GOGLA

The Voice of the **Off-Grid Solar Energy** Industry

Circularity Toolkit: E-Waste Blueprints

A guide to implementing and improving e-waste management for OGS companies

Swedfund

About the Circularity Toolkit: E-Waste Blueprints

GOGLA, with the support of Swedfund, has developed these E-waste Blueprints as part of our Circularity Toolkit to help off-grid solar companies implement and improve e-waste management across their operations.

The Blueprints build on the knowledge and best practice identified in phase 1 of our Toolkit. Wherever possible, we have sought to ensure that the Blueprint documents are applicable to a broad cross-section of OGS companies, regardless of company stage, product type or country of operations. However, companies should adapt the Blueprints as necessary to their unique operational context.

Disclaimer

The information and tools that form the Circularity Toolkit: E-Waste Blueprints are intended to provide guidance for companies wishing to improve their e-waste management operations. GOGLA, the authors and sponsors are not responsible or liable in any manner for any damages resulting from use of these resources.

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Introduction

As of 2020, more than 420million people are served by the off-grid solar sector, with an estimated 84 million live products on the market*. These products bring significant social, economic and environmental benefits to consumers and their communities. Eventually though, the products (or components of) will reach end-of-life and require repair, replacement and disposal.

Driven by social responsibility, investor interests, consumer and environmental protection, developing legislation and a desire to mitigate brand risks, the industry is taking action to manage and mitigate the negative impacts of e-waste.

Building on the GOGLA E-waste Toolkit, which captured knowledge and best-practice through a series of six modules, these Blueprints now provide OGS companies with practical tools to encourage implementation and improve e-waste management practices across the industry. Wherever possible, we have sought to ensure that the E-Waste Blueprint documents are applicable to a broad cross-section of OGS companies, regardless of company stage, product type or country of operations.

This interactive guide provides OGS companies with an overview of the Blueprints and their e-waste implementation journey. Users can navigate through the guide using the tabs on the right hand side and access the Blueprint documents via the relevant links.

All information can be accessed directly via GOGLA's Circularity Hub

*Off-Grid Solar Market Trends Report, 2020

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Scope

The E-waste Blueprints are a set of tools and templates to help off-grid solar companies develop and implement their own e-waste management initiative.

The documents have been developed to guide a cross-section of OGS companies (e.g. both vertically integrated and last mile distributors) in different market and business conditions. OGS companies can use the blueprints to design, develop, implement and review their e-waste initiatives.

There is no "one-size-fits-all" solution for managing e-waste from off-grid solar products. Companies using the Blueprints are encouraged to review and understand factors that will affect how they manage e-waste, such as internal resourcing and capacity, market conditions, product type and composition, availability of recycling facilities, and national or regional regulations.

Each element of the Toolkit aims to provide guidance for the responsible person or department within a company, ensuring that they are well-equipped to help the company achieve its e-waste ambitions.

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User Journey

The user journey below describes how an OGS company can navigate through the E-Waste Blueprints to develop their e-waste management capacity.

Assessments

The company understands its strengths and gaps regarding e-waste management.

| Hold an internal readiness conversation | → | Review feedback with key stakeholders | → | Complete e-waste assessment framework | → | Review recommended activities |

Planning

The company identifies a realistic, sustainable route towards better e-waste management

| Adopt strategic activities from the framework | → | Build an e-waste management action plan | → | Adopt an e-waste management policy | → | Select/Review e-waste processors |

Execution

The company implements effective tools and training to increase operational capacity and track success.

| Adopt and test e-waste KPIs and metrics | → | Build a training curriculum to fill operational gaps | → | Implement your e-waste action plan | → | Review and track progress |

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Advice for engaging and collaborating with key stakeholders

For an OGS company seeking to balance impact, profitability and environmental responsibility, developing an e-waste initiative that will become a core part of operations is not easy.

Successfully embedding e-waste management into your operations will require buy-in from a wide range of stakeholders. Therefore, identifying and engaging key individuals early on is advised. For example, you may consider some of the following actions:

- Identify e-waste champions, especially in executive positions;
- Find and engage stakeholders that see it as a pain point, and capture their concerns;
- Recognise that it is a cost centre, and incorporate with budgetary planning.
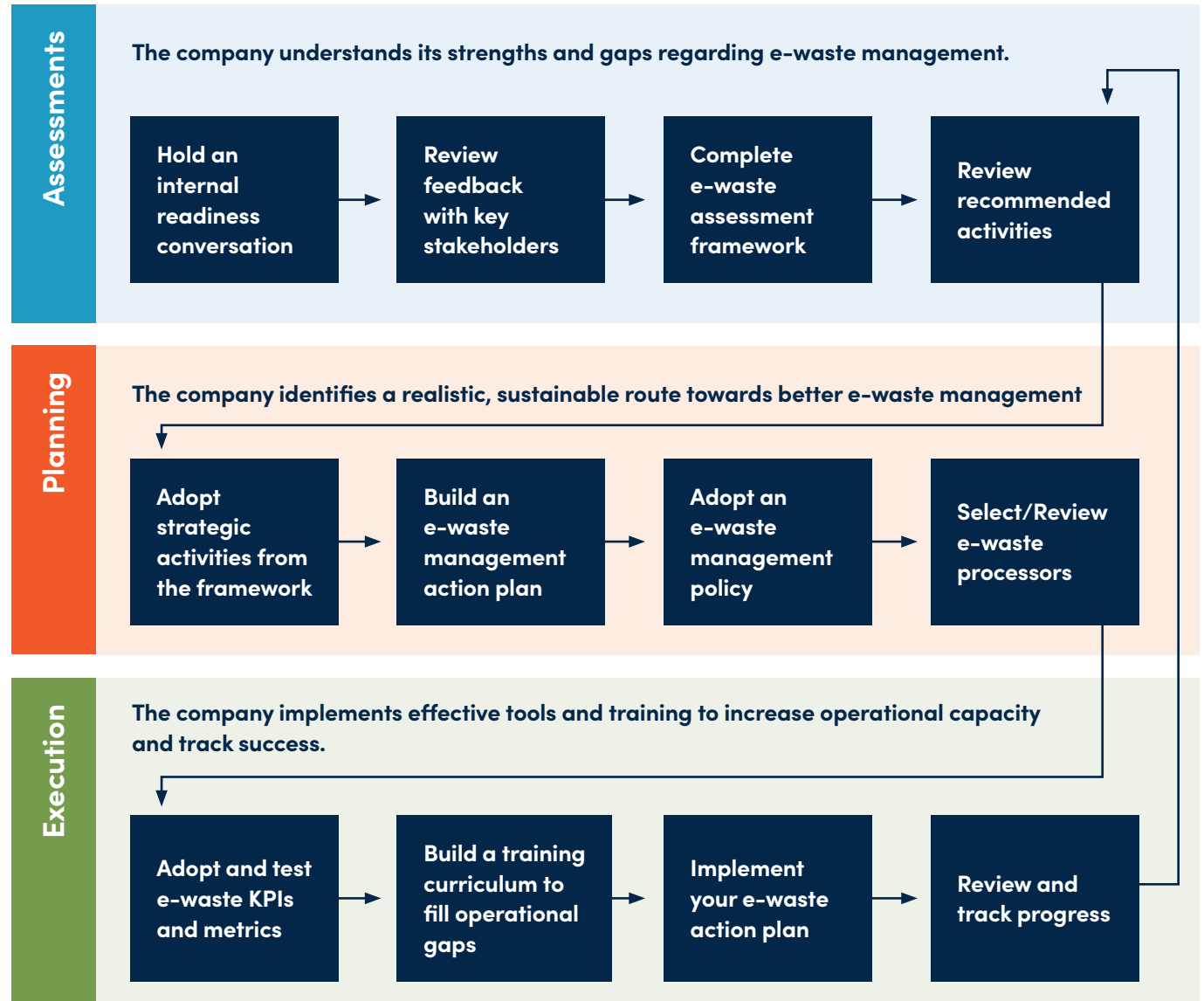

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Readiness checklist and conversation guide

The readiness checklist and conversation guide is a set of questions intended to stoke conversation amongst the designated e-waste lead, senior executives and operational team members within an OGS company. The discussion points help companies assess and understand organisational capacity and willingness to undertake an e-waste management initiative, and to identify the best period in which to begin.

Timing and approach is a significant aspect of the readiness checklist. There may not be a perfect time to begin your e-waste initiative, but there are better times to start.

For example, it is often challenging to operationalise such initiatives in Q4 due to the sales pressures on most OGS companies at that time. Alternatively, your OGS company may have only recently entered a new market and will not see any significant volumes of e-waste for the next couple of years. In this case, you may decide that early planning and monitoring of the external legal and operational context is key, but execution should not begin in earnest until you have reached a defined growth point.

For any company undertaking an e-waste initiative, and beginning with the readiness conversation, we recommend that companies identify an e-waste champion from the executive team, and an e-waste lead, who will own the initiative. Support will come from responsible departments and individuals across different operational departments.

Download the guide

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E-waste assessment tool

The E-waste assessment tool provides companies with a framework to review their existing e-waste management activities and identify strengths, gaps and opportunities. The assessment tool guides companies through a series of indicators that cover common aspects of e-waste management within an OGS company.

The assessment framework also highlights the recommended actions that an OGS company can take to address each of the indicators. These can be used to inform your e-waste roadmap (see page 10).

When assessing the e-waste environment, users should be cognisant of the risks that may arise within the e-waste management chain and how they can affect company operations and planned activities. The toolkit documents the common risks and mitigations to help OGS companies integrate risk management into their e-waste planning.

Carrying out your assessment
We recommend that the E-waste assessment is undertaken by the designated e-waste lead, with support and input from senior and operational members of the company.

Download the assessment framework

Download the E-waste risk overview

OGS E-WASTE MANAGEMENT ASSESSMENT FRAMEWORK

E-WASTE MANAGEMENT POLICY		How is this being met?	Notes/Comments (achievements & existing gaps)	Recommendations (what can be done)
EMP0	There is an e-waste management policy / plan in place. The policy/management plan has been signed off by Senior Management and adopted company-wide.	Mostly met		1. Adapt GOGLA's Blueprint e-waste policy. Review with senior stakeholders and obtain s
EMP1	The e-waste management policy is cross departmental and clearly defines how different parts of the business (nationally and internationally) will execute the e-waste management policy.	Somewhat met		1. Define all e-waste roles and responsibilities 2. Assign different roles and responsibilities to various departments or person(s) 3. Each department or person(s) has adopted e-waste roles and responsibilities as part 4. Each department or person(s) is tracking their e-waste efforts through the company's
EMP2	The policy includes a clear statement of ambition for e-waste management and outlines the long term goals for e-waste management. There is a direct connection to becoming a more sustainable company that embraces wider e-waste management principles (i.e. circularity), and links are made to e-waste as a value added business function with clear impact that benefits different stakeholders (e.g. consumers, community, and company/staff).	Fully met		1. Define an e-waste mission and vision statement 2. Connect the e-waste vision and mission to the company's greater vision and mission 3. Clearly define the impacts of e-waste management upon various stakeholders (e.g. cus 4. Integrate wider e-waste management principles into the e-waste initiative, which inclu Industry Opinion on Lifecycle and Recycling
EMP3	The policy explicitly details and adheres to e-waste legislation(s) that affect the company's countries of operation. There is a clear plan to stay updated on new e-waste legislations across all countries of operations.	Fully met		1. Identify and interpret the e-waste legal framework for each country of operation withi 2. Ensure legal compliance of the standard operating procedures for each country(ies) o 3. Track legal changes through an e-waste legislation repository or industry association
EMP4	The policy is reviewed regularly, at least annually and whenever there are changes to the organisation that affect the responsibility and roles of the people and departments involved. The review includes an assessment of forecast e-waste and ensure that the policy enables efforts to increase e-waste management capacity accordingly.	Not met		1. Define a review schedule of the e-waste management policy 2. Describe how the company deals with future e-waste through clear budgets and resou

E-WASTE ACTIVITIES AND OPERATIONS	How is this being met?	Notes/Comments (achievements & existing gaps)	Recommendations (what can be done)

CONSUMER AWARENESS & STAKEHOLDER ENGAGEMENT	How is this being met?	Notes/Comments (achievements & existing gaps)	Recommendations (what can be done)

E-WASTE PROCESSOR PARTNERSHIP CRITERIA	How is this being met?	Notes/Comments (achievements & existing gaps)	Recommendations (what can be done)

DATA COLLECTION AND MONITORING	How is this being met?	Notes/Comments (achievements & existing gaps)	Recommendations (what can be done)

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Building your e-waste roadmap

After completing the e-waste assessment tool, companies will then be able to establish an e-waste roadmap, with clearly defined goals and activities. A template roadmap is included with the assessment framework.

When building your e-waste roadmap, we recommend the following:

- Align your e-waste ambitions with organisational capacity and external infrastructure and regulatory factors.
- Establish mixed timelines (short, medium and long term) that reflect realistic ambitions and capability.
- Allocate actions to specific individuals and/or teams and incorporate into responsibilities.
- Ensure that there is a designated project manager who willtake ownership of the roadmap.
- Set milestones and celebrate them (this can provide good PR and act as a motivator for staff).

Access the roadmap template

[Company Name] E-waste Implementation Roadmap

Activity ID	Activity Description	Category	Acitivity Owner (Role)	Priority (1-3)	Due Date	Status	Outcome	
E.g.	Adapt GOGLA policy blueprint to develop a company e-waste management policy. Review with identified stakeholders and obtain sign off for adoption into company policy compendium.	E-waste policy and planning	Jane Bloggs (ESG Mgr)	1	25.11.2021	In progress	[once complete, link to approved policy document]	

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Developing an E-waste Policy

The E-waste Policy Blueprint has been developed to help OGS companies define their e-waste ambitions, outline their approach to e-waste management, assign roles and responsibilities and design key business processes.

The Policy Blueprint can be adapted to any company type, market or business context, and is foundational to any e-waste management initiative. For multi-national OGS companies, the policy is applicable at a global level with market-level aspects outlined in accompanying SOPs.

This document is an operational tool that will help OGS companies communicate about their e-waste management practices to staff and investors alike.

Implementing the policy
Like all organisational policies, once developed, the e-waste management policy should be signed-off via normal internal governance procedures. We recommend that it is reviewed annually to ensure that the ambitions, approach and external factors remain relevant.

Download the Policy Blueprint

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E-Waste Policy

A blueprint e-waste policy for OGS companies

About the Circularity Toolkit: E-Waste Blueprints:

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The Blueprints build on the knowledge and best practice identified in phase 1 of our Toolkit. Wherever possible, we have sought to ensure that the Blueprint documents are applicable to a broad cross-section of OGS companies, regardless of company stage, product type or country of operations. However, companies should adapt the Blueprints as necessary to their individual operational context.

Acknowledgements:

GOGLA is grateful to Swedfund for funding the development of the E-waste Blueprints and for their continuous support to GOGLA's ambitions to improve standards of e-waste management in the off-grid solar industry.

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Adapting the template standard operating procedures (SOPs)

The SOP template helps companies define regional, or market-level processes that may be subject to different legal frameworks or operational contexts.

We recommend that the SOP is owned by country-level management and is adapted to reflect the most appropriate methods of e-waste management for the specific regulatory, operational and resource realities.

Download the SOP template

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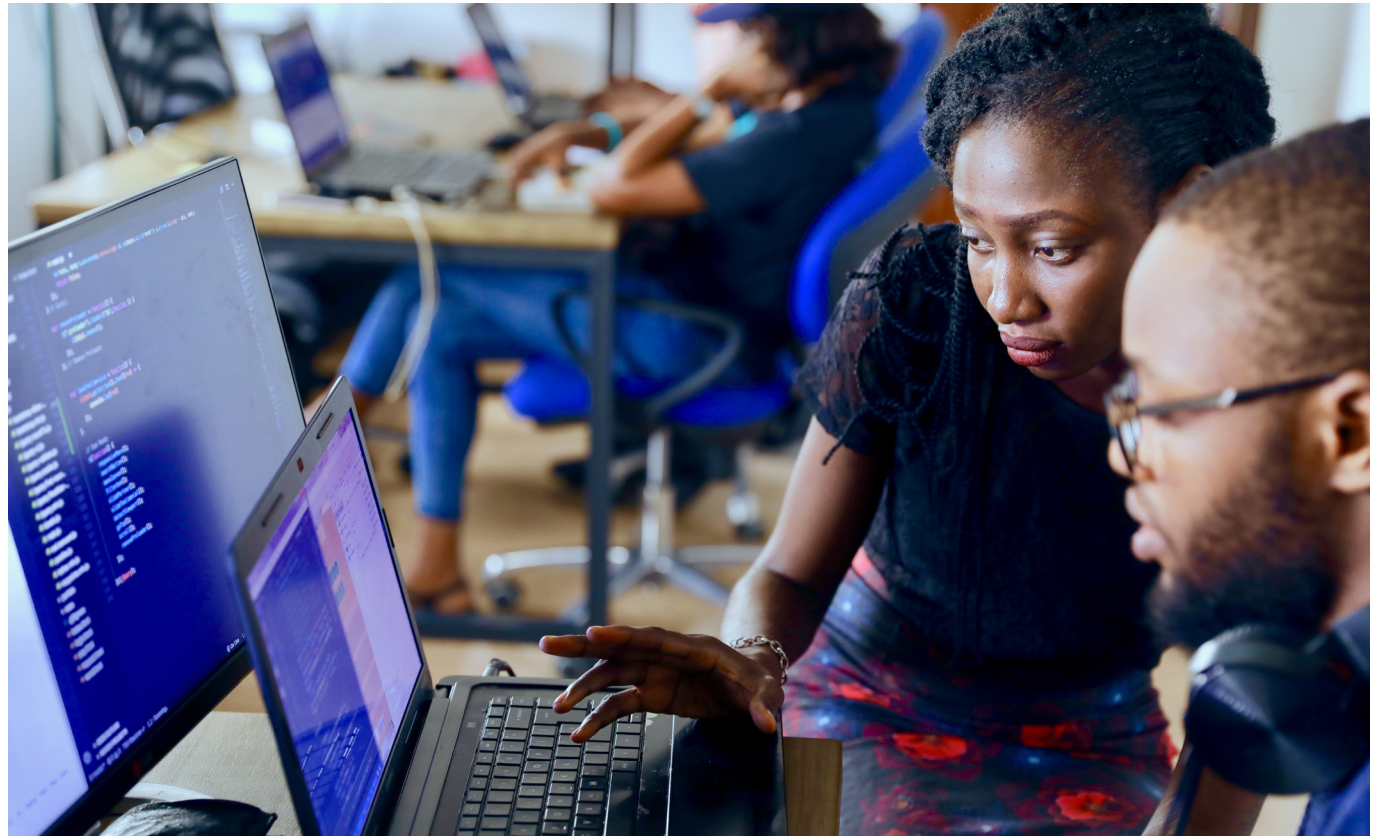- Assessment
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E-waste KPIs and data collection

The e-waste KPIs provide companies with a framework to measure, monitor and report progress in e-waste management. OGS companies can select the most appropriate KPIs for their business operations, and we have proposed a prioritisation level for the KPIs to assist the decision making process.

Using KPIs to evaluate the effectiveness of e-waste management practices can help companies and their investors to better understand their impact, identify gaps and communicate their successes in e-waste management.

The KPIs listed in the Toolkit have been informed by the GRI waste management tools and IFC's performance standards.

The KPIs defined within the toolkit cover three key areas: 1) Internal capacity and resourcing, 2) consumer awareness raising and initiatives, and 3) operational activities, including collection, repair and refurbishment, recycling and product design.

Download the KPI document

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Selecting and managing e-waste processing partners

Every OGS company handles e-waste; be it from in-warranty faulty products that cannot be repaired, or out-of-warranty, end-of-life products collected from customers via a take-back scheme. In many off-grid markets, however, the recycling infrastructure for e-waste is immature or non-existent. Where recycling facilities do exist, OGS companies are advised to ensure that their service partners meet minimum health, safety and environmental standards.

The E-waste Blueprints include an E-waste Processing Partner Pack which provides guidance for OGS companies on how they can identify, select, and manage their service providers.

How to find an e-waste recycling service

1. GOGLA collates a list of recycling service providers serving off-grid markets. Check the catalogue to see if we have listed any service providers in your markets*.
2. Seek information from colleagues in your networks such as GOGLA's working groups or National Renewable Energy Associations (NREA).
3. Ask your other service partners, such as mobile network operators (MNOs), or other large electronics producers that work locally.

Some companies may find that they are unable to locate a suitable recycling partner in their country of operation(s). In such cases, companies can include a periodic review (every 6-12 months) within their e-waste roadmap, and in the short term seek alternative solutions such as regional service providers that may facilitate transboundary movement of e-waste, establish safe storage and handling facilities, and consider alternative solutions for safe disposal.

*N.B. The information in our e-waste service provider catalogue is crowd-sourced from the industry and other stakeholders. If you know of an organisation that is not already listed, please do share the details for the benefit of others, especially in more nascent markets!

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Selecting and managing e-waste processing partners
E-waste processor pack

OGS companies that are able to identify a recycling service provider can use the E-waste Processor Pack to help them manage the selection, contracting and partnership.

The E-waste Processor Pack has five sections: pre-screening, first audit, decision making, contract drafting & signing, and periodic auditing.

The first three steps, shown here on the right include:

1. Pre-screening: Send the pre-screening form to the e-waste processor or recycler to complete. If there are several possible service providers, sending this to multiple companies may help you make an initial selection.

2. First audit: Complete an initial audit of their facilities, using the checklist included to guide the responsible person.

3. Review: After receiving a quotation and contracting information, the company/key stakeholders should evaluate the service provider according to their needs and priorities.

Download the e-waste processor pack

Choosing a partner voor E-Waste processing and recycling (1/2)

Step 0

Review your country → Look for a recycler/e-waste handler in the country → Is a list of licensed handlers/recyclers available?

Step 1

Pre-screening   *Marked requirements will vary across countries
Send pre-screening checklist to be completed by competing waste handler. Check the mandatory criteria:
- They possess licensing/registration AND/OR follow the country legislation.*
- They accept a site visit.
- They can handle your products in the volumes and frequency you require.*
- They have employee safety measures (safety gear, controlled temperature, labour rights).
- They have anti-theft measures (security, cameras, weighing, tracking)
- They are willing to provide recycling/disposal/export certificates

Step 2

First Audit (site visit)
Visit facilities and complete the site visit checklist and Audit Form. Notify minor and critical deviations.

Passes all mandatory criteria

Does not pass mandatory criteria → Declined

Receive quote for services

Passes all mandatory criteria & checks the most preferrable criteria

Step 3

Review and decission making

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Selecting and managing e-waste processing partners
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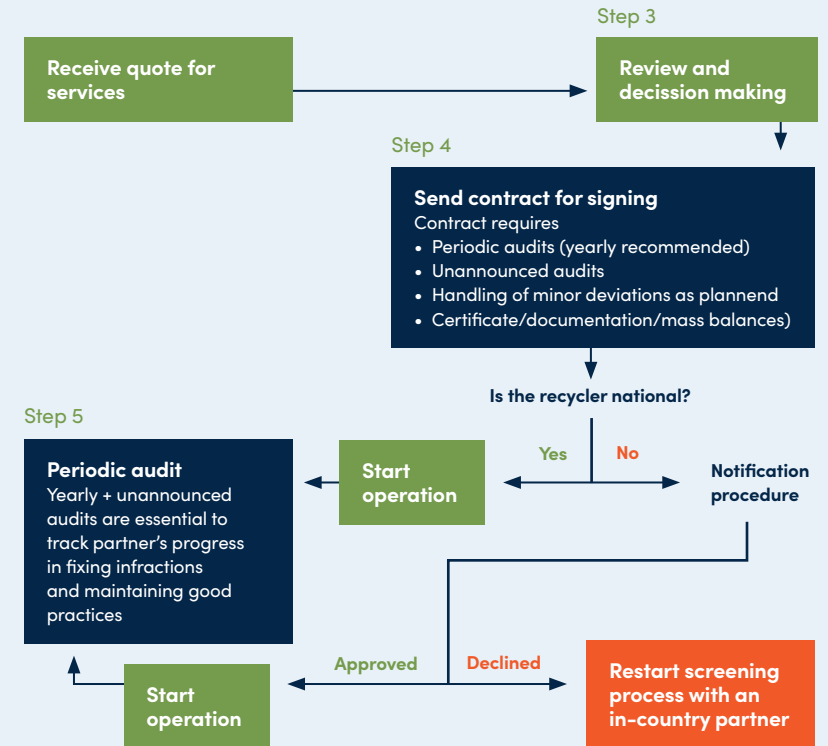## Contracting your selected partner

After selecting an e-waste processing partner, it is advised to ensure that you have an appropriate contract in place, including:

- Clause relating to IPP
- Confirmation of pricing structure
- Allowance for periodic and unannounced audits
- Defined certification/documentation

Periodic review and audits

OGS companies are encouraged to ensure that e-waste is being handles and processed as expected. This can be achieved through annual or ad hoc audits as well as via Mass Balance Sheet reporting. The Mass Balance Sheet is to be completed periodically by the e-waste processing partner and will inform the OGS company of downstream activities.

Choosing a partner voor E-Waste processing and recycling (2/2)

Receive quote for services

Step 3 — Review and decission making

Step 4 — **Send contract for signing**
Contract requires
- Periodic audits (yearly recommended)
- Unannounced audits
- Handling of minor deviations as plannend
- Certificate/documentation/mass balances)

Is the recycler national?

Yes → Start operation

No → Notification procedure

Step 5 — **Periodic audit**
Yearly + unannounced audits are essential to track partner's progress in fixing infractions and maintaining good practices

Approved → Start operation

Declined → **Restart screening process with an in-country partner**

Download contract template

Download Mass balance sheet template

Template: notice of safe disposal

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Training your staff via an e-waste curriculum

Effective and safe e-waste management within an OGS company, however extensive your ambitions, will benefit from the implementation of an e-waste training curriculum for staff in affected roles.

E-waste training within OGS companies will raise awareness of the subject amongst staff and ensure that those in roles with a responsibility within the e-waste flow are educated on the hazards, safe handling and storage, and company e-waste processes.

Where possible, basic e-waste awareness can be incorporated with staff onboarding training, and more in-depth process and health and safety training can be included in role-specific training programmes. Furthermore, e-waste education within an organisation may be supplemented with visual materials made available at collection points and warehouses.

Download the training guide

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Training staff and building an e-waste curriculum

GOGLA has prepared an example e-waste training needs matrix for OGS companies (see figure 1) the toolkit Blueprints also include a set of training slides that can be can be included as required within your e-waste training and development programme.

The slides include:
1. An introduction to e-waste
2. E-waste and your company
3. Recruiting credible e-waste partners
4. Communicating your e-waste story

Download the training guide

OGS E-waste training needs matrix	Senior managers	Operational managers (country level)	Commercial / Procurement	Logistics / Warehouse team	Aftersales mangers	Technical managers	Customer service teams	Aftersales agents	Sales
An introduction to e-waste what it is and why it matters	x	x	x	x	x	x	x	x	x
Your company and e-waste	x	x							
E-waste process flows, safe storage and handling				x	x	x		x	
Identifying and selecting credible e-waste partners		x	x						
Data, monitoring and reporting	x	x							
Consumer awareness raising							x	x	x

Figure 1 – Matrix for OGS companies

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Blueprints Map

Assessments

- E-waste readiness conversation guide
- E-waste assessment framework
- OGS e-waste risk overview

Planning

- Roadmap template
- E-waste policy blueprint
- SOP templates
- Template e-waste process

Execution

- KPIs and data tracking
- Waste Processor Pack:
  - Template: Contract
  - Template: Mass Balance Sheet
  - Template: Notification of safe disposal' with link
- Training guide and materials

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Industry consultation feedback: E-Waste Blueprints

The Blueprints have been tested by d.light through consultation, implementation and iteration, which has provided real-life feedback from a number of markets and helped to shape the final documents and accompanying guidance.

In addition to this, e-waste practitioners from Total Energies, Baobab+, CDC Group, M-KOPA and Enviroserve Kenya also reviewed parts of the e-waste blueprints. Members of GOGLA's Circularity Working Group were also consulted with during the development of the Blueprints.

We are grateful to those who took the time to review the documents and provide feedback, insights and resources that have enabled us to ensure the outputs are applicable to as broad a section of the OGS sector as possible.

The Blueprints are intended to be part of a living suite of resources for the OGS industry. GOGLA aims to iterate and develop the contents as required through learnings and as the industry matures in this area. To help us, we invite and encourage OGS companies, investors, and TA providers to provide feedback to GOGLA via email to r.rhodes@gogla.org.

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