


Finding Solutions for Electronic Waste with the Private Sector and Multi-Stakeholders Engagement

Developing Global Model of Circular Economy in Nigeria

PROJECT FULL NAME	COUNTRY & REGION	EXECUTING AGENCIES	IMPLEMENTING AGENCY
Circular Economy Approaches for the Electronics Sector in Nigeria		Nigeria's National Environmental Standards and Regulations Enforcement Agency (NESREA)	United Nations Environment Programme (UNEP)
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PROJECT TYPE: MSP		Co-financing Total \$ 13,086,582	IMPACT AREA ▪ Health and safety ▪ Creating safe employment
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Summary

According to Africa Waste Management Outlook, 125 million tons of municipal solid waste was generated in Africa in 2012, and this amount is expected to double by 2025. Electronic waste (e-waste) is a particularly important and rapidly growing waste stream due to the severe pollution it creates, notably producing mercury, persistent organic pollutants (POPs) from flame retardants, dioxins, and furans. This project connects and operationalizes pre-existing elements of a multi-stakeholder Extended Producer Responsibility (EPR) system in Nigeria. EPR is an innovative policy and financial instrument that requires manufacturers, importers, and retailers of electronic products to be physically and financially responsible for the waste management of their products, but which has thus far struggled to get off the ground in developing countries. Collaborating with a private sector-led Producer Responsibility Organization (PRO) on electrical and electronic equipment (EEE) in Nigeria and local and international stakeholders, the project addresses specific gaps identified by each partner, and has developed the Guidance Document for the Implementation of the EPR Programme for the

Electrical/Electronics Sector in Nigeria (the Guidance for EPR implementation). The project is helping to design and operate a financially self-sustaining circular economy approach for electronic products in Nigeria.

E-waste collection and recycling is a key source of income for many poor families; however, the informal nature of their operations exacerbates global pollution and toxic health effects. Key lessons learned are connecting and building on existing initiatives to establish a sustainable financing mechanism and management system for e-waste under the Guidance for EPR implementation. At the same time, the project also created opportunities to collaborate with the informal sector, and scaled up efforts to build a circular economy in Nigeria and beyond by collaborating with national and international stakeholders. As a result, the project contributes to reducing global pollution from e-waste, and reducing health impacts on local people in Nigeria. For the long term, the project will contribute to increasing healthy and safer employment in Nigeria, and providing a global model for a circular economy in the electronics sector in developing countries.



Figure 1. Pickers dismantle appliances by hand at Odo-Iyalaro to extract salable components @ Irene Galan / UNEP

Results, Global Environmental Benefits and Other Benefits

The project's key results to date are:

- The Guidance for EPR Implementation was gazetted in August 2020 as an enforcement mechanism of EPR Programme to reduce the severe pollution from e-waste producing mercury, persistent organic pollutants (POPs).
- The Extended Producer Responsibility Organization of Nigeria (EPRON)¹ has registered 41 electronic producers, via joint industry and NESREA notifications. A comprehensive database of producers and their products has been developed and is being piloted by EPRON, in collaboration with NESREA.
- Training 35 government agents, 23 value chain workers, and 25 informal sector workers on the new Guidance for EPR implementation and obligations by November 2020. Feedback received from informal collectors has informed the design of the collection pilot projects, including providing more visibility and security for individuals working on the street.
- Procurement initiated for e-waste collection pilots to demonstrate environmentally and socially-sound practices to collect and recycle 300 tonnes of e-waste.
- Communications strategy being rolled out to raise awareness of the new Guidance for EPR implementation, including press releases, radio jingles, and a media day for journalists. The project has also been presented at international

¹ Producer Responsibility Organisation (PRO) is an entity set up in collective Extended Producer Responsibility (EPR) schemes to implement the EPR principle on behalf of all the participating producers. EPRON is the PRO in Nigeria.

events including the World Circular Economy Forum + Climate in April 2021, and the United Nations monthly meeting with Secretary General in April 2021.

- Synergies have been created with other projects, international initiatives, and stakeholders aiming to improving sustainability in the electronics sector.²

Environmental Challenge

E-waste management is projected to grow massively as a sector and getting the right structures in place now will have enormous impacts into the future. Nigeria has been undergoing rapid transformation in information and communication markets of e-waste, mainly by importing new and used EEE, generating an ever-growing amount of e-waste. E-waste recyclers in Nigeria (mainly in Lagos) have reported good recovery rates for base metals such as ferrous metals, aluminum, and copper. At the same time, many waste fractions with no economic value are usually dumped or burned in an uncontrolled manner such as manual dismantling and hand soldering with lead solders by the informal sector. This has caused severe emissions of pollutants such as heavy metals and POPs, including dioxins, furans, and flame retardants (PBDEs) that often adhere to fine dust particles that are then released into the air, water, and soil systems.

At the same time, informal workers including women and youth are directly exposed to hazardous chemicals and commonly suffer respiratory and dermatological problems, eye infections, and lower-than-average life expectancy. According to the International Labour Organization (ILO), up to 100,000 people work in the informal e-waste recycling sector in Nigeria, collecting and dismantling electronics by hand to reclaim the saleable components. It is critical

to fully implement and enforce established formal waste management system with clear guidance and collaboration with producers, recyclers, and formal and informal collectors in Nigeria.

Integrated Approach and Key Features

The primary focus of the project is to reduce the global mercury and POPs pollution created by imported and produced EEE. In the meantime, it also aims to reduce environment and public health impacts from e-waste and to increase socio-economic benefits and healthy and safer employment in Nigeria.

Multi-stakeholder approach sharing European experience in Nigeria and beyond

With a multi-stakeholder approach, NESREA was able to develop and gazette the Guidance for EPR Implementation, one of the key outputs of the project, based on Nigeria's local context as well as international best practices and lessons brought from other existing EPR systems across the globe. Project stakeholders range from Nigerian government agencies, to United Nations agencies, the private sector, and NGOs. Under the strategic planning of Platform for Accelerating the Circular Economy (PACE),³ the project in Nigeria has been designed as its first flagship project to demonstrate a circular economy approach for the electronic value chain. Due to proactive engagement with global dialogues on electronics and circular economy, NESREA and EPRON received specific support from the UNEP technical team and international stakeholders such as the WEEE Forum⁴ during establishment of the Guidance for EPR implementation in terms of defining the roles and responsibilities of different stakeholders, prioritizing e-waste categories at different stages of the EPR implementation, and setting time-bound e-waste management targets.

² They include WEEE Forum, GIZ's project in Ghana, the Government of the Netherlands, Platform for Accelerating the Circular Economy (PACE) and the World Economic Forum.

³ PACE is co-chaired by the World Economic Forum, Philips, UN Environment and GEF, and aims to shape global public-private leadership and accelerate action towards the circular economy.

⁴ The WEEE Forum is the world's largest multi-national centre of competence as regards operational know-how concerning the management of waste electrical and electronic equipment (WEEE).



Figure 2: Informal pickers support their family by collecting and breaking down electronic waste at Odo-Iyalara @ Irene Galan / UNEP

A multi-stakeholder approach among various Nigerian government agencies is also critical to establish comprehensive producer's data system for the EPR Programme. To enforce registration with EPRON and establish a levy system of fees for collection and recycling from EEE producers and importers, EPRON is setting up a comprehensive database of producers and their products in the Black Box software⁵ by collaborating with NESREA. NESREA is exploring the availability of relevant data on EEE sales and market information in the organizations including the Standards Organization of Nigeria, Nigeria Customs Service, Federal Inland Revenue Service, The Central Bank of Nigeria, Federal Ministry of Industry, Trade & Investment, National Bureau of Statistics, and others. NESREA is also exploring the possibility to solicit their support in collecting data that are relevant for the implementation of the EPR Programme under the Guidance for EPR implementation.

Strong engagement with private sector from national and international levels

Private sector engagement was vital to establish effective and sustainable EPR system in Nigeria.

The project is engaging a mix of national and international experts from the private sector, recognizing the sector's influence on the e-waste value chain. In collaboration with the E-Waste Solutions Alliance for Africa (the Alliance),⁶ comprising Dell, HP, Microsoft Mobile, and Philips, NESREA first established the EPR programme as a provision in the national environmental regulation in 2011. The Alliance also supported creation of a blue print for implementing an effective e-waste management system in Nigeria, and this had been adopted and localized in the EPR plan that was subsequently approved by NESREA for implementation in 2017. However, the regulation did not provide enforceable requirements on each stakeholder, including government agencies, producers and Importers, recyclers, and collectors. Therefore, the Nigerian PRO had not managed to sign up member companies to pay levies to make the PRO sustainable or raise and use the levy to support three formal recycling companies.

To establish sustainable EEE PRO and enforce the EPR Programme in Nigeria, NESREA made registration with EPRON compulsory for all producers and importers in 2020 under the Guidance for EPR implementation, and EPRON would be able to collect levies and operate a producer's data system. Therefore, EPRON began registering more producers and preparing future activities to establish recycling schemes for environmentally-sound treatment of e-waste in Nigeria. At a national level, the formalized recyclers provide technical support to establish the recycling center, and the treatment of the collected e-waste in this project. At the international level, the project has received advice from international experts from the private sector, who have experience in a similar EPR and levy system in Europe.

⁵ The Black Box is a system to collect, store, manage, analyze, and produce market share information on all producers, including importers of EEE in Nigeria for the EPR Programme.

⁶ Since 2011, the Alliance has been pro-actively working to implement a sustainable model for e-waste recycling in Africa.

Levy system to collect fee for collection and recycling from EEE producers and importers

Establishing a levy system is a way to make the EPR program sustainable through collecting levy/fees from EEE producers and importers to cover the cost of EPRON operations, collection, recycling, and environmentally-sound disposal of e-waste. To establish a practical levy system, NESREA received technical advice from UNEP technical assistance and the WEEE Forum, since the EPR scheme for e-waste already exists in Europe. As a result, the Guidance for EPR implementation has been developed and provides a detailed financial scheme and implementation plan for collecting levies. In Nigeria, the levy to be imposed via the EPR scheme will allow formal recyclers to 'compete' and offer a similar price to the informal recyclers and therefore gain access to a higher proportion of the total e-waste. This will make the formal businesses more viable financially, while at the same time reducing the negative impacts of informal burning and disposal of hazardous components of the waste by providing access to finance and better health protection.

The project also supports NESREA, EPRON, and waste collectors on how to practically disburse levy funds to promote environmentally and socially sound e-waste management. Preparations for the collection and recycling pilots has started based on a feasibility study and collaboration with ILO and other social actors. These pilots will demonstrate how to achieve the new requirements of the Guidance for EPR implementation, test possible collection channels, map the critical networks and stakeholders, understand the actual e-waste treatment cost to help determine the level of levy per product category, and identify the solutions to dispose of hazardous fractions. To integrate formal and informal collectors into the e-waste management system, the Guidance for EPR implementation also determines roles and responsibilities of e-waste collectors, such as: every e-waste collector shall register with EPRON, organize the informal collectors into cooperatives or associations collaborating with NESREA, EPRON,

and States Governments, and provide incentives (monetary, points etc.) for informal collectors to participate in a more organized structure.

Lessons Learned

Connecting with existing mechanisms for policy enforcement

Key lessons learned from this project are:

1) enforcement of policy should be linked to existing mechanisms for company registration, tax, or import processes; and 2) it is vital to link with import and trade regulators, as well as environmental regulators for enforcement. Prior to the project, Nigeria's government EPR policy was not enforced, lacking operational guidelines, targets, or enforcement mechanisms. The project has supported NESREA to develop a new Guidance for EPR implementation to ensure policy enforcement, and to set collection and recycling targets. Enforcement of the new EPR regulations is still a challenging issue and letters from NESREA were only partially effective in driving producers to register with EPRON. Thus, NESREA is joining forces with Customs and the Standards Organization of Nigeria, who accelerate registrations with EPRON as a prerequisite for importing or trading licenses of new electronics.

To connect with existing mechanisms, the Guidance for EPR implementation explicitly explains roles and responsibilities for various stakeholders of EPR system. For example, in the Guidance for EPR implementation the role of the Nigeria Customs Service is defined as to: inform importers of EEE about their obligations; communicate the list of EEE importers detected to EPRON and NESREA for appropriate follow up of EPR responsibilities; ensure importers of new and used EEE have EPRON registration as prerequisite for importation; share data with NESREA on the inflow and outflow of EEE in Nigeria; report illegal import of used EEE and e-waste; and collaborate with NESREA to inspect and control the illegal shipment of e-waste. EPRON's registration system has been also linked with the



Figure 3: Employees at Hinkley dismantle discarded laptops @ Irene Galan / UNEP

Environmental Import Clearance for Electrical/ Electronic Equipment, Small and Large Industrial Equipment, and Mixed items to ensure that end-of-life EEE and hazardous wastes are not imported into the country.

Building on existing initiatives for sustainability of project

The project impacts are sustainable largely due to a project design supports existing initiatives that demonstrate the commitment of partners to dealing with the problem of e-waste. Both NESREA's EPR regulation and the existing recycling facilities are independent from the project but require a short-term intervention to operationalize them. The project is developing the producer registry database, but it will be handed over to EPRON, which has been given direct oversight and review responsibilities of the IT service provider. The sustainability plan for the

project is for EPRON to take forward its role as the PRO, and NESREA to continue improving the enabling environment for the implementation of the EPR system at the national level.

From previous donor funded projects for informal collectors on health and safety of e-waste handling and the benefits of formalization, worker associations of informal collectors are organized and have received training. A second in-depth training is being developed by ILO, and to be delivered in 2021. However, even with this knowledge, collectors still choose to work in the informal sector because of the relatively higher prices of e-waste. The levy should make up for the difference in prices and make the formal sector competitive. To make the project sustainable beyond the project period, the operational Guidance for EPR implementation also provides specific targets and enforceable provisions on each stakeholder, e.g. types

and quantity of e-waste to be collected over a one-, two-, and five-year period.

Scaling up toward Circular Economy in Nigeria and beyond

To develop a large scale 'Country Intervention Model,' that will allow Nigeria to scale up the previous and current pilot activities to national scale, the project interacts closely with the E-waste Coalition, a group of UN agencies and partners including the International Telecommunications Union, UNIDO, ILO, and others. NESREA believes the EPR Programme is a global tool and it will be applicable to other products such as plastics, chemicals, tires, and metals. Toward non-plastic pollution and achieving a circular economy in Nigeria, NESREA is willing to scale up lessons learned from this project to other waste streams. The project is innovative in terms of closely integrating the social and labor aspects of current e-waste management structures, and pilot mechanisms for transforming informal work into decent jobs through a partnership with ILO are important levers for future scaling up of this project.

Based on the project learning, a report on circular economy in Africa is under development and will be released in 2021. The report will identify key challenges faced by Africa and propose a roadmap towards the circular economy for electronics in the region. A global roadmap on circularity and managing the chemicals and waste in the electronic value chain is in preparation as well. Ongoing regional and global knowledge exchange on the circular economy model will scale up beyond Nigeria via regional networking and knowledge sharing to achieve the longer-term aim of reducing the use of harmful chemicals in electronics. UNEP and the World Economic Forum are engaged with major electronics manufacturers at the international level to highlight the lessons learned from this approach and to advocate for more leadership from the major manufacturers to promote circularity.



Children living in Oluosun dumpsite by Irene Galan, UNEP



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