



Country Minders for Peoples Development (CMPD),
with Training and Research Support Centre (TARSC)
in the Regional network for Equity in health in east
and southern Africa (EQUINET)



From a Waste Dumpsite into a Food Basket in Bembeke, Dedza, Malawi



The photo on the left shows a dumpsite in Bembeke, Dedza, CMPD, 2020.

On the right, the photo shows local farmers have a bumper harvest using fertilizer from waste, CMPD, 2020

Key messages

- Bembeke, Dedza has been transformed from one of the worst dumping sites to one of the cleanest urban sites in Malawi
- CMPD, in partnership with the Environmental Affairs Department (EAD), and stakeholders in Bembeke Dedza, devised and implemented a waste management initiative to turn waste into manure, reducing waste and improving food security in Bembeke.
- Bembeke farmers were trained to produce manure from waste and theater campaigns were held in eight zones to sensitize communities on 'waste to wealth'
- Urban waste and food security interventions succeed when all key stakeholders, including community members participate from conception to completion.
- Turning waste into fertilizer for food production contributes to food security, environmental protection, circular urban economies and mitigates the effects of climate change.

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Context and challenges

Despite increasing household consumption of plastic and other waste, rates of management and collection of waste have remained stagnant (Kalina et al., 2021). In Malawi, less than 42% of waste is properly collected and is taken to open dumpsites, 12% is thrown on roadsides, 9% is thrown on riversides, and 9% thrown in dumpsters, leading to a lot of waste contaminating the environment. (Kasinja and Tilley, 2018; Turpie et al. 2019).

The Republic of Malawi sets duties for the general public, businesses, various ministries (Natural Resources, Energy and Mining, Health, Environment Affairs Department) across different policy documents and laws. Malawi has legislation to combat waste generation problems generally, but only one national policy and no subnational policies or by-laws targeting plastic pollution specifically. National policy commits to developing a stronger waste management sector and recycling techniques and to encourage recycling, segregation of waste, reuse, and waste picking as an economic activity.

Malawi's Environmental Management Act (1996) prohibits littering in public places and states that any land affected by waste disposal sites needs to be restored and waste removed to avoid environmental contamination. The Act bans anyone from handling, transporting, or storing waste without a license, with a penalty for breach of US\$2582 (Rep of Malawi, 1996). The Environmental Management (Waste Management and Sanitation) Regulations (2008) and 2004 National Environment Policy states that every person has a right to a clean and healthy environment and has the duty to promote this. The Environmental Management (Waste Management and Sanitation) Regulations, 2008 list plastics as a material to be recycled (Turpie et al., 2019).

Specific regulations, such as the 2015 Environmental Management (Plastics) Regulations, ban the importation, manufacture, trade, and commercial distributions of plastic bags/sheets that are less than 60 micrometers in thickness, but exempt commonly used plastics used in food packaging, medicine or veterinary products, laundry dry cleaning bags, and plastics used for waste storage (Rep Malawi, 2015).

In 2016, the Plastics Manufacturers Association of Malawi appealed to the High Court to restrain the government from implementing the ban and to review the ban, arguing that it would lead to job loss in the sector, but the appeal was rejected by the Supreme Court, so the ban remains in place (Turpie et al., 2019; Pensulo, 2020). In 2020, two companies (OG Plastics and City Plastics) were still manufacturing plastic bags despite the ban and were forced to close, while local environment groups have called for strengthened enforcement given the presence of plastic bags in the market (Pensulo, 2020).

The government indicated in a 2021 plan to completely ban single-use plastics (Princewill, 2021), but have not taken this forward since then, notwithstanding the target to substantially reduce waste generation by 2030 in Sustainable Development Goal 12.

Cities are key actors in implementing these policies. Councils however manage only 12% of the waste generated, with private waste collectors filling the gap and limited coordination between waste generators (households and institutions), waste collectors and recyclers (UNDP, 2021). Local authorities face challenges in fulfilling their duties for waste collection due to inadequate collection vehicles and financial constraints, and limited adequate sites for composting of solid waste. Households commonly dispose of their waste in rubbish pits.

The Bembeke local economy also draws on small scale irrigation farming that demands purchase of fertilizer throughout the year to address soil infertility, with farmers facing a challenge of rising fertilizer prices.

Many smallholder farmers face challenges accessing information and commercial services to improve agricultural practices, reducing their returns from production, with reduced incomes affecting their ability to pay for food and for children's education (Ragasa and Niu 2017; GoM 2016; Chilemba and Ragasa; 2017; CMPD, 2021; GoM). Poor yields and incomes lead to food insecurity and nutritional challenges, particularly affecting children, elderly people, people with disabilities and chronic illnesses and low income households, and affecting participation in school (Hopper, 2020).

Responding to this situation, and with funding from the Malawi Environmental Endowment Trust, Tides Foundation, The Keepers of the Earth Foundation and First Peoples Worldwide, CMPD and the Environmental Affairs Department have since 2012 implemented a waste management programme in selected urban areas, together with an 'Eye on the Environment' and 'Malawi Environmental Watch' to address the environmental challenges that could be harmful for health. Learning from EQUINET work, CMPD used participatory methods to involve communities and affected groups across the process.



Informal settlements, Blantyre, Malawi, CMPD, 2019

Auditing the situation

From June 2012, through its Eye on the Environment initiative, CMPD implemented annual natural assets audits, using transect walks, inspired by EQUINET's work on photovoice, to take pictures and videos on the state of the environment. The images were used to develop evidence-based interventions and advocacy. They exposed the degradation of natural assets and significant waste management problems in urban Malawi, and that local authorities were not meeting duties to clean cities and remove waste. The inadequate waste collection vehicles, few poorly paid city cleaners and limited city bins failed to manage the waste generated, encouraged littering.

In 2012 -2015 urban areas in Malawi, especially Blantyre and Lilongwe, experienced cholera and other waterborne outbreaks, especially in informal settlements (WHO, 2015). The initiative exposed the causes of these diseases in poorly designed urban informal settlements, largely inhabited by poor, unemployed people, with poor housing, and a lack of access to clean water, toilets, rubbish pits and proper drainage systems. Limited budgets were earmarked for waste management. Waste was viewed as a nuisance and not as something that could innovatively be turned into wealth. The audits provided evidence that with subsequent advocacy alerted and encouraged authorities to take remedial measures (CMPD, 2015).

CMPD contributed this evidence to the Malawi State of the Environment Annual Situation Report and forecasts. The evidence helped to lever funds for CMPD from a special funding basket set up by the Malawi Environmental Endowment Trust (MEET). With these resources, CMPD extended its work to other areas, including Bembeke. In that area the evidence from the audit was used to engage the local authority and stimulated a collaboration with Environmental Affairs Department in the Ministry of Natural Resources in a joint waste management intervention.

Stakeholder dialogue

In Bembeke, the audit and dialogue with authorities pointed in addition to waste to the land degradation affecting farm yields, leading to hunger and exacerbating poverty. In a brainstorming session at a joint stakeholders meeting in Bembeke Dedza in 2018, delegates proposed to address both problems together, linking interventions for food security and waste management to create a win-win solution.

“The innovation devised involved turning the piling waste into locally made fertilizers to boost soil fertility and improve farm yields, address hunger and poverty whilst at the same time addressing the waste dumping problem.”

Ted Bonongwe, Agricultural Extension Worker, 2020.

With a buy-in from all stakeholders needed to sustainably ensure effective waste management, in June 2019 a stakeholders meeting was held, involving CMPD, the Environmental Affairs Department, Dedza District Council, Health authorities, agricultural extension workers, the Bembeke Market Leadership, Traditional Authority (T/A), Kamenyagwaza Youth Network and the Farmers Association. The meeting aimed to inform, strategize and design an innovative, economically empowering, community- and multistakeholder-driven intervention in Bembeke, to improve waste management, food security and to reduce poverty.

The meeting oriented stakeholders to the ‘waste-to-wealth’ idea, through turning waste into locally-made fertilizers to improve soil fertility. This would improve farm production and food security, generating improved incomes and health from better waste management. Stakeholders gave input into the design of the initiative, and to the methods for effective collaboration and implementation throughout the processes.

Suggestions were made to include training of farmers in how to make fertilizer locally from waste, and how to monitor and evaluate progress. Farmers understood the benefit for their incomes, but also for their families’ health, their children’s education and the overall development of their communities.



“We welcome this initiative with open arms and pledge our commitment to make it fruitful.”

Chairperson, Bembeke Market, June 2019.

Stakeholder meeting on waste management; CMPD, EAD, Dedza and local authorities Bembeke, CMPD, 2019

Representatives of the people stressed the need to thoroughly conduct community sensitization meetings in Bembeke for the community to fully understand and participate in the project. The stakeholders agreed to set up a committee, elected members to mobilize the people and ensure that planned activities are carried out successfully based on agreed roles and responsibilities. The committee chaired by Traditional Leaders worked/s as Volunteers.

Furthermore, stakeholders highlighted on the need to link the intervention with local Agricultural Extension Workers who should provide both relevant training in local fertilizer making from waste as well as on the farm practical know-how and nuggets to ensure bumper yields and prevent after harvest losses. Traditional leaders, who are Community Chiefs were asked to sensitise their subjects of the initiative whilst CMPD) and other officials were to conduct in-depth sensitization campaigns around Bembeke.

Community sensitization and ownership

In October, 2019, traditional leaders engaged their communities on the benefits of making fertilizer locally from waste to boost harvests, food security, as well as to increase income and reduce farm costs. In the same time, CMPD sensitized communities through drama, songs, dances and public speeches through its Theatre Group, while health officials informed the community on the safety and health benefits. Eight campaigns were conducted, one in each of Bembeke's eight zones targeting the general public, most of whom are farmers. These sessions explained the details and benefits of the initiative, its leadership and collective responsibilities, and discussed how to overcome challenges, and the logistics, timeframes and sustainability.

The campaigns were followed by the election of local committee leaders to strengthen local ownership of the initiative and involve communities in decisions on the initiative. The local Bembeke committee has since 2020 been responsible for reporting progress to the main stakeholders group during 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.



Community sensitization by the theater group, Bembeke, CMPD 2019,



Sweeping and collection of waste, Bembeke, CMPD 2020

The waste management process

Agricultural Extension Workers specialized in making fertilizer from waste conducted training workshops for six weeks in 2020, covering 2,113 farming families. Training was also given to 300 trainers with the Malawi School Leaving Certificate to continue the training after the initial project phase and funding, to build sustainability into the process. The farmers identified shop-purchased fertilizer as a problem-management strategy for poor soils, but saw the local fertilizer production as a problem eradication strategy, since it more sustainably addressed the land degradation. The agricultural experts shared information that was eye-opening for farmers, such as that purchased inorganic fertilizers do not supply nutrients to the soil but rather briefly to the crops, locally made fertilizers from waste nourish the soil and address soil infertility in the long term.

Farmers realised that if they continued to apply locally made fertilizers from waste, at a certain point the land would have retained its natural ability to produce well without additives and artificial help, reducing fertiliser use.

Immediately after the training, communities began segregating, collecting and piling waste away from the market to their local fertilizer-from-waste-production sites using wheelbarrows, shovels, sacks and ox carts, and wearing personal protective equipment provided by the project. The waste used for producing fertilizer was largely organic waste, rather than plastic or other solid inorganic waste.



Waste Collection and
Local Fertilizer making,
Bembeke, CMPD 2020

Waste collected from Bembeke market is sorted, unwanted content removed and separated into common groups. Usable organic wastes include eggshells, fruits and vegetables, flowers and plants, rice and beans, dairy products, meat, poultry, fish, bones, paper products, milk cartons, food waste, crop residue, leaves, tea bags, coffee grounds, and tea/coffee filters gardening waste, animal dung and ash. The waste is then loaded into plastic bags with a mix of animal dung, shop fertilizer, urine and ash then tightly shut for 21 days, with the product an organic fertilizer. This is a natural biological process that takes place under-regulated aerobic circumstances. Microorganisms such as bacteria and fungus break down the organic materials. After 21 days farmers take the organic fertilizers to their fields bin sacks, buckets, ox carts and vehicles.

At the onset, many farmers involved had stopped farming because of persistently poor harvests and exorbitant prices of farm inputs. When they saw the benefits of turning waste into local fertilizers, many went back into farming, expecting improved harvests. This increased crop production in the area, contributing to food security and poverty reduction.

"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."

Ernest Phiri, Bembeke farmer, 2020

Mechanisms for dialogue, co-production and review

Partner meetings between CMPD and the Environmental Affairs Department were held to jointly develop and support implementation of the waste management initiatives in urban and peri-urban areas. Various meetings were held and structures set up to dialogue with and involve stakeholders and affected communities in the design, implementation and review of the process, as earlier described. District stakeholder meetings were held between CMPD, EAD and Dedza District authorities at Dedza District Assembly, while the Bembeke stakeholders meeting took place in Bembeke, involving CMPD, EAD, Dedza District authorities, agricultural extension workers, health authorities, farmers representatives, the Bembeke market leadership, the Kamenyagwaza Youth Network and Traditional Leaders. More direct community engagement and sensitization was implemented through meetings that included drama, songs, traditional dances. Quarterly meetings were held to provide feedback and strategize on the way forward.

Outcomes achieved and future plans

One of the key successes of this initiative has been the transfer of vital innovative waste management and fertilizer production skills in over 1500 local farmers and directly affected communities so that people are the direct beneficiaries of the interventions. Shortly after the initiative began in Bembeke, most informal dumping sites were cleared, empty and clean. The stinking smell of rotting waste that was polluting the air was replaced by clean air.

The beauty of Bembeke emerged, invigorating the town landscape. Crop production increased by 120% due to the increased number of farmers rejoining both rain-fed and irrigation farming, using available, inexpensive locally produced fertilizers from waste (CMPD, 2022). This not only improved crop productivity. The increased production of crops and cleanliness of the urban area has boosted the vibrancy of the Bembeke market. The removal of waste and improved availability of food and improved incomes have provided resources for improved health and nutrition, with greater supplies recorded of legumes, maize, potatoes and vegetables (CMPD, 2022).

The additional income and market sales have stimulated the local economy. Bembeke has transformed from a health and environment harming dumpsite into a bustling economy and food basket. In the future, the plan is to identify more spaces in Bembeke to turn into green space, as they are a barrier to informal waste dumping, and also improve air quality and beautify the landscape.

The local authority and stakeholders have made proposals to advocate for special designated permanent and safe dumping sites away from residential areas, for safer waste disposal. Plans are under way to start recycling of plastics and other waste that cannot be turned into fertilizer once funds are sourced. Finally, the initiative intends to reach out and share its best practices through reports and other platforms to inspire and other urban areas grappling with waste management problems.

Enablers, challenges and responses

Waste can be hazardous to human health and there was thus initially caution in working with it or seeing its potential. The provision by one of the key stakeholders and health authorities of information on safety measures and of safety kits such as gloves, overalls, gumboots as well as wheelbarrows and other work-tools, helped to alleviate fears.

Farmers' initial singular focus was on boosting crop production. This meant that they did not see benefits in clearing waste. This called for the awareness activities implemented as described to explain the health and production benefits. Over time community members agreed with and became involved in removing and segregating the waste into what was useful for making fertilizer and what needed to be provided for waste collection for the formal dumpsite.

Not all waste could be turned into locally made fertilizer, as noted earlier and the resources levered were insufficient to invest in the recycling of inorganic waste, including plastics. The next phase will focus on the segregation, management and recycling of plastic and other waste. The COVID-19 pandemic also affected the scale-up of the initiative, given social distancing, lockdowns and illnesses. When the lockdowns were halted, scaling up progressed. When planning for urban health interventions, emergencies and effects of climate change must be factored in.

A key enabler was the visible improvements yielded by the initiative, noted in the previous section, with improved crop production and outputs for local market sales and consumption of the more available food crops such as maize, Irish potatoes, tomatoes and legumes. The visible improvement to Bembeke's environment and the additional money available in the town make it a more desirable place to live. This helps to build sustainability of the initiative.

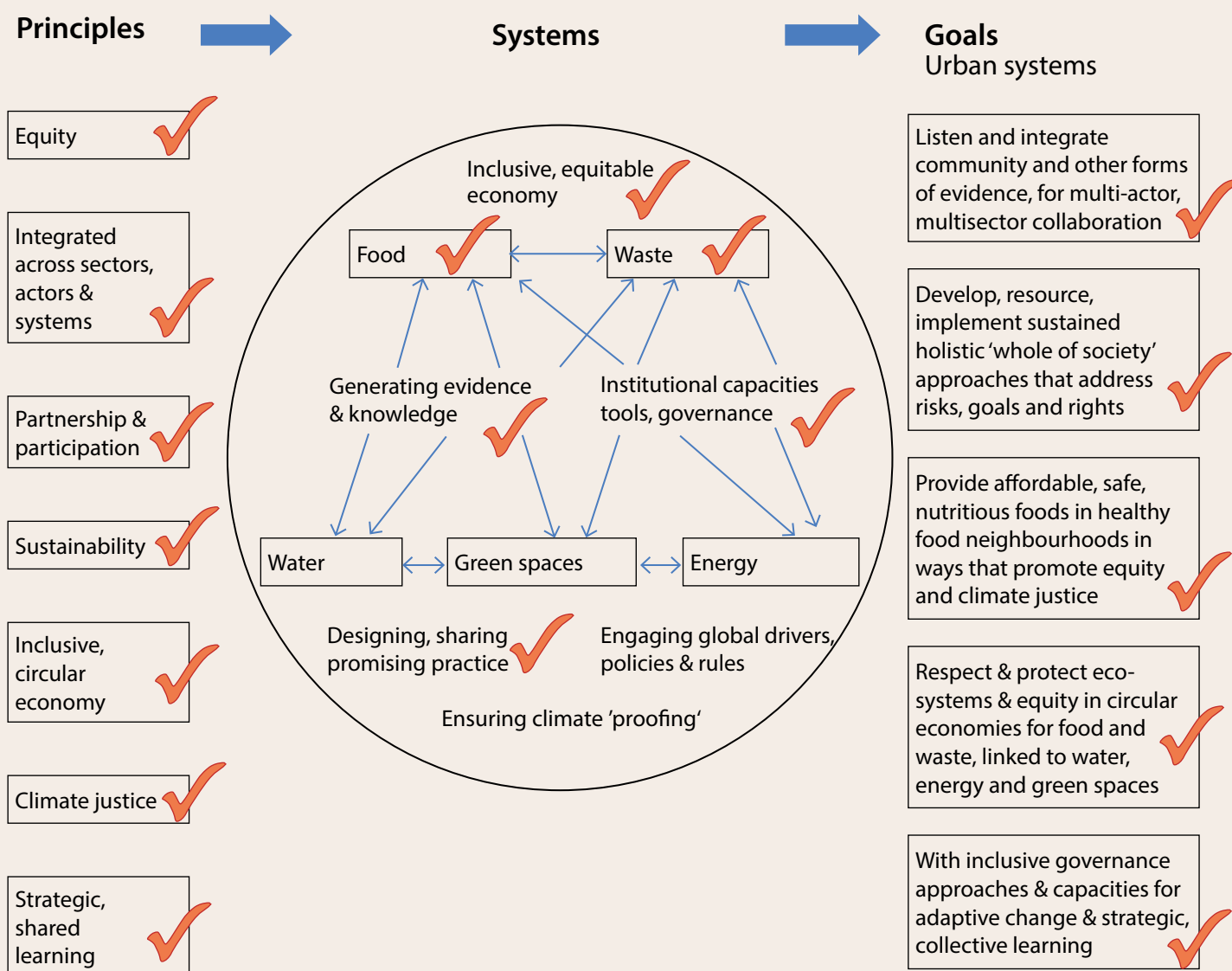
Features and learning for holistic, integrated approaches

This intervention provided learning on how to tackle issues that have multiple dimensions and impacts. *Figure 1* overleaf shows the EQUINET conceptual framework, linking different dimensions of urban environments in inclusive circular economies and measures to mitigate climate change.

This initiative addressed the waste management and food security dimensions of the circular economy in Bembeke, Dedza, enhancing equity in nutritional and economic outcomes for low-income residents and farmers. Applying holistic thinking and integrated approaches from design, implementation, monitoring and review enabled the work to be succeed. The initiative was a collective responsibility of different stakeholders at all levels including the local communities and showed the potential of generating links between what were previously urban problems to use them as assets for sustainable urban development. Waste when used innovatively can help improve urban food security of the growing urban population and assist in improving urban green spaces and urban landscapes. In this way it can also help improve air quality, salvage air pollution and improve rainfall patterns.

The initiative showed the importance of addressing the participation, partnership and governance dimensions shown in *Figure 1*. We noted how important it was to ensure participation of key stakeholders including community members from conception to completion to ensure success and continuity.

Figure 1: A representation of the EQUINET conceptual framework with areas addressed in Bembeke



Gathering evidence through the audits helped to lever attention to the issue and the need for change. Funds were necessary and levered from grants from the organisations noted earlier. The initiative also demanded skills and skills transfer, such as from agricultural extension workers through training to Bembeke farmers and communities on how to collect, segregate and use waste to make fertilizer.

Training of local resource persons (trainer of trainers) reduces costs of local training and supports longer-term continuity, including across generations. Transferring skills to local people empowers the local community and enables uptake and sustainability. People also had justified concerns and contributions that were made through awareness activities, meetings and committees.

People should be at the centre of the initiatives to ensure sustainability and there is a positive interaction between understanding and participation. Governments should not just develop sound policies and strategies but also ensure their enforcement, including by allocating adequate resources to implement urban health interventions that allow for local innovation and for the spread of good practice.

The initiative made a shift 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. It has showed that it is possible to boost the local urban economy and infrastructure while also making the towns and cities more inclusive, healthy livable spaces for communities.



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

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