



# GEF-7 REQUEST FOR CEO ENDORSEMENT / APPROVAL CHILD PROJECT – MSP ONE-STEP

PROJECT TYPE: Medium-sized Project (one-step)

TYPE OF TRUST FUND: GEF Trust Fund

## PART I: PROJECT INFORMATION

Project Title: Circular Economy approaches for the electronics sector in Nigeria			
Country(ies):	Nigeria	GEF Project ID:	
GEF Agency(ies):	UNEP	GEF Agency Project ID:	01689
Project Executing Entity(s):	National Environmental Standards and Regulations Enforcement Agency of Nigeria (NESREA)	Submission Date:	30 January 2019
GEF Focal Area (s):	Chemicals and Wastes	Expected Implementation Start	March 2019
		Expected Completion Date	March 2022
Name of Parent Program		Parent Program ID:	

### A. Focal/Non-Focal Area Elements

Programming Directions	Focal Area Outcomes	Trust Fund	(in \$)	
			GEF Project Financing	Confirmed Co-financing
(select) CW-1-1	Strengthen the sound management of industrial chemicals and their waste through better control, and reduction and/or elimination	GEFTF	2,000,000	13,086,582
<b>Total project costs</b>			2,000,000	13,086,582

### B. PROJECT DESCRIPTION SUMMARY

Project Objective: Nigeria adopts a financially self-sustaining circular economy approach for electronics						
Project Components/ Programs	Component Type	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Confirmed Co-financing
Component 1: Circular electronics management	Technical Assistance	The electronics sector recovers and reintroduces usable materials into the value chain and disposes of hazardous waste streams in an environmentally sound manner.	Output 1: The Government of Nigeria and Producers jointly implement the Extended Producer Responsibility (EPR) legislation for the electronics sector  Output 2: 300 tonnes of e-waste are collected through formalized collection channels that minimize environmental and health impacts  Output 3: Develop cost-effective recycling and disposal systems for various e-waste categories  Output 4: Regional and global	GEFTF	1,689,000	13,086,582

			knowledge exchange on Circular economy models for the electronics sector			
		Project progress and results are monitored and reported	Ongoing monitoring and evaluation of project results		130,000	
Subtotal					1,819,000	13,086,582
Project Management Cost (PMC)				GEFTF	181,000	
<b>Total project costs</b>					2,000,000	13,086,582

For multi-trust fund projects, provide the total amount of PMC in Table B, and indicate the split of PMC among the different trust funds here: ( )

**C. CONFIRMED SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE**

Please include evidence for co-financing for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
Recipient Country Government	National Environmental Standards and Regulations Enforcement Agency of Nigeria (NESREA)	In-kind	Recurrent expenditures	9,025,000
Private Sector	Hinckley	Equity Investment	Investment mobilized	2,451,582
Private Sector	Hinckley	In-kind	Recurrent expenditures	1,000,000
Other	United Nations University	In-kind	Recurrent expenditures	610,000
<b>Total Co-financing</b>				13,086,582

Describe how any "Investment Mobilized" was identified.

The investment provided as co-finance by Hinckley relates to recent, current, and planned future investments in a recycling facility for e-waste in Lagos, and a new 1m USD facility in Ogun State.

**D. The investment provided as co-finance by Hinckley relates to recent, current, and planned future investments in a recycling facility for e-waste in Lagos, and a new 1m USD facility in Ogun State. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS**

GEF Agency	Trust Fund	Country Name/Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee (b)	Total (c)=a+b
UNEP	GEF TF	Nigeria	Chemicals and Wastes	SAICM	250,000	23,750	273,750
UNEP	GEF TF	Nigeria	Chemicals and Wastes	POPS	875,000	83,125	958,125
UNEP	GEF TF	Nigeria	Chemicals and Wastes	Mercury	875,000	83,125	958,125
<b>Total GEF Resources</b>					2,000,000	190,000	2,190,000

**E.1. PROJECT PREPARATION GRANT (PPG) [Skip this section if PPG has previously been requested (as child project)]**

Is Project Preparation Grant requested? Yes  No  If no, skip item E.1.

**PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS**

GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in \$)		
					PPG (a)	Agency Fee (b)	Total c = a + b
UNEP	GEF TF	Global	Chemicals and Wastes	SAICM	50,000	4,750	54,750
<b>Total PPG Amount</b>					50,000	4,750	54,750

**E.2. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? No**

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF Trust Fund).

**F. PROJECT’S TARGET CONTRIBUTIONS TO GEF 7 CORE INDICATORS**

Select the relevant sub-indicator values for this project using the methodologies indicated in the Core Indicator Worksheet provided in Annex F and aggregating them in the table below. Progress in programming against these targets is updated at mid-term evaluation and at terminal evaluation. Achieved targets will be aggregated and reported any time during the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCC.

Project Core Indicators		Expected at CEO Endorsement
1	<b>Terrestrial protected areas</b> created or under improved management for conservation and sustainable use (Hectares)	
2	<b>Marine protected areas</b> created or under improved management for conservation and sustainable use (Hectares)	
3	Area of <b>land restored</b> (Hectares)	
4	Area of <b>landscapes under improved practices</b> (excluding protected areas)(Hectares)	
5	Area of <b>marine habitat under improved practices</b> (excluding protected areas) (Hectares)	
	Total area under improved management (Hectares)	
6	<b>Greenhouse Gas Emissions Mitigated</b> (metric tons of CO <sub>2</sub> e)	
7	<b>Number of shared water ecosystems</b> (fresh or marine) under new or improved cooperative management	
8	Globally over-exploited <b>marine fisheries</b> moved to more sustainable levels (metric tons)	
9	<b>Reduction</b> , disposal/destruction, phase out, <b>elimination</b> and avoidance of <b>chemicals of global concern</b> and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)	300 tonnes of POPs and mercury containing wastes
10	Reduction, avoidance of emissions of <b>POPs to air</b> from point and non-point sources (grams of toxic equivalent gTEQ)	

11	Number of <b>direct beneficiaries disaggregated by gender</b> as co-benefit of GEF investment	100 total: 30% female
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Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided.

The project will contribute minimum quantified global environmental benefits through direct interventions on e-waste management in Nigeria under the following Sub-Indicators under Core indicator 9:

- Indicator 9.1, Solid and liquid Persistent Organic Pollutants (POPs) and POPs containing materials and products removed or disposed: the project will collect 3 tonnes of plastics contaminated with Hexa-Heptabromodiphenyl ether
- Indicator 9.2: Quantity of mercury reduced: the project will collect and dispose of 30 tonnes of cathode ray tube (CRT) lead glass contaminated with mercury
- Indicator 9.3: Number of countries with legislation and policy implemented to control chemicals and waste: 1 country will fully apply its existing EPR legislation and register producers

In addition to the POPs and mercury targets above, the project will also contribute to implementation of the Strategic Approach to International Chemicals Management (SAICM) and its Emerging Policy Issue on Hazardous Substances in the Lifecycle of Electrical and Electronic Products (HSLEEP). Other hazardous substances that will be reduced and prevented from entering the Nigerian and global environment include heavy metals (lead, cadmium) and endocrine disruptors in plastics (such as the pthalates contained in the EU Regulation of Hazardous Substances directive). Endocrine disruptors are an Emerging Policy Issue in their own right, so the project will effectively address two areas under SAICM.

The project will ultimately result in far greater impact through the development of a practical circular electronics model for Africa and beyond. The project will develop business intelligence to quantify non-recyclable hazardous waste fractions, and demonstrate a lifecycle approach to address these. The strategies adopted will range from designing the hazardous components out of the electronic products to a regionally coordinated waste management approach. While these benefits cannot be quantified during the project, in Nigeria alone an estimated 52,000 tonnes of brominated plastics, 4,000 tonnes of lead, 80 tonnes of cadmium and 0.3 tonnes of mercury are burned or dumped every year, indicating the potential scope of a long term circular economy approach in reducing global and local pollutants.

The project will directly benefit at least 100 informal workers (scavengers, collectors, repairers, and recyclers of e-waste) as described in the Proposed Alternative Scenario and logframe. The total number of informal e-waste workers in Lagos is estimated in the thousands, however the project is proposing to work on a trial basis with a limited number to understand the challenges and realistic models, with the available budget. The direct project support to these 100 direct beneficiaries (min 30% women) will allow them to become formal (e.g. with access to social security; enjoy improved working conditions; and be linked to formal rather than informal recycling endpoints).

## G. PROJECT TAXONOMY

Fill up the table below for the taxonomic information provided at PIF stage. Use the GEF Taxonomy Worksheet provided in Annex G to find the most relevant keywords/topics/themes that best describe the project.

Level 1	Level 2	Level 3	Level 4
Influencing Models	Transform policy and regulatory environments		
Influencing Models	Convene multi-stakeholder alliances		
Influencing Models	Deploy innovative financial instruments		
Stakeholders	Private sector	Individuals/ Entrepreneurs	
Stakeholders	Civil society	Trade Unions and Workers Unions	
Capacity, Knowledge and Research	Capacity Development		
Capacity, Knowledge and Research	Innovation		
Gender Equality	Gender mainstreaming		
Gender Equality	Gender results areas		
Focal Area/Theme	Chemicals and wastes	Waste management	E-waste
Focal Area/Theme	Chemicals and wastes	Mercury; UPOPs, new POPs, disposal, plastics, eco-efficiency, Open Burning, BAT/ BEP	
		<input type="checkbox"/> Climate Finance (Rio Markers)	<input type="checkbox"/> Paris Agreement
			<input type="checkbox"/> Sustainable Development Goals
			Climate Change Mitigation 0
			Climate Change Adaptation 0
			<input type="checkbox"/> Climate Change Mitigation 1
			<input type="checkbox"/> Climate Change Mitigation 2
			<input type="checkbox"/> Climate Change Adaptation 1
			<input type="checkbox"/> Climate Change Adaptation 2

**PART II: PROJECT JUSTIFICATION**

DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF

*1a. Project Description. Elaborate on: i) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description); ii) the baseline scenario and any associated baseline projects, iii) the proposed alternative scenario with a description of outcomes and components of the project; iv) alignment with GEF focal area and/or impact program strategies; v) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing; vi) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and vii) innovativeness, sustainability and potential for scaling up.*

*i. Global environmental problems:*

According to Africa Waste Management Outlook<sup>1</sup>, 125 million tonnes of municipal solid waste was generated in Africa in 2012 and this amount is expected to double by 2025. The growth in waste generation in Africa is foreseen to be so significant that decrease or slower growth in waste generation in other regions will be overshadowed by increases in Africa. Furthermore, current waste management practices in Africa cause disproportionate economic, social and environmental impacts with more than 90% of waste disposed of at uncontrolled dumpsites and landfills. Informal waste pickers are active in recovering valuable resources from the waste at little or no cost to municipalities and private companies, whilst at the same time being exposed to the adverse environmental and health impacts caused by the primitive recycling techniques applied.

Electronic waste (e-waste) creates particular environmental problems through pollution by hazardous materials such as lead, mercury, beryllium, cadmium, and persistent organic pollutants (POPs) such as brominated flame retardants. During 2016, the Swedish Chemicals Agency inspected the content of 154 electrical and electronic low-price products and found chemicals banned or severely restricted for these uses in the EU, including lead, phthalates and short chain chlorinated paraffins, in 38% of samples<sup>2</sup>. The fractions of waste containing these hazardous components are largely ignored by the informal recycling operators and dumped resulting in the contamination of the local and global environments. Furthermore, even the recovery of the valuable metals (ferrous metals, aluminium, copper, nickel, gold, silver and palladium) results in contamination as primitive practices are common. These practices include: the burning of plastic cables to access copper wires causing the release of dioxins and other pollutants to atmosphere affecting air quality; and, the use of acid to leach precious metals from printed circuit boards causing air and water pollution. The unsound management of e-waste therefore causes loss of valuable resources, negative impacts to the local environment (air pollution, water and soil contaminations from the toxic and hazardous substances) plus contamination of the global environment via release of POPs and mercury.

Current e-waste management also results in health problems to the informal workers and communities close to the toxic waste dump sites. Informal recycling has traditionally been practised by marginal groups in developing countries and they are often a subject of harassment by the authorities and police, creating a loop that perpetuates if not increases social problems<sup>3</sup>. Informal workers are directly exposed to hazardous chemicals because of manual handling and lack of protective clothing/equipment and as a result commonly experience respiratory and dermatological problems, eye infections and lower than average life expectancy<sup>4</sup>. Research in Asia has demonstrated health risks to informal waste workers and their families associated with heavy metals, and dioxin related compounds discovered in high concentrations in breast milk of female waste recyclers. The stillbirth rate in a waste site in Guiyu was 4.6 times that of control sites, while blood lead concentrations in neonates were 4.8 times the control<sup>5</sup>. At the same time, informal sector workers do not have access to social

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<sup>1</sup> [http://wedocs.unep.org/bitstream/handle/20.500.11822/25515/Africa\\_WMO\\_Summary.pdf?sequence=1&isAllowed=y](http://wedocs.unep.org/bitstream/handle/20.500.11822/25515/Africa_WMO_Summary.pdf?sequence=1&isAllowed=y)

<sup>2</sup> KemI (2016) Supervision of electrical low-priced products (<http://www.kemi.se/global/tillsyns-pm/2016/tillsyn-11-16-tillsyn-av-elektriska-lagprisprodukter.pdf>)

<sup>3</sup> Informal Waste Recycling In Lagos, Nigeria TC Nzeadibe\* and HC Iwuoha.

[https://www.researchgate.net/publication/216888726\\_Informal\\_waste\\_recycling\\_in\\_Lagos\\_Nigeria](https://www.researchgate.net/publication/216888726_Informal_waste_recycling_in_Lagos_Nigeria)

<sup>4</sup> Role of informal sector recycling in waste management in developing countries David C. Wilson, Costas Velis, Chris Cheeseman. [https://ac.els-cdn.com/S0197397505000482/1-s2.0-S0197397505000482-main.pdf?\\_tid=d27daf70-fb4b-4d88-a56f-62d4cb1d9038&acdnat=1532678673\\_26cfc9c94e19a8ba06cb9cbbe8205d19](https://ac.els-cdn.com/S0197397505000482/1-s2.0-S0197397505000482-main.pdf?_tid=d27daf70-fb4b-4d88-a56f-62d4cb1d9038&acdnat=1532678673_26cfc9c94e19a8ba06cb9cbbe8205d19)

<sup>5</sup> Yang et al (2018) Waste management, informal recycling, environmental pollution and public health. Journal of Epidemiology and Community Health, [http://centaur.reading.ac.uk/74547/1/Informal%20waste%20recycling%2C%20waste%20management%20systems%2C%20and%20public%20health11\\_author\\_final\\_version.pdf](http://centaur.reading.ac.uk/74547/1/Informal%20waste%20recycling%2C%20waste%20management%20systems%2C%20and%20public%20health11_author_final_version.pdf)

insurance or health insurance and are disproportionately affected by these problems which are often left untreated<sup>6</sup>.

The global environmental objective to be addressed by this project can therefore be summarised as:

The reduction in the release of global pollutants (POPs, mercury and chemicals addressed under SAICM) into the environment from the unsound handling and management of e-waste. The co-benefit of this reduction includes a reduction in impacts on vulnerable populations engaged in the sector and reducing the contamination of air, land and water at local and global level.

### Nigeria

Nigeria has been undergoing rapid transformation in information and communication markets, mainly by importing new and used electrical and electronic equipment, 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, aluminium and copper while at the same time producing quite a significant amount of waste under primitive refurbishment and material recovery approaches (such as manual dismantling and hand soldering with lead solders). Many waste fractions with no economic value are usually dumped or burned in an uncontrolled manner. This has caused severe emissions of pollutants such as heavy metals and POPs (including dioxins, furans and flame retardants (PBDEs) often adhered to fine dust particles), being released into the air, the water and soil systems<sup>7</sup>. A large and informal recycling sector disposes of the hazardous and non-valuable fractions of this waste stream - an estimated 52,000 tonnes of brominated plastics, 4,000 tonnes of lead, 80 tonnes of cadmium and 0.3 tonnes of mercury are burned or dumped every year. An estimated additional 80,000 tonnes of plastics are burnt in the open, generating dioxins and furans (see Table 1).

Table 1: Material recovery efficiency by the informal recycling sector in Nigeria<sup>8</sup>

Material fraction	Material content	WEEE going to recycling	Material recovered		Downstream process
			(%)	(tonnes)	
	(% in cat 1-4)	(tonnes)	(%)	(tonnes)	
Ferrous metal	37.9%	200,000	95%	190,000	local market / export (?)
Aluminium	8.5%	46,000	85%	40,000	local market / export (?)
Copper	8.7%	47,000	70%	33,000	export
Lead	0.7%	4,000	0%	0	dumped
Cadmium	1.51E-02%	80	0%	0	dumped
Mercury	5.14E-05%	0.3	0%	0	dumped
Gold	1.25E-04%	0.7	30%	0.2	export / burned / dumped
Silver	6.28E-04%	3.4	Na	Na	
Palladium	3.13E-05%	0.2	Na	Na	
Indium	2.60E-04%	1.4	0%	0	dumped
Brominated plastics	9.6%	52,000	0%	0	burnt
Other plastics	18.4%	100,000	20%	20,000	Local market, burnt
CRT glass	10.1%	54,000	0%	0	dumped
<b>Other</b>	7.2%	39,000	0%	0	dumped
<b>Total</b>	100%	540,000		283,000	(52% recovery rate)

<sup>6</sup> The informal economy of e-waste: The potential of cooperative enterprises in the management of e-waste / International Labour Office, Sectoral Activities Department (SECTOR), Cooperatives Unit (COOP) – Geneva: ILO, 2014

<sup>7</sup> Informal e-waste management in Lagos, Nigeria – socio-economic impacts and feasibility of international recycling co-operations. Öko-Institut e.V. 2011. [http://www.basel.int/Portals/4/Basel%20Convention/docs/eWaste/E-waste\\_Africa\\_Project\\_Nigeria.pdf](http://www.basel.int/Portals/4/Basel%20Convention/docs/eWaste/E-waste_Africa_Project_Nigeria.pdf)

<sup>8</sup> e-Waste Country Assessment Nigeria. EMPA, Switzerland. 2012.

***Root causes of the problem and barriers that need to be addressed:***

The following are key causes and barriers that need to be addressed to overcome the current existing problems (See also the Theory of Change in Annex A).

1. **Weak regulatory control capacity over e-waste imports, collection and recycling:** In Nigeria regulations and legislation do exist to manage e-waste risks including: import legislation, Extended Producer Responsibility (EPR) legislation, and a ban on importing Cathode Ray Tube (CRT) devices. All of these support the requirements of the Basel Convention. However, these requirements, and in the case of exports from the EU the shipment regulations of the EU WEEE Directive, are infringed daily mostly without consequences. Application of the EPR legislation is hampered by the complexity of the local market; by the lack (until recently) of a Producer Responsibility Organization (PRO) being established to register producers; and by insufficient awareness and training among government regulators and inspectors on the impacts of e-waste and the mechanisms available to bring forward improvements.
2. **Informality of collection and recycling actors:** E-waste is collected by a vast and unregulated informal sector representing the most marginalized groups, including women and children. While they do manage to achieve high levels of collection efficiency the conditions for workers result in direct exposures to hazardous substances with no job security or occupational protection. Furthermore, existing collection routes largely culminate in informal recycling facilities and unlicensed waste dumps, rather than environmentally sound recycling facilities and facilities designed for the environmentally sound disposal of hazardous waste. As well as directly creating environmental and social damage, this also undermines the profitability and ability to operate of the registered recyclers who are not able to meet certain minimum quantities of wastes to treat.
3. **The cost of treatment of hazardous chemicals in products:** Some materials (“fractions”) are not recyclable in principle and need to be disposed of as hazardous waste. It requires substantial investment in treatment infrastructure and operational supervision to ensure environmentally sound management in line with the requirements of the Stockholm and Minamata conventions (for POPs and mercury) and the Basel Convention for other wastes, compared to the current system of informal and highly polluting ultimate disposal practices (dumping, burning, acid leaching etc.). The cost of environmentally sound management (ESM) is currently higher than the revenues generated from selling the recycled materials. There are opportunities for higher recovery of certain streams (e.g. precious metals in circuit boards) however ultimately there is a need for recyclers to supplement revenue via working on additional revenue streams. This higher cost would also be covered through economies of scale with bulking of the hazardous waste fractions across the sector allowing for a critical mass of wastes for treatment to be centralised.
4. **High and unsustainable rate of generation of e-waste:** The continued presence of hazardous substances in manufacturing of both branded and non-branded electronics; and, the high and rapidly increasing rates of generation and import of e-waste (e.g. Nigeria generated almost 300,000 tonnes (te) in 2017) are a barrier to sound management. Even if measures and facilities are developed, they will not be able to address the growing amounts of waste. Major challenges include overconsumption of electronic devices by consumers in developed regions of the world; the continued import of e-waste and near-end-of-life equipment; lack of incentives for manufacturers (both domestically and internationally) to stop including CoC (Chemicals of Concern) and inadequate efficiency of component reuse and material recycling of the concerned products.

***ii. The baseline scenario or any associated baseline projects:***

The following section presents the baseline scenario in Nigeria and globally, firstly presenting an overview of the electronics and e-waste sector in Nigeria, followed by further details and description of each of the four barriers presented above.

**E-waste management in Nigeria**

A UNU study on e-waste in Africa was commissioned by the GEF project on Stockholm Convention national implementation plans in Africa (GEF ID 3969). The study shows that Nigeria domestically generates increasing amounts of e-waste, from around 170,000te in 2009 up to around 290,000te in 2017, corresponding to an



increase of around 170 % in this time period. Small household appliances accounted for around 40 % of e-waste, cooling and freezing equipment for another 21 %, and large household appliances added around 6 %. Thus, household appliances contributed around 67 % to the total e-waste arising in Nigeria in 2017. Screens (18 %) and small IT (12 %) were large contributors as well, while lamps had a share of only around 3 % in the total e-waste stream.

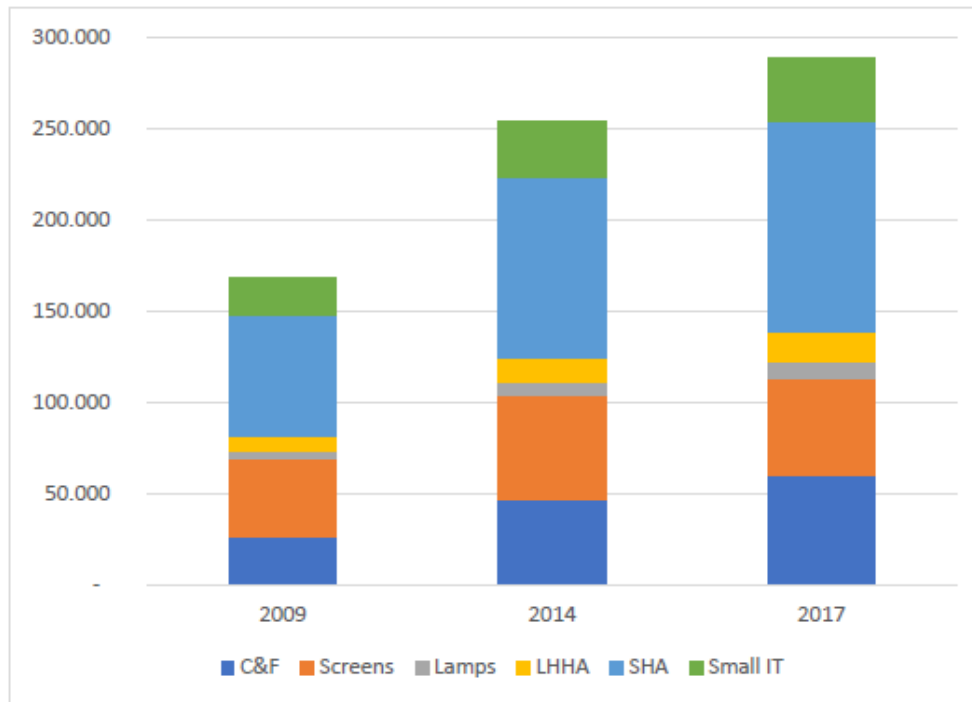


Figure 1 E-waste generated in Nigeria (in tonnes)  
(C&F cooling and freezing, LHHA large household appliances, SHA small household appliances, Small IT small information and communication technology devices)

Nigeria is one of the leading countries for e-waste imports in Africa (along with Ghana, South Africa, and Tanzania), importing second hand electronics and e-waste from more industrialized countries. The *Person in Port* project<sup>9</sup> implemented by UNU estimates that around 60,000te of used electrical and electronic equipment (UEEE) was imported in sea shipping containers to Nigeria per year via two ports in Lagos and not including imports over land routes from neighbouring countries. Most types of imported UEEE are at least partially functional, but the fraction which is ‘dead on arrival’ is estimated at at least 15,700te per year, most of it LCD-TVs containing mercury, refrigerators and air conditioners containing (hydro)chlorofluorocarbons. Imports are frequently falsely declared, while the *Person in Port* project also identified undeclared imports of UEEE stored in vehicles entering the country via shipping containers or Roll-on/roll-off imported vehicles. The project concluded that national and international regulations (including the Basel Convention, Nigerian import legislation, Nigerian ban on CRT devices, and the EU WEEE Directive) are infringed on a daily base without consequences.

A regional project by the Secretariat of the Basel Convention in 2008-2012<sup>10</sup> was successful in enhancing the capacity of African countries to tackle the growing problem of e-waste, including development of national e-waste assessments in Benin, Côte d’Ivoire, Ghana, Liberia and Nigeria. The “e-Waste Country Assessment

<sup>9</sup> Odeyingbo, O., Nnorom I., and Deubzer, O. 2018. Assessing Import Of Used Electrical and Electronic Equipment into Nigeria - Person in The Port Project. BCCC Africa and UNU - ViE SCYCLE.

<sup>10</sup> E-waste in Africa Programme, working in Nigeria, Ghana, with financial support from the European Commission, Norway, the United Kingdom, and the Dutch Recyclers Association (NVMP) - <http://www.basel.int/Implementation/Ewaste/EwasteinAfrica/Overview/Activities/tabid/2547/Default.aspx>

Nigeria Report<sup>11</sup> estimates that the material recovery rate (recycling and reuse) of the informal recycling systems in Nigeria was estimated at around only 52% due to unsound overall management of waste (see diagram 1).

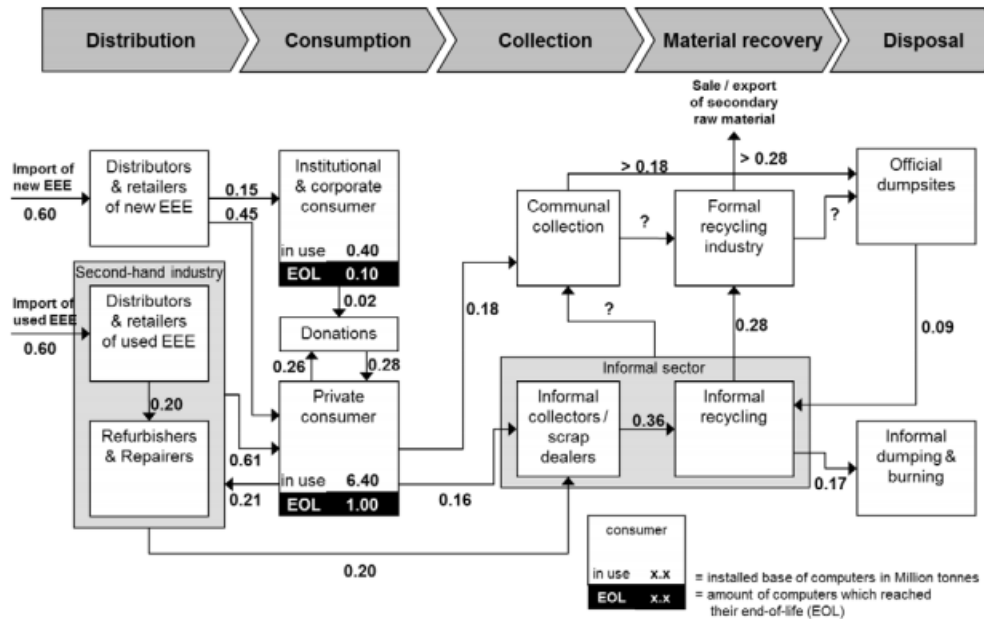


Figure 2: Massflows for (W)EEE in Nigeria in 2017 (unit: in million tonnes)

In Lagos the refurbishing, collection and recycling of used and end-of-life e-products takes place in and around certain geographic business clusters. The most prominent of these clusters are *Alaba Market* and *Ikeja Computer Village* which comprise 2,500 and 3,000 small businesses respectively. The businesses focus on refurbishing and marketing of used electrical and electronic products. The so-called *Westminster Market* located close to the port is another hub for imported second-hand equipment as well as *Lawanson Market*, a mid-sized second-hand market for used EEE.

According to NESREA, the Nigerian market for electronics is mainly composed of importers of large international brands, including:

- Large household appliances (washing machines, dryers, ovens): Samsung, Panasonic, LG, Nexus, Haier etc.
- Large household appliances (Refrigerator and air conditioner): Samsung, LG, Panasonic, Haier etc.
- TV: Samsung, LG, TP Vision, SONY, Sharp etc.
- ICT and telecommunications Equipment, Computer, Laptop and tablet: SONY, Microsoft, Toshiba, Apple, DELL, Intel, HP, ASUS, ACER, Lenovo, Samsung etc.
- Monitor: Dell, HP, Acer etc.
- Small household equipment: LG, Philips, Panasonic, SONY etc.
- Mobile phone: SONY, Apple, Sharp, Huawei, LG, Samsung, Gionee etc.
- Lighting: Signify, LG, Oki Electric Industry Co.

### Barrier 1: Regulations and enforcement

The NESREA Act of 2007 establishes the National Environmental Standards and Regulations Enforcement Agency (NESREA), with the prerogative to implement an EPR system. In particular:

- Section 7g mandates the agency to enforce compliance with regulations on the importation, exportation, production, distribution, storage, sale, use handling and disposal of hazardous chemicals and waste;

<sup>11</sup> [http://www.basel.int/Portals/4/Basel%20Convention/docs/eWaste/EwasteAfrica\\_Nigeria-Assessment.pdf](http://www.basel.int/Portals/4/Basel%20Convention/docs/eWaste/EwasteAfrica_Nigeria-Assessment.pdf)

- The National Environmental Regulations of 2009, SI No 28 on sanitation, states that it shall be the responsibility of manufacturers and producers to incorporate environmental concerns in the design, process and disposal of a product.
- Regulation 2011, SI No 23, for the electrical and electronic sector, states that: regulation 11(1) Every importer, exporter, manufacturer, assembler, distributor, and retailer, of various brand of EEE products, shall subscribe to an extended Producer Responsibility Programme, including the Buy Back as specified in Schedule VIII of these regulations. Section 11(3) further requires Manufacturers and Importers of EEE shall partner with the Agency, on the Extended Producer Responsibility Programme, within 2 years of commencement of these regulations in order to achieve the Buy Back within the period of 2 years.

NESREA produced and issued an operational guideline for the EPR program in 2014 to support stakeholders in compliance with these regulations, which cover the sectors of electronics, battery, tyres, food & beverage (packaging), paper, paints, and used oils. In the electronics sector, the guidance covers the following product categories: computer and electronic products, audio and video equipment, communication equipment, leisure and lifestyle equipment, small household appliances, large household appliances, electrical and electronic tools, monitoring equipment. Progress to date includes the establishment of a Producer Responsibility Organization, although this is not yet a fully operational system to support the Extended Producer Responsibility Programme for electronics.

A potential model for the EPR system exists in Nigeria with the more advanced status of the 2015 Food & Beverage Recycling Alliance which serves as Producer Responsibility Organization (PRO) for the food and beverage sector. The organization gather some of the biggest players in the market, such as Coca-Cola, Nestle, Nigerian Breweries and Seven-Up Bottling Company, and advocates collaboration for setting up platforms to drive the recovery and recycling of waste. The implementation of the EPR program in the food and beverage sectors started in the first quarter of 2016, and the participating companies advanced substantial amount of budgets to establish the collection and recycling system for plastic bottles and other packaging materials<sup>12</sup>.

Since 2011, the E-Waste Solutions Alliance for Africa (the Alliance), comprising of Dell, HP, Microsoft Mobile and Philips, has been pro-actively working to implement a sustainable model for e-waste recycling in Africa. The alliance has created a full multi-stakeholder blue-print for implementing an effective, private sector managed e-waste system in Nigeria.

The Alliance in collaboration with NESREA initiated the formation of a Local Producer Working Group in 2016. The Group is comprised of local manufacturers and importers of electrical and electronic equipment. The Group adopted an EPR plan drafted by the Alliance with the support of knowledgeable international consulting firms (Deloitte and Sofies). The Group fine-tuned and further localized the EPR plan that was subsequently approved by NESREA for implementation in 2017. With the complete blue print available for the set up and financing of a Producer Responsibility Organization (PRO) by the Group, NESREA requested that the PRO first be incorporated as a legal entity before the local industry will be expected to subscribe.

The PRO (Extended Producer Responsibility Organization of Nigeria or EPRON) was duly incorporated in March 2018 by the Group. Funding is currently being sourced for the operationalization of EPRON as per it's business and budget plan. There is a need for EPRON to register more producers in its system under s a functional governance structure, to start preparing future activities on establishing take-back and recycling schemes for environmentally sound treatment of e-waste in Nigeria.

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<sup>12</sup> <https://realnewsmagazine.net/environment/minister-urges-food-beverages-companies-to-implement-epr-policy/>

## Barrier 2: Collection and informality of the sector

Collection of e-waste in Nigeria is through the formal and informal organisations, with the informal sector being the major collector through waste pickers and scrap dealers' agents scattered in the country<sup>13</sup>. There are distinct steps in the collection network:

- Waste pickers collect waste in pushcarts from households at a price or just picking up discarded goods from domestic waste dumps. The average age of pickers is 30<sup>14</sup> with women representing 30% of pickers in Lagos dumpsites<sup>15</sup>.
- Waste pickers typically sell their material to brokers who dismantle it to extract the materials identified with most economic value. The collected e-waste is co-mingled with other metal scrap.
- Refurbishers are also an important source of collected materials to recycling facilities. Refurbishers in Nigeria are relatively well organized, with many belonging to different and competing associations such as Association of Vendors of Used Computers and Allied Products (AVUCAP), as well as the Computers and Allied Products Dealers Association of Nigeria (CAPDAN), with established apprenticeship schemes, registered with the authorities and paying taxes. However, they may dispose of their waste including hazardous components into the informal recycling sector and directly to dumpsites where burning etc is common.
- Importers also provide material to informal waste pickers, especially in Lagos due to the adjacency to the ports, where e-waste or used electronics are shipped into Nigeria.

The formal organisations involved in e-waste collection in Lagos are Lagos State Waste Management Agency (LAWMA) and the Lagos State Environmental Protection Agency (LASEPA). LASEPA, through a consultant under a public private partnership arrangement, collects municipal and industrial waste in addition to waste from households and commercial/ industrial facilities. Currently the e-wastes collected are kept apart in a section of the Olusosun, Igodun and Ikorodu<sup>16</sup> dump sites managed by the LAWMA. These sites are solely managed by the Lagos State Government. There is also an e-waste Collectors Association of Nigeria with over 100 registered members/collectors nationwide. This association provides health check-ups, trainings and Personal Protective Equipment (PPE) to the collectors.

As the informal collectors work at an individual and flexible basis they have a good access to the waste sources (end consumers, e-waste importers, waste dumping sites etc.) and lower labour cost compared to the formal collectors. This is largely due to inferior working conditions (no fixed contract, insurance or occupational protection with exposure to pollutions). Therefore, they are more competitive than the formal sectors in collection efficiency and the overall profit. When there is formal system in place in the future, the formal collection channels need to consider the existence of the informal collectors and develop innovative approach to make good use of the informal collectors, without losing their working flexibility, while offering more job security and occupational protection. The formal sector can thus be seen as an agent of change to improve the social / working conditions of their informal counterparts.

The potential opportunity of sustainable e-waste management has attracted attention from entrepreneurs in many developing countries. This has resulted in the development of innovative technology-based solutions. These include app-based collection tools such as 'Dr Weee' in Egypt or 'I got garbage' in India<sup>17</sup>. This approach

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<sup>13</sup> Collectors are defined in the operational guidelines of NESREA. Collector is defined as "a person or organisation who operates a centre or a point where wastes are collected or stored temporarily for the purpose of recycling". Informal collector is "a person who searches and picks waste that can be reused or recycled, and does not belong to a formal organisation".

<sup>14</sup> Health Risks Awareness of Electronic Waste Workers in the Informal Sector in Nigeria Chimere M. Ohajinwa 1,\* ID , Peter M. Van Bodegom 1 , Martina G. Vijver 1 and Willie J. G. M. Peijnenburg 1,2. [www.mdpi.com/1660-4601/14/8/911/pdf](http://www.mdpi.com/1660-4601/14/8/911/pdf)

<sup>15</sup> Informal e-waste management in Lagos, Nigeria – socio-economic impacts and feasibility of international recycling co-operations. <https://www.oeko.de/uploads/oeko/oekodoc/1371/2011-008-en.pdf>

<sup>16</sup> <https://ejatlas.org/conflict/e-waste>

<sup>17</sup> <https://www.wamda.com/2017/03/egypt-startup-dr-weee-tackles-e-waste>; <https://www.igotgarbage.com/what-we-do/>

will be investigated under the project and included in the overall strategy for implementation if found to work in the local context.

### **Barrier 3: Lack of environmentally sound/ formal recycling**

Recycling of e-waste is dominated by the informal recyclers, with informal recyclers spread all over the country, with the major ones in Lagos are located in Alaba rago, Olusosun dumpsite and Odo Iya alaro at Ojota while Sabongari serves as the hub for those in and around the Kano area. The informal recycling is done in a crude manner:

- E-waste is manually dismantled and separated for valuable fractions without protection measures.
- Copper wire and waste cables are burned with waste tyres in the open air to retrieve the copper coils.
- Non-valuable fraction (hazardous/non-hazardous) including the ash from the burning activities are either disposed with municipal solid waste or burnt off in the dark hours/ after government officials close work or abandoned on site.

The success of a sustainable e-waste management system will require addressing practices in the informal sector, encouraging and supporting transition to better treatment and improved facilities whilst also providing disincentives for actors who continue to cut costs by engaging in hazardous practices. The formal recycling sector needs to develop an eco-efficient approach, by combining the benefits of combining manual dismantling as pre-processing and state-of-the-art refinery facilities for critical dismantled fractions (*Best of Two Worlds* approach).

There are currently two recyclers recognized and certified by NESREA: (i) *Hinckley Recycling* (<http://www.hinckley.com.ng/recycling/>), and (ii) *E-Terra Technologies Ltd.* *Hinckley* can currently process 10,000 tonnes a year, and the treatment capacity will increase to 30,000 tonnes by October 2019. Additional companies are also thought to be in the process of registering, for example a new recycling company recently established by Sunray Ventures, *Green Compass Recycling*, which aims to set up formal collection networks and introduce best practices in the management and recycling of e-waste in Nigeria. The major challenge experienced by these formal recycling facilities is the competition for waste from informal recyclers, who are able to pay vendors more for e-waste thanks to their overall lower costs. Thus, the formal recyclers do not operate at full capacity which increases their operating costs and threatens their economic sustainability.

Downstream vendors in Nigeria buy the valuable e-waste fractions (e.g. printed circuit board, steel, aluminum, copper, plastics, cables, etc.) produced by the recyclers. Major destinations of collected, recycled materials are towards buyers in Onitsha, Lagos, Warri and Kano. The buyers are not registered, however, there is a process to register all collectors (buyers inclusive). The iron and aluminum fractions are sold to local iron smelters and companies in Nigeria, and circuit boards are exported to China and other Asian countries.

### **Barrier 4: Generation of hazardous e-waste**

The high rate of generation of non-recyclable fractions from e-waste can be stemmed if manufacturers replace hazardous substances upstream in the design and manufacture stages. Many global electronics manufacturers have developed their own restricted or reportable substances lists, with hazardous substances either already phased out or in the process. Many of these global companies explicitly design their chemical transparency initiatives to facilitate reporting under the EU RoHS and other national and regional regulations, but there is currently no industry-wide common standard for environmental performance or chemical safety. The Electronic Product Environmental Assessment Tool is one of the most widely adopted voluntary ecolabel in the IT sector, with strict environmental criteria that address the full product lifecycle, from energy conservation to product longevity and end-of-life management and toxic materials including lead, mercury, cadmium, hexavalent chromium, bromine and chlorine. A related project on Chemicals in Products under the Strategic Approach for International Chemicals Management SAICM (GEF ID 9771) will further develop global comparisons and tools to accelerate the transition away from hazardous substances in the design of electronic products.

Hazardous substances within the life cycle of electrical and electronic products (HSLEEP) were first considered in the Strategic Approach emerging policy issues context at the second session of the International Conference on Chemicals Management (ICCM2) in 2009. 13 activities were added to the SAICM Global Plan of Action in 2012, focusing on green design, environmentally sound manufacturing and awareness raising. An international workshop in 2011 hosted by UNIDO resulted in several recommendations for the sound management of hazardous substances within the lifecycle of products. However the SAICM independent Evaluation<sup>18</sup> in 2017/2018 found that progress on HSLEEP has been slow and has centred on downstream activities on sustainable e-waste management. A SAICM survey in 2014 mapped existing tools for management of HSLEEP and reiterated the need for more work on the upstream and midstream levels of the life cycle, such as in design and manufacturing<sup>19</sup>.

In 2016 the UN Environment Management Group (EMG) established an Issue Management Group on ‘Tackling E-waste: Towards Eco-design and a Life-cycle Approach for E-products - Coordinating delivery by the United Nations’ and identified 23 UN and related entities active with 154 e-waste initiatives (e.g. country programmes collaboration and partnerships, reports, guidance, training and tools, and quantitative studies and inventories)<sup>20</sup>. The group concludes that “*stronger emphasis on the design phase of EEE would require stronger collaboration by the UN with the private sector and offer stronger opportunities for UN-private sector partnerships. However, closer collaboration between UN entities and industry actors is at times challenged by legal interpretations regarding the extent to which UN entities can engage in externally and privately-funded projects.*”. In March 2018 at the World Summit on the Information Society Forum, UN Environment, the International Telecommunication Union (ITU), United Nations University (UNU), International Labour Organization (ILO), the Basel and Stockholm Conventions, the United Nations Industrial Development Organization (UNIDO) and the United Nations Institute for Training and Research (UNITAR) signed a Letter of Intent to establish an ‘e-waste coalition’ to improve coordination to address e-waste management.

The development of initiatives on a circular economy model already covers plastics, textiles and electronics. UN Environment programmes are coordinated from the Consumption and Production Unit, particularly on plastics. On a global level, the Platform for Accelerating the Circular Economy (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. Through developing innovative and blended financing models in developing and emerging economies the Platform brings many electronics producers together with public sector partners. Furthermore a number of initiatives are addressing sustainability in electronic products, most notably on energy efficiency and climate change initiatives such as the the UN Environment Sustainable Energy for All Accelerator (SEA4ALL) under the United For Efficiency programme, developing capacities for sound disposal of lamps and appliances and energy efficiency in buildings.

***iii. The proposed alternative scenario, GEF focal area strategies, with a brief description of expected outcomes and components of the project:***

In the proposed alternative scenario, the project aims to stimulate the development and operation of a financially self-sustaining circular economy approach for electronics products in Nigeria, including the treatment and management of e-waste.

## **Expected Outcome**

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<sup>18</sup> <http://saicm.org/Beyond2020/IntersessionalProcess/SecondIntersessionalmeeting/tabid/6193/language/en-US/Default.aspx>

<sup>19</sup> Compilation Of Best Practices On Hazardous Substances Within The Life Cycle Of Electrical And Electronic Products (OEWG.2/INF/14)

<sup>20</sup> EMG (2017) “United Nations System-wide Response to Tackling E-waste <https://unemg.org/images/emgdocs/ewaste/E-Waste-EMG-FINAL.pdf>

The electronics sector recovers and re-introduces usable materials into the value chain and disposes of hazardous waste streams in an environmentally sound manner.

### **Expected Outputs**

The project outputs directly address the four barriers identified above. The barriers are expressed as outputs or objectives in the Theory of Change (Annex A) and the sections below describe the proposed activities for each.

#### **Output 1. The Government of Nigeria and Producers jointly implement the EPR legislation for e-waste**

This output seeks to support the Government of Nigeria to set a level playing field for collection and recycling operations; and to facilitate the contribution of producers in ensuring the long term financial and operational sustainability of e-waste management. The output will be delivered in line with the National Environmental (Electrical/Electronic Sector) Regulations of Nigeria and implement the existing 2014 operational guidelines.

The project relies on the engagement of the producers of equipment<sup>21</sup> in establishing a PRO, including the upfront investment required to operationalize the legally registered entity. Their initial investment is substantial (cost of registering organisation, communication, registration/book-keeping, administration, staff etc.), estimated to be 600,000 USD to 1.2 million per year, which will be the sole responsibility of the Producers. Eventually, the introduction of the levy on all producers in Nigeria will cover the full costs of the EPR system, including PRO operations, recycling and environmentally sound management of wastes, thus allowing the initial investors to recover their investment. The scope of the PRO will include new and used electrical and electronic products.

The GEF investment will support the PRO indirectly, by working with NESREA to strengthen the enabling environment for the PRO to operate and facilitate full participation by all producers in the country (Activities 1.1 and 1.4). The project will also provide direct support to NESREA in the form of a monitoring system including IT services to monitor producers (Activity 1.2); on analysis to identify the appropriate level for the mandatory levy (Activity 1.3); and on a comprehensive communication campaign to promote compliance (Activity 1.5).

The output will be delivered via the following activities:

##### **1.1 Detailed roadmap and implementation plan for enforcing the national EPR legislation**

The consultations and negotiations initiated during the project preparation will continue to obtain stakeholder buy-in to the project activities and identify and confirm the contribution of each partner.

- Roadmap drafted to cover: roles of stakeholders; priority categories of e-waste to be addressed; and function and monitoring of the PROs, drawing on relevant experience in other countries, and within Nigeria for other sectors especially the beverage sector (*NESREA and UN Environment*).
- This roadmap will be reviewed by government and producers, based on the pilot experience of this project as well as the learnings from other countries and sectors who have implemented EPR programs and PROs before, and followed by wider consultation with all stakeholders. (*UN Environment and NESREA*).
- Adoption by NESREA to complement the operational guidelines and support the implementation of the EPR program (*NESREA*)

It is expected that this roadmap will be developed during the first six months of the project.

##### **1.2 National database to centrally manage and update the data of producers**

This database will be used to maintain a national register of producers, recycling and waste organisations, and a national inventory of electronics products and e-waste. The specific operating modalities for this registry body

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<sup>21</sup> Producer is defined as ‘the most responsible entity which may include but is not limited to the brand owner, manufacturer, franchisee, assembler, filler, distributor, retailer or first importer of the product who sells, offers for sale, or distributes the product’. EPR programme in Nigeria, Operational guidelines, NESREA, 2014.



will be determined as part of the national Roadmap (Activity 1.1). By maintaining the database centrally, it will provide objective information for defining relevant policy targets and financial responsibility of different producers, monitoring the performance of PRO(s) and enforcement of the EPR legislation.

- A methodology and database structure will be established to enable the data compilation and analysis from national statistics, port data, and surveys from producers. (*NESREA and UN Environment*)
- Technical training will be provided to the technical experts who will use and maintain the database/platform in the future (*NESREA and UN Environment*).
- The database will be tested on the existing data, and further improved after the testing phase. (*NESREA and UN Environment*).

It is expected that this database will be developed by the end of Year 1.

### **1.3 Levy estimated for a financially self-sustaining EPR program, for at least 6 product categories**

The exact assessment of the levy for electronic categories of products in Nigeria will allow the project to be both replicable and sustainable, through the identification of the share of costs for each producer and the fees for handling collection and recycling. The economic analysis and guidance to be produced by technical consultants and supported by Targeted Technical Assistance from the Resources and Markets Branch within the Economy Division of UNEP (based in Paris) will also address the potential economic sustainability safeguards risks of the project as per the attached Gender and Socio-economic Safeguards and Action Plan.

- Business intelligence efforts to determine in detail the size and sectors in the market and possible revenue which the systems can generate. Set up a technical platform for producers to report their sales data, to have a full assessment of the market intelligence while ensuring data security and protecting business intelligence (*NESREA and UN Environment with input from private sector*).
- Assess operational and technical costs of e-waste management, based on the experience of operating the existing EPR program, as well as the experience from Output 2 and Output 3 on the pilot testing of collection and recycling. The economic analysis will consider the most marginalized groups participating in current informal collection and recycling networks as well as later stages of refurbishment, recycling and waste disposal (*NESREA, UN Environment, inputs from private and informal sectors*).
- A guidance will be developed to define the details of the fund management. This will include the level of levy needed for different product categories, modality to charge the levy (such as visible fee to consumers, or invisible fee included in the price), the use of the collected funds (to cover operation cost and cost for collection and treatment) and monitoring the spending of the funds. The terms of reference for the guidance will explicitly consider the equitable access to the levy among the different actors including the most marginalized in the informal sector (*NESREA, UN Environment*).

It is expected that the levy will be calculated by the end of first 18 months of the project.

### **1.4 Capacity development to train governmental compliance inspectors to monitor the performance of the EPR program**

Capacity building is key to achieve an efficient and coordinated policy implementation, both at government and private sector level. Based on existing best practices and experiences, training will be provided to government officials covering managerial and administrative tasks related to the operation of the EPR legislation and PRO.

- Training will be provided to at least 60 governmental compliance inspectors to monitor the EPR program on:
  - administrative activities (paperwork, contracts with logistic companies, collectors and recyclers, financial report of the organisation including the collection and use of the levy);
  - physical activities of the contracted collection and recycling facilities (technical, environmental and social performance of the collection companies and recycling facilities, with special focus on the efficiency of treatment, destination of hazardous materials and environment, health and safety performance) (*UN Environment and NESREA*).

Capacity development activities will be conducted in the first and second year of the project.



### **1.5 Communication package to promote compliance and participation in PROs by all producers**

- A communication package will be developed to inform about the implementation of the EPR program. It will target various stakeholder: governmental officials, producers, consumers, collectors/logistic companies, recyclers, and the informal sectors. The communication package may include: brochures, leaflet, newsletter, manual, infographics, video, and texts for various media (newspaper, website, TV and radio, townhall meetings and social media) (*NESREA*).

### **Output 2: 300 tonnes of e-waste are collected through formalized collection channels that minimize environmental and health impacts**

This output will carry out pilot activities to collect 300 tonnes of e-waste and explore the most efficient collection channels for various types of e-waste in Nigeri such as collection points, mobile collection trucks, governmental and business-to-business (B2B) collection and working with the informal collectors. The results will provide useful insights on the technical, economic and social performances of various collection methods, to recommend the best approach for effective collection. The output will build on the existing collection channels, leveraging substantial co-finance contributions from value chain actors possibly including EPRON, retailers, municipality, urban and rural areas, companies and government.

#### **2.1 Establish and enforce the environment, health and safety (EHS) standards for e-waste collection**

Standardised processes are key to assure a minimum level of quality and reliability that is critical to the waste management value chain. Based on existing international standards on environment, health and safety, the project will engage local stakeholders to develop or adapt the standards to the local context to level the playing field and facilitate monitoring by local authorities.

- Environmental, health and safety standards<sup>22</sup> for collecting, storing, transferring and transporting e-waste are developed, with technical instructions provided on handling hazardous product and fractions (such as CRT TV and glass, lithium batteries, capacitors containing PCBs, fluorescent lamps containing mercury) (*NESREA, ILO*).
- Engagement and capacity building of informal collectors to improve their processes to comply with the standards, including by establishing regular monitoring and feedback from collectors (*NESREA and electronic waste associations, BCRC and ILO*).

#### **2.2 Create minimum 30 collection channels to take back e-waste from users**

Collection channels are key for the successful operation of a waste management scheme, with licensed recyclers facing competition from informal recyclers. This output aims at creating at least 30 collection channels and improving existing ones to ensure wastes are delivered to registered recyclers rather than the informal sector.

- Best channels for collecting e-waste are identified by testing different alternatives, such as municipal collection centres, fixed collection points at high population density areas, mobile collection trucks, mobile phone apps, and door-to-door collection. It includes / considers both B2B channels (like government and big companies), and collection from consumers (*UN Environment, NESREA and Producers, EPRON*).
- Engage refurbishment associations (e.g. Association of Vendors of Used Computers and Allied Products, Computers and Allied Products Dealers Association of Nigeria) to link them up with licensed recyclers
- A communication package will be developed to increase awareness, to motivate consumers to send in their waste products (such as advertisement through various media, mobile apps and educational materials etc.). The communication package will include specific messaging targeting women who have been shown to be primarily responsible for waste management activities within the home (*Producers and recyclers*).

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<sup>22</sup> Example of such national standards: SRI baseline description – Ghana and their Technical Guidelines [https://www.sustainable-recycling.org/wp-content/uploads/2018/03/eWaste-Guidelines-Ghana\\_2018\\_EPA-SRI.pdf](https://www.sustainable-recycling.org/wp-content/uploads/2018/03/eWaste-Guidelines-Ghana_2018_EPA-SRI.pdf)

It is expected that collection activities will be conducted throughout the first 24 months of the project.

### **2.3 Integrate the informal collectors into the collection systems**

Engage with the informal collectors (with special attention on child labour and women workers), to improve their employment conditions and improve health, social, and environmental performance, while taking advantage of their efficiency of reaching to individual consumers. This activity will be developed in close consultation with social partners, including ILO and workers organizations, to define and proactively manage potential social safeguard issues associated with labour and working conditions of existing informal sector workers, as the project may have unintended negative impacts on livelihoods of particularly vulnerable sections of the informal sector. Activities will include:

- Labour market analysis with ILO and stakeholders to map the actors in the value chain including a gender-and socio-economic status disaggregated analysis of the labour force and to assess potential barriers for formalization, to identify actors who may resist EPR and the gradual formalization of the sector. The analysis should follow relevant ILO standards and methodologies, including involving employer associations, refurbisher associations, informal collectors, and aiming for a participatory approach to agree on a strategy to bring everyone on board. (NESREA, ILO)
- Training and provision of PPE to increase the use of required protection; and on standards and best practices in sound management of e-waste. (NESREA)
- Initiatives to improve conditions for informal collectors in terms of safety and health and unemployment, including by promoting microcredit, entrepreneurship and membership of associations/cooperatives, as well as via formal registration and access to social security (NESREA, ILO, EPRON).

### **Output 3. Develop cost-effective recycling and disposal systems for various e-waste categories**

300 tonnes of e-waste are expected to be treated by the end of the project, with 10.8 kg of precious metals (Ag, Au, Pd), 150 tonnes of common metals (Fe, Al, Cu), 90 tonnes of plastics re-entering the value chain; and 30 tonnes of CRT lead glass, and 3 tonnes of other hazardous fractions are treated by Environmentally Sound Management (ESM) facilities.

The expected net cost from the recycling and disposal of the 300 tonnes of e-waste is between 200,000 and 300,000 USD, depending on the market prices. This is because of the revenue from selling the recycled materials, while offsetting the cost of disposing the hazardous fractions, does not cover the full costs of environmentally sound management of hazardous components (export and destruction at hazwaste incinerators). This cost estimation does not include the set-up of state-of-the-art facilities and requires the in-kind contribution from recycling companies.

### **3.1 Strengthen recycling centres for environmentally sound treatment of e-waste enforcing EHS standards**

The project will support recyclers for adoption of Best of the Two Worlds approach<sup>23</sup> to combine manual dismantling in Nigeria as pre-processing with regional or international state-of-the-art refinery facilities as end-processing. The project will also investigate a revolving fund where seed funding can be provided to scale up recycling activities through micro-finance / loans to recycling companies to buy new equipment and then repaid to allow reinvestment. The project will also initially cover costs of treatment of fractions and materials with no resale / recovery value, pending the long-term financing through revenues generated from recycling and the levy.

- Establishment of additional pre-processing and/ or recycling centres to demonstrate the environmentally sound treatment of e-waste enforcing EHS standards, considering that there are several recyclers are in the process of acquiring recycling licenses from NESREA and two with license

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<sup>23</sup> 'Best-of-2-Worlds' approach provides a network and pragmatic solution for e-waste treatment in emerging economies. It seeks technical and logistic integration of 'best' pre-processing in developing countries to manually dismantle e-waste and 'best' end-processing to treat hazardous and complex fractions in international state-of-the-art end-processing facilities. <https://www.sciencedirect.com/science/article/pii/S0956053X12001407?via%3Dihub#f0050>

granted. This may include a pilot to use micro-loans to support small and medium sized enterprises to set up dismantling activities. (*NESREA, EPRON and Recyclers*).

- The collected e-waste from Output 2 will be treated through pilot test via the available routes, to assess:
  - identification for the best pre-processing and end-processing for various products and for their specific fractions, considering the recyclable materials such as base metal, previous metal and plastics.
  - compliance with relevant standards, technical guidance, or best practices on specific safeguard measures for the health, social, income, and environmental performance of recycling workers. Capacity building activities will be offered to train the managers and workers of the recycling centres (*UN Environment, recyclers and NESREA*).

Recycling activities will be conducted throughout the last 24 months of the project.

### **3.2 Assess the technical, economic and environmental performance of the recycling centres**

- Technical, economic and environmental performance of the recycling centres will be assessed, in line with Nigerian environmental permitting and licensing requirements as well as compared to global best practice. The assessment will present a comprehensive overview on the positive impacts of the formal recycling, while provide insight on the potential areas of improvement for recycling efficiency and economic performance (*NESREA and UN Environment*).

### **3.3 Develop system for disposal of non-usable fractions (POPs, mercury)**

- Map the downstream solutions and outlets for hazardous fractions at both national and international levels, to identify solutions for environmentally sound storage and disposal (*NESREA and Recyclers*).
- Develop the most cost-efficient approach and provide guidance/ obtain commitment of the recycling companies for storage pending collection of enough waste for a cost-efficient destruction operation, including possibility of export (*NESREA and EPRON*).
- Support the recycling companies to develop a tracking system to report the destinations for all the valuable and hazardous fractions coming from the pre-processing. This will ensure the inspectors to trace and monitor the performance of the recyclers, especially on the outlets of hazardous fractions to prevent dumping or irresponsible disposal (*NESREA and EPRON*).
- The cost to dispose of accumulated hazardous wastes (POPs, mercury and others) will eventually be covered by the levy collected by the PRO towards the registered producers. The project will establish a reliable system for the ring-fencing of adequate funds to ensure the environmentally sound management and disposal of these wastes at such a time when a critical mass has been collected and establish a procedure for appropriate destruction or export if there is no solution available within Nigeria (*NESREA*).

### **Output 4 Regional and global knowledge exchange on circular economy model for the electronics sector**

A circular model for electronics will allow the project to apply learning in Nigeria and other African countries, to 'close the loop' and enhance circularity through the whole life cycle of the electronics, while engaging actors in the upstream, mid-stream and downstream of the whole value chain. The exploration of the circular economy approach will be carried out in the following three dimensions.

#### **4.1 Nationally and regionally coordinated approach to waste management**

The project will establish an example to improve the recycling efficiency of the e-waste management system. a coordinated approach to EPRs and waste management can bring efficiencies of scale and encourage innovative ways for producers to contribute to the establishment of collective or individual EPR systems, which will address the local requirements to organise the collection and recycling of e-waste and the financing of an operational system. The project will demonstrate:

- Quality recycling processes regionally— developing infrastructure in Nigeria and Africa region to be able to recover valuable materials, and access responsible treatment of critical components including ESM of hazardous wastes within the region wherever possible. Increase the tracibility of equipment and components through block chain and other methods (*UN Environment and recyclers*).
- Eco-innovation trainings will illustrate the value chains options for circular economy in Nigeria (*UN Environment*).

#### **4.2 Global best practices on closing the loop and promoting eco-design and responsible consumption**

Given the global nature of the electronics industry, several changes for circularity need to occur at a global level, beyond the immediate influence of Nigeria. Innovative business models need to capture greater value in electronic products, while developing new relationship with customers and downstream recyclers and keeping valuable resources for longer use within the sector. The project will demonstrate the best practices and success cases on upstream interventions that increases the circularity of the whole sector. The project will engage both global brands which are already demonstrating some best practices, and producers of more affordable electronics that do not export to the EU or regions where standards require them to adopt such practices (*UN Environment*). The business case and new business models developed for Nigeria under Output 1 will be explicitly linked to the practices and design decisions of international manufacturers and supply chains, to reinforce the costs and needs of the end-of-life managers in the real world at all levels in the product value chains.

Examples of such best practices to be promoted and advocated for include:

- Global manufacturers set up a fund per unit placed on market which can then be used to support local effort to set up national associations and PROs.
- Pursue new business models and designs for keeping materials in the loop, by enhancing the market acceptane of recycled materials and reusable components.
- Eco-design of products, for example as in the EU approach, ensures that:
  - the use of hazardous chemicals in the production of electrical and electronic products are reduced and eliminated;
  - components are easy to disassemble and recycling-friendly; have optimal lifespan for energy efficiency and less environmental impacts;
  - promote reuse of components, remanufacturing and recycled materials in the production of new products.
- Ecolabels can be used to provide reliable information to the consumers as well as to improve production processes which will allow companies to be certified. Ecolabels can also be used to reduce risks along the value chain.
- Consumers are provided with more access and know-how for product repair, refurbishment and upgrade. Users can also adopt cloud computing and equipment sharing in prolonging the use of electronic devices and reduce the pace of hardware obsolescence.

In addition to compilation and dissemination of best practices, the project will proactively engage with global and regional initiatives on sustainable electronics, circular economy, and sound management of chemicals and wastes, to contribute to and further develop related initiatives based on the project experience. This will include active engagement and participation in processes convened and coordinated by the following partners (at a minimum):

- SAICM emerging policy issue on HSLEEP and the Beyond 2020 process and ICCM5;
- PACE platform on the circular economy, including WEF and GEF processes;
- EMG and ‘e-waste Coalition’ partners both in Nigeria and globally;
- Regional and subregional initiatives such as the Economic Community of West African States (ECOWAS) meetings and events on e-waste and circular economy;

- Private sector and related partners including World Economic Forum and Alliance.

The circular economy publications and will be developed in the last 2 years of the project.

#### **4.3 Regional and global dialogue and information sharing for South-South Collaboration**

The output will establish dialogue and information sharing to facilitate the activities 4.1 and 4.2 above in improving coordination and circular economy approaches, both within Africa and globally. Best practices and knowledge resources will be compiled in a single location through the SAICM knowledge platform being developed through a parallel project (GEF ID 9771, SAICM Secretariat), and shared at SAICM regional and global meetings in 2019 and 2020.

The specific activities to be delivered are:

- Establish a platform on waste management, regional treatment network, pollution control of hazardous materials, EPR policy and implementation, circular economy, among a group of African countries (such as Nigeria, South Africa, Ghana, Rwanda, Kenya, and Tanzania). Best practices and technical knowledge will be exchanged through this dialogue and platform (*UN Environment/ SAICM Secretariat*).
- The learnings from the implementation of the EPR program, and recognition of value of electronic components, will inspire and motivate actors along the electronics value chain to contribute to the circular economy strategy and will provide a clear reference for replication in other countries, including other African countries (*NESREA*).

#### ***iv. Alignment with GEF focal area strategies:***

The project is submitted under the Chemicals and Waste Focal Area under GEF-7. It directly contributes to Indicator 9 on reduction of chemicals of global concern and addresses all three multilateral instruments for which GEF is the financial mechanism, namely Stockholm Convention, Minamata Convention and SAICM. The reduction of new POPs and endocrine disruptors in plastic components of e-waste including reduction of dioxins and furans created by burning of these plastics will directly contribute to Nigeria's implementation of both Stockholm Convention and SAICM. The reduction of mercury in CRT screens is also a significant amount of mercury waste. Finally, the project aims to establish a long term and sustainable mechanism for continued environmentally sound management of these wastes into the future, through the application of the country's EPR legislation and associated PRO, contributing also to the GEF focal area indicator on countries with operational legislative and regulatory systems.

This project will directly contribute to the achievement of the Sustainable Development Goals and particularly Goal 12: Targets 12.4 to achieve the environmentally sound management of all chemicals and wastes throughout their life cycle; and Target 12.5 to substantially reduce waste generation through prevention, reduction, recycling, and reuse, The Project's results can be reported by the country under indicator 12.4.2, which will measure hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment.

#### ***v. Incremental/additional cost reasoning:***

The project is building on several initiatives in Nigeria and has a clear incremental design.

Since the total net value of the valuable materials is not quite adequate to fully cover ESM of the hazardous components, it is essential to operationalize a levy system. In Nigeria, the government has passed EPR legislation; and private sector partners have legally established a PRO. These are essential preconditions for operationalizing a sustainable source of revenue to ensure the environmentally sound management of e-waste. The prior work done by NESREA and EPRON means that the country is now ready for an operational project to overcome initial investment barriers.

Secondly, two formal recyclers have already established ESM recycling facilities and been registered by NESREA. These investments are threatened by competition for source materials from the informal sector, which due to externalising costs, can offer better prices to collectors. The project strategy to increase the amount of waste materials to these facilities simultaneously builds on the previous investment to establish them, while addressing their barriers for a successful and sustainable operation in the future.

The project has been designed to link these two baseline initiatives and for each to support the operationalization of the other. Private sector engagement is essential for the EPR program to be effective: while government action is needed to ensure that wastes are delivered to ESM facilities not informal recyclers. Cofinance from identified stakeholders is therefore an integral part of the achievement of the project objectives.

***vi. Global environmental benefits (GEFTF):***

The project will achieve the following Global Environmental Benefits:

- 30 tonnes of mercury-containing wastes will be segregated and treated in an ESM.
- 270 tonnes of POPs-contaminated e-waste will be processed to separate the plastics containing POPs and COCs allowing subsequent treatment in an ESM.
- Additional tonnes of hazardous substances from electronic products will be segregated and disposed of, including heavy metals and endocrine disrupters present in plastics.

The reduction of these contaminants in Nigeria will directly contribute to the objectives of the Stockholm and Minamata Conventions and have global impacts. The other hazardous substances present in e-waste which are addressed by the two relevant SAICM Emerging Policy Issues on electronics and endocrine disruptors will also bring immediate environmental and health benefits for those exposed. The work with the informal sector will allow the project to directly benefit some of the most marginalized and vulnerable populations in Lagos, including prevention of exposure and access to healthcare.

In addition to the direct benefits the project will achieve, there will also be indirect and future benefits gained by the long-term output on circular economy. The project will achieve a global reach through the international partners, both with major global manufacturers of electronics, through the Alliance and World Economic Forum, and with UN Environment's programs on Circular Economy and SAICM. By identifying and promoting best practices and increasing the visibility of sustainable and circular electronics value chains the project will be able to foster increased collaboration beyond Nigeria.

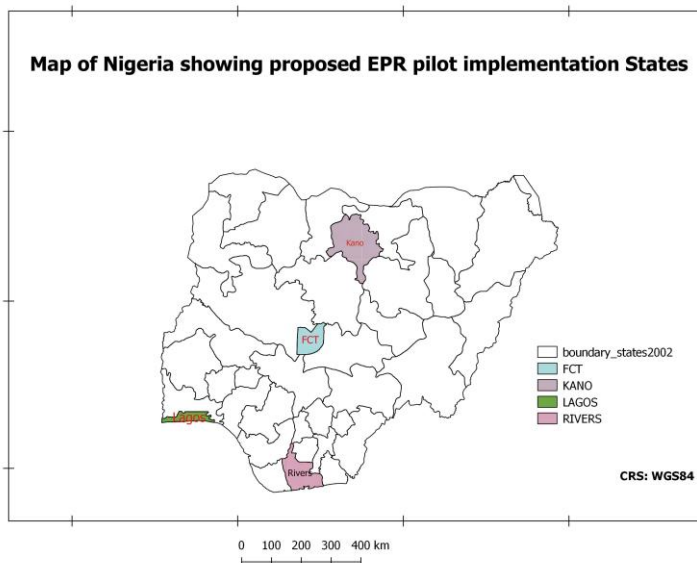
***vii. Innovation, sustainability and potential for scaling up:***

The project impacts are expected to be sustainable largely due to the design of supporting existing initiatives which demonstrate the commitment of partners to dealing with his problem. Both NESREA's EPR legislation and the existing recycling facilities are independent of the project and GEF funds but require a short-term intervention to operationalize them. At national level, the project will continue to interact closely with the e-waste Coalition, a group of UN agencies and partners including the International Telecommunications Union, UNIDO, ILO and others, to contribute to the further development of a large scale 'Country Intervention Model' which will allow Nigeria to scale up the previous and current pilot activities to national scale.

As described above, the project Output 4 on Circular Economy explicitly sets out the project approach to scaling up beyond Nigeria. The scale of the electronics industry, and the volume of e-waste in Nigeria, Africa and other regions, attest to the potential scope of expanding successful pilots. The project is innovative in closely integrating the social and labour aspects of current e-waste management structures, and the potential for transforming informal work into decent jobs is also an important lever for future scaling up of this project.

***1b. Project Map and Geo-Coordinates.***

Please provide geo-referenced information and map where the project interventions will take place.



The coordinates for the States are:

FCT: 9.0765N, 7.3986E

Lagos: 6.5244N, 3.3793E

Rivers: 4.8156N, 7.0498E

Kano: 12.0022N, 8.5920E

For Lagos, the pilot activities will focus on the following locations:



Source: Google Earth, from Basel Convention Secretariat<sup>24</sup>

***1c. Child Project? If this is a child project under a program, describe how the components contribute to the overall program impact. No***

<sup>24</sup> Basel Convention, 2011, Informal e-waste management in Lagos, Nigeria – socio-economic impacts and feasibility of inter-national recycling co-perations

## 2. Stakeholders.

Provide the Stakeholder Engagement Plan or equivalent assessment. (Type response here; if available, upload document or provide link) In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement.

Stakeholders as set out in the below Stakeholder Engagement Plan have all been actively engaged in the project development phase, remotely and in person during the Minamata Conference of Parties in Geneva, at meetings of the UN Environment Management Group (EMG), and during the NESREA 12th Stakeholders' Forum in Abuja in early December 2018. During project execution, the means and timing of continued engagement will be as per the Stakeholder Engagement Plan attached below. The Plan itself will be a 'living document' to be updated following the Inception Phase (see M&E Plan below) and on completion of relevant project activities, particularly the mapping of the collection and recycling labour market (Activity 2.3).

Information will be disseminated regularly to all stakeholders via the annual Project Steering Committee and via dedicated activities and budget allocations in Output 4 on dissemination of information and knowledge. The project will proactively engage with global dialogues on electronics and Circular Economy, including the Strategic Approach and the sound management of chemicals and waste beyond 2020, the UN EMG, and PACE, as per the proposed activities of Output 4.

Select what role civil society will play in the project:

- Consulted only;
- Member of Advisory Body; contractor;
- Co-financier;
- Member of project steering committee or equivalent decision-making body;
- Executor or co-executor;
- Other (Please explain) Beneficiary - individuals and associations of informal e-waste collectors and recyclers will be direct beneficiaries of the project.

Stakeholder	Role in project
NESREA Nigeria (National Environmental Standards and Regulations Enforcement Agency of Nigeria)	<p>Executing Agency</p> <ul style="list-style-type: none"> <li>- Establishing, housing and supervising the project execution unit</li> <li>- Acting as Secretariat for the Project Steering Committee (PSC)</li> <li>- Overseeing that the project runs according to the agreed work plan, budget and reporting tasks</li> <li>- Coordinating project activities with partners in different project components</li> <li>- Communicating with, and disseminating information to project stakeholders</li> </ul>
Ministry of Environment, Nigeria	<p>To chair the Project Steering Committee (PSC) as the lead policymaker on the environment in Nigeria</p> <p>Provide strong support and enforcement of the EPR legislation,</p> <p>Motivate and encourage the producers to join the EPR system,</p> <p>Provide further policy guidance where necessary to support the implementation of the EPR program</p>
UN Environment Sustainable Consumption and Production Unit	<p>Provide technical support on the implementation of the EPR legislation, support the pilot testing on collection and recycling, and provide intergovernmental dialogue and exchange with the private sector on developing the circular economy approaches.</p>
eWaste Solutions Alliance	<p>Provide technical support on EPR implementation plan and development of PRO model</p>
Collectors Association of Nigeria	<p>Provide support for the pilot testing of various collection channels and approaches in Nigeria, contributing to the collection quantity needed for the project</p>



Producers with major market share (such as Philips, HP, Dell, Microsoft etc.)	Commit to the establishment of the EPR system by joining the PRO, and allocate financial resources to advance the cost of running the system To support the implementation of the circular economy approach in Nigeria and Africa
Formal recyclers certified by NESREA (Hinckley Recycling, and E-Terra Technologies Ltd)	Technical support to the establishment of the recycling centre, and the treatment of the collected e-waste in this project) Provide information and data on the treatment efficiency of various types of equipment (environmental and economic data)
Municipalities and state government waste management institutions including LAMWA and LASEPA	Establishment of various formal collection channels, and provide support on capacity development activities
ILO	Provide training and capacity development to local e-waste collectors and recyclers, making sure that relevant EHS standards and social benefits are enforced in the recycling sector under the framework of this project as outlined in Output 2 above.
EPRON	To support the implementation of the Extended Producer Responsibility legislation in Nigeria, by registering national producers and set up a levy system to cover the environmentally sound collection and treatment of e-waste in Nigeria.  To support the development of registration system/software, collection and recycling pilot, circular economy showcase under the framework of this project.
SAICM Secretariat	Promote and disseminate lessons on chemicals of concern in electronics manufacture and on the sound management of e-waste to regional and global stakeholders. This will include at minimum participation and reporting to the Africa Regional Meeting planned for 2020. 26;
SAICM National Focal Point	The SAICM focal point will be invited to participate on the Project Steering Committee to ensure linkages with wider chemical management and Emerging Policy Issues initiatives in the country and also to widen the dissemination of the project results to the international SAICM community.
PACE	Promote and disseminate the circular economy approaches and models from this project at the global level.
World Economic Forum	Support engagement of industry at global level, through their own networks and members but also reaching out to other international actors in source countries for electronics.

### ***3. Gender Equality and Women's Empowerment.***

#### ***Provide the gender analysis or equivalent socio-economic assessment***

Increasing attention has been paid to the issue of gender in waste management and it is highlighted that waste production and management are not gender neutral – either in concept or practice (UN Environment 2015; IETC 2015). The structure of waste management reinforces normative gender roles. The current gendered nature of the waste sector is the product of attitudes and stereotypes of men and women. These gendered norms play out through the entire value chain of waste management.

In addition to the multiple responsibilities that women have at home, including caring for children, cooking and other unpaid activities, they are in most societies responsible for managing household waste, making them the primary users of waste management services globally (UN Environment 2015). One study (Gani et al. 2012)

found that women conducted over 95 per cent of waste management activities at the household level in Bauchi, Nigeria.

Inequalities in opportunities to women and men characterize the gendered nature of the informal economy (Loyd-Evans 2008), and gender shapes men and women's participation in the informal waste management sector (Nzeadibe and Adama 2015). Within the informal waste economy, women are often in charge to the separation of waste, whereas men can take on higher authority positions, dealing with buying and reselling of recyclables. The Nigerian waste economy is dominated by men, excluding women from participation in higher income positions (Nzeadibe and Adama 2015).

Since the project primarily aims to ensure a steady supply of materials to formal recycling facilities, there is a risk that there will be a focus on value chain stages immediately prior to the recyclers, for example the refurbishers, who tend to be the most organized and well-paid stage of the value chain. Workers are commonly university graduates with technical background, or more skilled workers who have gone through the sectors's apprenticeship system<sup>25</sup>, with underrepresentation of women likely (although no specific data on this exists yet). The project will proactively seek to engage elements of the value chain where women play a large role, even if these parts are not direct suppliers of recycling facilities; and seek to increase the participation of women in the refurbishment sector. The project has developed a Gender and Socio-economic Safeguard Action Plan, in recognition of the fact that in addition to gender differences there are other socio-economic factors including social status, age and education levels, that establish and perpetuate inequalities in the e-waste value chain. Please refer to Annexes K (Economic and Social Review Note), and Annex M (project Action Plan).

***Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women's empowerment? (yes  /no  ) If yes, please upload gender action plan or equivalent here.***

The project will contribute to gender equality and women empowerment by (i) providing capacity building to women to have a more formalized, recognized role in waste recycling; (ii) strengthening capacities at local level implementers by informing, training and engaging as partners in gender mainstreaming; (iii) collecting gender disaggregated data on labour force in the waste sector, enabling policy changes; and (iv) fostering equal opportunity employment commitments to prevent the exclusion of women from this sector.

If possible, indicate in which results area(s) the project is expected to contribute to gender equality:

- closing gender gaps in access to and control over natural resources;
- improving women's participation and decision making; and or
- generating socio-economic benefits or services for women.

Does the project's results framework or logical framework include gender-sensitive indicators? (yes  /no  )  
Output 2, indicator 6 and Output 3, indicator 9.

#### ***4. Private Sector Engagement.***

***Elaborate on the private sector's engagement in the project, if any.***

The Project will directly involve private sector in different levels, given their influence on the e-waste value chain.

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<sup>25</sup> Basel Convention (2011) Informal e-waste management in Lagos, Nigeria – socio-economic impacts and feasibility of international recycling co-operations

At international level this project has been formulated in partnership with the World Economic Forum (WEF), Alliance member companies and the waste industry. This collaborative approach has resulted in this project featuring in the regular PACE discussions, highlighting the expectations that this project will set a norm for future work on circular economy approaches in the electronic / e-waste sector.

At the International level the Alliance member companies will provide technical support on the EPR implementation plan and development of PRO model.

Nationally the Group will work across all producers to the establishment of the EPR system by joining EPRON and allocate financial resources to advance the cost of running the system.

Also at national level, the formalised recyclers will provide technical support to the establishment of the recycling centre, and the treatment of the collected e-waste in this project.

UN Environment, WEF will continue to engage with major electronic manufacturers at international level to highlight the lessons learnt from this approach and to advocate for more leadership from the major manufacturers to promote circularity. The project is seen as one of many vehicles to reach the long term aim of stimulating the establishment of an international private sector partnership to encourage countries to adopt the circular economy approach presented in this project. The replication of this project based on lessons learnt in the coming years will allow for not only the scaling up national level initiatives but also the achievement of the longer term aim of the reduction of use of harmful chemicals in electronics. This, coupled with stimulation of the improved design of products to aid recycling at national level, with greater levels of recovery of high value items and less waste requiring sophisticated treatment methods, will help address the growing challenges faced global from this waste stream.

**5. Risks.**

*Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation. (table format acceptable):*

The following risk table summarizes the project operational risks which could prevent the successful execution of the project and achievement of objectives, and the mitigation measures planned to minimize the likelihood and impact of these risks. The social and environmental safeguard risks are further addressed in the attached Gender and Socio-Economic Safeguards Action Plan (Annex M), which sets out the project approach to ensuring environmental, social and economic sustainability of the project impacts, both intended and unintended.

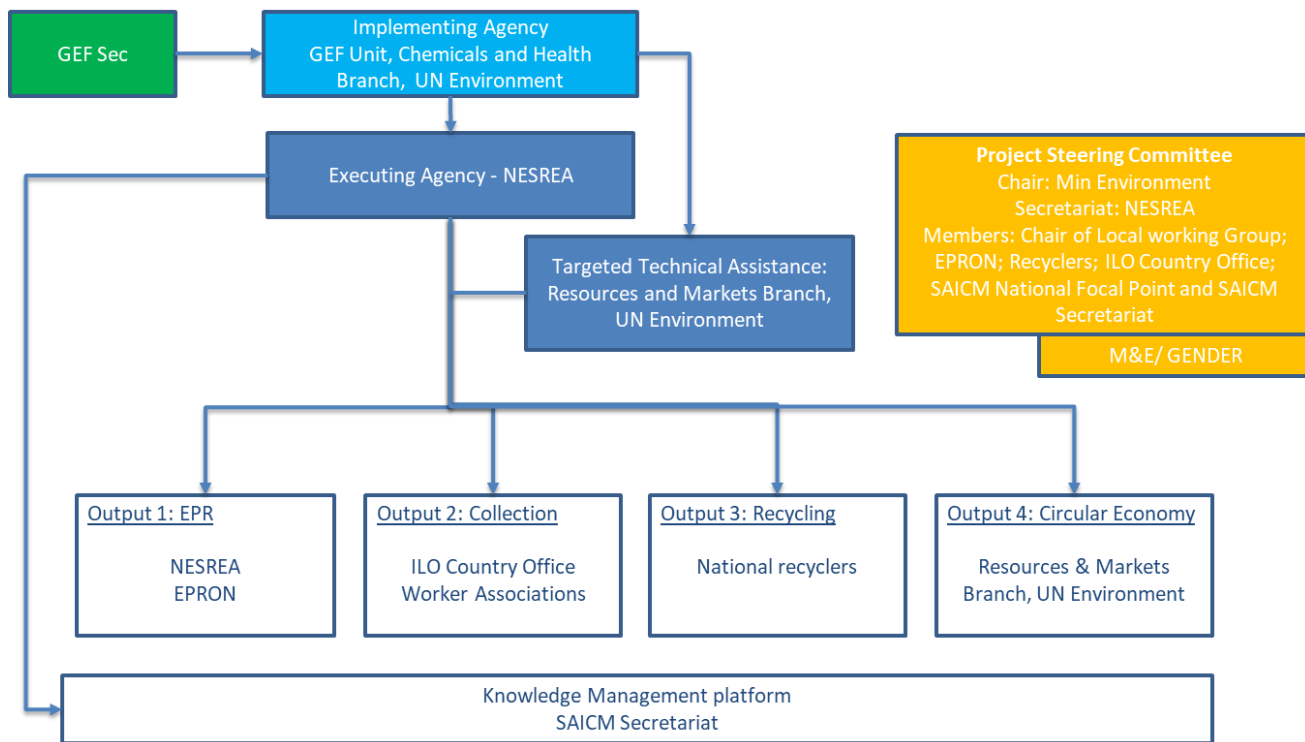
<b>Risk</b>	<b>Likelihood and Severity</b>	<b>Mitigation</b>
Producers do not invest to establish the PRO	High	The project has been designed to support the implementation of the EPR program in Nigeria. Most of the activities (on developing the roadmap for legislative implementation, pilot project on collection and recycling, identifying approaches for circular economy) are not dependant on the progress of the PRO system, set up by the private sector. Enforcement from NESREA will be enhanced during the project implementation, to ensure that Producers are encouraged to subscribe to EPRON
No-one contributes financially to the PRO in early stages (levy being collected to subsidize the system)	High	The budget of this project has been designed in a way that it does not rely on the levy that will be collected by the private sector. The budget reserved for the collection and recycling is

		sufficient to deliver the scale of the pilot (to collect and recycle 300 tons of e-waste).
Levy and other revenues are not ringfenced for disposal of hazardous waste fractions separated and stored for final disposal	High	Through linking the project activities with ongoing initiatives in Nigeria, including NESREA and the global e-waste Coalition, the project will be able to ensure that long term monitoring and incentives for appropriate disposal are maintained.
Market fluctuation causing the rising cost of collection and recycling	Medium	The budget for collection and recycling has been considered the scenario that rising price for collection and recycling due to various reasons (market, technical and labour cost). At the same time, co-finance from the recyclers would mitigate the rising cost.
Informal sector workers livelihoods are threatened by formalization of the recycling system	Medium	The project will work with social partners including ILO country office, to ensure that access to job security, EHS protection and social benefits are supported by the project. Please refer to Environmental Social and Economic Review Note
Not sufficient interests exist to develop and implement circular economy in Africa	Medium	UN Environment and NESREA will promote this projects through high-level events, dialogues, and networks to raise the attention and generate interests from the private sector to support the circular economy approach (such as UNEA 4, Platform for Accelerating the Circular Economy etc.).
The circular economy takes much longer time to shape and develop (beyond the project timeline)	Medium	The project will work with companies to identify a key list of products and topics to design and implement circular economy. The project will make sure early ideas and prototypes are incubated and developed within the timeline of the project.
The hazardous materials and components collected in the project are not properly stored or disposed of	Medium	A thorough tracking system will be developed to develop tracibility and transparency for the outlet of various fractions, so that the PRO and producers can check specific batch(es) of e-waste and verify with the recycling companies for revidence and proof. Please refer to Environmental Social and Economic Review Note

## ***6. Institutional Arrangement and Coordination.***

***Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.***

Implementing Agency (IA): This project will be implemented by the GEF Unit of the Chemicals and Health Branch of UN Environment. The Task Manager assigned at the Implementing Agency will be responsible for the overall project supervision, overseeing the project progress through the monitoring and evaluation of project activities and progress reports. It will report the project implementing progress to GEF and will take part in the Project Steering Committee (PSC). The Chemicals and Health Branch GEF Unit Task Manager will provide guidance and oversight of project execution by the Executing Agency with review and approval of work plans, budget allocations and budget revisions proposed by the Executing Agency in accordance with UN Secretariat rules for procurement and financial management.



Executing Agency (EA): The National Environmental Standards and Regulations Enforcement Agency (NESREA), Nigeria will be the Executing Agency (EA), as it is the sole government agency empowered by Nigerian law to regulate the environment outside of the oil and gas sector. The NESREA Act empowers the Agency to engage in projects like this and partner with organizations within and outside Nigeria. It also conceptualised the Extended Producer Responsibility (EPR) programme with a view to achieving circular economy in the country and which is already in its advanced stages preparatory to full implementation for various waste streams, including electronic waste. Eleven (11) regulations had been developed by the Agency all with specific programme on EPR. NESREA has already developed operational guidelines to producers, manufacturers and large-scale distributors for the EPR and successfully guided operators in the food and beverage, as well as the electrical/electronics sectors to establish Producer Responsibility Organisations (PROs). NESREA, therefore, has the requisite organisational capacity and legal backing to carry out the functions of the EA. The EA's key roles include:

- Establishing, housing and supervising the project execution unit (PEU).
- Acting as Secretariat for the Project Steering Committee (PSC).
- Overseeing that the project runs according to the agreed work plan, budget and reporting tasks
- Providing the required project reports, including quarterly progress and expenditure reports and annual Project Implementation Review and Cofinance reports
- Communicating with, and disseminating information to project stakeholders.
- Coordinating project activities with those of the SAICM project for knowledge management platform.

The EA will be contracted through a Project Cooperation Agreement either to the executing agency or another party in accordance with project document and budget.

Project Execution Unit (PEU): The PEU will be staffed by a project manager with support from an administration, procurement and finance officer. The role of the PEU is to:

- Ensure Project execution (all technical aspects of project implementation).
- Ensure project governance and oversight of the financial resources from GEF investment.
- Provide staff time and expertise in guiding and advancing the project.
- Sharing all achievements and project products/outputs with project stakeholders.
- Monitoring the execution of project components by the executing partners.

- Organize the PSC meetings and serve as its Secretariat.
- Management and implement the project results and output level M&E framework, to evaluate project performance.
- Manage the flow of information from the field, producing periodic monitoring reports. These include as a minimum, the annual Project Implementation Review (PIR) submitted to GEF in July each year; annual planning documents including detailed workplan, financial forecast, and procurement plan; and quarterly expenditure and progress reports.

Targeted technical assistance: The Resources and Markets Branch of UN Environment will contribute staff time and expertise in guiding and advancing the outputs of the project through UN Environment’s in-kind support; and via internal cooperation agreements directly with the Implementing Agency, with a clearly defined set of activities and resources which have been agreed during the project preparation (refer to Proposed Alternative Scenario). While funds will flow directly from the Implementing Agency to the Resources and Markets Branch, financial and technical reporting on these funds will be to the Executing Agency which will compile reports to provide complete technical and financial reporting to the Implementing Agency. Co-finance from these partners covers the staff time and costs for coordination of the project activities with the ongoing programmes of work.

PSC: The PSC’s membership includes IA, EA (as Secretariat) and other relevant institutions as needed and to be further defined during the project inception. The role of the PSC is to:

- Oversee the GEF Project.
- Provide overall guidance and ensure coordination between all parties.
- Provide overall supervision for project implementation.
- Review and endorse the annual work plan and budget.
- Oversee the implementation of corrective actions.
- Enhance synergy between the GEF project and other ongoing initiatives related to chemicals and waste.

The PSC will be chaired by a representative of the Ministry for Environment as the lead policymaker on the environment in the country with the mandate for managing chemicals and waste. The PSC will include members from the SAICM Secretariat and the Nigerian National Focal Point, and other members of the PSC with a mandate or contributing activity.

### ***7. Consistency with National Priorities.***

***Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:***

- ***Minamata Initial Assessment (MIA) under Minamata Convention***
- ***National Implementation Plan (NIP) under POPs***
- ***Others: SAICM and UN development assistance framework:***

Nigeria updated their Stockholm Convention National Implementation Plan in 2016 and highlighted stockpiles of waste electrical and electronic equipment as a priority, especially CRT screens which “contain over 50% of total POPs-BDE in EEEs’. The project directly responds to most of the national priority issues, including effective POPs regulatory frameworks, institutional capacity building of government agencies, mechanisms for proper management of PBDE wastes, the development of simple databases to promote sustained collaborative information sharing among stakeholders, and integration of gender dynamics in POPs management.

Nigeria has ratified the Minamata Convention and is in the process of developing its Minamata Initial Assessment with UNIDO.

Nigeria’s UN Sustainable Development Partnership Framework (2018-2022) (see footnote 3 on p11 of the document: “*The UNCT [UN Country Team] renamed the UNDAF as “partnership framework” to reflect the SDGs and the new way of working with the Nigerian Government*”) and addresses environment through its Outcome 9 on Environmental Sustainability & Food Security, which aims that “By 2022, Nigeria achieves environmental

sustainability, climate resilience and food security through efficient management of its cultural and natural resources.” The project will directly contribute to the second indicator from the monitoring framework, “Treatment of waste, generation of hazardous waste, hazardous waste management, by type of treatment”, by treating 300 tonnes of e-waste.

#### ***8. Knowledge Management.***

***Elaborate the “Knowledge Management Approach” for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project’s overall impact.***

The knowledge management approach will be developed in a participatory way, with careful analysis of the types of information that are required by different stakeholders, and the information that is realistic to expect to be shared. Output 4.3 on Regional and Global Dialogue will deliver the project Knowledge Management approach.

At a global level, the project knowledge will be shared via a Knowledge Management platform being developed under a related SAICM FSP (GEF ID 9771) which will cover all the Emerging Policy Issues, to disseminate information to all SAICM stakeholders in a coordinated and consistent manner. The platform design will follow a systematic technological and information needs assessment, and once it is up and running the Secretariat will actively manage and populate it with the component specific information and knowledge products from all related projects, including the current FSP on chemicals in electronics. As part of the SAICM information hub, the SAICM FSP will also establish a moderated community of practice on CiP in the three priority sectors (building products, toys and electronics) which will host the stakeholders from the current project. This will give access to Nigerian stakeholders to connect with peers in other countries and product sectors, as well as scientists and practitioners from around the globe, in an interactive space to share ideas, data and knowledge, with and from other similar projects and initiatives, and ensure opportunities for networking building and communication through the use of technology and social media.

#### ***9. Monitoring and Evaluation.***

***Describe the budgeted M & E plan.***

Project M&E will be conducted in accordance with established UN Environment and GEF procedures and will be provided by the Executing Agency. The M&E plan includes inception report, annual review and final evaluations. The Project Manager will be responsible for stakeholder engagement, gender monitoring, and outreach to the broader electronics community in Nigeria and Africa.

The project's M&E Plan will be presented and finalized in the Project's Inception Report following a collective fine-tuning of indicators, means of verification, etc.

In-line with UN Environment Evaluation Policy and the GEF’s Monitoring and Evaluation Policy the project will be subject to a Terminal Evaluation (TE). The Evaluation Office will be responsible for the Terminal Evaluation (TE) and will liaise with the Task Manager and Executing Agency(ies) throughout the process. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UN Environment, the GEF, executing partners and other stakeholders. The direct costs of the evaluation will be charged against the project evaluation budget. The Terminal Evaluation will be initiated no earlier than six months prior to the operational completion of project activities and, if a follow-on phase of the project is envisaged, should be completed prior to the submission of the follow-on proposal. Terminal Evaluations must be initiated no later than six months after operational completion.

The draft TE report will be sent by the Evaluation Office to project stakeholders for comment. Formal comments on the report will be shared by the Evaluation Office in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six point rating scheme. The final determination of project ratings will be made by the Evaluation Office when the report is finalised and further reviewed by the GEF Independent Evaluation Office upon submission. The evaluation report will be publicly disclosed and may be followed by a recommendation compliance process.”

<b>M&amp;E activity</b>	<b>Purpose</b>	<b>Responsible</b>	<b>Budget (US\$)</b>	<b>Time-frame</b>
<b>Inception workshop and report</b>	Review of project activities, outputs and intended outcomes; detailed work planning. Inception report includes detailed Year 1 workplan; budget; procurement plan (all by quarter) and updated Supervision Plan and Stakeholder Engagement Plan.	EA	Included in PMC staff costs	<b>Within two months of project start.</b>
<b>Project Steering Committee</b>	The PSC will be held annually. Provides annual progress review and detailed annual implementation and budget planning, including revisions to key documents such as procurement plans and Risk Table.	EA	50,000 for meetings (25k for conference services, 25k for participant costs)	<b>At least annually</b>
<b>Gender monitoring and mainstreaming</b>	This activity will be ongoing to allow continuous monitoring of the execution. The Gender consultant will also ensure links are made between SAICM Focal Points, health ministries and environment ministries.	Gender consultant	10,000	<b>Ongoing</b>
<b>Progress and financial reporting</b>	Annual Project Implementation Report (PIR) Submission of quarterly expenditure and brief progress reports, based on the annual workplan and budget.	EA	Included in staff costs	<b>Ongoing</b>
<b>Midterm Review</b>	Reviews progress and draws lessons on implementation issues and impact of project activities to date. Proposes corrective actions as required.	Consultant	20,000	<b>At the midterm of the project</b>
<b>Terminal report</b>	Reviews effectiveness against implementation plan Highlights technical outputs Identifies lessons learned and likely design approaches for future projects, assesses likelihood of achieving design outcomes	EA	Included in staff costs	<b>At the end of project implementation</b>
<b>Independent Terminal evaluation</b>	Reviews effectiveness, efficiency and timeliness of project implementation, coordination mechanisms and outputs Identifies lessons learned and likely remedial actions for future projects Highlights technical achievements and assesses against prevailing benchmarks	UNEP Evaluation Office	40,000	<b>At end of project implementation</b>
<b>Independent Financial</b>	Reviews use of project funds against budget and assesses probity of expenditure and	EA	10,000	<b>At the end of project</b>



<b>Audit</b>	transactions	<b>implementati on</b>
<b>Total indicative Monitoring &amp;Evaluation cost</b>		<b>\$130,000</b>

**10. Benefits.**

*Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?*

The project will bring direct socio-economic benefits to a minimum of 100 informal sector workers, at least 30% female, who will be supported in a formalization process to be able to improve their conditions of work, reduce exposures to hazardous chemicals, and be able to access social services and healthcare. This pilot experience is expected to bring much higher socio-economic benefits to the tens of thousands of people estimated to work in e-waste management in Lagos alone, through a combination of demonstrating the feasibility and preferability of formal sector, decent jobs; and through a gradual shift in perception about the risk and dangers (environmental, social and health) of continuing to work in an informal and unregistered economy. Thus a combination of enforcement of regulations, awareness raising of the dangers of polluting practices, and the increasing availability of sustainable alternatives, is expected to contribute to large scale shifts in individual workers decisions, which will also support global environmental objectives.

## PART IV: ANNEXES

### Annex A: Project Results Framework

Objective: Nigeria adopts a financially self-sustaining circular economy approach for electronics

Outcome/ Output	Indicators	Baseline	Targets and Monitoring Milestones	Means of Verification	Assumptions & Risks	UNEP MTS/ PoW reference
The electronics sector recovers and reintroduces usable materials into the value chain and disposes of hazardous waste streams in an environmentally sound manner.	1. Tonnes of recyclable material which are recovered and re-entering the value chain locally and internationally.	0 tons of recyclable material are recovered by the EPR program	10.8 kg of precious metals (Ag, Au, Pd), 150 tonnes of common metals (Fe, Al, Cu), 90 tonnes of plastics re-entering the value chain from 300 tonnes of collected e-waste	Activity report and auditing report from the contracted recyclers	Assumptions: EPR and PROs are functional Assumption: sufficient e-waste is collected, and contracts are issued with licensed recyclers Licensed recyclers adhere to EHS standards Risk: competition from the informal sector for collection	N/A
	2. Tonnes of hazardous fractions from e-waste which are safely disposed of, treated or channelled to appropriate treatment facilities	A small portion of the e-waste is collected and 200 tonnes recycled in 2017 by 2 recyclers registered by NESREA while the majority is recycled by the informal sector unsustainably and without safeguards	30 tonnes of CRT lead glass, and 3 tonnes of other hazardous fractions (CFC contained foams, mercury, batteries, frame retardants and POPs containing plastics) are safely stored or treated by Environmentally Sound Management (ESM) facilities	Basel destruction certificates	Assumption: ESM facilities are not available in Nigeria, and hazardous fractions need to be exported for environmentally sound treatment	N/A
Output 1. The Government of Nigeria and Producers jointly	3. Number of e-waste producers registered in Extended Producer Responsibility (EPR)	Nigeria has EPR legislation but no detailed roadmap. Currently being	Year 1 – 20 producers join. Roadmap published & database established. Year 3 – 150 producers have	PRO database	NESREA is committed to enforcing the EPR legislation and integrates the agreed roadmap into	Chemicals, Waste and Air Quality Expected

Outcome/ Output	Indicators	Baseline	Targets and Monitoring Milestones	Means of Verification	Assumptions & Risks	UNEP MTS/ PoW reference
implement the EPR legislation for the electronics sector	programs PROs	implemented by NESREA as a voluntary initiative. PRO is legally established but with no registered members or systems e.g. registration database or staff.	joined the EPR programs. Inspectors trained and actively promoting EPR.		its annual work and budget planning. Groups of producers establish PROs and cover costs until levy is established and generating revenue.	Accomplishment 5 (a) 3 <sup>26</sup>  Subprogramme 6 on Resource Efficiency, EA b, Output 1 (ii) <sup>27</sup>
	4. Amount of levy (USD) collected by PROs	No levy is collected towards any producers in Nigeria	Year 1 – level of levy calculated Year 3 – 100,000 USD of levy is committed	PRO database	Producers – global and local – are committed and voluntarily pay levy	
Output 2. 300 tonnes of e- waste are collected through formalized collection channels that minimize environmental and health impacts	5. Number of collection channels and points created within the EPR program	National estimated collection rate of e- waste is 52%. Lagos has two formal collecting organizations, LAWMA and LASEPA.	Minimum of 30 collection points and channels are established for the EPR program, with communication package in place	Environmental permits	NESREA to support the communication to and education of consumers	Subprogramme 5 Chemicals, waste and air quality: Expected accomplishment a, indicator (ii)
	6. Number of collectors gaining employment in the formal sector or with improved conditions in the informal sector (male/female)	Operational guidelines by NESREA exist ILO programme on formalization – Decent Work in e-waste sector Various projects exist on informal sector	Minimum of 50 collectors employed or contracted by collection channels of the EPR program, 30% female	Payment slips	Risk: Inability of the formalised sector to absorb and integrate informal collectors	
	7. Amount of e-waste safely collected and delivered to ESM facilities	540,000 tonnes e-waste estimated collected in Nigeria in 2010 by the informal sector. 0 tons of e-waste	300 tonnes of e-waste are collected and delivered to ESM facilities by the EPR program	Records kept by partner organizations	Assumption: Awareness change in and engagement of consumers to ensure delivery of products to formal	

<sup>26</sup> Technical guidance and support services for the establishment and enforcement of laws, regulations and fiscal policies for sound chemicals management

<sup>27</sup> Increase in the number of public and private finance stakeholders that adopt sustainable finance principles, processes and frameworks

Outcome/ Output	Indicators	Baseline	Targets and Monitoring Milestones	Means of Verification	Assumptions & Risks	UNEP MTS/ PoW reference
		collected by the formal organizations in Lagos.			collection channels	
Output 3 Establish cost-effective recycling and disposal systems for various e-waste categories	8. Number of recycling centres established for ESM treatment enforcing EHS standards	2 formal recyclers for ESM of limited electronics types operational and licensed by NESREA since 2016 (Hinckley Recycling and E-Terra Technologies Ltd.)	2 pre-treatment and/or recycling centers are set up and fully operational for at least 3 product categories	Environmental permits issued by NESREA	Assumption: Pre-processing facilities are established as in-kind contribution from recycling companies	Subprogramme 5 Chemicals, waste and air quality: Expected accomplishment a, indicator (ii) <sup>28</sup>
	9. Number of formal recycling workers gaining employment (male/ female)	0 formal recycling workers employed by the EPR program	50 formal recycling workers employed in the context of the EPR program, at least 30% female	Contracts	Risk: Recyclers choose to prefer informal sector due to greater revenue and profit.	
	10. Tonnes of e-waste collected and hazardous components safely stored pending disposal	No system existing to collect or export hazardous fractions for safe trip treatment	Year 1: 1 technical roadmap on management Year 3: 300 tonnes of waste collected hazardous components segregated	Storage facility and records	Assumption: strong database is created to track the hazardous wastes and ensure they are securely stored until disposal time.	
Output 4 Regional and global knowledge exchange on Circular economy models for the electronics sector	11. Number of global companies financially supporting establishment of PROs in Africa	Partnership on Accelerating the Circular Economy (PACE) network and Alliance members have initiated PRO in Nigeria	Year 3: At least 5 global companies including member companies of PACE supporting PROs in Africa	Global fund established	Not all global companies choose to participate Local companies freeloading	Subprogramme 5 Chemicals, waste and air quality: Expected accomplishment a, indicator (ii) <sup>29</sup>
	12. Number of users accessing	Tehnical guidance and	Year 3: 5 success cases on	Case study	Limited engagement of	

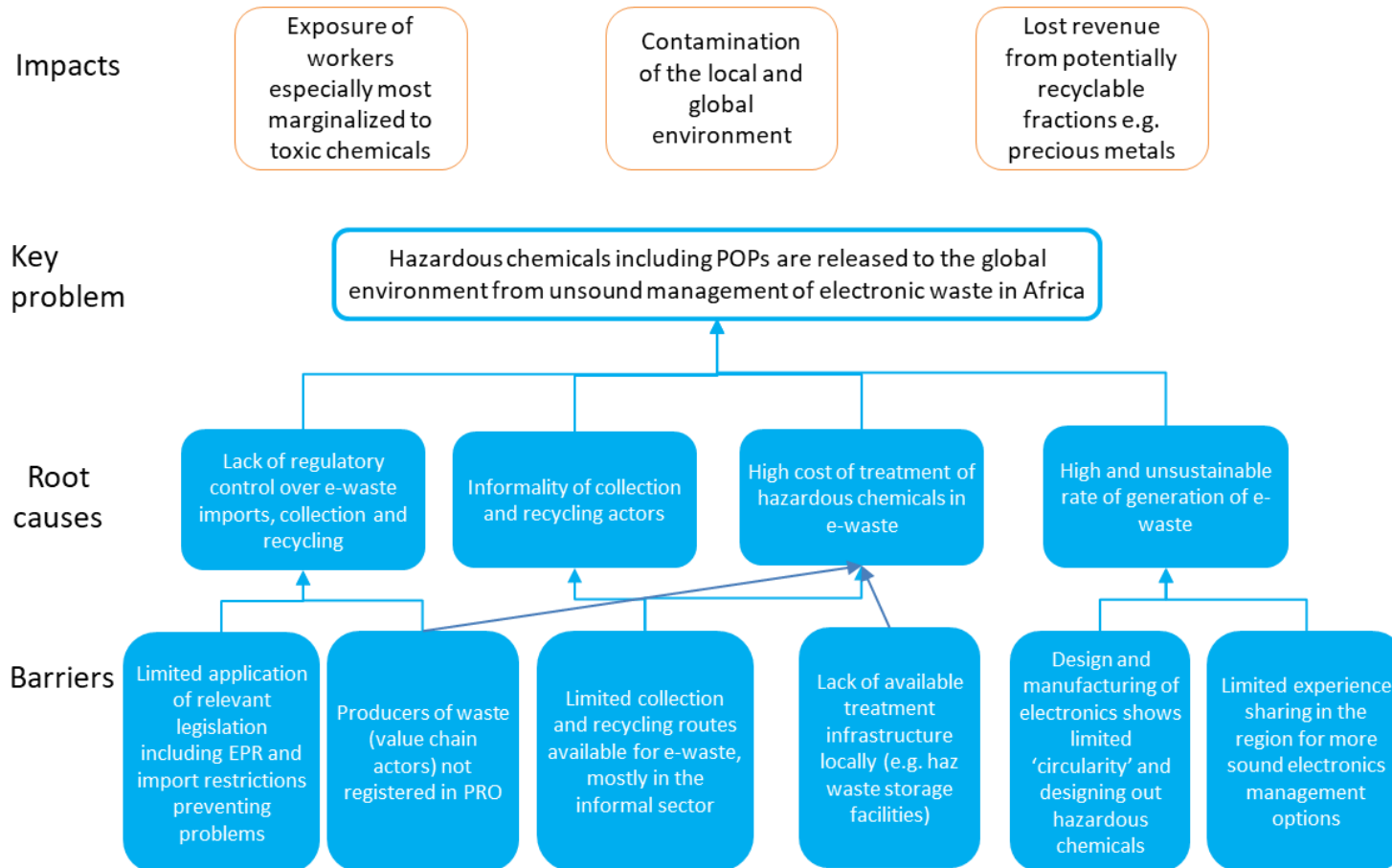
<sup>28</sup> Increase in the number of private companies/industries that have developed or implemented a strategy or specific actions on sound chemicals management using UNEP analysis or guidance

<sup>29</sup> Increase in the number of private companies/industries that have developed or implemented a strategy or specific actions on sound chemicals management using UNEP analysis or guidance

Outcome/ Output	Indicators	Baseline	Targets and Monitoring Milestones	Means of Verification	Assumptions & Risks	UNEP MTS/ PoW reference
	success cases via the KM platform	briefings exist on circular approaches but limited publications on successful experiences by value chain actors	circular electronics published (e.g. on ecoinnovation, fund for PROs, phase out of CoC) Year 3: At least 100 downloads of case studies and Reports to SAICM regional meetings and ICCM5 in 2020	publications and website statistics	global brands in changing upstream chemicals and other sustainability management approaches.	

### Problem Tree

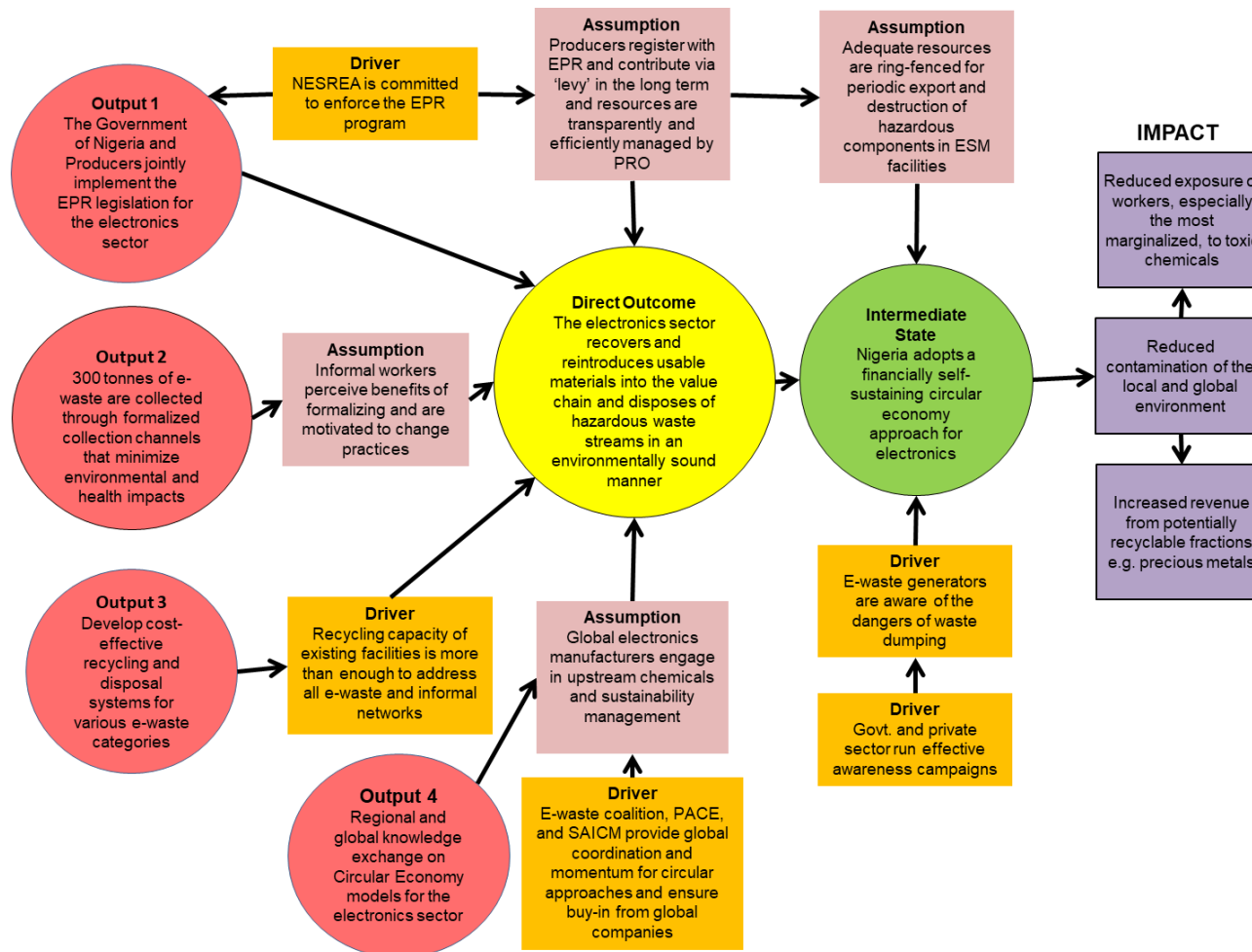
The following diagrams present the problem analysis as conducted by partners in the preparation phase, and the resulting Theory of Change diagram which sets out the causal pathway and logic on which the Project Results Framework above is based.



## Theory of Change

The Theory of Change is based on the above problem tree, and presents the anticipated pathway from the project outputs, via intermediate achievements, to the final impact (red, yellow, green circles, and purple boxes). The conditions and assumptions that support or may threaten the delivery of outputs, and progression to higher level changes (outcome, impact) are presented in orange for drivers or supporting conditions; and in pink for assumptions or potential risks that will be managed as part of the M&E plan.

**Key:** Red = Outputs. Pink = Assumptions. Orange = Drivers or facilitating conditions. Yellow, Green and Purple = intended outcomes and intermediate states toward the final environmental and social impacts of the project.



**Annex B: Response to Project Reviews if applicable** (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council, and responses to comments from the Convention Secretariat and STAP).

**Annex C: Status of Utilization of Project Preparation Grant (PPG)** (If requesting for PPG reimbursement, please provide details in the table below:

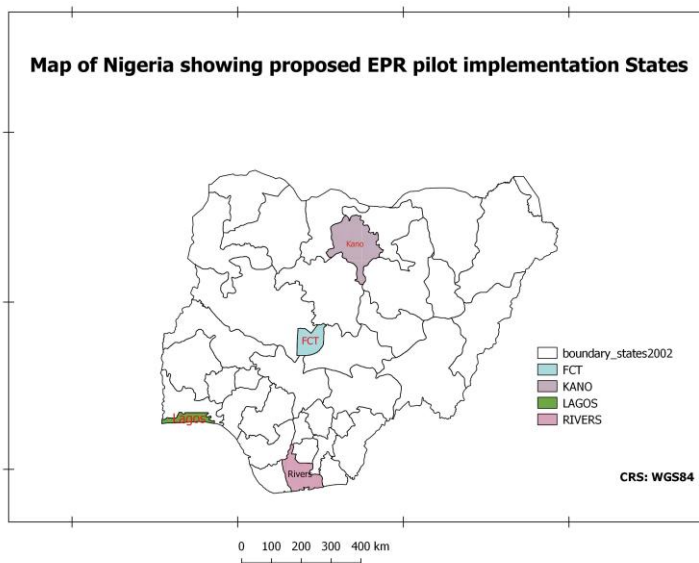
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
<b>Total</b>	1	1	1

**Annex D: Calendar of Expected Reflows (if non-grant instrument is used)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF Trust Funds or to your Agency (and/or revolving fund that will be set up)

**Annex E: Project Map(s) and Coordinates**

Please attach the geographical location and map of the project area, if possible.



The coordinates for the States are:

- FCT: 9.0765N, 7.3986E
- Lagos: 6.5244N, 3.3793E
- Rivers: 4.8156N, 7.0498E
- Kano: 12.0022N, 8.5920E

For Lagos, the pilot activities will focus on the following locations:





**Annex F: GEF 7 Core Indicator Worksheet**

Use this Worksheet to compute those indicator values as required in Part I, Table F to the extent applicable to your proposed project. Progress in programming against these targets for the program will be aggregated and reported at anytime during the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Core Indicator 9	Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products				(Tons)
	Metric Tons (9.1+9.2+9.3)				
	Expected		Achieved		
	PIF stage	PIF stage	MTR	TE	
		300 tonnes e-waste			
Indicator 9.1	Solid and liquid Persistent Organic Pollutants (POPs) and POPs containing materials and products removed or disposed				
	Metric Tons				
	Expected		Achieved		
	POPs type	PIF stage	Endorsement	MTR	TE
(select)	Hexa-Heptabromodiphenyl ether	(select)	3 tonnes		
(select)	(select)	(select)			
(select)	(select)	(select)			
Indicator 9.2	Quantity of mercury reduced				
	Metric Tons				
	Expected		Achieved		
	PIF stage	Endorsement	MTR	TE	
	30 tonnes of CRT lead glass		30 tonnes		
Indicator 9.3	Number of countries with legislation and policy implemented to control chemicals and waste				
	Number of Countries				
	Expected		Achieved		
	PIF stage	Endorsement	MTR	TE	
	Nigerian EPR legislation enforced		1		
Core Indicator 11	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment				(Number)
				Number Achieved	
			MTR	TE	
	Informal collectors and recyclers		30	Female	
			70	Male	
				Total	

## Annex G: GEF Project Taxonomy Worksheet

Use this Worksheet to list down the taxonomic information required under Part I, item G by ticking the most relevant keywords/ topics/themes that best describe this project.

Level 1	Level 2	Level 3	Level 4
<input checked="" type="checkbox"/> Influencing models			
	<input checked="" type="checkbox"/> Transform policy and regulatory environments		
	<input checked="" type="checkbox"/> Convene multi-stakeholder alliances		
	<input checked="" type="checkbox"/> Deploy innovative financial instruments		
<input checked="" type="checkbox"/> Stakeholders			
	<input checked="" type="checkbox"/> Private Sector		
		<input checked="" type="checkbox"/> Individuals/Entrepreneurs	
	<input checked="" type="checkbox"/> Civil Society		
		<input checked="" type="checkbox"/> Trade Unions and Workers Unions	
	<input checked="" type="checkbox"/> Communications		
		<input checked="" type="checkbox"/> Awareness Raising	
		<input checked="" type="checkbox"/> Behavior Change	
<input checked="" type="checkbox"/> Capacity, Knowledge and Research			
	<input checked="" type="checkbox"/> Capacity Development		
	<input checked="" type="checkbox"/> Innovation		
<input checked="" type="checkbox"/> Gender Equality			
	<input checked="" type="checkbox"/> Gender Mainstreaming		
		<input checked="" type="checkbox"/> Beneficiaries	
		<input checked="" type="checkbox"/> Sex-disaggregated indicators	
	<input checked="" type="checkbox"/> Gender results areas		
		<input checked="" type="checkbox"/> Access to benefits and services	
<input checked="" type="checkbox"/> Focal Areas/Theme			
	<input checked="" type="checkbox"/> Chemicals and Waste		
		<input checked="" type="checkbox"/> Mercury	
		<input checked="" type="checkbox"/> Unintentional Persistent Organic Pollutants	
		<input checked="" type="checkbox"/> Waste Management	<input checked="" type="checkbox"/> e-Waste
		<input checked="" type="checkbox"/> Disposal	
		<input checked="" type="checkbox"/> New Persistent Organic Pollutants	
		<input checked="" type="checkbox"/> Plastics	

		<input checked="" type="checkbox"/> Eco-Efficiency	
		<input checked="" type="checkbox"/> Open Burning	
		<input checked="" type="checkbox"/> Best Available Technology / Best Environmental Practices	
		<input type="checkbox"/> Climate Finance (Rio Markers)	<input type="checkbox"/> Paris Agreement
			<input type="checkbox"/> Sustainable Development Goals
			<input type="checkbox"/> Climate Change Mitigation 1
			<input type="checkbox"/> Climate Change Mitigation 2
			<input type="checkbox"/> Climate Change Adaptation 1
			<input type="checkbox"/> Climate Change Adaptation 2

**Annex H: Project budget, cofinance budget and Provisional Work Plan** - See excel files.

**Annex I: Cofinance letters** - See attached pdf file.

## **Annex J: Terms of Reference for Targeted Technical Assistance (Resources & Markets Branch, UN Environment)**

The project will benefit from Targeted Technical Assistance provided by UN Environment Resources and Markets Branch based in Paris, to align the project with international best practice and ensure efficient linkage with other regional and global initiatives on circular economy approaches to electronics. In general terms, the technical advice service includes preparation of Terms of Reference for consultants; review of draft reports and feedback: and responding to requests and queries from all project partners.

The technical advice and services to be provided under each of the Project Outputs are the following:

**Output 1: EPR and Policy** – support from two Programme Officers (for Life Cycle Thinking, and Safer Production and Eco-innovation), estimated 11 weeks over three years, total budget 35,000 USD

- Support to development of National Roadmap for the application of the Extended Producer Responsibility (EPR) program, including at minimum:
  - Definition of roles and responsibilities for various stakeholders (such as various governmental agencies, producer/importers/exporters, distributors, consumers, collectors and recyclers)
  - Key product and e-waste categories which will be addressed in the implementation plan
  - Generate and maintain data related to sales and market information
  - Definition of minimal requirements and concrete targets for collection and recycling of e-waste
  - Financial scheme and detailed implementation plan for collecting levy to cover the cost of the collection and recycling
  - The modality and responsibilities of the Producer Responsibility Organisation
  - Monitoring and reporting requirement on the performance and progress of the EPR program
- drafting of requirements for the national producers database to compile and update the market data of product put on the market, including new and second-hand equipment. and technical review and feedback on the draft database developed;
- assessment of cost elements for sound management of e-waste to be covered by the producers levy, to include:
  - Operation cost for managing EPR (Personnel, Hardware, software and office, Travel and meetings, Communication, Contracts, consultancy and auditing)
  - Technical cost for e-waste management (Collection cost to take back and collect products from various channels, Logistics and storage, Recycling and treatment (revenues and cost for different products and fractions))
- supporting the training to governmental compliance inspectors to monitor the performance of the EPR program.
- support the EA to prepare the Terms of Reference and the selection of national and international consultants to work on the levy calculation and the development of the registry software.

**Output 2 - collection:** support from two Programme Officers (for Life Cycle Thinking; Consumer Information and Eco-labelling), estimated 8 weeks over three years, total budget 25,000 USD

- Support to identify the most optional collection channels by carrying out the collection pilots in different states; preparing training on standards and best practices in sound management of e-waste towards e-waste collectors.
- support the EA to design the collection pilots in different states, and select the contractors for carrying out the collection pilots.

**Output 3 – recycling systems:** support from two Programme Officers (for Life Cycle Thinking; Safer Production and Eco-innovation), estimated 8 weeks over three years, total budget 25,000 USD

- Support to developing guidance for the assessment of recycling centre including:

- technical (e.g. dismantling efficiency for various products (labour used, liberation rate), Refinery efficiency for various recyclable materials, Treatment and disposal efficiency for various hazardous materials)
- Economic and market: Revenue from sales of reusable components and recyclable materials, Cost from equipment, hardware, labour and logistics, and handling of hazardous fractions, Market and financial feasibility study for recyclers to identify access to market opportunities (local and international), and Employment related to the recycling activities
- Environmental: Recycling efficiency of various recyclable materials, Capture/treatment rate of the hazardous materials, Emissions from various recycling processes, EHS performance of recycling facilities
- supporting the establishment for disposal of non-usable fractions (POPs, mercury) through recycling pilot test.
- support the EA to draft the Terms of Reference and the selection of contractor(s) to carry out the recycling pilots.

**Output 4 – circular economy:** Technical support from three Programme Officers (Life Cycle Thinking; Safer Production and Eco-innovation; Consumer Information and Eco-labelling) estimated over 15 weeks, (USD 50,000). Co-execution support for management and oversight of 305,000 USD for activities on Circular Economy and global outreach, including via SAICM Secretariat based in Geneva.

- provision of training on circular economy in Nigeria,
- organising high-level international event to engage with multinationals and government to implement circular economy in the electronics sector,
- contracting and oversight of consultants and development of information and dissemination materials through the SAICM knowledge management platform,
- Convening national and international events.

In addition to the Targeted Technical Assistance and co-execution functions described above, the Resources and Markets Branch will additionally provide cofinance support to the delivery of the above activities via the overall supervision of the Head of the Consumption and Production Unit and Head of the Life Cycle Initiative Unit.

## Annex K: UN Environment- Environmental Social and Economic Review Note (ESERN)

### Project Overview

Identification	GEF ID: TBC
Project Title	Circular Economy approaches for the electronics sector in Nigeria
Managing Division	UN Environment – Chemicals and Health GEF Unit (Implementing Agency)
Type/Location	Regional
Region	Africa
List Countries	Nigeria
Project Description	<p>The overall project objective is for Nigeria to adopt a financially self-sustaining circular economy approach for electronics.</p> <p>This can be achieved if Nigerian electronics producers and waste managers recover and reintroduce usable materials into the electronics value chain and dispose of hazardous waste streams in an environmentally sound manner. This Medium Size Project is comprised of four substantive outputs:</p> <p>Output 1: The Government of Nigeria and Producers jointly implement the EPR legislation for e-waste</p> <p>Output 2: 300 tonnes of e-waste are collected through formalized collection channels that minimize environmental and health impacts</p> <p>Output 3: Establish cost-effective recycling facilities and disposal systems for various e-waste categories</p> <p>Output 4: Circular economy model for the electronics sector in Africa and globally.</p>
Estimated duration of project:	36 months
Estimated cost of the project	USD 2,000,000

## II. Environmental Social and Economic Screening Determination

### A. Summary of the Safeguard Risks Triggered

Safeguard Standard Triggered by the Project	Impact of Risk <sup>30</sup> (1-5)	Probability of Risk (1-5)	Significance of Risk (L, M, H)
SS 1: Biodiversity, natural habitat and Sustainable Management of Living Resources	1	1	L
SS 2: Resource Efficiency, Pollution Prevention and Management of Chemicals and Wastes	2	1	L
SS 3: Safety of Dams	1	1	L

<sup>30</sup> Refer to UNEP Environment, Social and Economic Sustainability (ESES): Implementation Guidance Note to assign values to the Impact of Risk and the Probability of Risk to determine the overall significance of Risk (Low, Moderate or High).

SS 4: Involuntary resettlement	1	1	L
SS 5: Indigenous peoples	1	1	L
SS 6: Labor and working conditions	3	2	L
SS 7: Cultural Heritage	1	1	L
SS 8: Gender equity	2	1	L
SS 9: Economic Sustainability	2	2	L
Additional Safeguard questions for projects seeking GCF-funding (Section IV)			

**B. ESE Screening Decision**<sup>31</sup> (Refer to the UNEP ESES Framework (Chapter 2) and the UNEP's ESES Guidelines.)

Low risk  Moderate risk  High risk  Additional information required

**C. Development of ESE Review Note and Screening Decision:**

Prepared by: Name: \_\_\_\_\_ Eloise Touni \_\_\_\_\_ Date: \_\_28/11/2018\_\_

Safeguard Advisor: Name: \_\_\_\_\_ Date: \_\_\_\_\_

Project Manager: Name: \_\_\_\_\_ Date: \_\_\_\_\_

This project is rated as moderate risk based on potential risks on three UN Environment Safeguard Standards, namely 2: Resource Efficiency, Pollution Prevention and Management of Chemicals and Wastes; 6: Labor and working conditions and 9: Economic Sustainability.

As a pilot project developing new approaches to sustainable e-waste management, including an innovative financing mechanism to economically support a transition to more environmentally and socially sustainable collection and recycling, there is the potential for scaling up of successful approaches.

Given the relevance of gender and wider socio-economic inequalities in current e-waste management the project has developed a 'Gender and Socioeconomic Safeguards Action Plan' which addresses the three safeguard standards that are triggered (Annex M).

<sup>31</sup> **Low risk:** Negative impacts negligible: no further study or impact management required.

**Moderate risk:** Potential negative impacts, but less significant; few if any impacts irreversible; impact amenable to management using standard mitigation measures; limited environmental or social analysis may be required to develop a ESEMP. Straightforward application of good practice may be sufficient without additional study.

**High risk:** Potential for significant negative impacts, possibly irreversible, ESEA including a full impact assessment may be required, followed by an effective safeguard management plan.

## **Annex L: Acronyms**

**(H)CFCs:** (Hydro)Chlorofluorocarbons  
**AVUCAP:** Association of Vendors of Used Computers and Allied Products  
**B2B:** Business To Business  
**CAPDAN:** Computers and Allied Products Dealers Association of Nigeria  
**CiP:** Chemicals in Products  
**CoC:** Chemicals of Concern  
**CRT:** Cathode Ray Tubes  
**EA:** Executing Agency  
**EHS:** Environment Health and Safety  
**EMG:** Environmental Management Group of the UN  
**EPR:** Extended Producer Responsibility  
**EPRON:** Extended Producer Responsibility Organization of Nigeria  
**ESM:** Environmentally Sound Management  
**EU:** European Union  
**FSP:** Full Size Project  
**GEF:** Global Environment Facility  
**GEFTF:** Global Environment Facility Trust Fund  
**IA:** Implementing Agency  
**ILO:** International Labour Organization  
**LASEPA:** Lagos State Environmental Protection Agency  
**LAWMA:** Lagos State Waste Management Agency  
**LCD-TVs:** Liquid-Crystal-Display Televisions  
**LDCF:** Least Developed Countries Fund  
**LHHA:** Large Household Appliances  
**M&E:** Monitoring and Evaluation  
**MIA:** Minamata Initial Assessment  
**MSP:** Medium Size Project  
**NESREA:** National Environmental Standards and Regulations Enforcement Agency of Nigeria  
**NIP:** National Implementation Plan  
**PACE:** Platform for Accelerating the Circular Economy  
**PBDEs:** Polybrominated Diphenyl Ethers  
**PCA:** Project Cooperation Agreement  
**PEE:** Personal Protective Equipment  
**PEU:** Project Execution Unit  
**PIR:** Project Implementation Review  
**PMC:** Project Management Cost  
**POPs:** Persistent Organic Pollutants  
**PPG:** Project Preparation Grant  
**PRO:** Producer Responsibility Organization  
**PSC:** Project Steering Committee  
**RoHS:** Restriction of Hazardous Substances  
**SAICM:** Strategic Approach for International Chemicals Management (SAICM)  
**STAP:** Scientific and Technical Advisory Panel  
**UEEE:** Used Electrical And Electronic Equipment  
**UNEA:** United Nations Environment Assembly  
**UNU:** United Nations University  
**WEEE:** Waste Electrical and Electronic Equipment  
**WEF:** World Economic Forum



**Annex M: Gender and Socio-Economic Risk Management and Action Plan**

UN Environment Safeguard Standard	Risk Management Objective	Mitigation action (per project activity)	Responsibility
2: Resource Efficiency, Pollution Prevention and Management of Chemicals and Wastes	Ensure that the storage and management of hazardous fractions of collected e-waste is done in an environmentally sound manner	<p><i>3.2 Assess the technical, economic and environmental performance of the recycling centres</i> The recycling partner companies were selected based on their existing registration from NESREA; and the project will further verify that they do follow best practices through an independent assessment and ongoing monitoring of recycling centres during the project execution.</p> <p><i>3.3 Establish Develop system for disposal of non-usable fractions (POPs, mercury)</i> The partner formal recyclers to whom the project will deliver the 300 tonnes of e-waste need to ensure the environmentally sound disposal of the hazardous fractions. This should be part of their business plan, but the project has additionally allocated funds to support upgrades or new facilities for temporary storage and/or support to export of the hazardous components of the 300 tonnes of e-waste directly collected by the project.</p>	<p>Resources &amp; Markets Branch TTA. EIA consultants to be included in recycling/ processing plan pilot invesments.</p> <p>Resources &amp; Markets Branch TTA. Disposal market study consultant.</p>
6: Labor and working conditions	Ensure that the process of formalizing the current informal waste collection and recycling sector does not disrupt livelihoods of women or the most marginalized populations	<p><i>Activity 2.3 Integrate the informal collectors into the collection system</i> The Labour market analysis will describe the labour force in the e-waste sector, considering the roles or types of work in the different steps and disaggregating by gender, age, education level and other social status. For each different labour sector, including the least formal, the analysis will propose appropriate modalities to ensure representation at the project level, including in the Project Steering Committee. The different impacts experienced by different parts of the labour force will be reviewed, including exposure to hazardous working conditions, community perceptions and roles, and societal expectations. This careful review of current impacts will inform the conceptualization of the new formal collection systems, allowing the project to predict potential conflicts and propose ways to cushion unintended consequences that may fall on marginalized</p>	<p>Gender consultant</p> <p>ILO and social partners</p>

		people.	
9: Economic Sustainability	Ensure that women, children and the most vulnerable actors in the e-waste management value chain are able to get access to and benefit from the levy and do not lose out economically from losing access to informal recyclers for their collected materials.	<p><i>Activity 1.3 Levy estimated for a financially self-sustaining EPR program, for at least 6 product categories</i></p> <p>The assessment of operational and technical costs of e-waste management will explicitly assess and describe the roles and economic conditions and impacts of the most marginalized actors in the e-waste collection and recycling value chains, such as waste scavengers and informal recyclers. This may require a focus group discussion to be conducted in partnership with women’s or worker groups in order to be able to get input from these highly informal and often hard-to-reach groups.</p> <p>The development of guidance defining the management and the modalities for the use of the collected levy funds, will explicitly consider the needs identified above, and proactively seek input from marginalized groups on modalities for funds from the levy to be accessed by all levels of the informal sector.</p>	<p>Resources &amp; Markets Branch TTA</p> <p>Levy consultant, possibly in cooperation with local women’s or worker’s groups.</p>