

How Your Recycling Company Can Deal With Electronic Waste?

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E-Waste Management

A recycling company dealing with electronic waste should not operate like an ordinary scrap business. Phones, computers, televisions, refrigerators, batteries, cables, printers, and other electrical equipment contain recoverable metals, plastics, glass, and components, but they can also contain lead, mercury, brominated flame retardants, refrigerants, and other hazardous substances. The scale of the problem is growing quickly. The Global E-waste Monitor 2024 reported that the world generated 62 million tonnes of e-waste in 2022, while only 22.3 percent was documented as formally collected and recycled in an environmentally sound manner; global generation is projected to reach 82 million tonnes by 2030 (ITU & UNITAR, 2024). For a recycling company in Nigeria or elsewhere in West Africa, this creates both a business opportunity and a major compliance responsibility. The goal should not be to import obsolete equipment, extract a few valuable materials, and discard the rest. A sustainable business model should prioritize lawful collection, verified reuse, safe dismantling, recovery of valuable materials, protection of workers and nearby communities, and transparent downstream management of fractions the company cannot process itself.

Collection and Legal Compliance

The safest business model begins with equipment already present in the domestic market. Collection agreements can be developed with households, businesses, schools, telecom companies, government offices, repair shops, retailers, and producer-responsibility organizations. Every incoming load should be weighed, categorized, and assigned a traceable record showing its source and intended pathway. Devices that are genuinely reusable should be tested before being classified for refurbishment, while broken or obsolete equipment should enter the waste stream. This distinction matters because reuse can extend product life, but labeling nonfunctional waste as “used equipment” can conceal illegal dumping. Nigeria’s National Environmental (Electrical/Electronic Sector) Regulations, S.I. No. 79 of 2022, cover both new and used electrical and electronic equipment and are designed to prevent and minimize pollution from the sector (NESREA, 2022). The company should therefore build its intake procedures around Nigerian environmental requirements rather than assume that informal market practices are legally sufficient.

Cross-border movement requires even more caution. Amendments to the Basel Convention that took effect on January 1, 2025, made all transboundary movements of e-waste subject to the Convention's prior informed consent procedure for Parties bound by the amendments. Hazardous e-waste falls under Annex VIII entry A1181, while other e-waste is covered by Annex II entry Y49; the previous Annex IX entries that allowed some e-waste movements without this control were removed (Basel Convention Secretariat, 2025). A Nigerian recycling company should therefore not design its business around accepting containers of "second-hand electronics" from Europe or North America unless the shipment is legally classified, documented, consented to where required, and verified as appropriate for direct reuse or lawful waste management. The financial cost of rejecting illegal or unusable shipments should be considered before any international supply contract is signed.

Reuse and Recycling

A profitable facility should not destroy equipment before determining whether it has a higher-value second life. Functional testing can identify computers, phones, appliances, power supplies, screens, and other products suitable for repair or refurbishment. Components can also be harvested for legitimate spare-parts markets. Reuse typically preserves more of the original product value than immediate shredding and can support local repair skills and affordable access to electronics. However, refurbishment must include data protection, electrical safety testing, realistic quality grading, and clear warranty or resale policies. Devices that fail testing should move to controlled dismantling rather than back into informal markets where unusable equipment may eventually be burned or dumped.

Material recovery should then follow a planned sequence. Batteries, mercury-containing lamps, refrigerants, toner cartridges, cathode-ray tubes, and other hazardous or specialized components should be removed before general mechanical processing. Circuit boards, ferrous metals, aluminum, copper, plastics, and glass can then be separated for appropriate downstream treatment. The Global E-waste Monitor highlights the economic value lost when recoverable materials escape formal systems, but it also stresses that resource recovery must not create larger health and environmental costs (ITU & UNITAR, 2024). A recycling company should therefore measure recovery yield together with worker exposure, residual waste, emissions, and downstream compliance rather than judging success only by the value of recovered copper or precious metals.

Worker Safety

Informal e-waste recycling often relies on practices that are fast and cheap precisely because they transfer health costs to workers and communities. Open burning of cables, manual breaking of cathode-ray tubes, uncontrolled acid leaching, and crude heating of circuit boards can release toxic metals, particulates, dioxin-like compounds, and other hazardous substances. WHO's work on e-waste and child health warns that unsafe recycling can expose workers, families, and nearby residents to

mixtures of toxicants and that children are particularly vulnerable because of their developing nervous, respiratory, and immune systems (WHO, 2024). A formal company should prohibit open burning, uncontrolled chemical extraction, dumping of residues, and manual processes that expose workers directly to dust or fumes.

Safety controls should begin with process design rather than personal protective equipment alone. Enclosed or locally exhausted workstations, dust control, fire-resistant storage, appropriate ventilation, mechanical lifting aids, spill containment, electrical isolation, and safe battery storage reduce exposure at the source. Workers should receive task-specific training, medical surveillance where appropriate, vaccination and hygiene support, and clear procedures for incidents involving mercury, battery fires, refrigerants, sharp components, or chemical exposure. Lithium-ion batteries require particular attention because damaged cells can ignite and fires can spread rapidly through mixed storage. Nigeria's National Environmental (Battery Control) Regulations 2024 provide another reason to separate battery management from ordinary scrap handling (NESREA, 2024).

Electronic recycling is also an information-security business. Computers, phones, servers, storage drives, printers, and network equipment may contain personal, financial, medical, commercial, or government information long after the user believes the device has been discarded. A company that accepts electronics should therefore define a chain of custody for data-bearing assets. Customers should be able to choose documented data sanitization or physical destruction, and the company should record the method used. Devices intended for refurbishment require verified sanitization before resale, while drives intended for destruction should be rendered unrecoverable through an appropriate process.

Data-security capability can become a commercial advantage because businesses and institutions are more likely to use a recycler that can demonstrate secure handling. Collection containers should be tamper resistant, access to data-bearing devices should be restricted, and employees should be trained in confidentiality. The company should issue certificates of sanitization or destruction only when the process has actually been completed. This discipline protects clients and strengthens the credibility of formal recycling compared with informal disposal channels.

Downstream Partners

No single facility needs to process every material. A company may dismantle equipment locally, bale metals, remove hazardous components, and send circuit boards or specialized fractions to licensed processors with more advanced technology. The important issue is knowing where materials go after they leave the site. Downstream vendors should be audited for permits, worker protection, environmental controls, and final disposition. Contracts should prohibit unauthorized re-export, open dumping, or subcontracting to unknown informal processors. Documentation should allow the company to trace major material streams to a legitimate endpoint.

Producer responsibility can strengthen this model. Nigeria's regulatory framework uses extended producer responsibility to place end-of-life obligations on producers, importers, assemblers, and major distributors. A recycling company can therefore work with producer-responsibility organizations, manufacturers, retailers, and large importers to create collection and treatment systems rather than depending only on spot purchases from informal collectors. The informal sector should not simply be excluded. Collectors and repair workers already provide collection coverage and market knowledge. Formal companies can create safer partnerships by paying transparent rates for collected material, providing training and protective equipment, and requiring that hazardous dismantling occur in controlled facilities. This converts informal collection capacity into part of a safer formal chain.

A recycling company operating in West Africa must demonstrate that it is not simply relocating environmental harm. Communities may reasonably fear smoke, contaminated water, noise, traffic, fires, or hazardous residues. Facility design should include impermeable work surfaces, storm-water controls, secure hazardous-material storage, fire detection and suppression, emergency planning, and monitoring appropriate to the processes used. The company should disclose what it accepts, which processes occur on site, and how residual materials are managed. Public education can also explain why formal recycling is safer than dumping or burning and how consumers can return devices through approved channels. The related Academic Master discussion of [electronic waste](#) shows why uncontrolled disposal is not only a waste-management issue but also a public-health and environmental problem.

Community engagement should include a clear complaint process and rapid response to spills, fires, or suspected pollution. Lessons from industrial contamination cases, including the consequences discussed in the Academic Master analysis of the [mercury spill](#), reinforce the importance of transparency and responsibility when hazardous materials are involved. A company that reduces exposure, documents its flows, and communicates honestly can build long-term relationships with regulators, producers, institutional clients, and local communities.

Conclusion

An electronic-waste recycling company can become both environmentally useful and commercially viable, but only if it treats e-waste as a regulated and potentially hazardous resource stream rather than ordinary scrap. The strongest model for Nigeria is built around domestic collection, clear distinction between reuse and waste, lawful transboundary movement, safe dismantling, worker protection, data security, material traceability, and audited downstream partners. Current Nigerian regulations and the Basel Convention's 2025 e-waste amendments make informal assumptions about importing and processing obsolete electronics increasingly risky. At the same time, the enormous gap between global e-waste generation and formal recycling creates room for well-managed companies that can recover value without externalizing health and environmental costs. The most competitive recycler will therefore not be the company that processes material most cheaply. It will be the company that can prove where equipment came from, how data were protected, how workers were

safeguarded, where each material stream went, and that the recovery process did not create a new waste problem for another community.

References

Basel Convention Secretariat. (2025). *E-waste Amendments: Questions and Answers*.

International Telecommunication Union & United Nations Institute for Training and Research. (2024). *The Global E-waste Monitor 2024*.

National Environmental Standards and Regulations Enforcement Agency. (2022). *National Environmental (Electrical/Electronic Sector) Regulations, S.I. No. 79 of 2022*.

National Environmental Standards and Regulations Enforcement Agency. (2024). *National Environmental (Battery Control) Regulations, 2024*.

National Environmental Standards and Regulations Enforcement Agency. (2026). *Laws and Regulations*.

World Health Organization. (2024). *E-waste and Child Health*.