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Waste Management and Recycling Infrastructure Assessment Guidance

Contents

Purpose of the document

This guidance document produced by the WREC team aims to support humanitarian field practitioners with conducting assessments of companies specialized in waste management and recycling and to provide a general methodology to identify local companies offering these services in humanitarian contexts. It's important to note that in some cases, practitioners will need to conduct desk reviews only without performing physical assessments of the facilities for various reasons (security, access constraints, etc.). Conducting field inspections and physical assessments represents the preferred methodology for conducting infrastructure assessments to ensure accuracy in the data collection process and it is the most effective way to validate information collected through desk reviews. When a physical assessment isn't viable, the waste management and recycling infrastructure assessment can still be useful to inform decision making and further engagement by partners. In either case, the information provided in the waste management and infrastructure assessments is a guide and should be used by humanitarian partners as such, recognizing that some of the details provided in the assessment might be inaccurate or outdated as industries and practices often change quickly, particularly during emergencies. Therefore, updates to the information are required on a regular and periodic basis.

This guidance illustrates how to assess the local Waste Management and Recycling (WMR) capacity in a specific location for the day-to-day operational needs of humanitarian organizations. For further guidance on solid waste

management in emergency contexts, please consult the IFRC Solid Waste Guidelines and other relevant resources available on the WREC platform.

About the WREC

The challenges of waste management and pollution prevention are cross cutting. No single actor can solve them alone. For this reason, the Global Logistics Cluster has brought together a coalition of representative and influential humanitarian actors who, together, offer a uniquely wide operational reach. The WREC Project seeks to reduce the adverse environmental consequences of humanitarian logistics through awareness, practical guidance, and real-time environmental expertise. Coordinated by the Global Logistics Cluster and supported by a coalition of humanitarian organizations - the Danish Refugee Council (DRC), the International Federation of Red Cross and Red Crescent Societies (IFRC), Save the Children International, and the World Food Programme of the United Nations – the *Waste management and measuring, Reverse logistics, Environmentally sustainable procurement and transport, and Circular economy* (**WREC**) project seeks to address priority gaps identified through active collaboration with humanitarian partners, responding to the need to act together, to scale up from ad hoc to systematic action, and for solutions to common environmentally sustainable logistics challenges that can be localized.

Leveraging the Cluster and coalition partners networks of over 500 partners and mobilizing the shared commitments of the coalition and institutional donors, the project will build on existing work and will focus on the two most significant environmental impacts from humanitarian logistics, with direct consequences for local communities:

- **Waste** created directly or indirectly by humanitarian activities - packaging, distributed items at end of useful life, and waste resulting from support functions such as management of fleets or premises;
- **Greenhouse gas (GHG)** emissions and pollution from transport and logistics operations.

Focusing on waste and greenhouse gas emissions, the WREC project provides support to the humanitarian logistics community by:

1. Collaborating with academia in the production of qualitative and quantitative[1] studies looking into the environmental impacts of humanitarian response;
2. Providing and embedding environmental expertise within the humanitarian community via a team of Environmental Specialists available to support partners with guidance and problem solving;
3. Coordinating the humanitarian efforts in impact reduction by organizing workshops, information sessions and meetings on key topics such as: waste management, green procurement, Greenhouse Gas emissions, Reverse logistics and circular economy;

[1] The quantitative study is in progress and is being conducted in partnership with the Kühne Logistics University. The final report should be published in Q3 2023.

4. Capturing the needs and environmental priorities for humanitarian partners via global surveys[2];
5. Providing an environmental knowledge and information portal;
6. Mapping local capacity to identify in-country Waste Management and Recycling (WMR) infrastructure , making the mapping available to the humanitarian community via the WREC information portal.

WREC workstream: Waste management

As part of the WREC efforts to support humanitarian logistics practitioners with information and solutions to reduce, manage, and properly dispose of waste produced by humanitarian operations, the WREC team has developed several tools. First, a dedicated section on waste management and recycling infrastructure has been added to the Logistics Capacity Assessments (LCA), including a country overview (chapter 3.7) and a country contact list (chapter 4.12). An assessment template has been developed to support with data collection and it's available in Annex I.

By leveraging on the global WREC network of partners, and in tight collaboration with the Joint Initiative on Humanitarian Packaging Waste, the WREC is also publishing country-specific lists of facilities providing waste management and/or recycling services. This activity is supporting humanitarian organizations and other relevant stakeholders in identifying suitable companies to manage and dispose of waste properly.

In addition, the Global Logistics Cluster has produced an interactive map via the WREC information portal with information provided by partners utilizing the LOGIE resource. The interactive map provides partners with a visual overview of waste management and recycling infrastructure by country of operation, based on the assessment details provided by humanitarian partners.

At present, 17 assessments for the following countries are available on the WREC website: Sri Lanka, Liberia, Lebanon, Rwanda, Uganda, DRC, Niger, Iraq, Madagascar, Ethiopia, Cameroon, Burkina Faso, Kenya, Antigua and Barbuda, Senegal, Haiti and Bangladesh.

Information mapped through the WREC template

Different waste streams warrant different types of waste management solutions. Focusing on specific waste streams is important for understanding (a) where the waste occurs and thereby, which stakeholders need to be involved in managing that waste stream, and (b) which materials are included in the waste and thereby, which waste management processes need to be followed (Tuomala, Gyöngyi; Aminoff, Ely, 2022).

All humanitarian partners are encouraged to collect the information on WMR companies by utilizing the Waste Management & Recycling Company Assessment form (Annex I) and share the information collected with the WREC

[2] The results of the baseline survey launched in September 2022 are available here.

team. This process will help updating key information on country-specific waste management services accessible to the whole humanitarian community on this page.

The assessment form collects information on infrastructure company location, types of waste processed (hazardous/non-hazardous, etc.), waste disposal methods, facility capacity and safety provisions, and contact information to support humanitarian partners with information on available waste management solutions in country. Information regarding the types of waste collected and managed by the waste management companies is critical to capture to ensure that all types of waste that are handled by humanitarian organizations are managed in an ecological manner. The types of waste assessed by the WREC are categorized as follows, considering common waste streams associated with humanitarian response.

Non-hazardous waste	Hazardous waste	Admin waste
• **Packaging (flexible laminate plastics)** • **Packaging (HDPE Plastics)** • **Packaging (Styrofoam)** • **Packaging (Polypropylene)** • **Packaging (plastics/others - PET and PT)** • **Plastic PT** • **Organic waste** • **Aluminium** • **Steel** • **Glass** • **Corrugated Cardboard** • **Packaging (paper)** • **Pallets (wood)** • **Paper (office)** • **Furniture** • **Vehicle Spare Parts** • **Styrofoam**	• E-waste: IT Hardware (e.g. servers, routers, external drives, CPUs) • E-waste: Telecoms equipment (e.g. deskphones, radios, mobile phones) • E-waste: Computers (e.g. desktop computers, laptops, monitors, keyboards, other) • E-waste: Scanners, printers, copiers, toner cartridges • Household appliances (e.g. Air-conditioners, fridges, generators) • Lighting equipment (light bulbs, switches, fluorescent lamps) • Batteries of different types (e.g. lithium ion, lead acid) • Electrical and electronic equipment (e.g. cameras, smoke detectors) • Gym equipment (e.g. treadmills) • Solar Photovoltaic equipment (e.g. PV panels, inverters) • E-waste (general) • Medical Waste (e.g. soiled medical items, used sharps, glasswear, etc.)	• General Office Waste • Composting (food waste)

	• Used engine oil, lubricants • Tyres • Chemicals and Fertilizers	

Waste disposal methods are another critical component to assessment of waste management and recycling facilities, as this informs the maturity of the WMR infrastructure in country and potential areas where humanitarian organizations need to support local markets and/or source alternatives (disposal of hazardous materials such as medical waste or e-waste should not be handed over to landfill WMR companies, for example) within the region or with other partners. Each type of waste disposal method has pros and cons as well as appropriateness for types of waste. Partners with questions regarding waste management are encouraged to reach out to the WREC Environmental Specialist on Waste Management for support and guidance (Global.WREC@wfp.org).

- Landfill;
- Incineration;
- Physical recycling;
- Exported;
- Sorting only;
- Other;
- Unknown.

The integration of a dedicated LogIE map on the WREC website allows to capture also the geographical dimension associated with each facility identified through the assessment, when the geographical coordinates of the treatment plant or main office are available.

How to compile the Waste Management and Recycling (WMR) Assessment

Conducting a waste management and recycling infrastructure assessment can lead to the identification of local contractors, government entities, manufacturers, or even civil society groups and cooperatives with adequate capacity to treat and dispose of hazardous and non-hazardous waste created as a result of humanitarian activities. The WMR assessments therefore help to inform humanitarian organizations on the available WMR capacity in a specific country and identify gaps where additional support and/or advocacy is needed. Before starting the assessment, it is advisable to reach out local NGOs, Clusters (if activated), civil society groups, government bodies, and UN Agencies operating in the area, seeking collaborative opportunities to jointly manage waste. Coordination and consolidation of waste volumes and waste handling may be needed if the WMR infrastructure in the country of operation isn't adequate to handle the needs of the local populations and the humanitarian operations. All along the process, ensure engagement

and proper coordination with the local procurement unit to avoid duplication of efforts in the identification of the most adequate WMR company.

Multiple scenarios are possible for conducting a WMR infrastructure assessment, this guide will provide recommendations for two scenarios based on the geographical location of the assessor vs. the location of the object of the assessment.

Scenario 1: Conducting an in-person assessment (the assessor **is located** in the same country of the facilities to be assessed).
Scenario 2: Conducting a Remote desk assessment (the assessor **is NOT located** in the same country of the facilities to be assessed).
Important considerations applicable to both Scenario 1 and 2: if you can't retrieve all the information requested in the WREC template, it's still possible to publish the assessment **as long as you have the following information for each company:** *Company name, Company contact details, waste types (hazardous, non-hazardous or admin) accepted and disposal method*.
If an assessment doesn't contain the disposal method and the waste types collected by the companies, the WREC won't be able to publish the form on the website. The ratio behind this is twofold:
1) If a partner needs to access specific waste disposal services (e.g. to dispose of specific waste types such as plastic, hazardous waste, paper etc), by opening the assessment he/she can immediately spot the companies that he can contact by filtering the spreadsheet by waste type.
2) Some disposal practices can generate adverse environmental and social hazards (e.g. the incineration of hazardous waste). That's why it's important to get this level of detail, so that the 'critical' records can be removed from the assessment until further physical evidence on the facility can be collected.

Scenario 1: In-person assessment

In this case, the assessor is likely to have access to direct or semi-direct information on the waste management and recycling facilities, being able to retrieve the information needed for the assessment with a satisfying level of accuracy. This can be achieved through the following steps:

- Contact the local authorities (e.g. National Environmental Agencies, Ministry of Environment) and request access to the list of licensed waste management and recycling companies registered at the Local Chamber of Commerce;
- Contact in-country humanitarian actors (Clusters, NGOs, civil society, UN agencies, etc.) and request information on existing waste management solutions / providers that are being used by partners;

- Call/email the facilities' focal points to schedule a physical visit to the facility and conduct an on-site interview with the facilities' operations manager, or any other relevant function. If you aren't an environmental practitioner but a generic admin or logistics staff member, **during the visit at the facility** try to verify if the information provided by the company matches the actual situation on-site: if a company declares that they only deal with non-hazardous waste but you see oil containers, tyres, e-waste or similar items at the premise's site, it's worth asking for additional explanation to the company's focal point. The WREC template available at Annex I should be filled in entirely during the field visit. If some information isn't available, the template can still be sent to the WREC team as long as it includes: contact details of the assessed companies, waste types accepted by the facility and disposal method (for each waste type).
- If the interview doesn't provide satisfactory results or information is still lacking, conduct a short interview online/by phone – following the WREC template's structure during the questionnaire - to capture the information required. Make sure to request the participation of the facility's Head of Office or Head of Operations.

  Note: *it's always important to verify the accuracy of the information provided by partner organizations by contacting the individual facilities. Information registered in company profiles maintained by humanitarian partners may be outdated.*
- Register the answers to the questionnaire in the WREC template – available in Annex I and online - and share it with the WREC team for validation and publication (global.WREC@wfp.org).

If you need to compile the assessment to identify a suitable contractor, once contractors have been selected, their sites should be inspected regularly to ensure they are managing/disposing of waste responsibly, and all licenses/permits are in order. Note that local regulations may be context-specific and it's worth asking local contractors if they have any geographical or logistics constraint associated with the transport of waste, particularly if waste is exported to neighbouring countries for treatment or recycling purposes.

Scenario 2: Remote assessment

When an entity doesn't have the opportunity to conduct an in-person assessment due to physical constraints (e.g. lack of resources, travel restrictions, safety measures or reasons of force majeure), a remote assessment can be conducted and shared with the WREC team for validation. The information provided in the assessment can be amended and updated, in case a physical assessment can be performed at a later stage. Recommended steps to conduct a remote assessment are outlined as follows:

- Liaise with the team within your organization which has a local presence, asking to possibly contact the local authorities and get access to the list of licensed waste management and recycling companies registered at the Local Chamber of Commerce;

- If colleagues can't provide support or if your organization doesn't have an office in the country of interest, try to access the Local Authorities websites – such as the Chamber of Commerce or the local Environmental National Agency – and see if any list of licensed WMR companies is available online;
- Identify the contact details of the facilities available in-country and call/email the facilities' focal points to conduct a short interview – following the WREC template's structure during the questionnaire - to capture the information required;
- Contact the WREC team (global.WREC@wfp.org) to check if any WREC partner can provide support in the elaboration of the assessment, possibly organizations with a local presence; *Note: it's always important to verify the accuracy of the information provided by partner organizations by contacting the individual facilities. Information registered in company profiles maintained by humanitarian partners may be outdated.*
- Register the answer to the questionnaire in the WREC template – available in Annex I and online - and share it with the WREC team for validation and publication (global.WREC@wfp.org).

Glossary

- **Baseline** starting point used for comparisons.
- **Circularity measures**: Measures taken to retain the value of products, materials, and resources and redirect them back to use for as long as possible with the lowest carbon and resource footprint possible, such that fewer raw materials and resources are extracted and waste generation is prevented.
- **Disposal:** Any operation which is not recovery, even where the operation has as a secondary consequence the recovery of energy.
- **Electronics E-waste** (Electronic waste): Electronics refers to end-of-life or discarded appliances that use electricity. Some examples include computers, printers, monitors, television sets, domestic appliances, mobile phones, etc. Electronic products contain several types of hazardous materials like mercury, arsenic, lead, cadmium, and should be discarded properly.
- **Incineration:** Controlled or uncontrolled burning of waste. Incinerators are machines of different types and size and are designed to burn a given array of waste streams at high temperatures in one or more chambers. Choose closed incineration when re-use or recycling cannot be used for any kind of waste. Open incineration instead, consists in the uncontrolled burning of waste in open pits. It should be avoided due to negative environmental and health impacts.
- **Landfill:** A landfill is a facility designed for the controlled burial of waste, equipped with systems to control leachates, compact the waste, manage methane production, among others. It can be a method to dispose waste when options of re-use, recycling, composting and closed incineration have been exhausted.
- **Motor oil and related fluids:** The majority of fluids from vehicles and machinery are hazardous and must be collected and disposed with care using a specialist facility. Typical fluids include motor oil, brake oil, antifreeze (if a hazardous type is used), petrol, diesel and lubricating oils.
- **Medical waste:** This includes expired pharmaceuticals, sharp medical instruments and any waste contaminated with bodily fluids or other potentially infectious materials. Most of the times the preferred disposal method for this type of waste consists is closed incineration.
- **Plastics**: Plastics are synthetic materials made from petroleum. There are many different types of plastics with different properties. Some examples are polypropylene (PP), polyethylene (PE), polyethylene terephthalate (PET), polyvinyl chloride (PVC). Plastic containers are encouraged to be reused. Most thermoplastics (plastics malleable when subjected to heat) are recyclable, if they are properly separated.
- **Solid Waste:** Any garbage, refuse or other discarded material, resulting from different types of operations (industrial, commercial, agricultural, etc.) and from community activities; for which an alternative use has not been identified.

Annex I: The WREC template for waste management and recycling companies

You can find the waste management and recycling template on the WREC platform and below, in case you need to work offline and can't access the webpage. If you need to account for multiple types of waste, please use a separate row for each waste type. If you need to register information for multiple companies, use a separate row for each company. You can print multiple copies of this page or add more rows if needed. *Note: use a separate row for each waste type collected by the local company, since different waste types tend to be associated with different disposal methods. Use separate rows for each company identified. If the local WMR company developed any virtuous initiatives or circularity measures to reduce, reuse or recycle waste streams, possibly share some details with the WREC team.*

Country:																**Waste Information**							
Name of Company	**Physical Address**	**Focal Person**	**Telephone Number**	**Email Address**	**Website**	**Does the company have an Environmental, Health and Safety certification (e.g. ISO 14001, ISO 45001 or equivalent)?**	**Business License Validity Dates**	**Years of experience**	**Company main business**	**Facility is well maintained (roof/walls)? (Y/N)**	**Hazardous materials are processed and stored separately from non-hazardous waste? (Y/N)**	**Facility has adequate ventilation? (Y/N)**	**PPE provided to staff (hard hats, overalls, boots, etc.)? (Y/N)**	**Processing capacity (e.g. max tonnes/day or month)***	**Collection provided (Y/N)**	**Any transport capacity constraints (geographical, volumes, frequency)?**	**Non hazardous waste accepted**	**Non hazardous waste Disposal method**	**Hazardous Waste Accepted**	**Hazardous waste disposal method**	**Admin Waste Accepted**	**Admin Disposal method**	**Comments**

Disclaimer: Registration does not imply any business relationship between the supplier and WFP/Logistics Cluster, and is used solely as a determinant of services, and capacities.

ANNEX II Waste Management and Recycling Questionnaire

Environmental Questionnaire

Site visit: Waste Management and Recycling infrastructure

Company name: _____
Location: _____

This document complements the WREC Waste Management and Recycling Assessment Guidance and can be used by humanitarian partners to assess waste management and recycling facilities through site visits. It is complemented by an Annex listing hazardous and non-hazardous waste types.
Evaluation date: xx/xx/xxxx

Index	**Question**	**Observations**
1	Evaluation carried out by: (name, organization, position, email, telephone)	
2	Focal point in the company during the evaluation	
3	Main company business **(for example: *waste collection and aggregation only, processing & recycling, landfill management, etc.)***	
4	Does the business cover areas of social utility? *(e.g. development projects, employing vulnerable categories)*	
5	Geographical areas covered (please list all)	
6	Does the entity receive funding or financial support? *(if yes, by whom? Government, donors, private entities?)*	
7	Company website	
8	Does the company have any environmental standards/certifications (e.g. ISO 14001), EMS, or an environmental policy? *(if yes, request if it's possible to see it and list the certifications)*	
9	Company registration number	
10	What is the business license validity date of the company *(if registered at the Chamber of commerce)?*	

TECHNICAL QUESTIONS

	Question	**Y**	**N**	**Observations**
11	**Aspect 1 – COLLECTION/RECEPTION**			

	Does the site have and maintain an inventory of all the waste generated for the last year?			
12	**Detail the operator's collection equipment** (*e.g. Number of trucks, use of own fleet vs contractors etc.)*			
13	**What materials are collected each month? How many kg per each waste type, on average** *(e.g., PP, PET, HDPE, LDPE, PS plastics[3], paper, cardboard, glass, e-waste, metals, etc.)*			
14	**Is the company receiving waste directly to the compound by external stakeholders? What is the total %?**			
15	**Aspect 2 - STORAGE** **Is the waste storage area organized, clean, and free of obstacles?**			
16	**Is the company treating hazardous waste?**			
17	**If hazardous materials are accepted at the premise, is it stored properly?** (*e.g. on dry concrete platforms sheltered from rain, in sealed or secured containers, no leaks are visible close to the area of storage)*			
18	**Aspect 3 – WASTE SORTING** **What are the sorting conditions/protocol** (manual vs mechanical – if manual, how many workers? If mechanical, how many machines?)			
19	**What is the maximum daily capacity for waste sorting, per each type of waste?**			
20	**How many sorting lines/conveyor belts are there?**			
21	**Aspect 4 – RECYCLING** **What are the materials recycled by the company?** **Indicate the monthly volume (M3) and % of material recycled against the total volumes received at the premise** *(to understand, in percentage, how much is recovered over the total waste volumes received).*			
22	**What processes/procedures are used for the Recovery – Recycling?** (e.g. dismantling / transformation of matter - explain the process)			
23	**Which are the final products generated?**			
24	**Are the final products sold and/or exported for selling?**			
25	**Where do the materials go after processing/recycling?**			

[3] The most common types of plastics are: Polyethylene Terephthalate (PET or PETE), High-Density Polyethylene (HDPE), Polyvinyl Chloride (PVC or Vinyl), Polypropylene (PP), Low-Density Polyethylene (LDPE), Polystyrene (PS or Styrofoam). If the materials received at the facility don't belong to any of those categories, you can mark 'other'.

26	**If the company doesn't recycle materials directly, do they ship material to third parties for recycling? If yes, to which third parties** *(name, location, are they formal or informal/unlicensed operators)*			
27	**If the waste is transported/exported out of country for recycling purposes, are there transboundary regulations that the company follows? If yes, which ones?**			
28	**Aspect 5 – OTHER CONSIDERATIONS** **Are any non-recovered materials** (i.e., final waste) **going to the municipal landfill?** *(Monthly volume (M3) and Kg)*			
29	**How many employees are working in the plant?** *(Did you observe the presence of children in the compound and women? Child labour is an indicator of lack of social protection measures)*			
30	**Health and safety: do the workers use Personal Protection Equipment (gloves, goggles, earplugs (noise), mask (fumes), etc.)?**			
31	**Is the plant well ventilated or there are areas where workers are subject to inhaling of fumes?**			
32	**What are the main challenges/needs of the company business?**			
	CONCLUSION **Environmental Aspects of concern** (list the question index associated with observations indicating high to moderate environmental & social risks – specifically, the questions for which you have registered 'no' as an answer)			e.g. question index 31, 22,5..
	Follow up visit scheduled? If yes, when?			

Date Signature