
# E-waste

## *Our fourth hotseat session*

6th July 2022

FOOTPRINTS AFRICA

# About our hotseat series

## What do circular businesses need to grow sustainably?

In building the first and most comprehensive database of well over 500 circular business models, we always ask this question to entrepreneurs. For the most part, the answers are not surprising. [1]

There is one, though, which has cropped up a lot more than we would have predicted. First and foremost, many entrepreneurs want to be connected to other businesses doing similar things elsewhere on the continent. They want to learn from the experience of their peers and get diverse perspectives, whether that be from people who have been there already, who have deep subject-matter expertise, or simply with a different problem-solving mindset.

## The idea for the hotseats

We developed the idea for a series to bring together entrepreneurs and experts and invite them, through rapid-fire questions, to help three people with the thorniest challenges they are facing. We picked four of the themes where we see the greatest numbers of businesses working in parallel across the continent:

- Plastic waste to construction materials
- Regenerative agriculture
- Black soldier fly farming and
- E-waste.

It's in these areas where we see many examples of what we sometimes call 'parallel evolution': where businesses are creating bespoke business models and often seeking different solutions to the same challenges. This means there is huge scope for collaboration.

## The e-waste hotseat

On 6th July we held the last of these hotseat sessions, convening a group of over 50 businesspeople, subject matter experts and investment specialists. We selected three challenges and put them to the wisdom of the crowd. Just as with our previous sessions we were delighted with the intensity of the discussion and the generosity of people's contributions.

We are sharing this writeup so that more people can draw on the insights, and so that the session participants can reflect on them again.[2] We have followed the Chatham House rule (no comments are attributed) so that people could express themselves as freely as they like.

We are grateful to the support of Sitra, the Finnish Innovation Fund, which has made this hotseat series possible.

## Why e-waste?

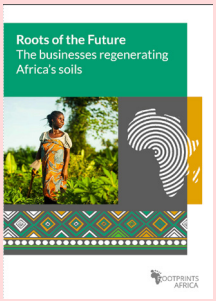
We picked e-waste partly because of the significant number of businesses we have uncovered working in

### Footprints Africa's work on the circular economy transition

At Footprints Africa we are on a mission to prove business can be a force for good at scale. We have an ambitious circular economy programme which maps and measures businesses' circularity and increases their impact across the African continent, as well as our B Corp programme.

Our first report showcasing circular economy businesses across Africa is here:


Our latest report on Regenerative Agriculture is here:




You can find more information and a presentation on our extensive case study work on our site: www.footprintsafrica.co.

1 The Circular Economy: Our Journey in Africa so Far

2 Please note that the content of the summary has been lightly edited for clarity and length.

this area. But we also chose this theme because it's a challenging one in which circular business models and practices have yet to be widely adopted. Globally, e-waste is the fastest growing waste stream. In 2019, for example, it amounted to roughly 53.6 million tonnes, of which only 17.4% was properly collected and recycled.[3]

We know that digital solutions can provide answers to Africa's socio-economic and energy challenges, but digitisation - and the built-in obsolescence of many devices - has its own environmental implications. As a continent, Africa produces very little e-waste - just 2% of the world's total. However, many countries, such as Ghana, Kenya, and Nigeria, have become illegal dumping grounds for the gadgets the rest of the world throws away.

The challenge lies in part how to capture the value in waste materials and prolong the useful life of much equipment that is thrown away. It also involves looking upstream, to aspects of product design and producer responsibility. In selecting the businesses for this session we tried to cover as many of these themes as possible.

## Some useful resources

We also want to share some additional useful resources we have uncovered through our research and preparation for the session:

- Business Blueprints for E-waste Management: A guide to implementing and improving e-waste management for OGS companies, Sofies and GOGLA, 2021
- E-Waste Training Manual, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in collaboration with the Ministry of Environment, Science, Technology and Innovation, 2019
- Policy practices for e-waste management: Tools for fair and economically viable extended producer responsibility - Examples from Africa, International Telecommunications Union, 2021

# The challenges

In preparing the session we received many interesting challenge questions. We chose three that appeal to as wide a business audience as possible, from a business that focuses on treating end of life materials, to one that turns e-waste components into solar lights, to a company specialising in e-waste compensation between Europe and Africa.

The challenges are as follows:

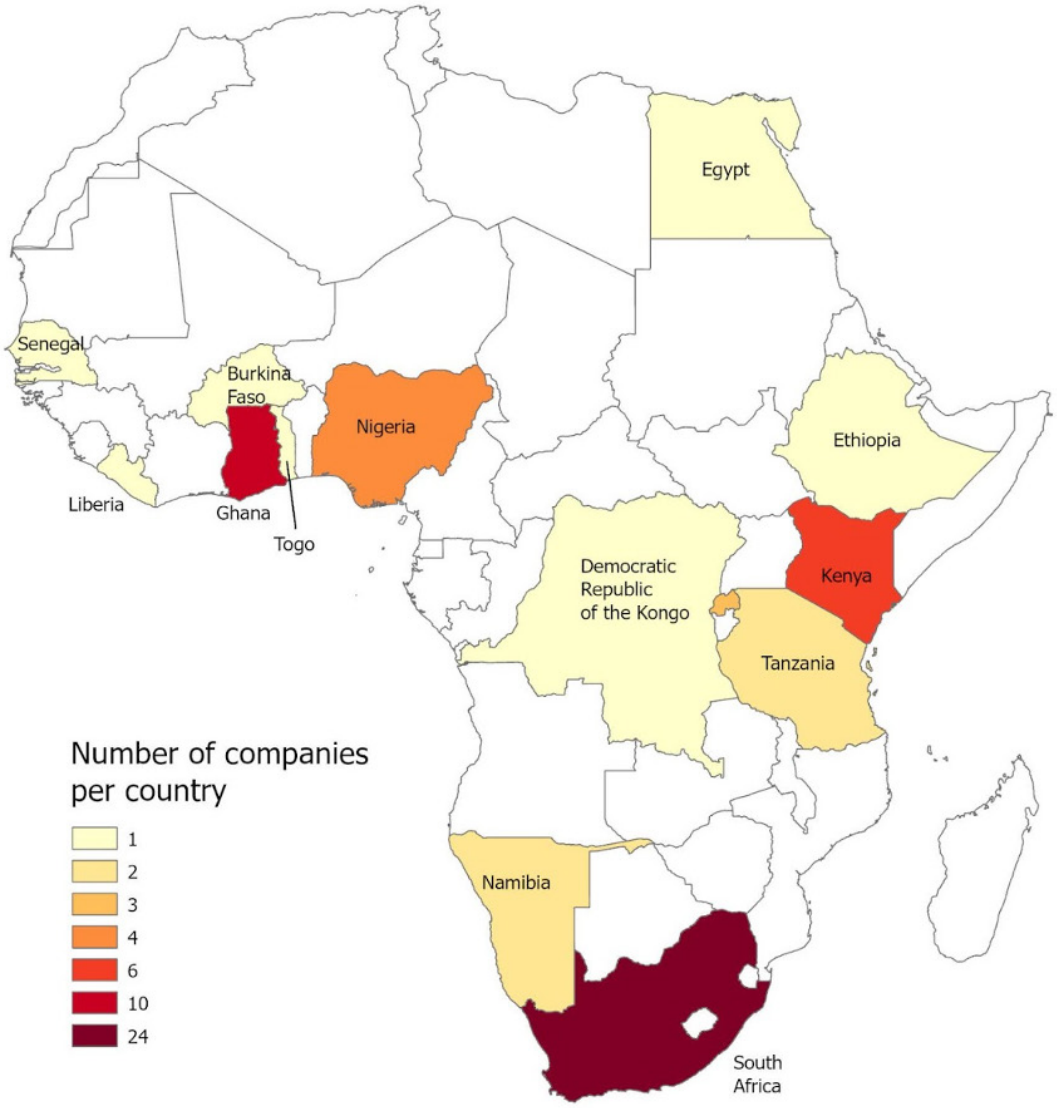
1. **How can we be commercially viable whilst ensuring both low value waste and hazardous materials are effectively recycled?**
2. **How do we ensure a continuous supply of recyclable materials for our product?**
3. **How can we make the real flows (export) of e-waste transparent and direct those flows to local recycling in the future?**

We are grateful to the three businesses for exposing and articulating their challenges, and sharing them with the session's participants.

Waste compensation.
Picture courtesy of Closing the Loop

3 See 'Global electronic waste up 21% in five years, and recycling isn't keeping up', World Economic Forum, available at: https://www.weforum.org/agenda/2020/07/global-electronic-waste-recyclingmanagement/

## Mapping E-waste companies



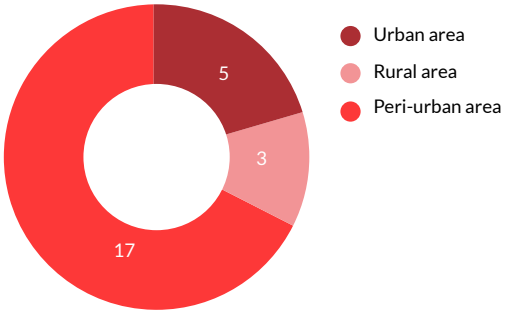

Heatmap courtesy of GRID-Arendal (www.grida.no) plotting the locations of the 58 e-waste businesses we have mapped across the continent to date.

# Profiling the hotseat participants

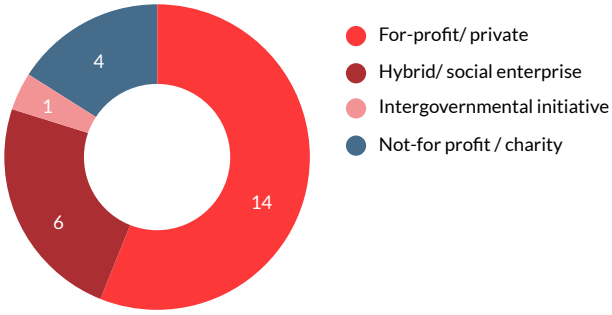
## Survey responses

These figures are drawn from 25 responses by participating e-waste businesses to the Footprints Africa circular economy questionnaire.

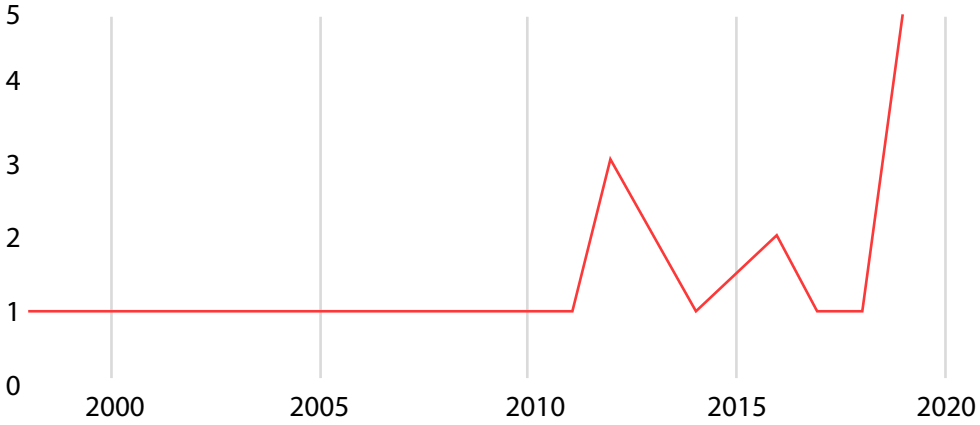
### Context of operations



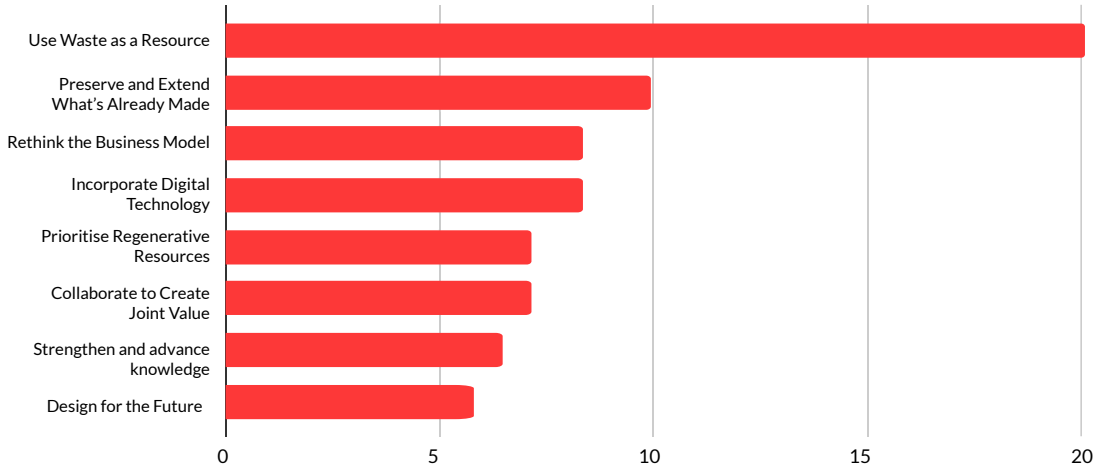

### Business type




### Businesses' start years

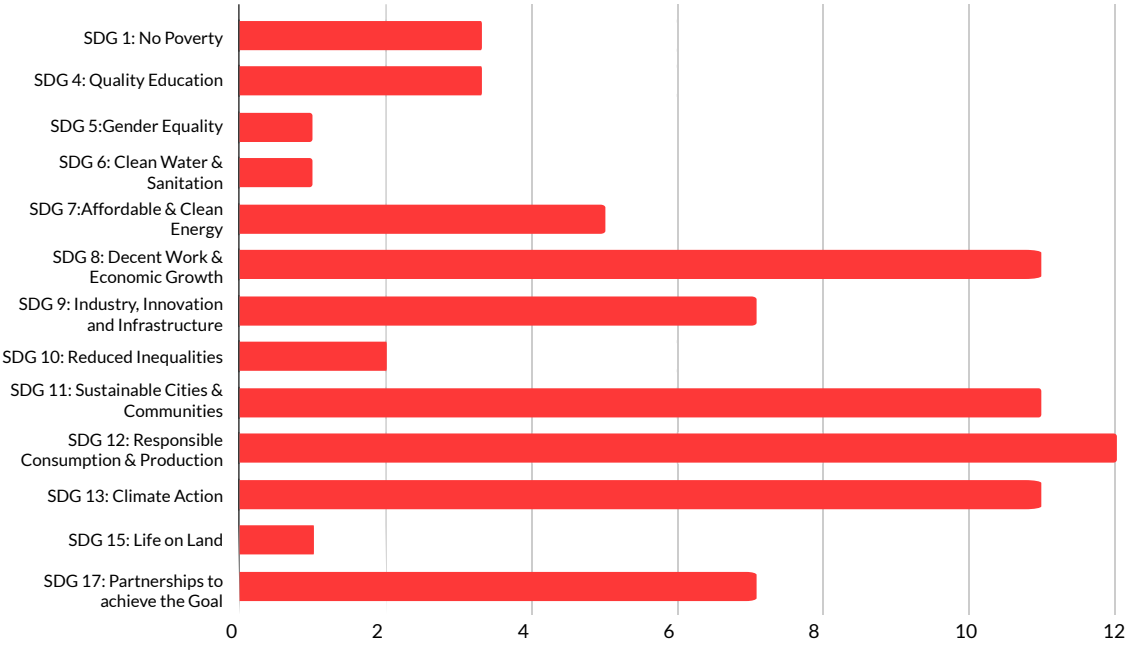



### Circular economy strategies




For our mapping work we use Circle Economy's circular economy strategies as a reference point.

### Priority Sustainable Development Goals

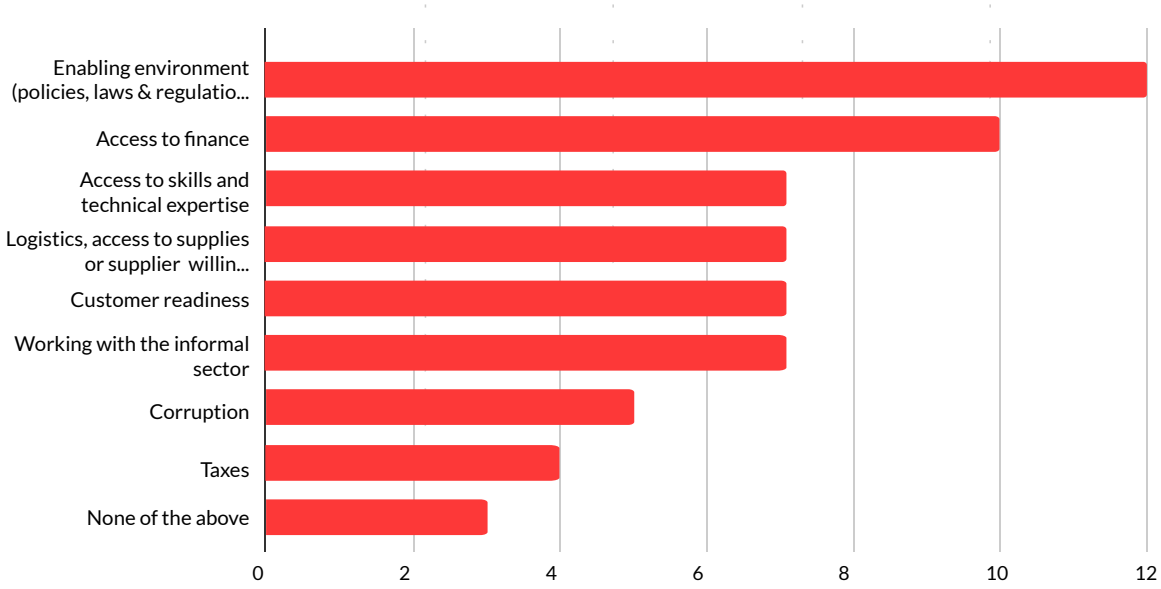



Respondents to the Footprints Africa questionnaire are asked to pick their top three Sustainable Development Goals.

## In-session poll responses

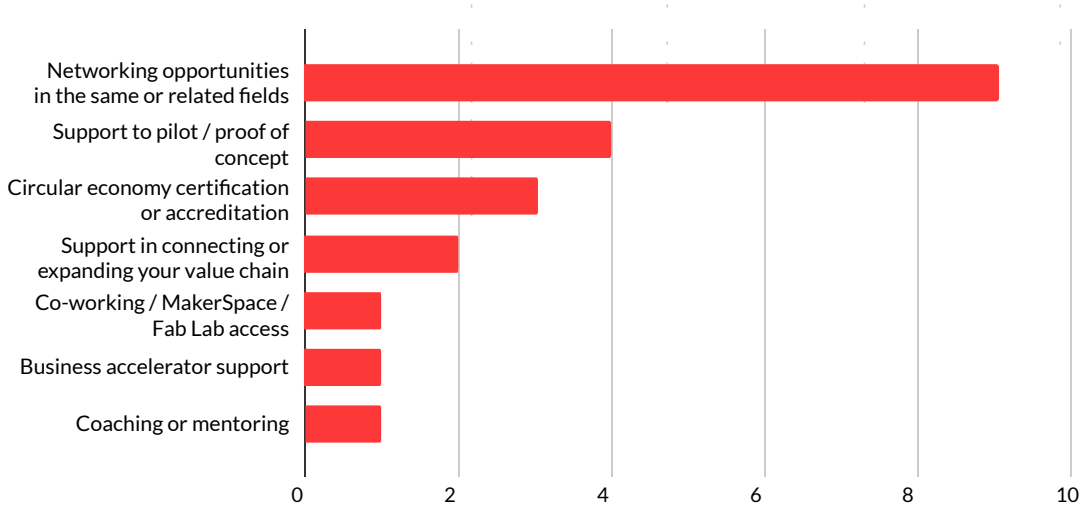
These figures are from 25 responses to the in-session poll.

### Main challenges that businesses face



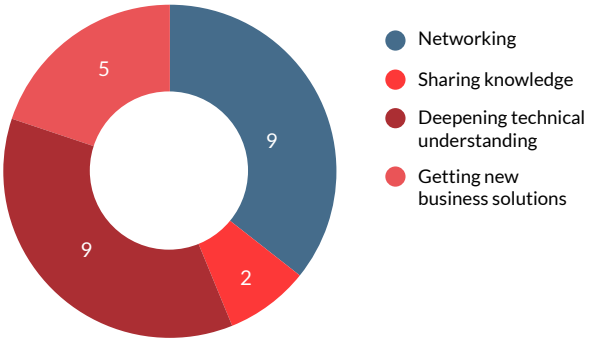

Respondents were asked to pick their top three options.

## Support that businesses say they need

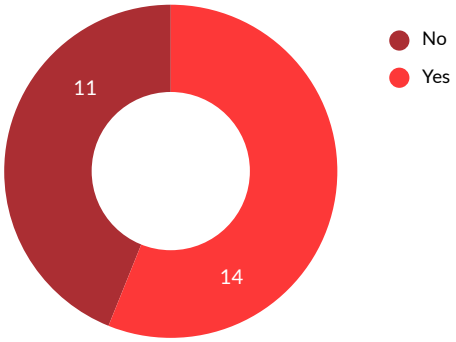



Again, respondents were asked to pick their top three options.

## What businesses found most valuable from this session




## Proportion of participants who are members of e-waste recycling bodies



# Challenge 1

# How can we be commercially viable whilst ensuring both low value waste and hazardous materials are effectively recycled?

## Business 1 description

**Business 1 provides services in e-waste recycling, including secure data destruction, ATM decommissioning, and battery collection.**

Business 1's aim is to establish a self-sufficient recycling sector in East Africa – reducing the region's overall environmental footprint and reducing the region's current reliance on the export of e-waste.

## Background information

- Business 1's main revenue currently comes from secure data destruction.
- Their electronic waste is separated into a large variety of materials. Some provide a more significant recycling challenge, especially in Sub Saharan Africa. These are:
  - » Low value waste such as plastics (over 10% of e-waste) which have little recycling value.
  - » Hazardous materials such as Li-Ion batteries where there are no Africa-based facilities for recycling.
- Landfilling in many African markets is not well managed and hazardous materials often find their way back into the environment.

## The questions that were asked

- Why does the hazardous waste transport licence only apply to end of life equipment and not distribution when the items are new?
- Who could you club together with to collectively propose a more effective solution for disposal of hazardous materials?
- How do you convince companies and institutions to work with you directly? If we're talking about refurbishment of equipment, how do you convince them to give the equipment to you instead of selling it, for example, at a profit or giving it to their employees?
- How much do you go 'back to the source' to discuss the reasons for having to contend with these hazardous components in the first place ?
- In Tanzania there are a couple of other recyclers for e-waste with significant capacity. Have you reached out to them for collaboration?
- How did you finance your operations? Have you considered climate financing as well?
- When will it be possible to do the recycling of Li-ion here in Africa? What will be needed to make this possible?
- Have you considered engaging the legislative bodies with bottom-up pressure for extended producer responsibility (EPR) to support your revenue?"
- How do you compare to others providing this service locally? Are you open to partnering with companies or organisations who might want to sponsor transport and safe recycling of the non-valuable items?
- Are there other recycling companies that you can partner with to have a stronger, aligned business voice to influence EPR policies?
- Seeing as the Li-Ion batteries are proving difficult to recycle in Africa, how are you disposing of those at the moment?
- What other recycling areas are you considering to diversify your revenue base? Perhaps like in Ghana: adding entry level manufacturing, remanufacturing, or assembly ?
- Is it problematic that you continue to not valorise these two kinds of materials while EPR rules evolve or recycling facilities are still not in place?
- Do you think you can be commercially viable as a responsible and legally compliant recycler?

# Challenge 2

# How do we ensure a continuous supply of recyclable materials for our product?

## Business 2 description

**Business 2 is a social enterprise using Electronic waste to develop a solar lantern and solar home systems designed and produced with a lower environmental impact.**

Their process involves harvesting specific materials: E-waste LiPo batteries, Lithium ion batteries, as well as Plastic PET, PE, & PP waste.

## Background information

- Business 2's product is made from 70% recycled materials.
- Two companies in Nigeria collect e-waste and give it to Business 2 for free. Access to batteries is abundant but plexiglass (from discarded monitor screens) is low.
- They have a strategic partnership and profit share with one supplier.
- Accessing materials from the informal sector/ consumers would mean paying for them and impact the business model.
- Business 2 currently does assembly but would like to scale up and purchase machinery that could improve capacity and reduce unit costs

## The questions that were asked

- Is your problem a lack of availability of materials or a lack of access to them?
- Can you jump the step of the waste processor and approach companies to discuss with them how you can upgrade the material and give it a second life? That way you could maybe access more material upstream and give companies assurance on the future use of the products.
- In terms of pricing, how does your product compare to normal lamps made of virgin materials?
- Did you look into alternatives for the input materials? For example, opaque milk bottles or PET as a substitute material? Have you explored potential pre-consumer plexiglass sources ?
- Have you thought about actually not getting your raw material for free, but actually paying for it, to secure this as a supply and also to stimulate the supply from these recyclers?
- Do you consider yourself a producer of new products or subject to environmental legislation in Nigeria? In other words you consider you need to register and pay the end of life cost before the products are placed on the market?
- What products could you make that would be similar but with more high value added?
- Do you think if you buy and you pay for more raw materials that you can produce more lamps and sell more?
- We tend to gravitate towards the biggest sources of e-waste, such as processing companies. Would it be unthinkable to accept deliveries directly from consumers with e-waste, perhaps with some small compensation?
- Have you considered working together with organisations outside of Africa that might be able to help you scale in terms of extra commercial value that might not be seen in Nigeria, but exist elsewhere?
- Can you reach out to any of the equipment manufacturers and see if they would give you their product or equipment for free, or even pay you to take on their equipment to showcase its other African contexts, and show its use?
- How many units would you have to have built and in circulation to take the pressure off this supply challenge that you have?

# Challenge 3

## How can we make the real flows (export) of e-waste transparent and direct those flows to local recycling in the future?

## Business 3 description

**Business 3 offers a waste-compensation service for their customers in the 'developed' world on their (first) steps towards green procurement of electronics.**

Customers pay for the service to make their procured devices waste-neutral. New devices are 'compensated' by collecting and recycling an amount of electronic waste that equals the new device. E-waste is collected using the service fee in countries that lack recycling capacity.

## Background information

- Electronic devices are being used in huge numbers in Africa. Once these become end-of-life and they cannot be repaired anymore, they are stripped for parts, and enter illegal/unregulated trading.
- Valuable parts (such as circuit boards and copper cables) are often smuggled out of Africa to processors around the world. Most of these transports do not have the necessary permits and are not properly documented.
- Operators of recycling facilities do not have a guarantee of a minimum volume of waste and they cannot make their business case because of these illegal exports.

## The questions that were asked

- Have you looked at the business model for engaging communities with different, ethical payment approaches?
- How do you define the difference between the two categories - formal and informal? It's not that easy to see which companies operate in the formal sector and which operate in the informal sector.
- Can you tap into European EPR financing that should be going into recycling but simply isn't because the devices are being shipped to Africa?
- Have you thought about going down the road of an original equipment manufacturer traceability certification ?
- Can you create a financial situation where it is viable to do the right thing, e.g. paying collectors a bigger share when they only collect and return everything to a processor?
- Have you considered pioneering a 'crowd waste mapping' activity to create better visibility of waste sources?
- Is it more than just a matter of price? Is there something that makes the informal system more attractive which needs to be looked into? If so, maybe you can create added benefits - safety, regular supply, or appropriate equipment and disrupt the market in a positive way?
- Have you explored how later stage recyclers, possibly in other geographies, have solved for this? Have they developed their own traceability platforms?
- How might you plan to quantify the 'size of the prize' of converting 'shadow' flows to formal, transparent ones? So that you can propose a better model as well as thinking about it in terms of just enforcement?
- Have you considered approaching those companies whose waste you're receiving 'informally'? Perhaps they have ways at company level to plug the leakages into informal recycling?
- Have you considered interacting with the NGOs that are already working 'on the ground'? It might not be specifically for e-waste; plastic waste is an obvious area where there is a read-across in terms of the challenge and potential solutions.

# Profiling the hotseat participants

## Key details on participants' businesses

| Name | Country/ies | Web |
|---|---|---|
| AppCyclers | Ghana | www.appcyclers.com |
| AST Recycling | South Africa | www.astrecycling.co.za |
| Atlantic Recycling International Systems | Ghana | - |
| Beyond the Grid Foundation | UK | www.beyondthegrid.africa |
| CDC (now British Investment International | UK | www.bii.co.uk |
| Circular Computing | UK | www.circularcomputing.com |
| City Waste Recycling Ltd | Ghana | www.cwmcl0.wixsite.com |
| Close the Gap Kenya | Kenya | www.close-the-gap.org |
| Closing the Loop | Africa, multiple countries | www.closingtheloop.eu |
| DiscoverBrands Systems limited | Kenya | www.discoverbrands.co |
| DSS+ | UK | www.consultdss.com |
| E-waste Initiative Kenya | Kenya | www.ewik.org |
| Ecobring Innovations | Ghana | www.facebook.com/Ecobring-Enterprise-102745078930519 |
| Electro Recycling Ghana | Ghana | www.electro-recycling.com |
| Electronic Cemetery E-Waste Management | South Africa | www.facebook.com/eastcoastewaste |
| ENGIE Energy Access | Tanzania | engie-energyaccess.com |
| eWASA | South Africa | www.ewasa.org |
| Fetola | South Africa | www.fetola.co.za |
| Ghana National Cleaner Production Centre | Ghana | www.ncpcgh.org |
| Green Cities | Liberia | www.greencitiesinclr.com |
| greenABLE | South Africa | www.greenable.co.za |
| Innovate labs | Ghana | www.innovatelabs.tech |
| IoT Network Hub | Ghana | https://www.facebook.com/iotnetworkhub |
| ITAD AFRICA (IT Asset Disposal & Electronic Recycling) | South Africa | www.itad.africa |

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|---|---|---|
| Klaks | Ghana | - |
| M-Kopa | Kenya | www.m-kopa.com |
| Mara Phones | South Africa | www.maraphones.com |
| MavRDC Limited | Tanzania | www.mavrdc.com |
| Quadloop | Nigeria | www.quadloop.co |
| Recyclobekia | Egypt | www.recyclobekia.com |
| Sitra | Finland | www.sitra.fi |
| Smart Eco-Highway | Burkina Faso | - |
| Smartphones4good.rw | Rwanda | Smartphones4good.rw |
| Sustainable Recycling Industries (SRI) | South Africa | www.sustainable-recycling.org |
| Uniquely Recycled & Asset Disposal | South Africa | www.urad-sa.co.za |
| United Nations Environment Programme | Kenya | www.unep.org |
| Wastezon | Rwanda | www.wastezon.com |
| WEEE Centre | Kenya | www.weeecentre.com |
| World Economic Forum | Switzerland | www.weforum.org |
| Zang Technologies Limited | Nigeria | www.facebook.com/zangtechnologies |

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See **www.footprintsafrica.co** for more information on the programmes Footprints Africa runs to support businesses to develop purpose-driven cultures and so empower their employees to improve their social and environmental impact.

Front cover image courtesy of WEEE Centre, based in Kenya.

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