

# GREENING URBAN SLUMS IN DEVELOPING COUNTRIES

## KYCE—Kenyan Youths for Circular Economy

Lydia Mpyisi, Stephanie Musho, Phenny Omondi, Purity Kendi, Lavender Micalo, Kathleen Muraya.



### PERSONAS

We are targeting the people living in Kibera, one of the largest slum in Africa. Most people living in this area are below the poverty line with a daily budget of approximately 1 dollar per day. Kibera hosts close to 170,070 people, yet its size is similar to that of the Central park in New York City. Due to overcrowding, it has been challenging to provide basic needs like sanitation facilities. As a result, waste management has become a huge menace. KYCE is trying to provide a solution to lack of sanitation facilities, unemployment and high cost of living to the people of Kibera.

#### Road side sellers

Waithera is a sole proprietor who sells vegetables on the road side. She generates waste that can be used as raw materials in other processes in stead of being damped in open public areas



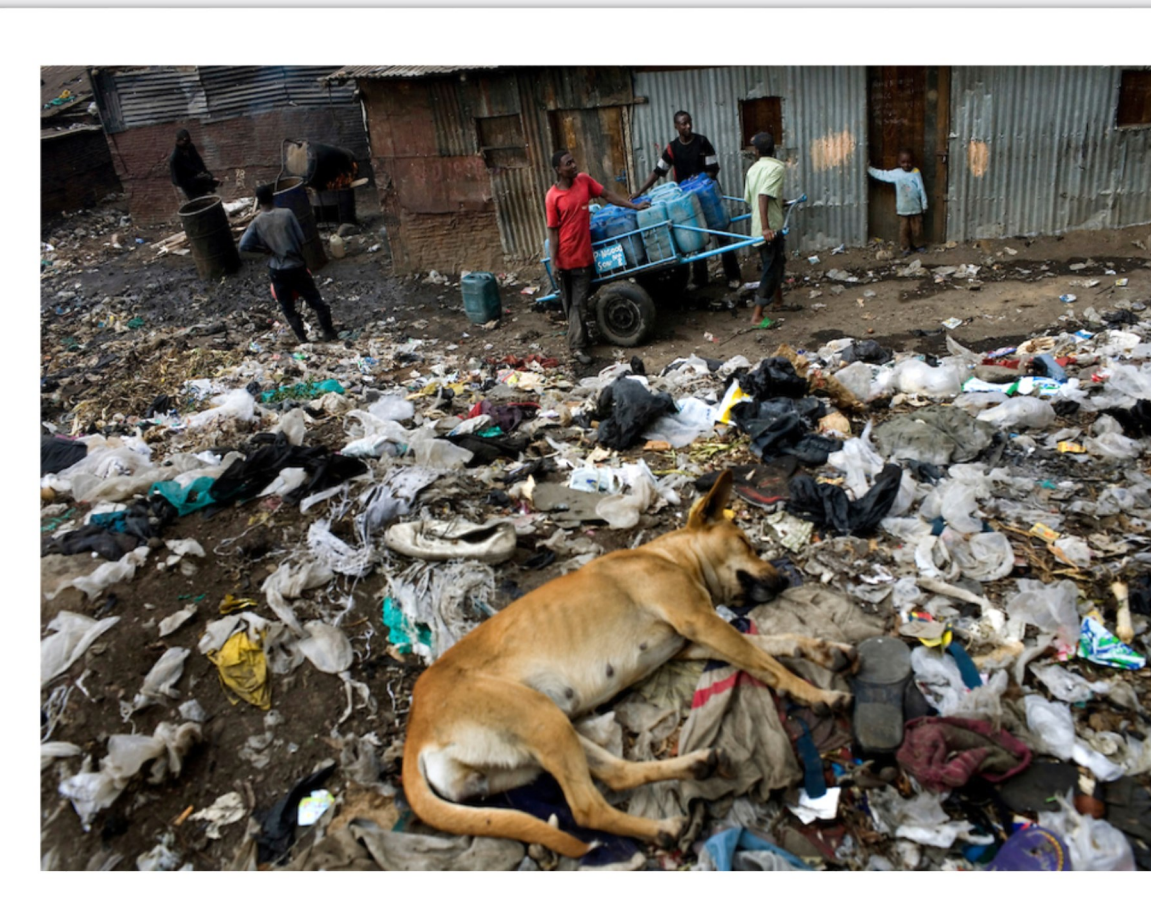
#### Unemployment in the Kibera

'Warui' are local boys who are unemployed. In stead of sitting next to the dumpsite, our project can create employment for them and at the same time, help to reduce the waste in the public areas.

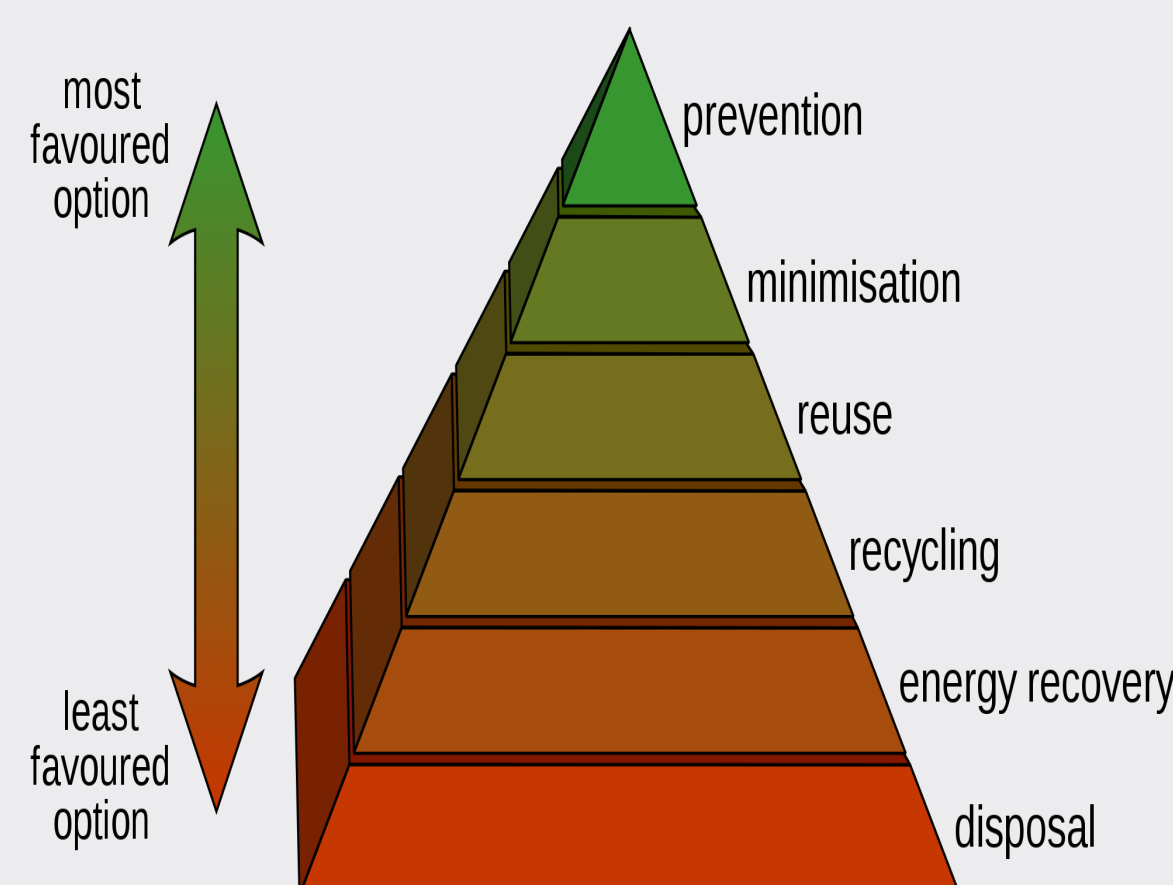


#### Waste management menace in the Kibera slums, located in Nairobi, Kenya

Due to lack of sanitation facilities, waste is dumped in public spaces and people use 'flying toilets' -the use of plastic bags for open defecation, which are then thrown into ditches, on the roadside, or simply



The KYCE project is in line with the circular economy. In addition, it promotes proper waste management. As shown in the picture, this project is in line with the recommended hierarchy of waste management.

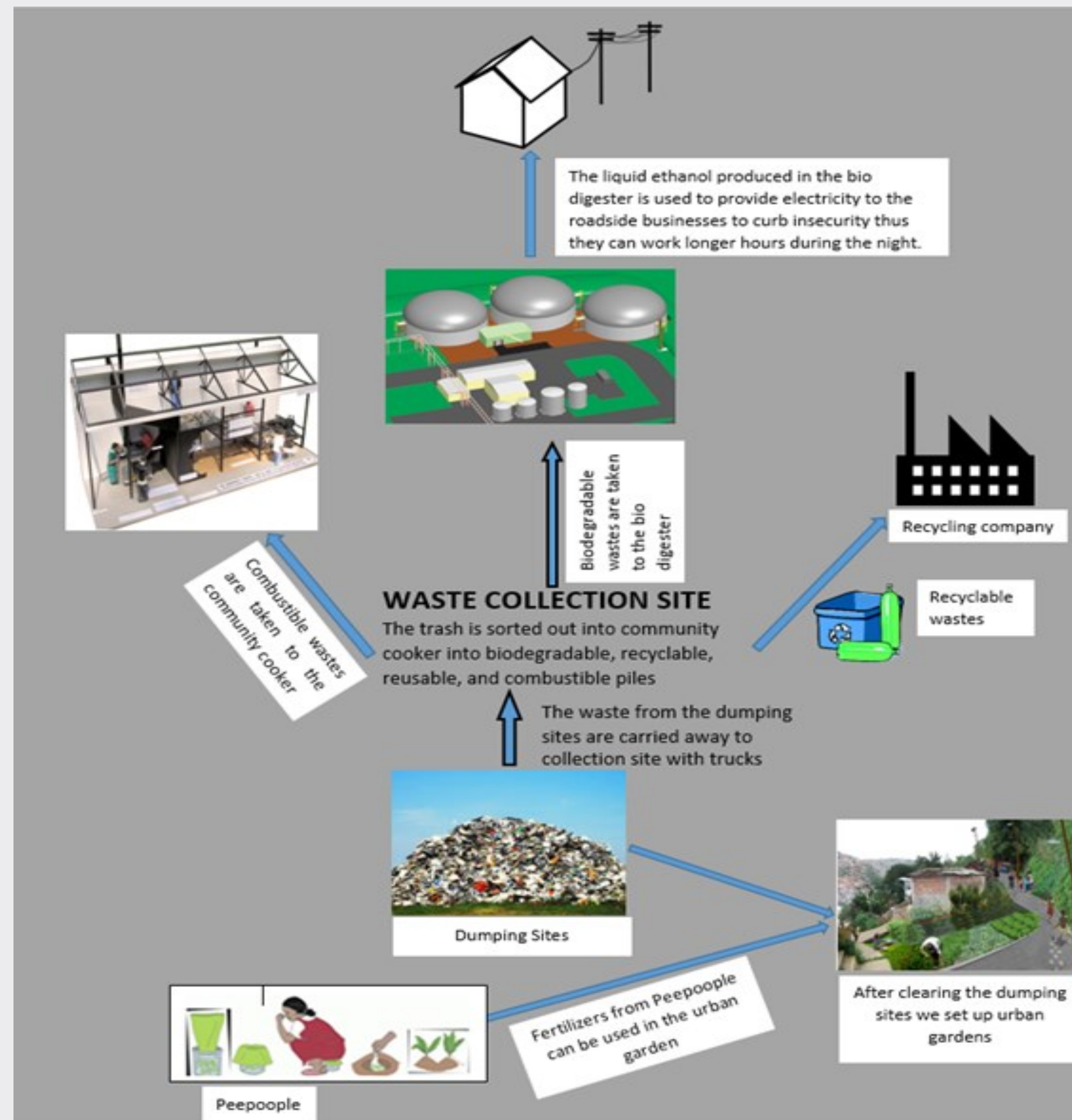


### ABOUT KYCE

Its is really challenging to explain some of the benefits of a circular economy but it is best understood when compared to linear economy. In a linear economy raw materials are extracted from our planet and turned into products that are often disposed after use. A circular economy, however, is a waste-free and resilient design that is restorative of ecosystems, ambitious with its innovation and impactful to the society.

KYCE as a group is trying to create a circular economy design in Kenya and our idea can be adopted by other developing countries. Our plan is to use the already existing independent projects and integrate them in such a way that we shall create a self-sustaining system that will create employment, improve sanitation and hygiene, enhance the aesthetic value of the urban slums, and improve the overall health of the slum communities. The four projects that we shall integrate are: the community cooker, peepoo, community gardens, and bio-digesters. We have chosen Silanga village in Kibera as the prototype since Peepoo and the Community Cooker projects are already existing in this area.

The Community Cooker uses trash, collected by local youth for income, to power a neighborhood, cooking facility. To address the lack of toilets, Peepoo innovated Peepoo, which is a personal toilet that is used to convert human waste into organic fertilizer. Community gardens are pieces of land gardened by a group of people and is used to produce fruits, vegetables, and/or ornaments. Bio-digesters are structures in which organic matter is digested through anaerobic fermentation with the production of a burnable biogas and a nutrient-rich slurry.



### THE SCOPE OF THE KYCE PROJECT

KYCE will work with the locals to set up waste collection and sorting sites. The waste will be sorted out into categories: biodegradable, recyclable, reusable, and combustible. The biodegradable waste will be used a raw material for a bio-digester that will be set up to generate liquid ethanol and biogas that can be used as a source of electricity to the roadside business owners during night hours to curb insecurity. The recyclable wastes will be sold to recycling companies and converted into useful materials that can be resold. The money obtained from the recycling companies will be used to pay the worker at the waste collection site. Wastes that can be re-used will be donated to orphanages or to other members of the slum communities who may be in need of those items.

The combustible waste will be sold to the Community Cooker management crew to be used as a source of fuel for the Community Cooker. The payment from this transaction can be used to fuel the trucks used to transport the wastes to the collection sites. With this approach of waste management, we envision that we will be able to reduce trash and dumpsites that are found in public places in most urban slums in developing countries.

Additionally, we plan to work together with the locals to establish urban and/or community gardens to replace the dump sites. The garden will be used to grow food crops, which will not only provide food but will also provide a source of income to those who will be involved in planting and selling the food. To enhance the growth of food, KYCE will partner with Peepoo to obtain the organic fertilizer that Peepoo makes from human waste. Continued use of Peepoo will help to minimize the use of "flying toilets" and defecating in public places. As a result, there will be improved sanitation in the urban slums.



The picture above shows our vision for urban slums like the Kibera slums. In the context of circular economy, the community garden is a source of food and employment. It is also a means through which we can help improve the sanitation and aesthetic value of the urban slums by replacing the dumping sites.

### Acknowledgements

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