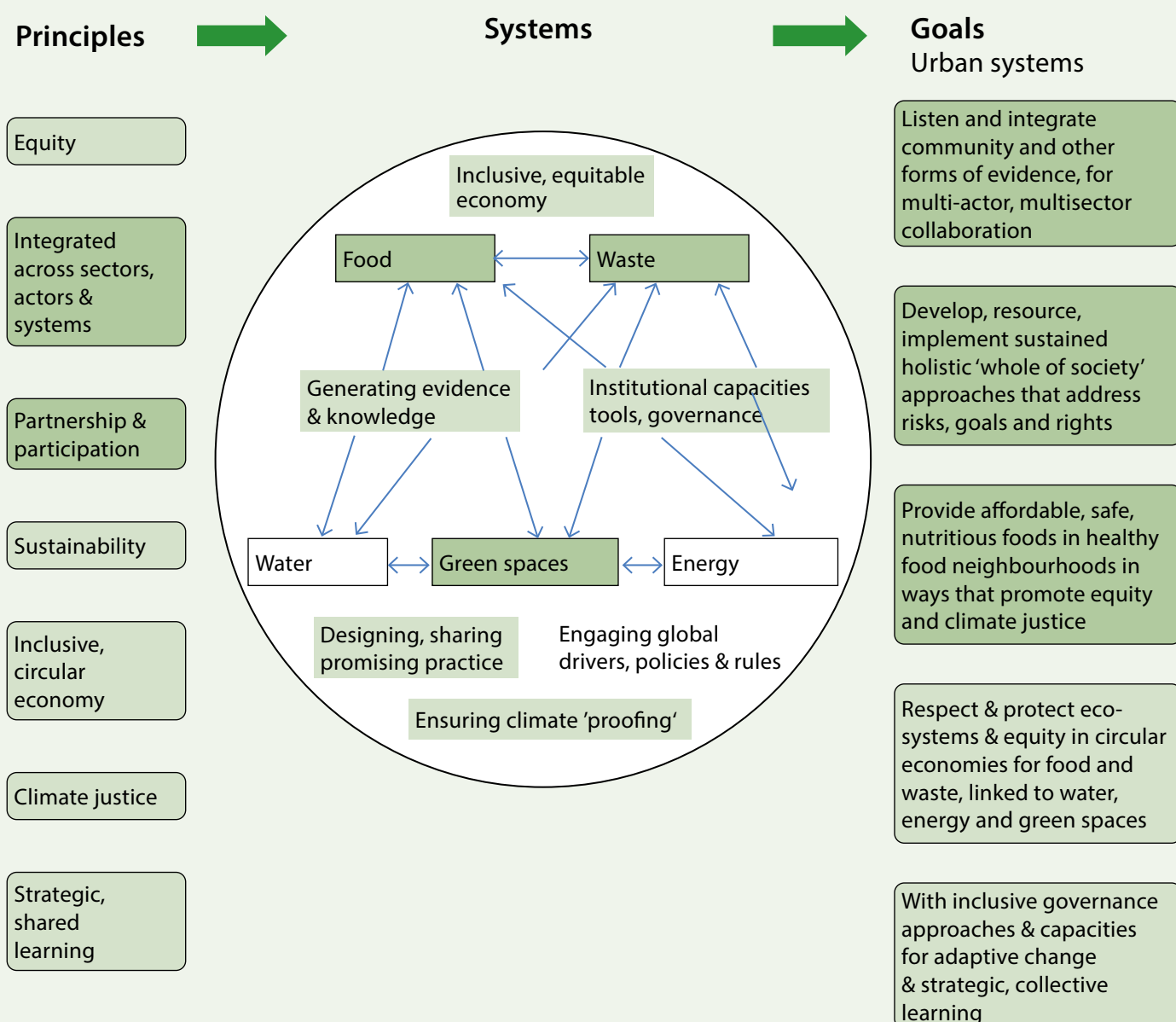
The case studies also demonstrate horizontal outreach of learning to other settlements within the city and other cities, facilitated by local authorities, lead institutions and networks. However, less apparent in the local case studies was the uptake of learning from these local initiatives by political and government actors at national, regional and global level, including in making changes to policies, regulations, financing systems or institutional procedures. They seemed to build sustainability more bottom-up through local community, stakeholder and local authority measures than top-down through national or international reforms. This raises the issue of how these local initiatives are able to effect change in higher level policy, legal, and funding systems to support scale-up in 'process not project' approaches. It also raises the issue of how far the local technologies, innovations and life-forms involved are protected from external commercial patenting and extraction, without sustained fair benefit for local communities.

5. Shared learning across the case studies

The graphical representation of the framework presented earlier is now presented again in *Figure 2* below, with the figure showing the areas covered to varying degrees across all the case studies.

Figure 2: A graphical representation of the EQUINET conceptual framework (EQUINET, 2023)

Shaded areas are commonly covered, with the intensity of shading reflecting the level of coverage



Source: Adaptation by authors of figure in EQUINET, 2023

Collectively, *Figure 2* shows the range of features documented within the EQUINET conceptual framework covered by the case studies. Their focus on food and waste makes these two areas well covered in all case studies, with consequences for expanding green spaces, economic benefits for lower income groups and climate mitigation. Some case studies include links to water and energy, but these are less connected to the circular economy to climate adaptation.

The case studies collectively address all the key principles in the conceptual framework, particularly those relating to the integration across sectors and actors, and the inclusion of partnership and participation. They collectively contribute to the different goals of holistic, integrated approaches, particularly those that integrate community evidence and voice; strengthen 'whole of society' approaches and provide affordable, healthy and accessible food for improved incomes and wellbeing. In their grounding in low income communities and contribution to incomes, health and wellbeing and to the recognition and participation of these often marginalised communities in decisions affecting their wellbeing, the case studies enhance equity. The cases are primarily local and have weak engagement with / impact on global rules and policies, or national laws and policies.

There is shared learning from across the case studies on how principles for holistic, integrated approaches can be implemented in practice, and the challenges faced.

In relation to equity, beyond their focus on low income communities, equity is supported by linking often precarious communities with sources of technical expertise and authority, and by responses to their needs in ways that support livelihoods and wellbeing. Waste and food are issues that are close to communities. The case studies outline how they are acted on in ways that bring opportunities for marginalised groups to participate in the circular economy, to transform their lives, ecosystems and wellbeing and to apply adaptive responses to climate change. Doing this is noted to shift understanding, and to strengthen the confidence and power to produce change.

These findings are consistent with those found in earlier work on urban health equity in the region that point to participatory and recognitional equity as pivotal to improved health and wellbeing (Loewenson et al., 2022). The case studies show similar features of listening to affected communities and exposing lived experience from the beginning and at all stages of interventions. Various forms of consultation and dialogue, mapping, audits, drama, photovoice and visual tools are used to understand their conditions, priorities, ideas and assets, to show and discuss the current conditions, and investment is being made in the skills, capacities, networking and organisation of key social groups. All of these areas of intervention are investments in voice and agency for more 'active citizenship' and community leadership (Loewenson et al., 2022).

Those implementing the work note resource limitations, particularly in low income communities. In Rimuka, Kadoma, for example, 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, ... 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."

(ADFT et al., 2024).

Partnerships enable these communities to access new resources and knowledge, to gain capacities to take more control of their food supply and living conditions and to make informed decisions that contribute to improved futures. While the initiatives take various local measures to overcome resource gaps, some activities need wider support, such as for land and solar-powered boreholes for urban agriculture, and policy and legal standards to enable this. The mechanisms set up, whether formal or informal, help to address power imbalances, sharing information and embedding accountability on agreed plans. The work is implemented in ways that strengthen social networks and collective decision making, with actions that encourage collective organisation. As found in earlier urban health work in the region (Loewenson et al., 2022), these changes take time, and many of the case studies build iterative stages that deepen organisation, capacities and confidence in often excluded groups.

Social participation and partnerships are embedded in all case studies, making links across local authorities, workers, community-based organisations, community leaders, residents, professionals, technical agencies, businesses and others. The benefits of this noted in the case studies include:

- Leveraging resource contributions for innovations, critical services and activities.
- Bringing trust and ownership and understanding to activities.
- Sharing capacities and knowledge from different actors. .
- Sharing evidence and ideas between different actors to build shared understanding.
- Supporting continuity through collaboration across different actors.
- Encouraging shared commitment and accountability between partners on implementation.

Partnerships demand good communication and facilitation skills, as well as formal mechanisms to support them, such as memoranda of understanding. They also call for supportive policies and laws, particularly for longer-standing practices such as urban agriculture, recycling and technology innovation. Building relationships and co-creation was noted to take time and capacities for facilitation by trusted institutions. Resource shortfalls for the latter are sometimes met by working with community-based volunteers and engaged networks, like the Climate Smart Youth Network in Uganda, to enable the expansion of the activities.

The case studies, and particularly the NUDHSS platform in Nairobi, show how evidence can be used to manage and integrate different views and build shared priorities. There are challenges. The evidence may exclude less accessible and more marginalised people, and give greater weighting to quantitative data than social perceptions and views. In the case studies there are efforts to manage these challenges, such as recruiting local community members as field workers, and blending different processes for gathering and using different forms of evidence.

Integration across sectors and actors is demonstrated in the ‘whole-of-government’, ‘whole of society’ and ‘One Health’ cross-sectoral approaches used in the case studies, including in evidence gathering and review, prioritisation and planning, in capacity building and in specific activities such as urban agriculture, service provision or clean-up campaigns. (See for example the Good Food for Cities approach below).

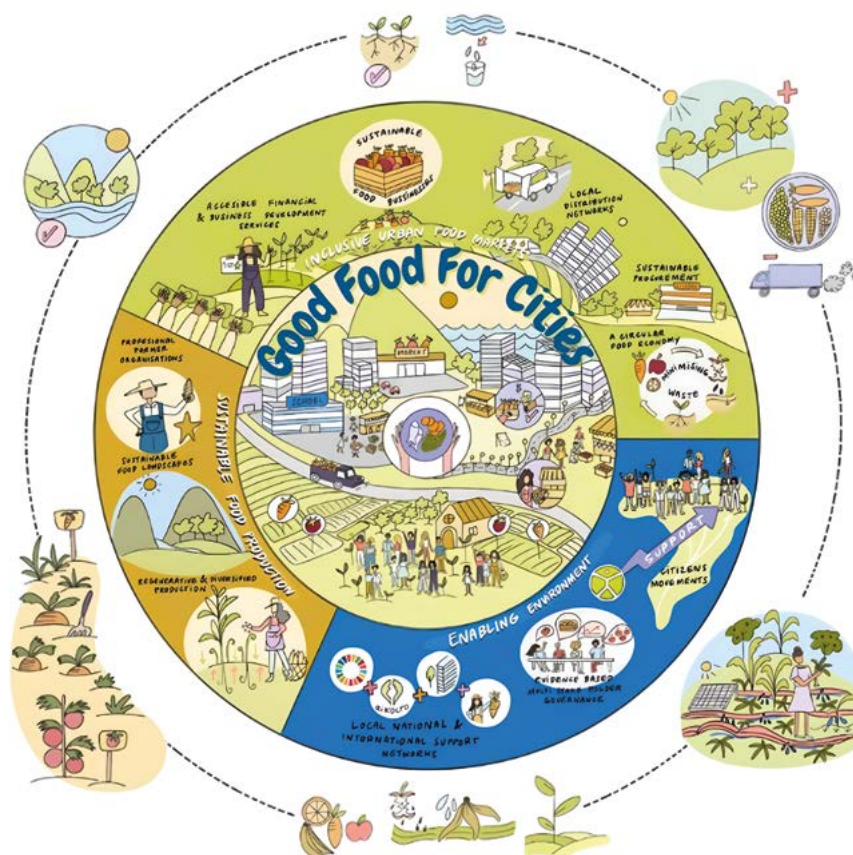


Figure 3: The Good Food for Cities 3 Tier Approach, Rikolto, 2021

This cross-sectoral multi-actor collaboration in diverse processes is noted to enable resource mobilisation, unity of purpose and complementarity, and to bring ideas to manage wider challenges, such as climate mitigation. These findings reaffirm findings of other urban health work in the region, where similar approaches stimulate and build relationships, trust, partnership and collaboration in shared forums, contributing to successful practice (Loewenson et al., 2022).

The case studies indicate that institutional catalysts, brokers and convening institutions are important for this collaborative change. As previously raised, this requires a trusted facilitating institution, which beyond the capacities and resources noted previously, also has a strategic vision, knowledge and a persistent presence to enable what often need to be sustained or iterative processes for longer term changes.

Raising issues such as food and waste systems, while they have potential to benefit a local circular economy and wider production and marketing, can also generate resistance around the options proposed, especially from stakeholders actively benefiting from the current urban systems. For example in Mbale, reducing the high demand on imported foods by stimulating local production can challenge the interests of food importers. In Kibuye I Parish, large companies polluting water and land were noted to have exerted power to prevent their activities being exposed or halted. In Malawi, government efforts to regulate harmful forms of plastic waste have been actively contested by business as economically damaging (FRA et al, 2024; ACTogether Uganda et al., 2024; CMPD et al., 2024).

The inclusion of stakeholders and an increased awareness and demonstration of positive win-win options can help to manage such resistance. It can encourage a bottom-up shift in attitudes, building mutual understanding and respect between actors and align capacities towards agreed areas of change, especially when also backed by training (Loewenson et al., 2022).

Many of the collaborative mechanisms provided for this are not provided for in law. While local authorities play a key convening role, collaborative mechanisms need legal, budget and institutional reforms. In the interim, as for example in Kwekwe and Kariba, collaborations are consolidated through formal agreements, and by including them in plans adopted by the local authority.

Urban local government authorities have resources, legal authority, capacities and power to create change, and are supported by wider collaborations for this. Their role in many of the case studies is evident, including in land use and urban planning. However, some case studies also note the absence of clear policy or legal frameworks for key areas such as urban agriculture, waste processing or marketing of foods, including ultra-processed foods, weakening their role. The initiatives engaged on these gaps, some of which are controlled at national level. For example, in Mbale City, the lack of by-laws at city level to regulate production and consumption of unsafe foods meant that in 2023, the Good Food Parliament and Good Food Council influenced the city leadership to draft a food ordinance for the city, supported by local partners. In Kwekwe, while urban agriculture is enabled in practice, the local authority still needs a policy or by-law to regulate and promote it (Ngwenya et al, 2023).

Building collective responsibility on shared challenges is noted to help meet constraints and challenges. For example, in Bembeke, Malawi, *applying holistic thinking framing the initiative as a collective responsibility of different stakeholders at all levels including the local communities showed the potential of generating links between what were previously urban problems, to use them as assets for sustainable urban development and enabled the work to succeed* (CMPD et al, 2024). While collaboration helps to address resource gaps, resource limitations and the segmentation of public budgets calls for innovative financing approaches, such as blending government budgets with resources from international agencies, business, technical agencies or other local partners. Demonstrating impact from practice helps to leverage financing, as perhaps most explicitly noted in naming the centres of collaborative planning and implementation “Community led Agriculture Banks” in Kibuye I (ACTogether et al., 2024).

In terms of the learning on building an **inclusive circular economy as a contributor to urban health equity**, the case studies reflect linkages, inter-connectedness and interdependence of different social determinants of health (waste, food, energy, water and green spaces) that are contributors to a circular economy. They demonstrate, for example, links between waste management, green spaces, food production and energy, and links between recycled products or local food production and improved local jobs and incomes.

Applying 'the 3 Rs' to "reduce, reuse and recycle" creates opportunities for urban renewal through environmental greening, fertiliser for urban agriculture, construction of engineered landfills, use of wastewater for agriculture, use of solar energy for powering boreholes and processing, and for public and street lighting. While implemented locally, their impact on healthier livelihoods and ecosystems contribute beyond the local level and bring global ideas of inclusive economies and climate justice to local level.

Renewable energy is an important driver of the range of changes that support health-promoting ecosystems, equity in circular economies and climate justice. It is also an area that appears to need more specific focus and attention. There were some examples in the case studies, such as of solar energy used for street lighting and powering boreholes. SDG data suggests that while the installed renewable energy generating capacity had increased in the region, particularly in Southern Africa where the capacity had more than doubled between 2015 and 2021, this is not yet reflected in household access, with only 18% of households in SSA having a primary reliance on clean fuels and technologies in 2021 (UN DESA, 2024).

The case studies point to the importance of investment in innovation and R&D within countries to nurture new forms of practice and to generate, test and apply new, locally relevant and affordable technologies and methods that improve social, ecological and economic wellbeing. Much of the technology innovation in the case studies came from local institutions, linking with communities to ensure their relevance. Viable supporting local technology innovation, including in technical institutions, makes embedding and funding innovation and knowledge generation in countries key for circular economies, including through domestic innovation funds and accessible and affordable internet and applications for information sharing (Loewenson et al., 2022).

Innovation towards a circular economy demands attention across the full value chain. For example, in Rimuka, Kadoma, while the implementers needed to identify effective strategies to reduce household food waste, including through storage practices and meal planning, they also raised the need to go upstream to regulate, incentivise and change business and industrial processes to reduce waste, such as in the materials used, the integration of mandatory recycling, and fees for disposal of waste where alternatives exist.

Such changes toward a circular economy call for a change in mindsets around existing practices, together with health impact assessment of the benefits and risks for health. For example in Malawi, while farmers mindsets were shifted by understanding the income and productivity benefits of organic fertilisers, the health risks of waste recycling to produce fertilizer needed safety measures such as gloves, overalls, gumboots, wheelbarrows and other work-tools to be provided by the local authority (CMPD et al., 2024).

Evidence from early initiators can encourage others to join initiatives, as could institutional support for new practice. For example in Kwekwe, the occupational risks community waste pickers faced from exposure to waste hazards, rain, heat and sun meant that they needed improved tools and working conditions, and measures to safeguard their health and safety as a key element of the circular economy (KCC et al., 2024). Setting up iterative implementation phases/steps with monitoring and strategic review can help to assess impacts, adjust processes, build capacities, confidence and experience, test technology and methods and facilitate steps towards and higher institutional and resource support for the more comprehensive change demanded by a circular economy (Loewenson et al., 2022).

At national level, Poverty Eradication Action Plans, SDG strategies, debt relief initiatives and national development plans recognise that reducing poverty and sustainable development call for policies and areas of public spending that distribute the socio-economic opportunities and benefits from economic growth (IMF et al, 1999). However, the case study experiences suggest gaps or inconsistencies in the application of these intentions at local level. For example, the SCINE Initiative in Uganda report that the 2006 Land Use Policy, 2004 Poverty Eradication Action Plan and 2015 National Development Plan II do not explicitly provide an integrated approach on sustainable urban farming, leaving the initiative without a clear policy framework (MoH, 2004, MoLHUD, 2006, UIA, 2015). Similar gaps are noted in specific policy frameworks guiding local food production and processing, urban agriculture, local waste processing, or indeed the policy choices between local and external operators in these areas.

Without support from policy commitments, laws, budgets and specific operational goals and plans, initiatives have had to implement creative ways to address challenges. For example, the SCINE initiative convened meetings with local school managers and opinion leaders to implement waste and food system activities in schools, to overcome the lack of support for this option in the Directorate of Education and Social Services. If circular economy approaches, such as those in the case studies, were given more attention at national level, including in the criteria for public tenders and private investments and in international development financing, it may be possible to see greater investment in the local skills transfer, social enterprise and technology innovation for these initiatives.

Learning can be shared from the case studies on measures for and factors in **sustainable development and just measures for climate change**, both important policy commitments in the region and globally. The enablers for this include having shared goals; collaborations and partnerships; increased capacities; investment in circular economy links, local technology innovation and income generation; evidence of impact and local leadership. Including schools and school children, as in several case studies, sets a foundation for longer-term, intergenerational sustainability. This contrasts with the advertising and targeting of young people by ultra-processed food producers that is generating a risk of chronic ill health in young people (TARSC et al, 2022; Igumbor et al., 2012).



Ultra-processed food marketing Harare, TARSC 2022

Evidence of progress and impact helps to sustain and amplify practice. In contrast, inadequate sustainable funding, or investment in small-scale economic activities, from public and private sectors makes some practices dependent on less predictable international funding. The lack of a clear legal, policy and strategic framework at national level also weakens sustainability.

The case studies identify a lack of sufficient funds as a key barrier to support scale-up and to sustain initiatives. This is particularly the case in low-income communities where it takes time to break the disadvantage of poverty through subsidies for inputs, such as seedlings for urban agriculture, and resources for capacity building. SCINE Uganda note that international resources are often secured for this, while local ownership of initiatives helps to leverage new funding. However, international 'project' funding often has short time frames within which to achieve results that may not help to sustain the longer-term steps that need to be taken in low income communities.

"The urban farming short contracts that last 2-6 months do not cover a comprehensive programming window, leaving some of the initiated small scale urban farming initiatives such as continued sensitization, provision of back stopping technical support and monitoring progress with local beneficiaries in urban farming very difficult in the long run, risking project sustainability."

(Team leader - SCINE Uganda 2023).

The inclusion of more established institutions, such as the local authorities or technical agencies such as the NUHDSS platform through the APHRC in Kenya and the role of collaborative forums helped to sustain initiatives (TalkAB[M]R et al., 2024). Framing the processes as programmes with longer-term strategic plans and fitting financing into this framework, rather than as multiple short term projects, also helped to link resource pockets to sustainable process, as in the role of the KISWMP in Kariba (Municipality of Kariba et al., 2024).

As explicitly stated in Bembeke, Malawi (CMPD et al., 2024), and implicit in other case studies, key enablers of sustainability are the visible improvements yielded by initiatives in living and urban environments; the recognition, improved incomes and food security communities experience, as the urban areas people live in become more desirable places to live. Importantly, these changes help to reduce contribution to and vulnerability from climate change.

The Kyoto Protocol and the United Nations Framework Convention on Climate Change commit countries to limit and reduce greenhouse gas emissions. The case studies show numerous ways that the circular economic activities promote climate-proofing. The recovery and recycling of solid waste and wastewater helps to conserve resources, energy and prevent environmental water and air pollutants, feeding waste into circular economies rather than environmental degradation and climate-related risks. 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. Providing practical ways for local people to protect natural resources and biodiversity within urban areas promotes respect for ecosystems and biodiversity.

The Kwekwe and Kariba case studies, for example, show the implications waste management, energy, environmental and healthy urban food system practices have for managing climate change and the associated vector borne disease. Directly, they can strengthen green spaces. Indirectly they reduce greenhouse gases, such as from municipal waste burning, while growing crops in urban open spaces help sequester carbon dioxide (KCC et al., 2024; Municipality of Kariba et al., 2024). There are also examples in the case studies of water and renewable energy practices that improve water availability through sustainable energy alternatives.

As noted earlier, these processes for sustainability and climate mitigation represent 'bottom-up' measures that need to be integrated with and supported by initiatives and measures at national, regional and international level. The contradiction between these local efforts and the lack of change in larger, better resourced or higher level national and transnational institutions are sometimes both visible and disheartening at local level. For example in Uganda, the SCINE initiative reports how large companies operate in wetland and urban areas, despite laws prohibiting this. Large companies benefit from non-compliance or exemptions that ignore their climate and environment impacts, and do not have adequate plans to retrieve and recycle disposed products, or engage plastic waste collectors or recyclers for extremely low prices, that are inadequate to stimulate local small scale recycling. In contrast, local small-scale urban farmers are highly regulated on their environmental impacts and land use, even though they pose lower carbon footprints (ACTogether Uganda et al., 2024).

While climate change demands action at all levels including local level, improved international and national control of harmful practices by powerful multinationals and an expectation that they set a good example is important to give confidence that local communities are taking an unfair share of the burden not only of climate change, but also of its management.

Sharing strategic learning for urban health

The local work, processes, innovations and impacts reported in the case studies provide important strategic learning for holistic, integrated approaches to meet the rising health equity challenges from urbanisation, inequality and climate change. The studies point to a range of assets, actions and processes that support strategic learning. These included having relevant evidence useful for planning and assessment of interventions, and processes that enable collective discussion, analysis, learning and improvement. The NUHDSS was set up to overcome the constraints of aggregate data and single surveys not providing an adequate picture of local situations or distributed impacts of interventions, while many case studies used a mix of field assessments and participatory audits to gather evidence on the situation and the views of communities.

Having multi-stakeholder platforms involving all actors enabled the sharing of ideas, skills, experience and learning in design, implementation and review, while links with international networks brought useful information to processes, and shared evidence with other cities. Many case studies were structured in steps, building review and sharing learning at each step. Key areas of learning, including on enablers and challenges and how to manage them were discussed in this process.

The learning shared was not purely operational. The initiatives and the collaborative exchanges around their planning and review widened understanding of what it means to have a 'just and sustainable system' and opened planning to more integrated, cross sectoral and holistic approaches. Some case studies showed the potential young people have to grasp different paradigms. For example, the SCINE Uganda initiative in Kibuye I, in reflecting on the work with schools and schoolchildren noted that *children are able to share and challenge their fellow community and household members by doing what they learnt at schools in their respective communities or homes. Evidence is that children enthusiastically explore, easily grasp and further test ideas* (ACTogether Uganda et al., 2024).

Some case studies had a holistic integrated paradigm, vision or approach as an explicit entry point to explore the situation and discuss options and desired changes from the start, as was the case in Mbale's GF4C initiative. This provided a framework for strategic learning on *the interconnectedness of the drivers within the urban environment and the need for comprehensive and interlinked strategies and actors* (FRA et al., 2024).

In other case studies, the paradigm shift and strategic learning for it grew in the course of the intervention. For example, the initiative in Bembeke shifted from problem management (using shop-bought fertilizers to add crop nutrients) to problem eradication (using organic fertiliser from waste to provide soil nutrients).

"It showed the potential to switch from short-term solutions dependent on external, commercial suppliers to longer-term solutions based on the local economy...while making the towns and cities more inclusive, healthy livable spaces for communities."

(CMPD et al., 2024).

Similarly in Kibuye I, the practical links demonstrated between food security and healthier urban ecosystems provided concrete ideas of and options for what it means to take a more holistic lens on more complex issues such as climate justice.

In settings that are often cast into the periphery of wealth and benefit, these experiences and the learning from them show the reality and possibility of alternatives that build more synergistic links between urban economic, social, health and ecological wellbeing.

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Equity in health implies addressing differences in health status that are unnecessary, avoidable and unfair. In southern Africa, these typically relate to disparities across racial groups, rural/urban status, socio-economic status, gender, age and geographical region. EQUINET is primarily concerned with equity motivated interventions that seek to allocate resources preferentially to those with the worst health status (vertical equity). EQUINET seeks to understand and influence the redistribution of social and economic resources for equity-oriented interventions. EQUINET also seeks to understand and inform the power and ability people (and social groups) have to make choices over health inputs and their capacity to use these choices towards health.

EQUINET implements work in a number of areas identified as central to health equity in east and southern Africa, including

- Protecting health in economic and trade policy, in extractives
- Local production of health technologies
- Urban health and wellbeing
- Building universal, participatory, primary health care oriented health systems
- Equitable, health systems strengthening responses to pandemics
- Fair Financing of health systems
- Promoting public health law and health rights
- Social empowerment and action for health
- Monitoring progress on equity and equity analysis

EQUINET is governed by a steering committee involving institutions and individuals co-ordinating theme, country or process work in EQUINET from the following institutions: TARSC, Zimbabwe; CWGH, Zimbabwe; CEHURD Uganda; SEATINI, Zimbabwe; REACH Trust Malawi; University of Zambia, Zambia; IWGSS Kenya and South Africa; Innovations for Development, Uganda, SATUCC Botswana and Tax Justice Network Africa, Kenya

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