

E-waste Compensation

as an International Financing Mechanism in Nigeria (ECoN)

Period	01.2021–09.2022
Countries	Nigeria
Project partners	Öko-Institut e.V., Closing the Loop, SRADev Nigeria, Verde Impacto, Hinckley Recycling

Financing of e-waste treatment

Unsustainable treatment of e-waste leads to severe environmental pollution and risks to human health. In many low- and middle-income countries, there are small formal recyclers who try to manage e-waste sustainably. After dismantling, some fractions can be sold to the local industry, while others must still be exported at high costs to appropriate end-processing facilities. Full responsible e-waste recycling might theoretically be possible in some countries, but sound end-of-life management often comes with net costs. Sustainable e-waste management is not a profitable business model per se. Therefore, alternative financing approaches, such as e-waste compensation, must be established to enable sustainable e-waste management until it can be replaced by a functioning EPR system.

The project

The project *E-waste Compensation as an International Financing Mechanism in Nigeria (ECoN)* further developed *Waste Compensation* – an innovative international financing mechanism for sustainable collection and treatment of e-waste to include batteries and flat panel monitors. Thus, the project created an opportunity for the electronics industry and users of electronics to actively contribute to strengthening and further developing the e-waste recycling sector in Nigeria as well as helping to further advance this concept internationally.

E-waste compensation as a financing mechanism

With e-waste compensation, international brands and consumers of electronic equipment can contribute to

a sound management of equivalent e-waste volumes in low- and middle-income countries by providing finances to organize collection and environmentally sound management of e-waste on their behalf. The project worked with financial support provided by IT producers and consumers to fund sustainable e-waste recycling practices, driven by a functioning business model called *Waste Compensation*.

Extending e-waste compensation to batteries and flat panel screens

Based on the model of e-waste compensation, the project responsibly collected and processed 30t of waste batteries and flat panel screens (which are economically negative) in Nigeria during the project period of 1.5 years.

Linking informal and formal recycling actors through e-waste compensation

The project has proven that a link between informal collectors and formal recycling facilities can be built and further developed. ECoN project partner Verde Impacto collected 21.7t of flat panel screens and 11.4t Li-ion batteries through registered agents in Nigeria. These agents work with local collection networks and use financial incentives. Local added value was further increased by involving collectors from the informal sector and providing them with employment, income, and training.



Principles for e-waste compensation

E-waste compensation needs rules to ensure that the money benefits sound e-waste management and unintended side-effects are avoided. Therefore, the ECoN project developed 11 e-waste compensation principles. Furthermore, the project developed a model for waste compensation and contributed to a comparison metric of electronic waste products for compensation. To achieve acceptance for applying the e-waste comparison criteria, the project set a special emphasis on stakeholder involvement. The model was effectively integrated with an ICT certification scheme.

Exploring treatment pathways for monitors and batteries

Several local treatment pathways for monitors and batteries were explored ranging from reuse of components and remoulding of recycled plastics to co-processing in the cement industry. E.g., one project reuses PMMA (better known as a trademark "Plexiglass") for lamps made from re-purposed batteries. Through these treatment pathways, hazardous fractions from screens are taken care of in an environmentally friendly manner. Secondary raw materials from e-waste fractions are reused locally, which would otherwise be costly to procure.

Achievements of the project

1. Collected and processed 30 t of e-waste sourced locally in Nigeria (overachieving project goal by 10 t).
2. Sold waste compensation of screens to a client (MMD, Philips monitor manufacturer).
3. Partnered with 4 local downstream solution actors and 1 re-use case.
4. Held 4 in-person and virtual trainings on manual dismantling and occupational safety with the informal sector and recyclers.
5. Increased local added value by involving collectors from the informal sector.
6. Developed principles for e-waste compensation.
7. Demonstrated that incentive-based collection and sustainable management can be replicated within larger solutions such as EPR schemes.

Through this project, effective mechanisms for batteries and monitors were piloted. Subsequently, e-waste compensation can be standardised and scaled as a funding mechanism in many other countries and also be used as a blueprint for developing local policies and financing instruments in Nigeria.

PREVENT Waste Alliance

The PREVENT Waste Alliance serves as an international 'think and do tank' for circular economy practitioners. As a platform for knowledge exchange and international cooperation, it brings together organisations from the private sector, academia, civil society and public institutions. PREVENT's mission is to advance the circular economy in low- and middle-income countries by minimising waste, eliminating pollutants, and maximising the reuse of resources in the economy worldwide.

This project was selected in a call for innovative and scalable solutions to build a circular economy.

The PREVENT Waste Alliance was launched in 2019 by the German Federal Ministry for Economic Cooperation and Development.



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More information: www.prevent-waste.net/en/