Reformers

Reformers team is tackling SDGs 9 and 13. We are focusing on the waste sector. We are providing innovative solutions to help reduce the harmful effects of waste on our environment, by creating a circular economy.

Difficulté **Moyen** | Durée **12 heure(s)**

Catégories **Bien-être & Santé, Recyclage & Upcycling, Science & Biologie** | Coût **500 USD ($)**

Sommaire

Introduction

Sequel to our findings the characteristics of the solid waste generated across popular and economically significant cities of Africa, namely Cairo (Egypt), Lagos (Nigeria), Johannesburg (South Africa) and Nairobi (Kenya), and therefore the projected potential income generation for waste investors were carried out. With dense population that stands at 9.12, 8, 4.4 and 3.1 millions in Cairo, Lagos, Johannesburg and Nairobi, respectively, organic/putrescible/biodegradable waste generated is approximately 60% of the entire waste stream, with the smallest amount recorded in Johannesburg (approx. 35%).

Reformers is proffering an innovative solution to problem like Climate Change, Pollution and Clogged waterways. Our solutions involve three major areas namely; collection of waste, sorting of waste with our smart bins into different components like plastics, metals and all. We then recycle and upcycle the waste to new materials to fit into industries like Construction and Transportation, Fashion and Kitchen Items, and Agriculture.

Matériaux

- https://discord.com/channels/785546246986792980/787227420477882374
- https://drive.google.com/drive/u/0/folders/13Ta7Bo4Ik6ac7YaNmnbt_yG1efD0gYhY
- https://discord.com/channels/785546246986792980/787227420477882374
- https://drive.google.com/drive/u/0/folders/13Ta7Bo4Ik6ac7YaNmnbt_yG1efD0gYhY

Outils

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Étape 1 - Brainstorming

In this step, we discussed different approaches to building a smart bin capable of sorting waste into different compartments based on the properties of the waste.

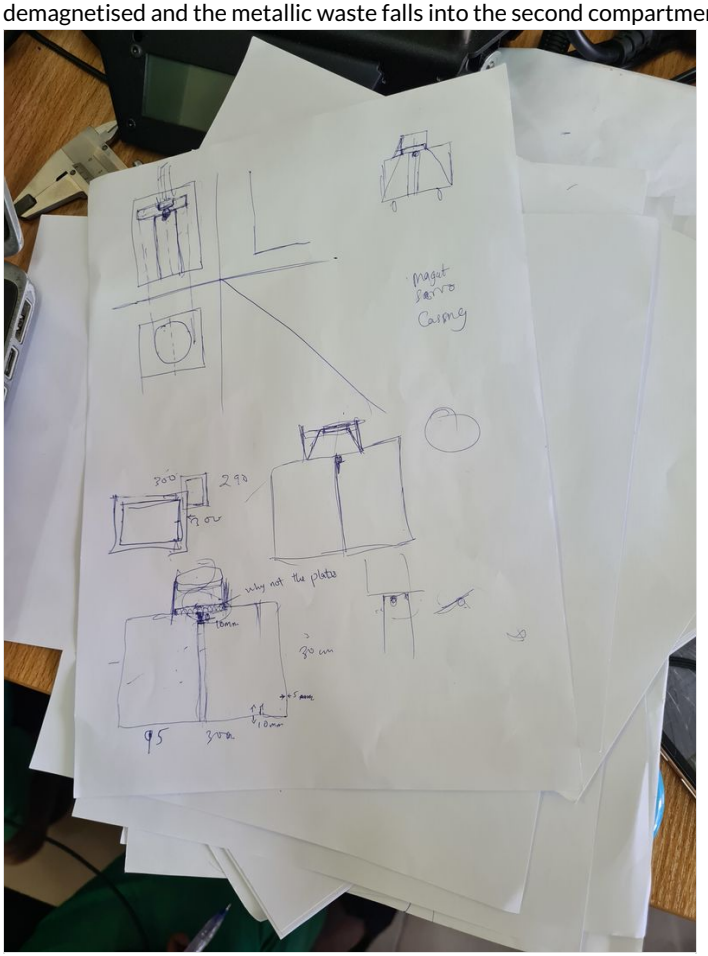
Our goal is to create a bin for separating plastic, metal, paper, organic and other kinds of waste.

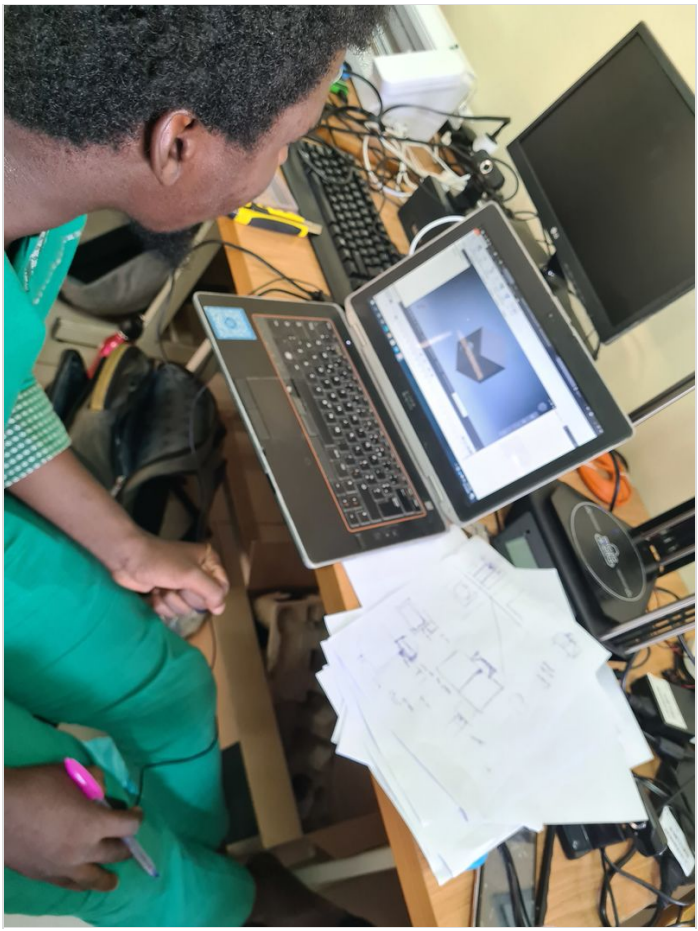
Étape 2 - Design

In this step, we came up with sketches and 3D designs for the smart bin.
The bin would make use of metal detectors, capacitive sensors (for plastic waste) and infrared sensors for organic waste.

Our design is to use each of these sensors to detect the presence of each kind of waste and then place them in their appropriate compartment.

For our prototype, we only detected metallic waste and made use of a magnet. We designed a simplified bin with 2 compartments (one for metallic waste and the other for other kinds of waste). A magnetic tray sits on top of the bin and waste is placed on it. If the waste is not magnetic, it is placed in one compartment, but if it is magnetic, it sticks to the tray. Then the tray is rotated to the second compartment, is demagnetised and the metallic waste falls into the second compartment.





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Étape 3 - Implementation

In this step:

1. We implemented the design for the smart bins
2. We went out to collect waste
3. We recycled some of the waste (plastics) to show new products that can be formed. We created a plastic tray from waste plastic bottle caps. We also created a pipette tube rack.

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https://wikifab.org/wiki/Fichier:Reformers_20201212_152000.mp4

Étape 4 - Results

Notes et références

https://www.researchgate.net/publication/265511623_Waste_Generation_in_Africa_An_Invitation_to_Wealth_Generation