

Lilongwe: Waste as the entry point for GBI and Nexus intervention



ICLEI Case Studies

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Lilongwe in Context

Lilongwe is the capital city of Malawi and with approximately one million inhabitants, is the largest city in terms of population size. Lilongwe is well connected by roads which has contributed to it being a valuable agricultural market town and a large trading center. Malawi has an agronomic economy based on cash crops such as tobacco, rice, legumes and coffee so the surrounding agricultural areas employ much of the population. Like many cities in Africa, it is rapidly growing and experiencing the associated pressures on its natural resources, as well as pressure to expand its built infrastructure.

Food-Water-Energy Nexus in Lilongwe

Food supply is not perceived to be a challenge in Lilongwe, as vegetables such as maize, bananas and potatoes, are grown for local consumption. In addition, cattle, sheep, and goats are raised predominantly for local consumption with some being exported. However, there are issues of access in terms of households not having enough money to afford nutritious food [3]. Approximately 72% of the city are reliant on subsistence farming to supplement their food supply [4].

The city's river system includes the Lingadzi, Nankhaka and Chankhandwe Rivers, however, Lilongwe relies mainly on the Lilongwe River for its drinking water. The quality of these rivers is



Facts & Figures

Population
989,318 [1]

Annual Population growth rate
3.8%

Average Income per Capita
750 USD (2013) [2]

Population Density
2,453 persons/km²

compromised by a lack of effective waste collection and management which means much of the city's waste contaminates the rivers. Approximately 74% of city residents have access to potable, reticulated water, which is supplied by the Lilongwe water board. However, this access is affected by intermittent water supply and low water pressure, due to the high demand for a limited supply. The water supply is also challenged by illegal tapping of the pipes, particularly in high density areas. The remaining 26% of the population access water via wells or other decentralized sources. Improving supply capacity and access to reticulated water are main priorities for the city with regards to water [3]. Some efforts to improve water services include investment in new capacity, completion of a new water master plan and a partial rationing program to overcome the challenges of low pressure in some neighborhoods across the city. Bylaws are also under revision to discourage vandalism of pipes and water meters [3].

Malawi is entirely reliant on hydroelectric generation for electricity, though the supply is not enough to meet the growing demand [5]. Household energy mostly comprises of biomass in the form of charcoal. The charcoal which the city imports is unsustainably harvested, which results in wide deforestation and erosion. This is particularly problematic around riverine areas because it reinforces the feedback loop: as the city's energy demand grows, more charcoal is harvested which requires trees and sand. Consequentially, the resulting vast erosion causes flooding and blocks rivers and hydroelectric dams. This disruption undermines the production of electricity and widens the energy supply-demand gap [4]. The additional waste discarded in the rivers, as noted above, exacerbates this issue, and is the entry-point for this nexus innovation.

The city is prioritizing issues around waste, energy, and urban cleaning [6]. The city has undertaken several initiatives to restore the riverine areas and green the city, for example, encouraging the planting and raising of seedlings in schools and community environments. The city has also implemented a public works program to involve unemployed citizens in doing paid work for the city such as planting trees and cleaning. This program aims to support incomes and access to food for the unemployed, while simultaneously supporting wider city development. Currently, there are no formal waste collection, or recycling projects in the city, and there is minimal established



Figure 1 – Urban residents depend on wood for charcoal to supplement limited hydroelectricity supply

infrastructure to support a recycling program. Therefore, private companies and NGOs that are starting to work in this space are driving these priorities forward.

A Story of Innovation: Reducing waste contamination in water sources

The Rivers project (UNA Rivers) is a pilot project which was developed as part of the Urban Natural Assets for Africa project [7] and was hosted by ICLEI Africa from January 2016 through December 2020. UNA Rivers has a variety of activities designed to work towards mainstreaming nature-based solutions in municipalities. In Lilongwe, these include:

- The development of a Lilongwe Urban River Revitalization Plan;
- Updating the Local Biodiversity Strategy and Action Plan;
- Reviewing national urban plans and land-use plans;
- Development of river-based planning guidelines and associated training;
- Promoting public awareness through events, posters for schools, and producing a river revitalization song.

This project, sought to protect and improve the quality of Lilongwe's rivers by looking upstream to prevent the waste from entering the river systems. It was understood that the majority of waste entering the system was organic, and the inorganic waste entering the system was mostly related to food packaging and distribution.



Figure 2 – Images of the Lizulu market context
Photo credit: ICLEI Africa

Because of this, the pilot project was proposed in Lizulu and Tsoka market, which is located on the banks of the Lilongwe River. The project aimed to initiate a composting process to divert both food loss and food waste from the market, directly into a composting site, and produce compost that could then be sold to generate income. The project also undertook local river clean-ups to directly remove litter and waste from the river neighboring the market. The project was devised using a gender inclusive lens, attempting to support women working in the market to undertake the composting. However, in the early stages of the project, market vendors were not interested in engaging with waste initiatives. The project team had to look elsewhere for people to manage the collection and composting process. Taking a gender-inclusive approach, twelve women from nearby communities were introduced to the project and trained in composting approaches. This worked in the early stages; however, the formalization of their roles conveyed a confusing message. The provision of T-shirts and composting safety equipment gave the impression that the women were making large amounts of money from the

food waste provided to them by the vendors for free. This caused tension between the vendors and the collectors which had a gendered dimension as many of the male vendors raised concerns. In addition to waste management, in order to gain a deeper understanding of what the river meant to citizens and market vendors and provide a means for dialogue between citizens and policy-makers, a photovoice process was initiated. This encouraged participants in the composting project to take photos of the river before and after, and reflect on what they felt to be important in this initiative [8].

A year after this project was initiated, a number of efforts were made to reinforce the value of the composting process, and support market participation. These include:

- Capacity building and awareness around waste management engaging with the market to show how and where to take their waste;
- Purchasing and distributing bins in high footfall areas;



- Developing a process for market leaders (and others) to take these bins to the compost area on a daily basis;
- Improving demarcation of the compost area to better drop off and sort the waste;
- Erecting educational signage;
- Constructing a shelter for the composters and a storage area for the tools [7].

This project was imagined through many different perspectives. The ICLEI Africa project coordinator suggests that this project failed to deliver on its intended aims of a continuous composting process. Nevertheless, they reflect that it offers many valuable lessons which have informed future pilot projects. Such reflections include that it was difficult to create ownership of the composting project in the market given that it was a commercial space and not a community where people lived. Also, while the attempt to follow a gender-inclusive approach was positive, once the compost was perceived to be making money, the men working in the market as vendors challenged the women by requesting a payment for the waste they were providing. This created tension and would have reduced the already modest incomes that the women were receiving from compost. In addition, despite the amount of compost produced, and the amount of litter removed from the river, the project coordinator remarks that one would not perceive a clear difference, as the waste seems pervasive. Finally, developing market interest in the compost was difficult and requires further outreach.

The implementing partner considers this project to have been a success, partly for the novel approach and for their role in developing the composting site, which delivered on the technical promise of creating compost from waste and reducing downstream impacts in the river.

Lilongwe City Council has recognized the value of the project, however, have suggested that it has limitations based on social uptake, and as such, is not contributing to larger system wide change. Therefore, they suggest that larger infrastructural investments are needed to properly reduce the contamination of waste in the rivers and deliver on the potential that composting could offer. The project team is attempting another pilot in a residential community in order to see if local ownership could be the key for more effective outcomes.

Enabling Environments & Capabilities

While this case has a technical underpinning, based on diversion of waste through composting, it values social processes as the basis for effective socio-technical intervention. Implementing this project in the market required a large amount of relationship building. Firstly, complex governance relationships present in the market needed to be understood as these represented a rather interesting form of equitable governance, in which all of the vendors ensured that everyone made money in the market. Secondly, it was important to understand how residents and vendors understood their relationship with the river. The



Figure 3 – The first day women volunteers started working on the waste management site
Photo credit: Francisco Ngwira



Figure 4 – The recycling center after 30 days
Photo credit: Francisco Ngwira

project took the approach of using photovoice, in which vendors and market visitors were given cameras and asked to express their stories of the river, and to document the progress of the project as it evolved. This process is summarized [here](#). The photovoice process was also used as an instrument to build relationships

between project implementers, market users and policy makers.

Enablers and Capabilities involved in the development of the composting project are summarized in Table 1:

Table 1 - Enablers and capabilities for the implementation of the UNA Rivers - Lilongwe composting initiative

Knowledge	Institutional	Social	Ecological	Technological	Economic
<p>Project to mainstream biodiversity and nature-based-solutions approach into urban planning</p> <p>Emerging knowledge about the state of the river identified the target intervention as waste diversion</p> <p>Existing knowledge of composting within city, but operationalizing it in new location, through training of project participants</p> <p>Implicit learning by market vendors about the economic value of composting</p> <p>Project lessons captured for future efforts</p>	<p>ICLEI - Urban Natural Assets (UNA) Africa Program</p> <p>Lilongwe City Council - Environment Department; Planning Department</p> <p>Market leaders and organization</p> <p>Food Vendors</p> <p>Implementing partner</p> <p>Composter participants</p> <p>University researchers</p>	<p>Project was driven from a partnership between ICLEI UNA and Lilongwe City Council to integrate nature-based solutions into urban planning: to clean rivers while also building livelihoods</p> <p>Navigating positive and negative engagements with vendors - sensitization to the need for compost - diffusing conflicts around who benefits financially from the food waste</p>	<p>Expected downstream impacts on the improvement of water quality</p> <p>Clear need for reducing organic waste disposal in the river</p> <p>Proximity of market to river</p>	<p>Process technologies of how to compost</p> <p>Tools (physical): Rakes/ implements, composting slip/ area, bins</p> <p>Cameras for photovoice</p> <p>Availability of space for composting</p>	<p>External funding</p> <p>Investment predominantly in social development and technical skills</p> <p>Expectation that incomes from composting efforts would ensure continuation of the program</p>

Synthesis

A key feature of this project was the way in which it was designed to complement a number of activities related to mainstreaming nature into urban planning. This means the lessons that have emerged can find purchase in future projects. The UNA Rivers Project team articulate the following key learnings from Lilongwe:

- Improved understanding of the immense effort and time needed to effectively build partnerships and relationships;
- Recognizing that in certain contexts it may be helpful to see informal areas as unserved rather than unplanned;
- The power of specific projects, such as the river revitalization project that rely on multi-stakeholder engagements, in assisting with bridging the divide between city officials and community members;
- The importance of co-production processes, where all stakeholders have the opportunity to influence the design, planning and implementation of projects, particularly in relation to ensuring project ownership and buy-in;
- The potential of structured governance systems present in informal areas to be harnessed for successful project implementation;
- Enhanced understanding of procedures and processes vital to the success of implementation projects in African cities;
- The role and effectiveness (or non-effectiveness) of on-the-ground activation or pilot projects;
- The importance of context specific information in participatory planning [7].

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