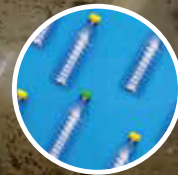




“ECO-CONSCIOUS KOFI AND AMA”



Experiments By UNDP Ghana’s
Accelerator Lab On Plastics
Segregation And Recycling



Co-building the Accelerator Labs as a joint venture with:



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Author

Allen Joseph Anie

About the UNDP Accelerator Labs

The United Nations Development Programme (UNDP) Accelerator Labs is the world's largest and fastest learning network on wicked sustainable development challenges. Co-built as a joint venture with the Federal Ministry for Economic Cooperation and Development of Germany and the Qatar Fund for Development, the network covers 115 countries, and taps into local innovations to create actionable insights and reimagine sustainable development for the 21st century.

Learn more at acceleratorlabs.undp.org or follow us @UNDPAccLabs

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Introduction

Ghana's production of waste is rising rapidly, along with an increasing population and expanding economy. It is estimated that 75% of solid waste is simply discarded and [just 5%](#) of the 1.1 million tons of plastic waste Ghana generates annually is recycled, contributing to poor sanitation and pollution.

This waste could be described, more accurately, as material in transition - much of it is recoverable. With an estimated value of US\$ 15 billion, there is huge potential for a circular economy. Recycling is a key element of [Ghana's approach to managing plastic waste](#), but despite some good practice in plastic waste management, as set out in the [Roadmap for Radical Reduction of Plastic Waste in Ghana](#), the current reality presents a significant development challenge.

To respond to challenges such as this, the United Nations Development Programme (UNDP) has set up an innovative network of [Accelerator Labs](#) across the globe, including in Ghana, to identify, test and scale up solutions to developmental challenges.

In synergy with other initiatives by the UNDP in Ghana, such as the [Ghana Waste Recovery Platform](#) (which is facilitated by UNDP), the UNDP Ghana Accelerator Lab (AccLab) has been identifying, mapping, and experimenting with grassroots solutions for waste management, and applying various methodologies to understand the circular economy including behavioural insights, collective intelligence, and ethnography.

One such solution is a plastic recycling scheme, through which homes and businesses can deposit their recyclable plastic bottles in branded containers, at selected fuel stations in Accra. The AccLab has used behavioural insights methods to design experiments which focus on driving changes in behaviour, increasing take-up of plastic recycling and thus improving waste management.

Recycling is not an entirely new concept in Ghana. Some communities have always re-used items – including plastic bottles. Indeed, there is an informal community which goes from house to house collecting plastic waste, for free or for a fee. But can informal solutions cope with volumes of plastic waste being collected?

In line with an ethos of growing portfolios of mutually reinforcing solutions to tackle complex challenges from multiple angles and accessing more diverse data about development challenges, the AccLab collaborated with the Ghana Waste Recovery Platform and [Young Reporters for the Environment](#) (an NGO) to launch an online [Let's talk about recycling](#) survey. The survey results provide primary data about some of the complex issues affecting waste-management, particularly recycling.

Furthermore, the Accelerator Lab collaborated with [Tro-Tro Diaries](#) (an online community on Facebook with around 400,000 members in Ghana and West Africa) to generate conversations about how plastic waste is affecting communities.

Understanding the context: “Let’s Talk About Recycling” survey

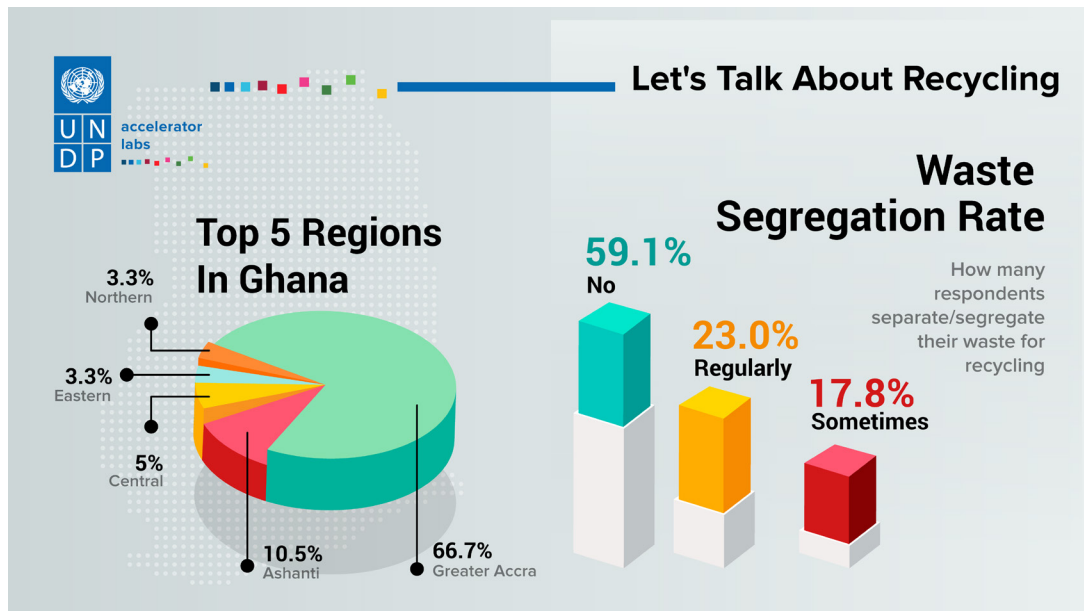


Fig 1: Respondents by region & Waste Segregation Rate

The Accelerator Lab conducted an online survey to collect data on segregation and recycling, particularly of plastic. This report highlights some key results. An infographic and full set of results is [here](#).

There were 405 respondents to the survey, most of whom live in the Greater Accra (67%) and Ashanti (11%) regions of Ghana, with 45% being female and 53% male (2% did not answer this question). 41% said they segregate their waste at least sometimes, but the majority (59%) do not. 77% said their communities are badly affected by plastic litter to at least some extent.

Results suggest that households and businesses prefer their recyclable waste to be collected at their doorsteps, instead of taking it to recycling points. Typically, this is linked to issues of *accessibility* (location of recycling points), *affordability* (perceived costs of the journey to recycling points - including time), and the existence of *alternatives* (including whether there is a recyclable waste collection service in place).

Who segregates what?

23% of respondents said they segregate their waste regularly – we call them Eco-conscious Kofi and Eco-conscious Ama!. Those who segregate support different economic activities including food-processing and the creative sector. Some give glass waste to craft companies who produce traditional glass bead jewellery; compost food waste into manure for farming; sell or give plastic bottles to juice-makers who bottle sobolo (a hibiscus-based drink); and donate plastic waste to youth-led recycling schemes for making school bags, as well as other recycling schemes.

Which recyclable materials are generated and segregated daily?

36% said plastic, but many would also like to segregate paper, glass, electronics, and food, suggesting opportunities for green entrepreneurs. Some of the respondents said;

“There should be facilities for people interested in electronic hobbies to salvage parts for makerspaces. (Greater Accra)”

Organic waste (cocoyam, plantain, yam) can be sorted and sent back to gardens or farms. (Ashanti)”

However, efforts to segregate are sometimes hampered by errors in handling waste.

“Personally, I will segregate waste 24/7 but the eventual collectors do not, they collect everything into the same thing- that is the problem. (Greater Accra)”

I put the plastic bottles in a separate bag and give it to the company that collects our rubbish. Sometimes I see they add it to the general rubbish. (Greater Accra)”

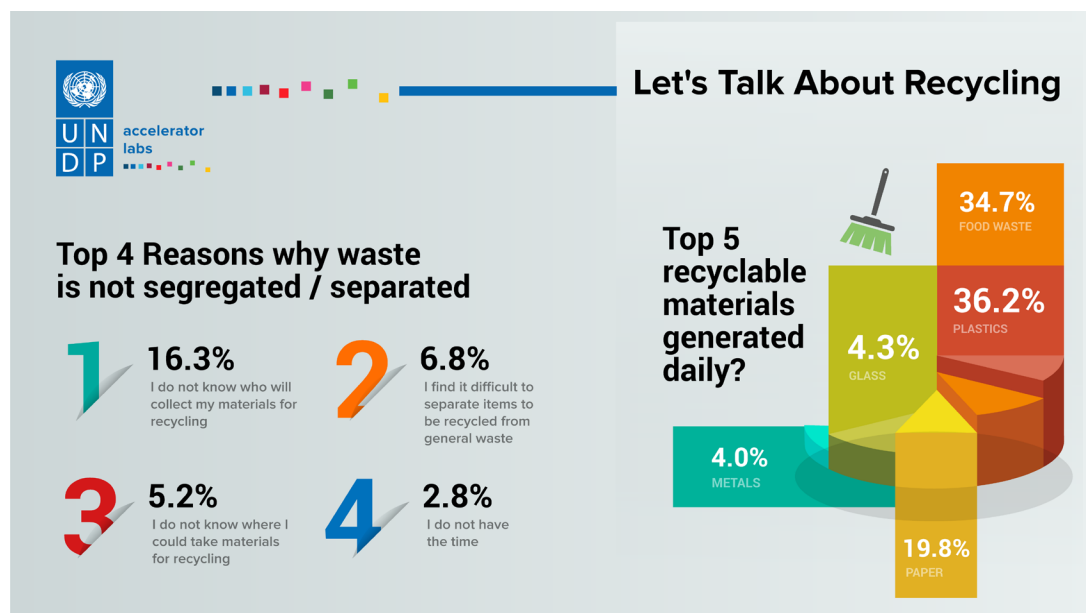


Fig 2: Why waste is not segregated & Recyclable materials generated daily

Community recycling point or pick-up service?

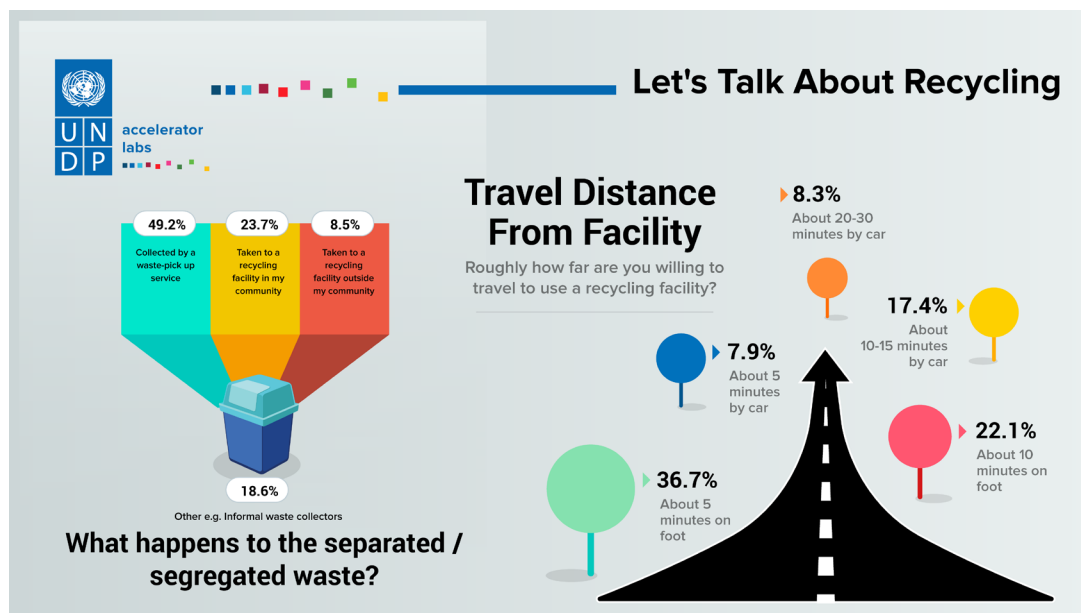


Fig 3: What happens to segregated waste & How far are you willing to travel to a recycling facility?

About 50% of those who segregate waste have it collected by waste pick-up companies. 32% go to recycling facilities, and the rest rely mainly on informal-sector waste collectors.

Zoomlion (Ghana) Limited was most often mentioned for waste pick-up. SME's, including Sesa Recycling, Coliba, Jekora Ventures and Nwura Asa were also mentioned.

There are huge quantities of catering waste (plastic bottles and polystyrene containers) generated at large social events in Ghana, particularly funerals. Several catering businesses who responded to the survey, called for practical support to recycle this waste.

About 60% of respondents said they would only travel up to 10 minutes on foot to use a community recycling facility suggesting a strong preference for either a collection service, or recycling facilities located close the communities.

Informal-sector

Respondents highlighted the significant contribution informal sector waste-pickers and collectors make to recycling, but said they should be organized better and supported, given the potential for recycling to create jobs and stimulate local economies. However, some pointed to low incomes from waste-picking (an average of 50 pesewas from selling 1 kg of plastic) as a disincentive.

What would make segregation and recycling easier?

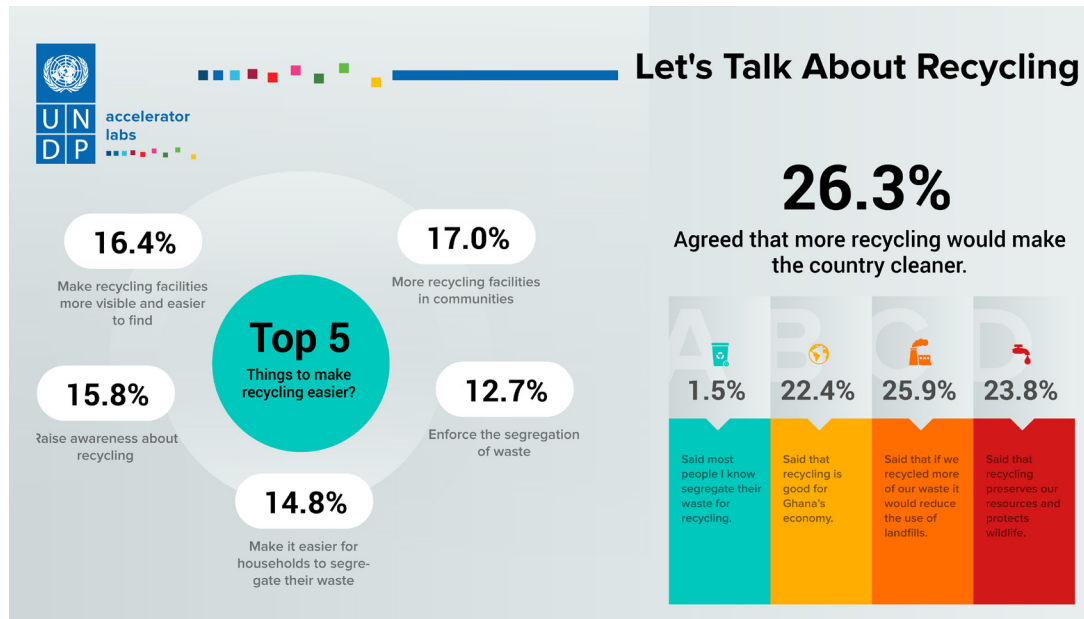


Fig 4: Making recycling easier & Benefits of recycling.

The survey asked respondents what would make segregation and recycling easier? The top 3 things are: more community recycling facilities (17%); making facilities more visible and easier to find (16.4%) and increased awareness (15.8%). Further analysis of the data showed that the lack of affordable bins, and lack of accessible collection and recycling facilities are particularly acute challenges outside Accra. Some respondents noted:

“Big companies should provide recycling bins at low/no cost or things will not change. (Greater Accra)

Assemblies should ensure we know where facilities are - make them easier to access without a car. Are there any outside Accra? (Greater Accra)

I live in a peri urban community. There is no recycling centre in the whole district – about 30 km from Kumasi. (Ashanti)”

Just about 1 in 4 respondents (26.3%) said that more recycling would make the country cleaner.

To raise awareness about segregation and recycling, many respondents suggested using more Ghanaian languages and less English in public campaigns, and tailoring communication to suit different levels of environmental awareness in communities. This could be a combination of repeated public-education campaigns to get basic messages across, and gradual education of communities about more complex concepts, for example benefits of recycling.

Incentives

Only 10% of respondents said they would only recycle if they were paid to, but many suggested incentives including pay-back or points-redemption, to cultivate and sustain segregation habits.

“Some token amount to people, especially young children, and youth, for bringing a certain quantity of pure water sachets, plastic bottles, old shopping, and fertilizer bags, to the recycling containers. (North East)

Nwura provides points for households who sort their waste, retrievable in cash at a point in time. This has encouraged more households to sort their waste.” (Western)

Provide some incentive for the recycling bins to be emptied regularly. We see such bins overflowing ... making all around very filthy and defeating the purpose for providing [them]. (North East)”

Online conversations to generate data about plastic segregation and recycling

To generate additional insights about plastic segregation and recycling, the AccLab collaborated with the Tro-Tro Diaries online community, to frame questions for 4 weeks of online conversations. The online conversations reached 19,500 members of the online community with about 2150 commenting.

The main question was “Is our community badly affected by plastic litter or are we just exaggerating?”

This generated a lot of [comment](#) from the online community, including broad agreement with the proposition that communities are badly affected by plastic litter, but also specific examples pointing to awareness of the link between gutters choked by plastic and flooding, whether in Accra or other cities like Koforidua.

Behaviour was often cited as a key part of the problem, whether consumer behaviour where buyers accept or except their purchases to be placed in many plastic bags, or where people dump their waste in public spaces.

As one comment describes:

“Badly affected but yet you buy toothbrush, and you request plastic bag, you buy [energy drink] in Tro-Tro [another] plastic bag, yoghurt [and] pie, pie gets its own plastic bag, yoghurt gets its own plastic bag, then they both get overall plastic bag”.

Another comment on the online conversation was:

“Exaggerating??? If it rains in Koforidua and the gutters overflow, that’s when you will realize how serious this thing [plastic litter] is”

“Badly affected and that is the cause of most of the flooding in Ghana, because most of the gutters are choked with plastic”.

Applying Behavioural Insights to Plastic Segregation and Recycling

Background

The *Let's Talk about Recycling Survey and Online Conversation* point to contextual factors that may make it more or less likely that people in Ghana will segregate their plastic for recycling, including whether facilities to deposit segregated plastic are conveniently located or whether waste-management companies provide a reliable collection service from homes.

However since segregation and recycling of plastic is not mandatory in Ghana, it is important to understand the choices individuals make about post-consumer plastic, and how these may manifest as patterns of behaviour. The AccLab conducted 4 focus groups in communities to understand these behaviours, and data from the focus groups points to different behavioural archetypes of recyclers. Archetypes help to describe the typical motivations and attitudes of those who recycle – and include “*Eco-conscious Kofi*”, “*Maybe Mansa*” and “*Just-passing Ama*”. *Eco-conscious Kofi* is a generally eco-conscious Ghanaian, often working in a professional role in the waste-services sector, an expatriate, or a Ghanaian who has returned home after living overseas, with exposure to recycling schemes. Recycling is established behaviour in this group. *Maybe Mansa* is often an avid browser of social media, and publicity and advocacy about recycling on social media may be the trigger to visit the recycling point. However, recycling by this group is only intermittent. A *Just-passing Ama* only recycles when they happen to be close to the recycling location and it is convenient – which in some cases is about every 3 months or so.

The purpose of applying Behavioural Insights was to understand what it takes to shift people from being a *Just-passing Ama* to a *Maybe Mansa* or better still an *Eco-conscious Kofi* and hence increase quantities of post-consumer plastic deposited in recycling bins.

The AccLab designed a set of “nudges” (easy and low-cost suggestions) to encourage and accelerate recycling behaviour, as part of a process of experimentation. This is one [example of how the UN system is deploying behavioral approaches](#) to tackle development challenges.

Experiments were co-designed with GRIPE (Ghana Recycling Initiative by Private Enterprises), Coliba Limited (a recycling start-up), and Total Petroleum (Ghana) Limited, and took place at selected fuel service stations under an existing *iRecycle* project, where people can deposit PET (polyethylene terephthalate, the most common thermoplastic resin used in containers for liquids and foods) plastic bottles in recycling bins.

These fuel stations are behavioral hotspots, where the primary activity, *refueling*, can be reframed, to include other decisions, such as whether to shop at an onsite convenience store, service the car, and deposit plastic. Typically, waste pickers collect plastic from the bins for sale to aggregators and recyclers. The plastic deposited is a *no/low-cost* input for waste-pickers, aggregators, and recyclers, supporting livelihoods along a value chain which links the informal and formal waste sectors.

While arrangements under the *iRecycle project* worked well initially, amounts of plastic deposited declined over time. At one station *Osu*, bins that were previously full enough to be emptied twice a week, only needed emptying twice a month. As use of the bins declined, waste-pickers reverted to picking plastic off the streets. Since segregation and recycling are learned behaviors, this was an ideal opportunity for the AcCLab to test if applying BI could increase use of the bins, by shifting social norms from *'plastic waste is a national problem - for Government to solve'* to *'plastic waste is also a local problem – which local people have a key role in solving'*.

Context and Archetypes

Following the initial focus groups, the AcCLab organized additional interviews and workshops with waste pickers, recycling start-ups, those who segregate, and those who do not. Segregators said that locating bins at the fuel stations enables them to combine segregation with buying fuel, making it easier to sustain their segregation habits, but they had concerns about bins not being emptied regularly and creating litter. Those who do not segregate highlighted the lack of awareness about where to take segregated plastic to, corroborating results of the *Let's Talk about Recycling* survey. An inspiring group of female pensioners, who are also waste pickers, described how many of the youth had abandoned waste-picking because of declining incomes, but these pensioners saw waste-picking not only as a source of income (albeit low), but an important way to maintain physical and mental activity and a sense of purpose during their retirement.



Fig.5: Throwback (pre-Covid) pictures – workshops with waste-pickers and station staff

Workshops enabled co-creation and refinement of behavioral archetypes (personas) to describe typical motivations of segregators including the active (Eco-Conscious Ama and Kofi) and *intermittent* (Just-Passing Ama and Maybe Mansa), as well as *those who do not segregate* (No Chance Omar). Based on this, an information intervention was designed, to encourage segregation, targeting a 10% increase in plastic deposited, based on the framework below.

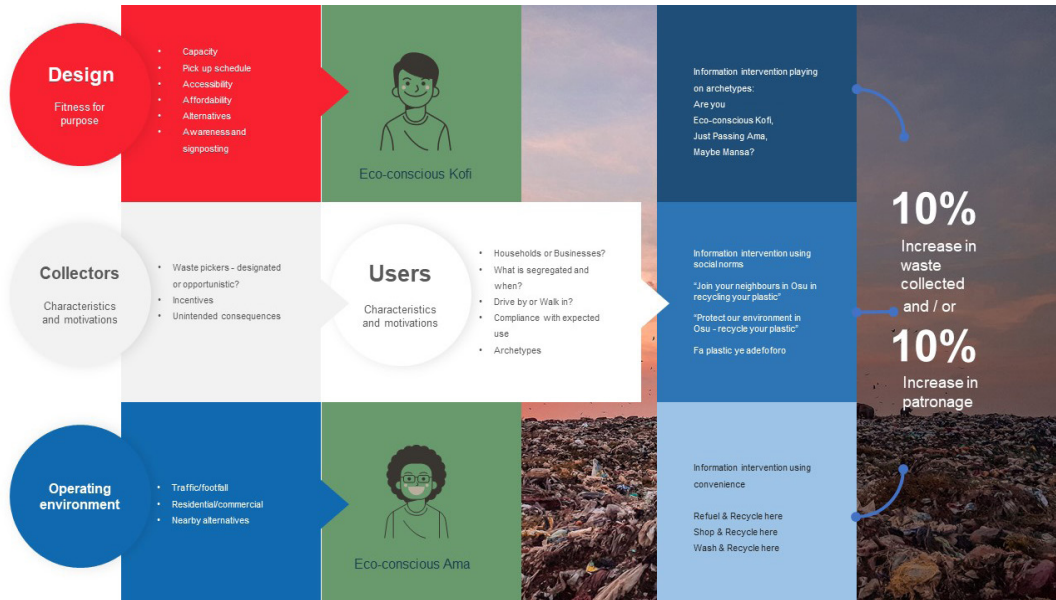


Fig.6: Framework for information intervention



Fig.7: Eco-conscious Ama Archetype



Fig.8: Eco-conscious Kofi Archetype (Source: UNDP)

Small billboards were designed and mounted near bins at two stations East Legon and Osu.



Fig.9: Osu Billboard (Source UNDP).



Fig.10: Customer at East Legon bin (Source UNDP)

Results of the experiments

Over 3 months in late 2020 and early 2021, quantities of plastic deposited, and perceptions of existing and potential segregators, were studied. In total just over 1 tonne of plastic bottles was deposited at the 2 sites. At East Legon, almost 750kg was deposited, about 59kg weekly, and an average 18% increase above a pre-intervention baseline of 50kg weekly. At Osu, almost 300kg was deposited, about 23kg weekly, and an average 44% increase above a pre-intervention baseline of 16kg weekly. Bins were also monitored at two similar “control” locations, where amounts of plastic deposited did not vary much or showed some decline, over the experiment period. These are very positive outcomes, particularly as they were achieved without financial or other incentive systems, pointing to untapped potential for segregation and recycling among households and businesses, and opportunities for green entrepreneurs and investors.

At the experiment sites, bins were often full, and excess plastic was bagged separately. Over time, some segregators reported secondary behavioral effects, as their family and friends began to segregate their plastic.



Fig.11: Bins at East Legon

What worked?

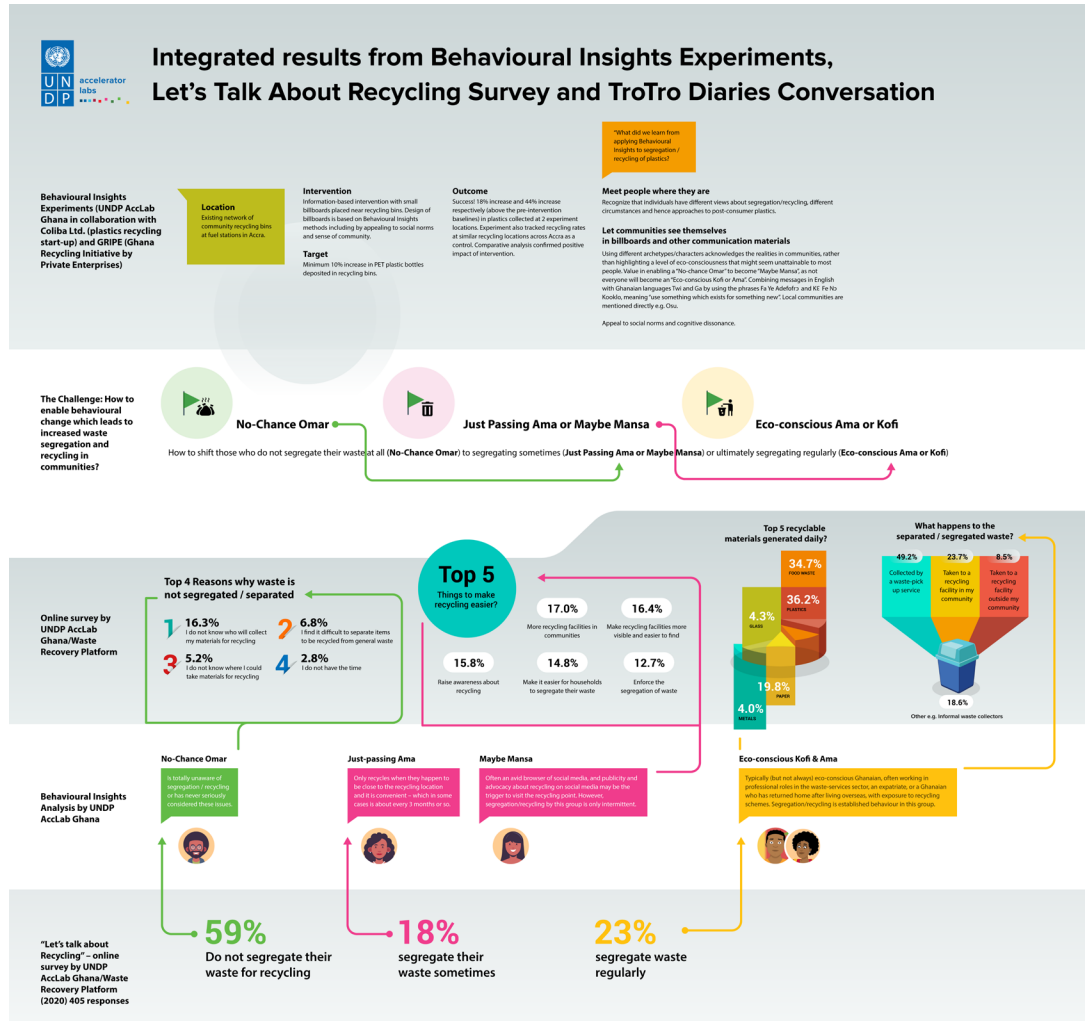
Success factors include:

- Co-creating and situating archetypes in local contexts:* The archetypes helped people to see themselves in context, situating the plastic issue at an individual and community level, not just nationally or globally.

Billboards combined English with Ghanaian languages Twi and Ga, using the phrases *Fa Ye Adefofɔ* and *Kɛ Fe Nɔ Kooklo*, meaning “use something which exists for something new”. Local communities were mentioned directly including “*Osu Man Bii* [meaning people of Osu] – Don’t just throw your plastic away”).

- Cognitive dissonance:* We juxtaposed Ghana’s Independence Arch in the background and litter in the foreground, suggesting gaps between aspirations for clean communities and current realities. For some, this was a trigger to pay attention.

The infographic below triangulates the experiment with results of the AcclLab's “Let’s Recycle” survey and the [Conversation on the Tro-Tro Diaries](#) online community.



Recommendations

1. The 'Let's Talk about Recycling' survey, Tro-Tro Diaries Online Conversation and Behavioural Insights experiments provide multiple perspectives on the potential for a circular economy, and associated opportunities and challenges. The infographic of integrated results captures key data and linkages. These are rich sources of data and knowledge, to help individuals, as well as public and private organizations to design successful plastic segregation and recycling schemes in Ghana.
2. While plastic deposited did increase following the experiment, segregation habits can lapse if bins are few and inaccessible – two concerns that came up clearly in the 'Let's Talk about Recycling' survey' and the Behavioural Insights experiments. It is important to develop more networks of well signposted bins, particularly outside Accra, and the data suggests opportunities for the private sector to invest in developing these networks of bins, particularly where they are innovatively co-located with other services including shops and fuel stations. Feedback from the experiments shows that people are more likely to develop segregation habits if these build upon and reinforce existing habits including buying fuel and shopping.
3. Overall, there is understanding of the harmful effects of plastic pollution, including in the TroTro diaries Online conversation, where respondents made the link between gutters choked with plastic and flooding in some of Ghana's big cities. However, while there is awareness, individuals continue to make choices which exacerbate the very problem they recognize, including by overusing plastic bags and casual littering. This suggests that raising awareness is not enough on its own. Instead, as the experiments show, the use of carefully designed communication, incorporating behavioural approaches, can be used to trigger behavioural change. The archetypes developed for this experiment including Eco-conscious Kofi and Ama and No-Chance Omar could be further developed and modified to support efforts to achieve behavioural change.
4. Enabling Maybe Mansa to become Eco-Conscious Ama is great but enabling No-Chance Omar to become Just-Passing is also significant. Recognizing incremental behavioural change should be a key part of awareness raising, as idealized levels of eco-consciousness often portrayed in advocacy can appear unattainable. There is scope to expand this behavioural approach across more sites, and to modify messages in line with local priorities.
5. Among the active segregators and recyclers (the Eco-conscious Kofis and Amas) there is interest in making things from segregated material, and not only plastic. There are opportunities for the private sector to decentralize capacity to process plastic and other materials, for example using mobile shredders, which could then enable individuals to take up entrepreneurial activities and begin trading and creating jobs locally.
6. With rapid growth in post-consumer plastic, it is also necessary to develop uses for plastic-waste at scale, including through sustainable construction.
7. To achieve true behavioural change, these messages must also be customised for children and youth, including through products such as this UNDP Accelerator Lab (Ghana) [animation](#), so that environmental awareness is developed at an early age, enabling the younger generation to play a key role in achieving the change we want to see.





United Nations Development Programme

UN House No. 27 Ring Road East,

Tel: +233 302 215670-83

Website: www.gh.undp.org

E-mail: registry.gh@undp.org

Facebook & Twitter: @UNDPGhana

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