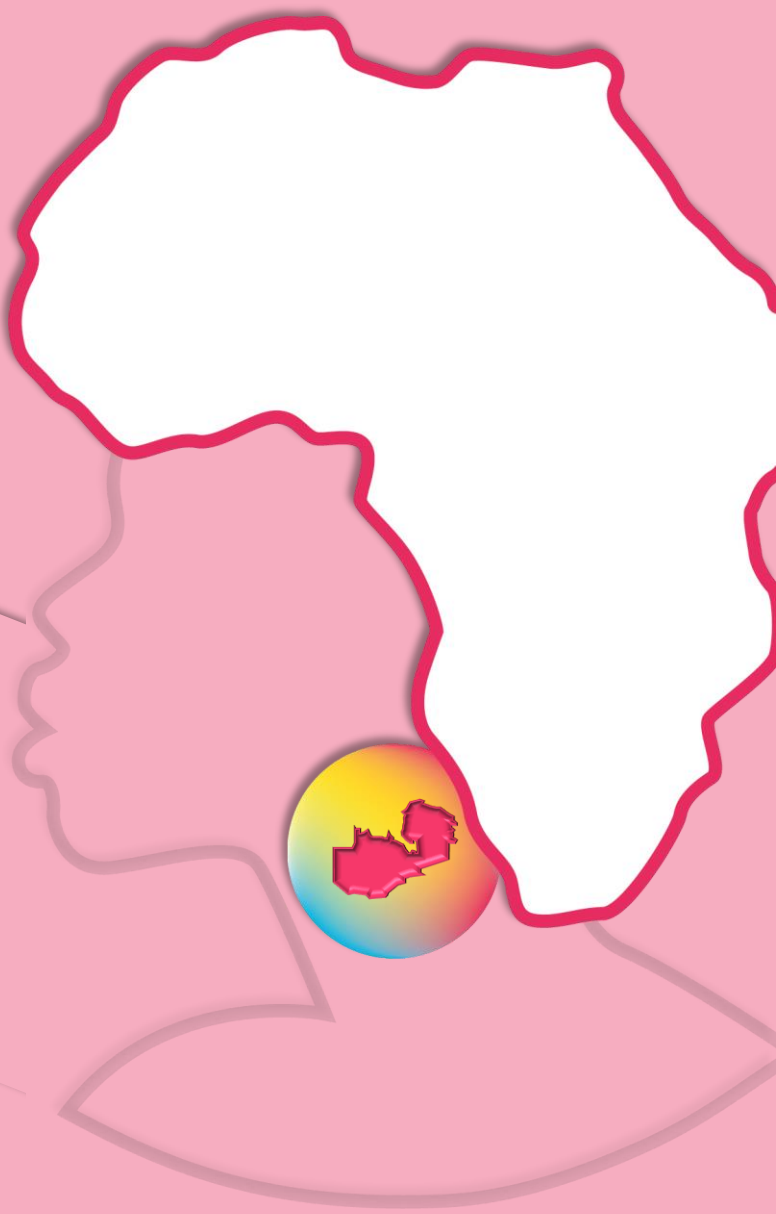
PROJECT FACTSHEET

ASSESSMENT OF THE CURRENT STATUS OF THE CIRCULAR ECONOMY



in the waste sector for developing a waste stream specific roadmap

IN ZAMBIA

APRIL 2022, FACT SHEET

INTRODUCTION

The Ministry of Green Economy and Environment (MOGEE) through the Zambia Environmental Management Agency (ZEMA), in collaboration with the Ministry of Technology and Science, the National Designated Entity (NDE) of the Climate Technology Centre and Network (CTCN), in partnership with the Netherlands Organisation for Applied Scientific Research (TNO) supported by Sustainable Inclusive Business (SIB-K), a knowledge centre under the Kenya Private Sector Alliance (KEPSA)), implemented a study to assess the current status of the circular economy in the waste sector for developing a waste stream roadmap in Zambia. The European Commission-funded study through the Climate Technology Centre & Network (CTCN) envisions supporting Zambia to transition the waste sector to adopt circularity with a focus on organic and inorganic-domestic waste. The assignment seeks to develop a national waste stream roadmap, including conceptualizing a pilot project for a more circular management system. The implementation period of the project is between 2021 and 2022.

THE CURRENT STATE OF WASTE MANAGEMENT PRACTICES IN ZAMBIA

- Most of the waste collected ends in a landfill, open dumpsites controlled by local authorities. This is because the country only has one engineered landfill located in Lusaka.
- Waste is collected in Zambia by the local government and several private organizations. During waste collection, waste is not separated. Separation of waste at source is not common for households.
- Informal waste pickers collect valuable components at dumps or landfills to separate them
- 42% of the local authorities observe that their waste management strategies have mainstreamed the circular economy principles
- Organic waste makes up the majority of residential waste, accounting for 51% on average. Plastic is the second most common waste source, accounting for around 14% of all waste. Paper, metal, and glass make up 6%, 9%, and 4% of total home waste in Zambia, respectively.

PROJECT'S GOALS

The project's goal was to develop a waste stream-specific road map and pilot project for a more circular waste management system in Zambia

Specific objectives

- Assessment of the waste management practices for the six waste streams (plastics, metals, glass, paper, household waste, agricultural waste), identifying and developing an up-to-date guide to key stakeholders, existing public and private sector initiatives as well as policies and insights in waste generation and processing.
- Identify potential opportunities and barriers to transitioning to a more circular waste management system for each waste stream
- To select a prioritized waste stream with the greatest potential for transitioning to a more circular management system
- To develop a detailed strategic national roadmap for the selected waste stream, which serves as a management tool for the implementation phase, creating new businesses, innovation, and technology transfer. The roadmap will include short, medium, and long-term recommendations for, among others, appropriate technologies, legal reforms, policies and regulations, and market engagement
- Conceptualization of a pilot project with potential economic, social, institutional, and environmental benefits.

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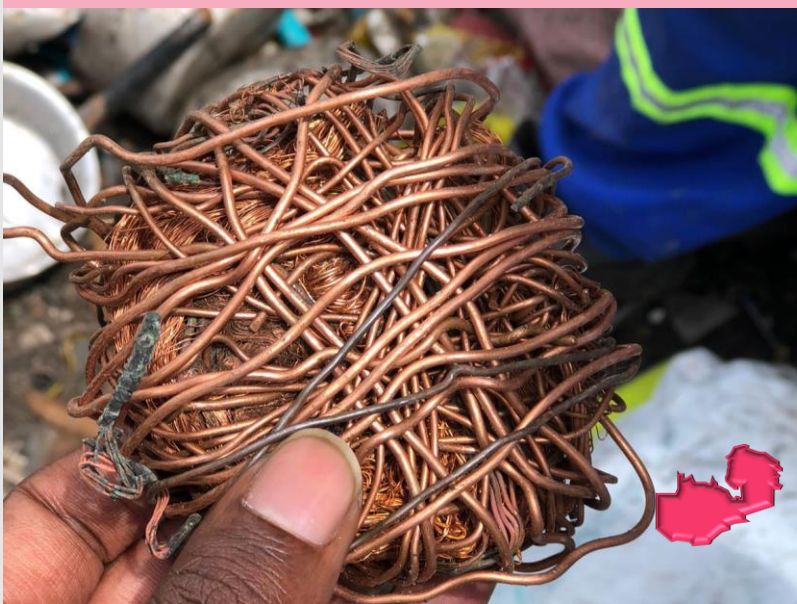

POLICIES AND INSIGHTS IN WASTE GENERATION AND PROCESSING

- The Environmental Management Act, 2011 establishes structures and procedures and gives the power to develop initiatives to conserve the environment and negate pollution (section 3 on Superiority of Act). The Act establishes the Zambia Environmental Management Agency (ZEMA) to ensure integrated environmental management, the protection and conservation of the environment, and sustainable management and natural resources.
- The Solid Waste Regulation and Management Act [No. 20 of 2018] provides for the sustainable regulation and management of solid waste. It provides for general and self-service solid waste services, incorporating solid waste management companies and defining their statutory functions. It also covers the licensing and functions of solid waste service providers, operators, and self-service solid waste providers and the regulation, operation, maintenance, and construction of landfills and other disposal facilities.
- Statutory Instrument, No 65 of 2009 on Extended Producer Responsibility Regulations provides a framework for the sector to implement the extended producer responsibility scheme. The SI presents a framework to leverage the voluntary schemes in bringing on board lessons learned while transitioning to the enforcement of the mandatory phase. Schedule one of the S.I identifies plastic as one of the priority waste streams of focus.
- Local Government (Solid Waste Management) Regulations, 2011 (G.N. No. 100 of 2011) provides a basis for the city council to establish effective solid waste management, including accelerating a circular economy for plastics. This includes accelerating partnerships for valorizing plastic waste and creating infrastructures that enable waste separation at the source.
- Although Zambia acknowledges its main challenges with waste management and circularity, the current policy framework mainly focuses on socially and environmentally sustainable disposal. The aim is not separation at source, recycling, or reuse.
- Plastics have an established market when compared to other waste sources
- The average collection frequency by the local authorities is 5.1 per month. Despite the overall low level of circularity in the formal economy of Zambia, it is interesting that 'circular behavior' is implicit in low-income areas (rural areas, densely populated areas): goods are used intensively and are not easily discarded.
- Because of the lack of separation of different waste streams, different types of waste become contaminated, reducing the potential for downstream recycling. Furthermore, local governments face significant challenges in collecting waste, such as a lack of budget and infrastructure.
- Waste recycling in Zambia is not very common. A few big players are involved in recycling various waste streams. Small-scale home industries are also active in the manufacturing of products from waste.
- Circularity is not promoted directly. The national solid waste management strategy was designed from a public health perspective and not from a perspective of boosting the market for secondary raw materials. This has resulted in fewer improvements than expected.

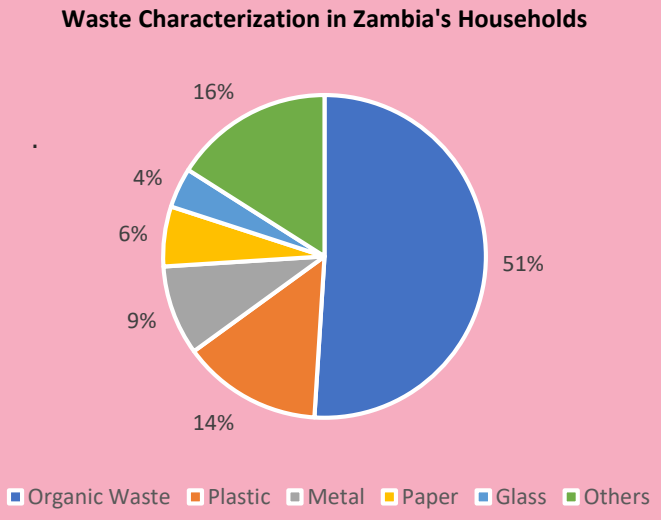

Figure 1: Waste Characterization in Zambia

POLICIES AND INSIGHTS IN WASTE GENERATION AND PROCESSING

- Within the current policy framework, incentives such as taxes and tariffs only exist for large-scale businesses and industry, not for smaller businesses or social enterprises, while their services will be critical in improving waste management.
- The Nationally Determined Contribution target is given to reach a 25% decrease in CO^2 emissions per capita by 2030, compared with the projected Business as Usual scenario. In case substantial support is provided, Zambia can achieve a 47% decrease in emissions in 2030 compared to the Business as Usual scenario.

CIRCULARITY ANALYSIS OF THE PRIORITIZED WASTE STREAM

Plastic was selected as the priority waste stream in Zambia. It is a relatively well-developed downstream value chain with stakeholders at every juncture, the value of products from waste is relatively high, and volumes are expected to increase. However, there is hardly any internal industry for remanufacturing or recycling, and most plastics are exported. The upstream value chain deserves attention and a proper collection system to increase volumes. Waste valorization starts with informal and formal waste pickers, aggregators, waste transfer stations, or buyback centers, ending with recyclers and processors. There are three technological pathways considered for the valorization of plastic waste:

- Closed-loop recycling (plastic products are recycled into the same product or applications with requiring materials with similar qualities),
- Open-loop recycling (plastic is downcycled into a different product, often tick walled products of lower quality),
- Feedstock or thermo-chemical recycling (which breaks down the plastics into monomers or other hydrocarbon products).

DENTIFIED POLICY/REGULATION GAPS

IDENTIFIED GAPS	
The alignment of policies is observed as a weak link and coordination between sector players.	The EPR Regulation specifies the priority waste stream but does not emphasize the development of producer responsibility organizations to facilitate plastic collection and recycling.
Strategies dating back to 2004 remain solid provisions to scale innovative technology to valorize plastic waste.	There is limited information and a database on the quantities of waste.
As ZEMA and the Ministry of Local Government and Rural Development authorities pointed out, guidelines to operationalize the two Acts are urgently required.	Low levels of incentives such as subsidies, tax holidays, or reduced import duty on equipment to support small enterprises in the adoption of circularity for plastics.

CONCEPTUALIZED PILOT PROJECT

Waste Transfer Station aims to provide better waste management and valorize waste. A Decentralized Integrated Waste-transfer Station (DIWS) is suggested as a pilot project, potentially including low- and medium-tech recycling. A DIWS combines four functions: a buyback center, a waste transfer station, a value addition facility, and a recycling facility. However, margins are low since the most value is added during processing. A DIWRS can address this by:

- Including value addition activities for each waste stream (washing and shredding plastics, crushing glass, shredding metals)
- Including low-tech recycling activities for some of the waste streams (molding plastic products, composting for organics)
- To scale the upstream part of the value chain, since the value is better distributed along with the actors (informal waste workers, waste transfer stations)

The pilot will provide a decentralized local waste disposal option for informal waste collectors, public and private collectors, and individual households.

CRITICAL ASSUMPTIONS OF THE PROPOSED PILOT

- The project assumes that the pilot will be established in a distinct urban zone.
- The pilot will make two assumptions about the generation of plastic waste.
    - One PBBC that does value addition in phase 1 and recycling in phase 2 and processes 300 tonnes of plastic annually, thus 6 tonnes a week approximately.
    - Six PBBCs, each collecting roughly 1 tonne of plastics per week. Each PBBC will be established within a community. Leverage the available asset (land) within the community and reduce the costs that would have been incurred in collection. There will be one larger site in a strategic location for value addition activities phase 1) and Low- and Medium-Tech Recycling (phase 2).
- The pilot assumes that shreds will attract 2-3K/kg compared to the unwashed and unshredded raw material prices.
- The pilot assumes that 75% of the plastics will be bought back against market prices. The other 25% will come from separated public collections.
- The pilot anticipates that the local authority will support the pilot's setup and engagement with waste pickers and aggregators.
- The market for recycled plastic products will grow, and firms will begin to use recycled material in their packaging.
- The country's policies will provide an enabling environment to support the pilot's sustainability and stimulate extension, as expected under the phased approach.
- The pilot assumes that the market prices for plastic will be stable.

ANTICIPATED CHALLENGES IN EXECUTING CONCEPTUALIZED PILOT PROJECT

- Setting up collection and processing network, in collaboration with local authorities
- Incentives for collectors to sell separated waste or pay for the dumping of mixed waste
- The current implementation of plastic waste management technologies shows that the key gaps are not due to a lack of existing technology – recycling technology is in place, and several companies are already implementing these.
- Securing funds and land for start-up (costs of machinery to extrude and molt plastics are quite high, from $250,000 for a simple granule producing plant to $2,000,000)
- There is little domestic development of recycling technologies, nor little domestic availability of spare parts. This means that recyclers are dependent on expensive imports of (parts of) equipment.
- No incentives such as subsidies, tax holidays, or reduced import duty on equipment used for recycling and circular activities
- No equipment manufacturer in the country, so everything needs to be imported

STRATEGIC NATIONAL ROADMAP

The Zambian Circular Economic Roadmap aims to steer the country's transition to a circular economy in the area of organic waste management. The roadmap is governed by three main themes: (1) waste management that is sustainable, (2) organic waste management that is circular, and (3) the creation of a circular economy. Improvements in the institutional environment may speed up change and allow ideas to scale up through enhancing collaboration, guaranteeing cross-learning, and minimizing opposition. Although this is part of a larger waste system in which industry and other commercial and institutional actors play a significant role, this roadmap concentrates on home actions. This roadmap has been created to meet the demands of the country.

In the medium term, the plan aims to strengthen and update existing policies and strategies, as well as provide a framework to assure the availability of waste generating data across waste streams. In the medium term, expanding EPR legislation and guaranteeing its operationalization through the establishment of Producer Responsibility.

Organizations is seen as a critical component in promoting private sector engagement. The dissemination of information and awareness creation about waste disposal policies and best practices is a supporting pillar in guaranteeing compliance and successful execution of regulations. The most essential part is infrastructure development, which is where local governments should focus their efforts. Infrastructure development must be linked to capacity building and institutional strengthening.

ROADMAP VISUALIZATION OF THE CURRENT PRIORITIZATION

ROADMAP 2030

Long 2027-2030

- (Re)design of policies for sustainable plastic (waste) management
- Implement (financial instruments for circular economy development
- Improve cross sectoral collaboration
- Prepare and foster human capacity building
- Increase data availability

Medium 2024-2026

- Expand the policy and legal framework for EPR for plastics
- Include the informal sector
- Include woman and young entrepreneurs
- Invest in R&D and innovation
- Increase dry/wet separation at source and full post collection separation
- Improve waste disposal options

Short 2022-2023

- Improve policy and regulatory enforcement
- Improve inter-institutional collaboration
- Improve public-private collaboration
- Increase public awareness and information availability/sharing
- Enhance the valorization of (plastic) waste
- Increase collection levels

Domain:

- Enhancing the institutional environment
- Promoting constructive collaboration
- Increase knowledge levels and availability
- Improve the physical infrastructure

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