ASASE
RESILIENT AND SUSTAINABLE COMMUNITIES

White paper

The role of recycling in tackling plastic packaging pollution in the Global South

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1. Packaging enables access to safe and affordable food and water to everyone who needs them

In both Global North and Global South, packaging plays an essential role in delivering food and everyday stapples for billions of people across the globe.
And even if it is from different reasons, in both global regions there are also unsolved challenges related to its end-of-life – in other words what happens to packaging after it is used. This is the case especially in case of plastic packaging which is one of the major contributors to a growing problem of plastic pollution. Today, globally only 9% of plastic waste is recycled, meaning that the rest 91% ends up either in landfill, incinerated or leaking into the environment (OECD, OECD Global Plastic Outlook Database, 2022). Increasing the circularity of plastic, the model in which materials remain in circulation longer for example by recycling, is extremely important both for avoiding plastic pollution, and for recovering the value from used packaging materials.
Providing solutions for plastic recovery after consumer use is key for packaging sustainability as the volume of plastic packaging globally is expected to keep growing, and the growing demand is mainly driven by population and GDP growth in emerging markets. (Charles, 2023). The global annual plastic production is around 460 million tons (OECD, OECD Global Plastic Outlook Database, 2022), of which plastic packaging accounts for roughly thirty one percent. (Statista Research Department, 2023) (Charles, 2023).
However, what has not kept up with the speed of plastic consumption is the development of the related waste management capacity, and subsequent value regeneration. The most dramatic consequences of this are witnessed in the Global South where plastic recycling is hindered by lack of sufficient collection, sorting and recycling infrastructure as well as capacity building and extra burden is brought by waste exportations from the Global North. (Kwakwa V. & Garcia Mora, 2021)
This White Paper examines solutions to increase plastic packaging circularity, especially in the Global South, where the value of packaging for the development of society is undeniable, but also where plastic pollution is one of the biggest environmental burdens. The paper introduces the barriers and levers for change and presents the ASASE Foundation case study with a proven, scalable solution.

2. Improving packaging circularity is high at the agenda in global decision making forums

Solving plastic pollution is an urgent element in the combat against climate change and nature loss. From a climate change perspective losing plastic packaging to waste instead of bringing it back to the loop is a waste of financial and natural resources. What is more, plastic pollution endangers both aquatic and terrestrial lives, including all forms of life, making it detrimental for nature.
The massive scale and impact of the plastic pollution have fueled governments, industry, and other stakeholders to act, and the global community is expected to agree with an urgent schedule on the key actions to tackling this challenge.
In 2022, two major milestones were reached in the fight against the plastic pollution. First of which is the decision to start developing a legally binding UN Treaty on Plastic Pollution which aims to address the full lifecycle of plastic and second of which is, the Kunming-Montreal global

biodiversity framework (not legally binding) which, among other targets, sets actions to prevent, reduce and eliminate plastic pollution.
Recent regulatory development has also been rapid and regional regulatory bodies across the globe are setting different legislative frameworks to control plastic waste, including Packaging and Packaging Waste Regulation in the EU and single-use plastic bans, and increased extended producer responsibility (EPR) schemes in many countries globally.
As a result of all global development, the pressure towards industry and investors is growing and many companies are responding by setting ambitious targets for packaging recyclability.
These important new developments are driving towards the change, which was called for by the private sector in collaboration with the public sector, at the World Economic Forum Sustainable Development Summit in 2018 during which The Global Plastic Action Partnership was launched. However, to make the change happen and move from idea to implementation and scale up impact we need scalable solutions appropriate for the Global South.

3. Unsolved, but not unsolvable, end-of-life challenges of plastic packaging

The unsolved challenges of plastic packaging relate mostly to its end-of-life – how to get the used packaging back to the plastic loop instead of wasting the material or ending it up in the environment. The end-of-life challenges can be split into the five key areas – each of which are equally important to address to make plastic packaging more circular.

#1 Not all plastic packaging is recyclable

A fundamental way to make plastic packaging more easily recyclable is to have its structure based on a single material, i.e., to have a mono-material composition. This is the case for many rigid plastic products such as beverage bottles, which are typically made of PET or HDPE and thus have a better chance to be recycled compared to flexible plastic films of which a big share is today still made of multi-materials, including different plastics and aluminum layers. The multi-material composition and presence of non-plastic components such as aluminum greatly negatively affects the efficiency of mechanical recycling process as well as the quality of the output product and thus creating a barrier to recycling at scale in many cases.
Whilst making the assessment as to what is the environmentally best recyclable packaging solution for each different application, the impacts occurred in the whole value chain should be analyzed. For example, switching packaging material from plastic to glass can have a positive impact on plastic pollution in a linear value chain but on the other hand, increase the transportation volume and load, thus leading to higher emissions from transportation. On the other hand, if plastic packaging is designed to be recyclable, and also recycled, its many times environmentally better option compared to other materials. (Associates, 2023; Brock & Williams, 2020)
This challenge can be solved by designing all plastic packaging put on the market to be recyclable. Numerous Design for Recycling Guidelines are already in place and, adopting those at regional level will only accelerate the implementation of technically ready to recycle plastic packaging.

#2 The collection and recycling infrastructure capacity is limited and partly inefficient

Many countries in the Global South lack adequate waste management infrastructure including collection systems, waste segregation practices, and recycling facilities for any kind of waste. Furthermore, wherever existing the input feedstock in plastic recycling facilities is usually a mix of different polymer types affecting the processing capacity and output quality, especially when advanced recycling infrastructure is not available (Why are plastic recycling rates so low,

2017). To efficiently recycle plastic packaging, collection, sorting, and recycling infrastructure capacities and capabilities are needed to develop. Waste management solutions are many times locally managed and decentralized due to which solutions should always be adapted to local conditions. (Browning, Beymer-Farris, & Seay, 2021)

In the Global South informal sector has an important role in delivering waste management services and many people make a living collecting waste as part of the informal economy. In some cases, the waste being collected is hazardous and unhealthy, but due to financial incentives, waste is often seen as a valuable resource. It's important to also support the informal sector to scale the waste collection to be more organized and to ensure health and safety by providing business development skills and investment support. Further, **a new report highlights the important role of the more than 15 million people informally collecting and recovering 58% of the total sold waste globally in putting an end to plastic pollution.** (United Nations Human Settlements Programme & Norwegian Institute for Water Research, 2022)

Enabling the just transition for the people informally collecting and recovering waste, such as the informal sector, plays a recognized, legitimate and key role in collecting and recycling plastic packaging in the Global South and is critical part of the solution we need to develop and implement.This will be beneficial for the many national systems due to the cost optimizations which might be realized by creating formal collection and recycling operations where the currently informal waste pickers can operate.

#3 Recycling is not always commercially viable

Recycling plastic has not been historically very cost-effective mainly for the above reasons – plastic waste being comprised of a mix of complex material structures and a lack of large-scale infrastructure to collect, sort and recycle. But the situation is changing.

During the recent years, practically all large consumer brands have committed to circularity goals, including increasing recyclability of their products and the use of recycled plastic in their packaging – boosting both supply and demand in the plastic recycling value chain. This development is pushed by regulatory development towards reducing virgin plastic use in products – development which is led by the EU and amplified globally. This all is resulting in increased demand for recycled plastic which has already led to increasing investments in collection, sorting and processing capacity and improved price competitiveness of recycled plastic, especially in the case of recycled PET (Arthus, 2022). It is important to note the price of recycled plastic varies greatly depending on used input material, recycling processing technology and output quality, the high-end being recycled resins used for contact-sensitive food packages and lower value applications including for example recycled pellets used for plastic lumber.

Additionally, and following the example of many European countries, an increasing number of countries in the Global South have developed and implemented or, are planning to implement, EPR schemes to help finance some of the collection, sorting and recycling cost.

In all cases, more scalable solutions to build recycling capacity are needed, along with EPR type financial schemes such as these solutions can become economically viable.

#4 There is not enough incentivization via financial instruments, legally driven, for innovation and developing recycling infrastructure

As stated earlier, the plastic recycling business in the Global South is usually decentralized and locally managed, meaning that instead of a few large-scale investments, multiple small and medium size investments are needed. Many financial instruments directed for developing countries are ineffective to allocate capital to these small and medium size investments. (Why are plastic recycling rates so low, 2017). In general, strong regulatory interventions with

economic incentives together with consumer pressure for more sustainable alternatives are needed to give a kick-off for recycled plastic market. (Charles, 2023)
On this, two platforms are expected to help: the National Plastic Action Partnerships and the Global Treaty which both can inspire and create the framework for the enabling legislation to be developed at national levels.

#5 Reasons for low consumer participation are multifold

Consumer's participation in recycling is a vital part of plastic circularity and thus understanding people's behaviors toward recycling is a key for success.
In the Global South, the recycling participation rates are low, and the reasons for it are multifold. These include a potential lack of awareness on the importance of recycling, being unaware of all the negative impacts of plastic packaging pollution on the environment and human health, the lack of resources available, focusing on other more pressing priorities, and a lack of education about how to recycle properly. It is important to note that most people in places with apparent waste issues do have concerns about it, but they do not necessarily have specific capacities to act, for example due to the lack of waste management infrastructure. Some other potential reasons for low recycling participation rates include lack of motivation to act and empower.
On the other hand, in some cases, even when recycling programs are in place, participation rates can be low due to a lack of incentives or convenience. For example, people may not be willing or able to sort their waste or take it to a recycling facility if it is inconvenient for them. It is also possible that some people may be more likely to dispose of waste improperly if they do not see the value in recycling. Consumer's participation increases both the volume and quality of waste input material for recycling, which is why addressing the points made above is crucial for tackling packaging pollution.
Like in the Global North, this should be addressed with the right communication with the consumers of plastic packaging. In the vast majority of the communities, these consumers can be reached, in the most effective way, via community engagement and school programs to educate and create awareness of the value of plastic waste after use and, the importance of correct disposal of packaging after use, via segregated collection. The informal sector can also be trained to disseminate these messages in their efforts to collect valuable plastic packaging waste.

4. ASASE Foundation Case Study on Local End of Life Management of Plastics in Africa

Local recycling solutions scaled and fitted to the local conditions are powerful tools to increase availability of waste management solutions and hence tackle plastic pollution in the Global South. This White Paper presents the waste management solution emerging in Ghana which is an example of working, scalable solution that has the potential to be implemented also elsewhere in the region and thus provide solutions for plastic circularity.
Ghana is one of those eight countries in the Global South which have launched National Plastic Action Partnerships, which are platforms for enabling regulatory development and launch of necessary infrastructure systems to realize the circular economy of plastic packaging.
Such new development is driving towards the change, which was called for by the private sector in collaboration with the public sector, at the World Economic Forum Sustainable Development Summit in 2018 during which The Global Plastic Action Partnership was launched.

The case study also show how good progress and potential has still some hurdles to overcome to fully realize an impactful solution.

ASASE Foundation recycling plant in Accra, Ghana

Setting the scene

The ASASE Foundation[1] is a legally registered Non-Governmental Organization (N.G.O.) in the greater Accra Region. It was created on March 25th, 2017 to enable Ghanaian women entrepreneurs to play a key role in cashing-in on the plastic waste trash of Accra, for the benefit of their own communities. To fulfill this Mission ASASE is launching CASH IT! Operations consisting in Collection Centers and Recycling Plants, in each community where it enters, in collaboration with the Municipal Assembly (local government).

First such CASH IT! Recycling Plant, as a social enterprise, was launched in Nov. 2019 in Kpone-Katamaso and in 2021 in Tema West (both Municipalities of Accra) to reprocess plastic packaging waste collected in the community. Women, who were previously waste pickers, become formal employees and got training to work in a plant. The Recycling Plant does sorting, washing, shredding or grinding of plastic waste, drying and extrusion; it employs 45 people working in 2 shifts, with majority women. Each plant has a standard capacity of 2'000T reprocessed per year, which is determined by the combination of amount of waste generated by the community and the optimal scale to allow reprocessing to be profitable when full capacity is achieved. This secures the financial sustainability of the Recycling operation.

In 2022 ASASE also opened a CASH IT! Converting Plant in the third community in Accra, Weija, which takes flakes of plastic from the other two CASH IT! Recycling Plants and produces plastic lumber. This product is sold into making furniture and light construction as end applications.

CASH IT! Collection Centers are launched in each community where a Recycling Plant is being set up. Their role is to become buying centers for the plastic waste collected from the street of the community by local waste pickers and from residents and to collect the waste from the community schools. The Collection Centers are set up with a shack for storing working tools and protection equipment (scales, recording books, collection and transportation bags and sacks and protection equipment) a shelter for workers at the center, a baler for PET bottles and space large enough to store material collected during the week and the collection tricycles. Each collection center does collection from the houses of residents, waste pickers, schools, community businesses, buying of waste brought by community people at the center or during Saturday Market at the buying centers establish ad hoc, sorting, bagging and selling of waste. ASASE provides the seed money to build and equip the center, as described, and the working capital to get it started. The manager of the collection center is an informal aggregator identified in the community, who is being trained to take over the center as entrepreneur. The replenishment of tools and the cost of fuel and maintenance for tricycles should be covered partially by the sales of the waste collected to the CASH IT! Recycling Plant and by any Producer Responsibility Fee which is being collected in the country. Ghana is working through the National Plastic Action Partnership towards creation of an EPR (Extended Producer Responsibility) Scheme but until then ASASE Foundation is using the International Plastic Credits system to partially finance the functioning of the Collection Centers.

The ASASE Foundation is managing any CASH IT! Operation until it becomes self-sustainable economically, when the assets are transferred to the employees of CASH IT! and the Foundation opens other new such Operations in a new community.

[1] The ASASE Foundation, https://asasegh.com/

Challenge addressed

Ghana has a population of 32.4 million people, as declared in 2022, with an average growth of 2.2% while the waste generated is growing at more than double the population growth rate. The country generates annually over 1.1 million metric tons of plastic waste of which approximately 86% is mismanaged by dumping, burning in open air, or burying (World Bank-Ghana, April 2020) . The plastic waste generated has the following composition(World Bank-Ghana, April 2020): 25.3% polyethylene film, 23% PET, 19.2% rigid containers polyethylene, 10.6% rigid household items polypropylene and the rest is other plastics and plastic items.
The largest share of the waste is polyethylene film which is majority water sachets; for the majority of the population clean water for drinking is only accessible and affordable in these water sachets of 500ml. However once recycled this plastic would go back to one time shopping bags which would find their way back to litter after one use. Disposed, these shopping bags will not be picked by waste pickers because in most cases they are very contaminated with human waste and therefore without recycling value.
The waste pickers lack tools and protection equipment and are willing to partner with recyclers who would secure their constant offtake of volume of waste collected and are also interested to keep their own place in the value chain while adding steps like waste sorting and bagging of waste aggregated, before selling.
While there are many possible end markets for the recycled polyethylene and polypropylene and the country does not lack entrepreneurs who bring out innovation in developing such products with recycled plastic, they have not access to financing for starting industrial scale operations to implement their innovation.

Developed solution

The ASASE Foundation innovated by creating community based social enterprises which engage deep in the community to mobilize, in collaboration with the local government, the resources necessary to create awareness about the plastic litter problem and the opportunity to cash in the value of plastic waste, when collected and recycled in the community. These social enterprises are collection centers and recycling or converting plants where people from community can sell their plastic waste or get jobs in the CASH IT! operations, to work either in collection or in plastic recycling.
The other pillar of this innovative solution is to close the loop of plastic packaging in the country; none of the collected plastic waste is being sold to traders who would export to Europe, USA, or Asia. All is either converted in plastic lumber by CASH IT! Plant or sold to recyclers in Ghana who produce at industrial scale construction sheets, household items like buckets, bowls, baskets, or industrial items like garbage bins or polytanks.
The solution is materialized now in couple of industrial scale operations which were built with seed money from grants provided by the European Commission (EuropeAid program) or the Alliance to End Plastic Waste (an organization of over 60 members all global companies in the value chain of plastic packaging). The aim of this is to demonstrate this solution for scale up at country level; it is expected that based on this demonstration funding will be facilitated either at country level (currently low probability but in mid to long term should be the way forward) or by global organizations like Global Environmental Fund (GEF) or banks like the World Bank (the most likely way forward in short to mid-term).

Key learning

The challenges are many and at any level on the development of the solution. They gave good lead towards the challenges in implementing such solution, as detailed below.

- The solution can be implemented only in partnership with the local government which has the legal power, obligation and rights to steer and implement the appropriate action towards elimination of plastic litter
- The provision of public spaces in the community for the aggregation of waste
- Engaging the communities is an efficient way to hire the people who will work in the operations which form the solution locally and, to keep the fair share of value created by cashing-in the plastic waste
- It is important to attract the necessary funding until the operations reach financial sustainability; reliable funding can be secured if the aim of such operation is to create a measurable impact in terms of volume of plastic waste deviated from litter and recycled for value. The funding has to be patient to allow the operations to stabilize in a still instable overall economic environment, characteristic to countries from the Global South.

Way forward to increase impact

The solution here above described, has been developed by ASASE Foundation to inspire for scale up such as it will create a measurable impact at country level. Continuous transfer or know-how from the Global North, transfer of appropriate technology and impact funding with patience, to deliver on financial goals, are the key ingredients to realize the necessary impact.

5. Our call to action: promising levers to make plastic packaging circular in the Global South

As the case study shows, technical recycling solutions needed in the Global South already exist and the barriers to implement are not of technical nature. However, there are some other value chain challenges discussed earlier that we need to overcome in order to increase the scale and impact of recycling. Exporting solutions and knowledge offers also business opportunities to recycling companies in the Global North while at the same time creating jobs and business in the Global South.

Overall, increasing the circularity of plastic packaging requires a mix of solutions as none of the solutions alone delivers a quick win to a complex problem. It is acknowledged that recycling alone will not solve plastic pollution, but it is a powerful and proven way to alleviate the problem and slow down the accumulation of waste. As mentioned, tackling plastic pollution starts from product design and steering plastic use to those packaging solutions where their functionality benefits outweigh negative environmental impacts.

Plastic packaging plays a critical role in both Global North and Global South people' lives. Thus, the solution should not be banning plastic packaging, but focusing on fit-for-purpose solutions, and improving their circularity - which is proved to be possible.

Enhancing the circularity of the plastic packaging value chain requires that:

1) **Plastic packaging is used when it is fit-for-purpose.** There is no one material that is suitable for every conceivable application and the use of plastic material is preferred when its numerous functionality benefits – lightweight yet durable, protecting and preserving food efficiently during transportation and storage, extending its shelf life, minimizing food waste, and boosting affordability and accessibility – outweigh the resources and challenges required to address its end-of-life.
2) **100% of plastic packaging is designed to be recyclable –** this applies to all types of packaging. The problem of plastic pollution starts long before plastic packaging ends up

as waste and the transition to a circular economy starts with product design and innovation, impacts of which are reflected throughout the entire life-cycle of products. The priority should be to focus on mono-material packaging solutions which fit to the existing recycling infrastructures.

3) **Solutions are developed in partnerships with local bodies and communities .** The complexity of the issues related to waste management of plastic require collaboration not only across the value chain but also with the national and local governments and the formal and informal communities leadership. The efficiency of the resources invested, both money and people and efficacity of activities deployed are only realized when they co-develop the solutions considering the local specificities and cultural elements which impact adoption of solutions. The solutions, most of the time, involve behavioral change related to attitude against litter, waste disposal, waste segregation, etc and this takes time and requires constant reinforcement by the local leaders.
4) **Gap funding is made available to support reaching commercial viability** Everywhere in the world where it exists, today mostly in the Global North, the collection and sorting are subsidized and, when recycling technologies are emerging, they are also subsidized until they reach financial sustainability. Equally, legislation in the Global North is such as it enables investment in the innovation and the infrastructure necessary to realize sustainable end of life solutions for plastic waste. Same is also needed for the Global South via private and public subsidy schemes and access to investment money.
5) **Waste management solutions are scaled up**. There are already many great examples of local recycling plants in the Global South demonstrating that favorable business conditions exist, and that the major technical hurdles have already been overcome. Plastic packaging recycling has the opportunity to create business value and jobs in the Global South but the gaps in the value chain, especially challenges in collection to ensure access to quality feedstock, is hindering the development. Growing digital solutions offer also new ways to improve collection logistics efficiency, the cost of which is currently significant. Cross-value chain collaboration is the blueprint for success and the packaging industry plays a key role in facilitating the business to get started.
6) **Incentives to use recycled material are created to boost end-market.** One major obstacle in increasing the use of plastic recycling is the underperforming recycled plastics markets. The price of recycled plastic is competing with virgin materials and up to this point, producing virgin plastic has almost always been cheaper compared to recycled plastic because virgin plastic does not bear the cost of its end of life management– but there are signs of this changing. As the availability and quality of recycled plastics increases, as well as consumer pressure on more sustainable products heightens, potential buyers have stronger incentives to prefer recycled over virgin. However, stronger financial incentives are needed to accelerate the development, as done in the Global North by taxation and other policy interventions. (OECD, Improving Markets for Recycled Plastics – Trends, Prospects and, 2018) (Charles, 2023)

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