Climate Action Accelerator

TOOLKIT

SOLID WASTE CHARACTERISATION

September 2025 – Version 1

Climate Action Accelerator
Solutions Unit

About the Climate Action Accelerator

The Climate Action Accelerator is a Geneva-based not-for-profit initiative created in 2020 with the aim of leveraging a critical mass of high human impact organisations in order to scale up climate solutions, contribute to greater resilience, and ultimately limit global warming to well below 2°C in order to avoid adverse impacts on communities around the world. Its overall goal is to help shift the aid, health and higher education sectors towards a radical transformation of their practices, halving greenhouse gas (GHG) emissions by 2030 on a 'net zero' trajectory in line with the Paris Agreement, and transitioning to low-carbon, resilient, sustainable models.

Acknowledgements

This toolkit was produced by Pascal Carré (Technical expert, premises, energy & sanitation) with the support of Clotilde Belin (Programme Officer). Its development was coordinated and supervised by Sonja Schmid (Solutions Team Lead).

The toolkit also builds on implementation projects from the climate and environmental roadmaps of Climate Action Accelerator partners. We are grateful for their commitment and for the wealth of knowledge and experience developed through their collaboration.

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INTRODUCTION

Why characterise waste?

The aim of waste characterisation is to determine reliably and accurately the solid waste composition (qualitative analysis) and quantity (quantitative analysis) and, if possible, its treatment method and final destination, for each structure, project or premises supported or used by the organisation.

This characterisation stage is essential to design and implement a solid waste management plan. It is necessary to develop quantifiable objectives and specific activities adapted to each context in order to:

- Reduce the quantity of waste and its environmental impact
- Strengthen or implement appropriate treatment methods
- Monitor progress in waste management
- Estimate the environmental footprint of waste produced

Continuous characterisation, or characterisation carried out at regular intervals, helps to measure improvements and propose adjustments.
The waste's environmental footprint can be estimated by analysing the results obtained.

Waste characterisation is an activity in its own and must be realised independently of waste management itself. A Toolkit dedicated to waste management will complement this Toolkit.

This Toolkit only concerns solid waste and not liquid waste, which involves specific and different methods and techniques.

Purpose of this toolkit

The purpose of this Climate Action Accelerator toolkit on Waste characterisation is to equip organisations with a set of resources and strategies to integrate policies and procedures to reduce the carbon and environmental footprint of their activities. It serves as a practical guide, offering a suite of tools and best practices.

Target audience and users

This toolkit is aimed at technical teams who have to carry out waste characterisation.

Feedback

This toolkit is a living document and will continuously be updated to reflect evolving good practice. Partners and other organisations are invited to share suggestions, challenges, and success stories. Additionally, organisations are welcome to contribute in-house tools for potential inclusion. Please contact us at contact@climateactionaccelerator.org for feedback and contributions.

I. PREPARATION

STEP 1: DEFINITION OF FREQUENCY AND SCOPE OF THE CHARACTERISATION PROCESS

Aim: Establish a structured framework for waste characterisation, clearly defining the scope of the activities concerned, planning a suitable frequency for reliable monitoring over time, and determining relevant sorting categories adapted to local realities.

Tools:

- List of different types of waste and their European nomenclature
- WHO guideline: "Safe management of healthcare waste" containing a nomenclature of medical waste.
- Table classifying common types of waste (general, medical, garage, electrical equipment, construction, and demolition) with their respective nomenclature.
- Nomenclature of general waste

Actions:

1. **Set the scope**
   a. Choose the projects or offices where the characterisation will be carried out: all the facilities, or just the most representative ones?
   b. All activities must be represented: for example, offices, garages, housing, health centres or hospitals.

2. **Plan the frequency of the characterisation exercise**
   a. To avoid bias, data should be collected over a minimum period of one month, and ideally repeated 3 or 4 times a year.
   b. Continuous characterisation work, or work carried out at regular intervals, makes it possible to monitor progress, identify changes in the organisation's waste production, highlight any reductions or increases and make any necessary adjustments.
   c. The frequency with which waste is collected and taken to the weighing and storage area should be defined according to the type of waste: daily or weekly. For certain types of waste, such as WEEE (Waste from Electrical or Electronic Equipment), the collection frequency can be more spread out over time.

3. **Define sorting categories**
   a. Divide waste into categories according to its characteristics (material, hazardousness, recyclability, etc.).
   b. Take inspiration from the different categories established by the European Commission or the WHO (see "Tools in the spotlight").
   c. Identify as far as possible the final destinations available locally for each category of waste, and the sorting required by recycling service providers, for example.
   d. Organise a discussion workshop to determine the sorting categories on the basis of
      i. the needs observed in the projects (waste problems identified)
      ii. the organisation's activities (office, health or reception facilities, etc.)
      iii. recycling or treatment facilities, if any.
   e. Work with users and maintenance staff to define categories.

Once waste categorization has been carried out, waste reduction targets need to be defined.

Example of sorting categories:

General waste	Paper/cardboard Wood Plastic Glass Metal Textile Organic Minerals Other general waste
Medical waste	Infectious waste Sharps waste Organic waste Pharmaceutical waste Chemical waste Radioactive waste General healthcare waste

Garage waste	Tyres Oils and fluids Batteries Other garage waste
Waste from electrical and electronic equipment	Heat exchange equipment Screens and monitors Lamps Large equipment Small equipment Small IT and telecom equipment Photovoltaic panels
Construction and demolition waste	Concrete, bricks, tiles and ceramics Wood, glass and plastics Bitumen and tar Metal Soil, stones and sludge Insulation materials Gypsum-based materials Other

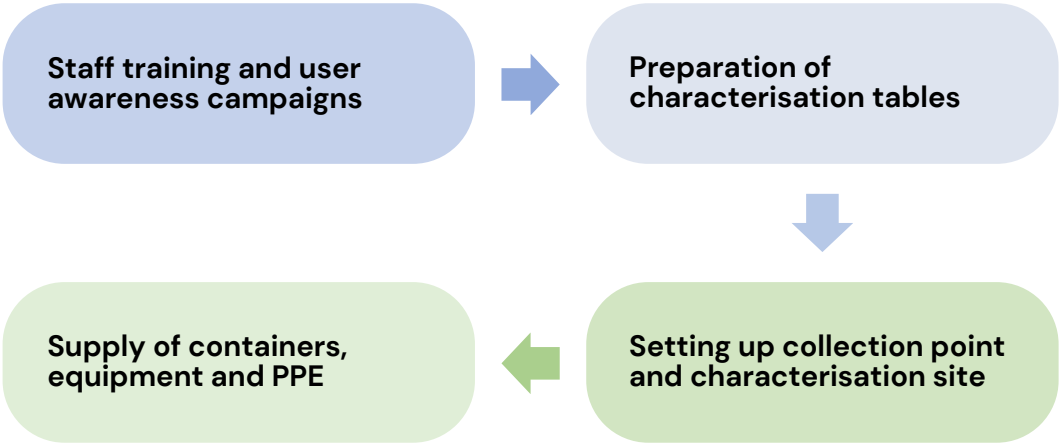
STEP 2: IDENTIFICATION OF SITES, HUMAN RESOURCES, TOOLS AND EQUIPMENT

Aim: Organise the team and prepare the logistics necessary for characterisation, including space planning and the acquisition of materials and equipment.

Tools:

- Annual waste monitoring report
- Monthly monitoring tables by type of waste

Actions:



Key activities of the preparation

1. **Train the waste management team**
   a. Inform and raise awareness among all staff about waste sorting.
   b. Identify maintenance staff directly responsible for characterisation.
   c. Train maintenance staff in waste characterisation and recognition of different categories.
   d. Update job profiles to include waste characterisation activities.
   e. In certain types of establishments, such as hospitals, it is important to set up a health committee responsible, among other things, for waste management.

2. **Prepare data collection tables**
   a. A data collection table is drawn up on the basis of the categories determined previously.
   b. It is necessary to establish a common definition for the different types of waste as well as for the final destinations. (See "Definitions" tab with data collection tables).
   c. The weighing results are recorded in a monthly characterisation table by project or site, and by type of waste.
   d. The data collected in the monthly tables are reported in an annual table that tracks changes in quantities by category.

3. **Identify collection, storage and weighing sites**
   a. Organise the areas for installing the sorting containers for users.
   b. The collection points are defined and easily identifiable.
   c. Set up a dedicated area for storage, weighing and recording. Inside the waste area if there is one, or in the immediate vicinity.
   d. The storage and weighing area is secured (door and fence) and access is limited to trained personnel.
   e. The route between the collection points and the storage and weighing area is as simple as possible, does not hinder other users and does not create risks.
   f. If a waste management area already exists, the storage and weighing area must be located within it or in its immediate vicinity.

4. **Prepare and supply collection, weighing and protection equipment**
   a. Provide personal protective equipment (PPE) for the staff in charge of collecting and characterising the waste, to protect their health and prevent accidents.
   b. Equip sorting and collection points with containers suitable for each type of waste. Check local standards (type/colour code) for containers. Some waste requires special containers (e.g. medical needles or sharp instruments, or washable containers with lids that are easy to empty/move).
   c. Equip the characterisation site for storage (shelves, containers, etc.) and weighing activities (scales, register, shelf, etc.). People scales or industrial scales may be suitable, as well as the Salter scales used in nutritional centres.

Example of a Salter scale

The table below shows the equipment required for collecting and weighing waste.

Materials and equipment	
Personal protective equipment (PPE)	Protective goggles Gloves Apron Safety footwear
Collection	Collection containers Transport trolley
Characterisation	Scale Register Shelves

II. IMPLEMENTATION

STEP 3: WASTE SORTING AND COLLECTION

Aim: Carry out collection and transport activities.

Actions:

1. **Collect and transport**
   a. Collect waste sorted by category in specific, clearly identified containers, as close as possible to where it is produced (e.g. at the patient's bed).
   b. Transport the waste in its containers to the weighing or characterisation site (daily/weekly, depending on the type of waste).

STEP 4: WEIGHING AND RECORDING DATA

Aim: Collect and compile data on different types of waste using pre-established collection tables.

Tools:

- Annual waste monitoring report
- Monthly monitoring tables by type of waste

Actions:

1. **Weighing and recording**
   a. The waste is weighed by category at the characterisation site.
   b. During this stage, some waste will have to be sorted again: use this information to raise staff awareness of the need to improve selective sorting.
   c. Weights are recorded by category on paper or electronically, for example on a dedicated tablet.
   d. Most waste is measured in kilograms, but certain types of waste, such as garage waste (tires, batteries, etc.) or WEEE, will be recorded by unit.

2. **Compile the data**
   a. The data collected is regularly recorded and compiled in a monitoring table.
   b. Direct observation of all the stages of waste management, i.e. sorting, collection, storage and treatment, will enable the reliability of the data collected to be verified.

Example of a characterisation table with data recording for several projects:

TABLEAU DE CARACTERISATION MENSUEL DES DECHETS GENERAUX
SOS Médecins Burkina Faso

Type de déchet	Déchets recyclables						Autres déchets généraux		Déchets électroniques (DEEE)		TOTAL par projet	Répartition par projet
	Plastique		Carton, papier		Métal							
Unité	kg/mois	Destination finale	kg/mois	Destination finale	kg/mois	Destination finale	kg/mois	Destination finale	kg/mois	Destination finale	kg/mois	%
SIEGE/BUREAU	2,5	centre déchets municipal	1,1	centre déchets municipal	0		0,5	centre déchets municipal	0,1	centre déchets municipal	4,2	
PROJET 1: PEC HIV/SIDA	6,2	incinérateur	2,4	incinérateur	0,2	collecte/ recyclage	0,5	incinérateur	0		9,3	
PROJET 2: Appui technique MAC	0		0		0		31,8		0		31,8	
TOTAL par type de déchet	8,7		3,5		0,2		32,8		0,1		**45,3**	

GRAND TOTAL en kg/mois

III. ANALYSIS AND ACTION PLAN

Aim: Interpret the collection tables and use the data collected as part of the characterisation.

STEP 5: DATA ANALYSIS AND ESTIMATION METHODS

Aim: Know how to read characterisation tables, highlighting the key facts and information needed to develop an appropriate solid waste management plan.

Actions:

1. **Analyse the data**
   a. Recording and compiling the data provides precise information on the waste produced, enables observations to be made on volumes and flows, and highlights the main waste management issues.
   b. Waste characterisation will provide information on the following points:
      i. Identification and quantity of the main types of waste (in kg and %)
      ii. Breakdown of waste by type (in kg and %)
      iii. Breakdown of waste by project, service or department (in kg and %)
      iv. Identification of available final destinations
      v. Control of hazardous waste management
      vi. Identification of major or immediate problems
      vii. Identification of additional information to be obtained
      viii. Confirmation of chosen typology (review categories if inappropriate)
      ix. Identification of immediate measures to be implemented to better manage or reduce waste.

Example of a characterisation table with data processing:

TABLEAU DE CARACTERISATION MENSUEL DES DECHETS GENERAUX
SOS Médecins Burkina Faso

Type de déchet	Déchets recylables						Autres déchets généraux		Déchets électroniques (DEEE)		TOTAL par projet	Répartition par projet
	Plastique		Carton, papier		Métal							
Unité	kg/mois	Destination finale	kg/mois	Destination finale	kg/mois	Destination finale	kg/mois	Destination finale	kg/mois	Destination finale	kg/mois	%
SIEGE/BUREAU	2,5	centre dechets municipal	1,1	centre dechets municipal	0		0,5	centre dechets municipal	0,1	centre dechets municipal	4,2	9%
PROJET 1: PEC HIV/SIDA	6,2	incinérateur	2,4	incinérateur	0,2	collecte/ recyclage	0,5	incinérateur	0		9,3	21%
PROJET 2: Appui technique MAC	0		0		0		31,8	?	0		31,8	70%
TOTAL par type de déchet	8,7	19%	3,5	8%	0,2	0,5%	32,8	72%	0,1	0,5%	45,3	100%
											GRAND TOTAL en kg/mois	

Main waste generated by type and by project

Main waste generated by type

Percentage breakdown by waste type

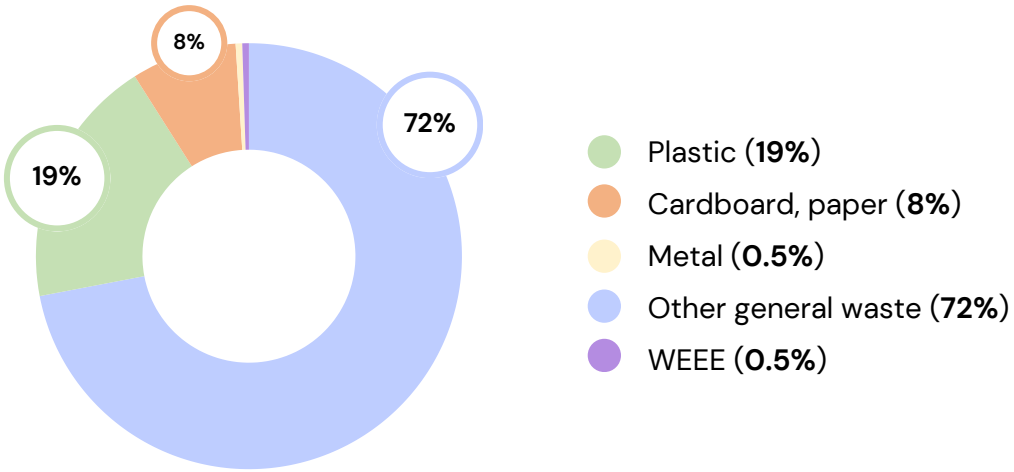
Additional information

Main waste generated by project

Percentage of waste generate by project

This table allows us to analyse the data: we can see, for example, that the category 'Other general waste' needs to be analysed and broken down, for example by adding a category 'Organic waste'.

A pie chart will give a better idea of the proportions of each type of waste produced:



See another example of characterisation carried out by the NGO Solthis in collaboration with the Climate Action Accelerator here (in French).

2. Estimate and extrapolate missing information

It is not always possible, or desirable, to carry out this characterisation work on all an organisation's sites or projects. Various methods can be used to estimate the volumes of waste produced. However, these methods remain approximations that can introduce significant biases.

Several methods are used:

a) Estimation based on purchases

The quantity of waste can be estimated on the basis of the type and volume of purchases made. A percentage of waste per product is estimated according to different criteria, for example:

- Contents to be subtracted: items whose contents are not considered to be waste; only the packaging or container is. The weight of the contents is therefore subtracted from the calculation.
- Long-life: items that can be reused over several years. Their weight is spread over their estimated lifespan.
- Single-use: single-use consumables that are treated entirely as waste after use.
- Unused: items that do not fall into any of the above categories, considered to generate 100% of their weight in waste.

This methodology makes it possible to estimate waste on the basis of purchases made and encourages better purchasing. It is less accurate than a full characterisation and does not reflect the progress made in terms of waste management.

b) Average estimate per employee

Based on the results of characterisation work carried out in similar projects, it is possible to estimate the quantity of waste produced using a ratio in kilograms of waste per patient or per employee.

For example, one medical organisation estimated the annual amount of waste produced per FTE* for its projects, according to building category:

- Accommodation: 150 kg/person/year
- Offices: 34 kg/person/year
- Mechanical workshops: 400 kg/person/year

The actual waste generated per employee per type of activity should be measured multiple times for the results to be extrapolated.

* Full-time equivalent

c) **Average estimate per activity**

The amount of waste produced can also be estimated according to the type of activity, for example:

- Hospitalisation: estimated waste per bed per day
- Consultation: estimated waste per consultation

The actual waste generated by different types of activities should be measured multiple times for the results to be extrapolated. The selected activities should be representative of the facility's overall operations. In addition, general waste streams need to be accounted for.

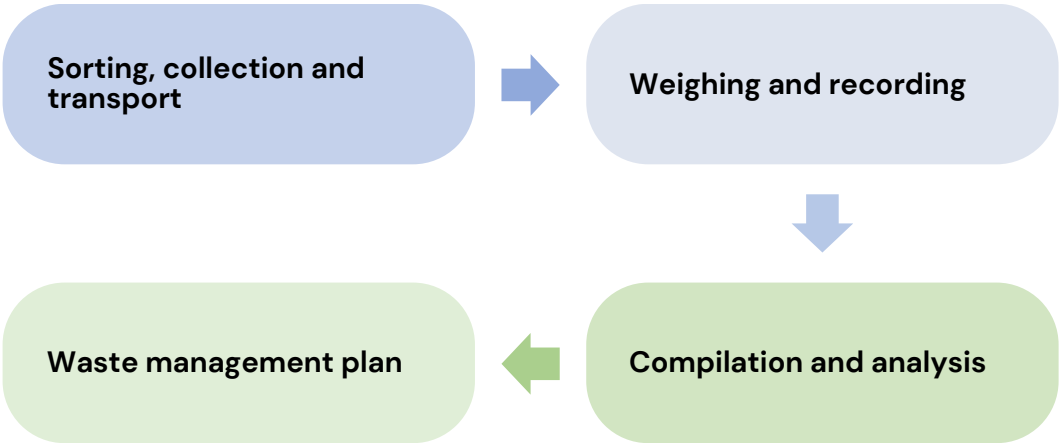
3. **Define actions to implement**

a) **Interpreting the results**

- By analysing the results, it is possible to identify trends in waste production and set targets for reduction, recycling and treatment in general.
- It is also possible to determine whether the existing equipment and facilities are sufficient and suitable for the proper treatment of waste.

b) **Management plan**

- The indicators, measures and actions to be taken are determined from the conclusions of the characterisation.
- The indicators and activities are then used to draw up the "Waste Management Plan" specific to the structure or organisation.
- This plan will include quantified objectives, measures to be implemented and actions to be taken, as well as result indicators.
- Continuous or regular characterisation enables developments and changes in the organisation's waste management to be measured and corrective measures applied where necessary.



Key activities of the implementation

IV. ADDITIONAL RESOURCES

Information on waste categorisation

This document in French published by ADEME presents the situation of the electrical and electronic equipment (EEE) sector in France in 2023. The prevention, collection and treatment of waste electrical and electronic equipment (WEEE) are mentioned from page 14 onwards.

This document in French lists the different categories of WEEE and specifies the contents of each category.

The World Food Programme has published this guide in French and English to assist NGOs in the safe management of garage waste.

This WHO document is a guide for the safe management of medical waste, based on the comprehensive and detailed WHO manual entitled Safe management of wastes from health-care activities (WHO, 2014) and also takes into account relevant resolutions of the World Health Assembly.

This is a page in English from UK government to help classify the waste generated by businesses before it is collected, recycled or disposed of.

Information on waste characterisation

This ADEME guide in French is aimed at local authorities and provides a method for characterising large volumes of waste on an area-wide scale.

In this guide in English, the Logistics Cluster and WREC propose a waste characterisation system similar to the one presented in this toolbox.

Carbon Impact Measurement

The carbon footprinting toolkit has been developed by the Climate Action Accelerator to assist organisations in calculating their carbon footprint. It gathers the necessary tools and approaches, allowing users to follow a methodological framework without being a comprehensive guide itself.

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