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Life Cycle Assessment

Mapping and Overview of current use by humanitarian organizations

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Abbreviations

AI	Artificial Intelligence
CAA	Climate Action Accelerator
CML IA	Institute of Environmental Science - Impact Assessment
CO_2 eq	CO_2 equivalent
DG-ECHO	Directorate General for European Civil Protection and Humanitarian Aid Operations
EF	Environmental Footprint
EPD	Environmental Product Declaration
GHG	Greenhouse Gases
GWP	Global Warming Potential
HCC	Humanitarian Carbon Calculator
HOs	Humanitarian Organisations
ILCD	International Reference Life Cycle Data System
INGO	International Non-Governmental Organization
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisations for Standardisation
JRC	Joint Research Centre
LCA	Life Cycle Assessment
LCIA	Life Cycle Impact Assessment
NFI	Non-Food Item
PAS	Publicly Available Specification
PEF	Product Environmental Footprint
PIQUET	Packaging Impact Quick Evaluation Tool
QSE	Quality, Social and Environmental
SMAC	Shelter Methodology for Assessment of Carbon
TCFD	Task Force on Climate-related Financial Disclosures
WFP	World Food Programme
WREC	Environmental Sustainability in Humanitarian Supply

Executive Summary

This report presents the main elements, findings and recommendations of the study on the mapping of existing Life Cycle Assessments (LCAs) of relief items used in humanitarian aid.

The qualitative analysis focuses on how humanitarian organizations use LCAs to enhance environmental sustainability throughout relief supply chains. The report shows the main LCA goals, categories and methodologies, reviewing their use across relief items. It analyses interviews and stakeholder feedback, tracking how LCA has contributed to internal awareness, product specification, strategic decisions, procurement guidelines, and donor accountability mechanisms within the sector.

Key Findings

- The use of the LCA methodology is expanding in the humanitarian sector as organizations seek to better understand and minimize the environmental impacts of products and supply chains throughout their full life cycle.
- LCAs are primarily used to identify environmental hotspots, inform procurement decisions, and provide credible data for donor accountability and impact measurement.
- It is not necessary to conduct an LCA for every product. Existing results and established patterns should guide action, reserving new LCAs for areas of uncertainty, specific decision-making, or substantial potential impact.
- The environmental impacts associated with transportation are usually lower (if air freight is avoided), compared with other more impactful life cycle stages (e.g. raw material extraction, production or end-of-life). This has implications in product selection.

Key Constraints

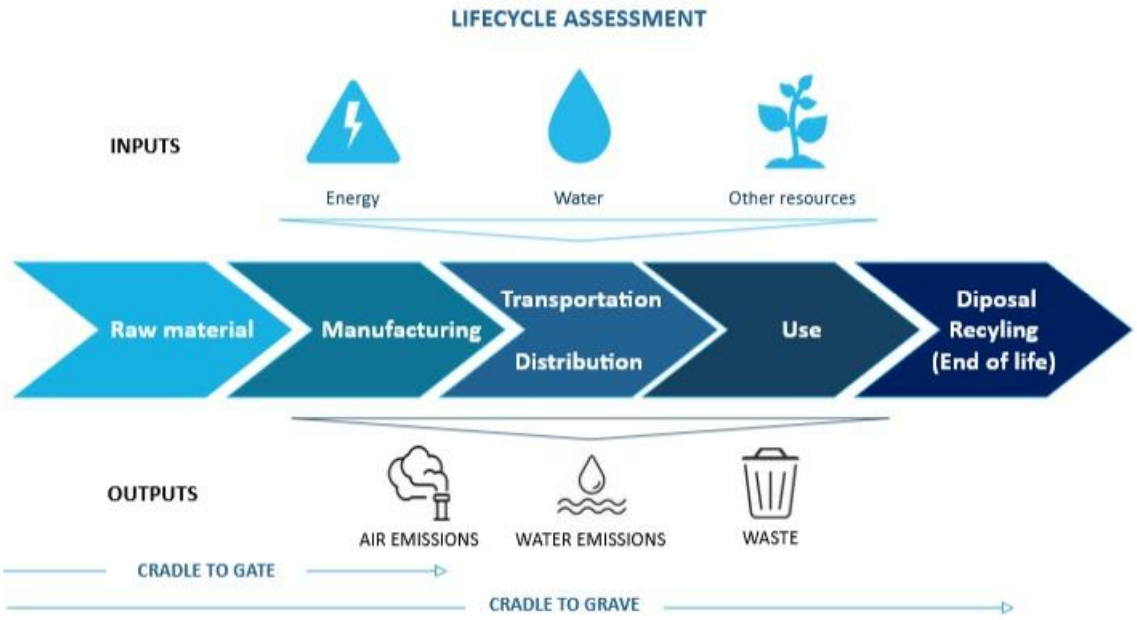
- Conducting LCAs is resource-intensive, requiring advanced technical skills, significant time, and financial investment—resources that may exceed the capacity of many organizations.
- Data availability remains a major challenge, especially for supplier-specific details, product use and end-of-life stages, hindering consistency and comparability.
- Concerns over confidentiality, limited access to results, and the lack of harmonized approaches restrict full sector-wide learning, operationalization limiting an agreed humanitarian data-sharing framework.

Key Recommendations

- Conduct LCAs to assess the environmental impact of humanitarian products, only if it is duly justified. Not every product needs an LCA.
- Establish a common humanitarian LCA framework to enhance comparability and standardized reporting.
- Prioritize resources on known solutions.
- Use environmental experts to conduct and interpret LCAs, collaborate with suppliers on impact reduction.

Introduction

A Life Cycle Assessment (LCA) measures the environmental impact of products and services at each stage, from raw material extraction, manufacturing, and distribution, to use and disposal or recycling. This is especially relevant in humanitarian aid, where organizations rely on the large-scale distribution of relief items.



LCAs inform decisions on materials selection, how to source products, and how to distribute them. By analysing the full life cycle, LCAs reveal opportunities to reduce environmental impacts, minimize waste, and make humanitarian operations more sustainable.

The number of LCAs for humanitarian food and non-food items is increasing. Humanitarian organizations, donors, researchers, and suppliers are all supporting LCA initiatives. Projects like CAA and WREC compile LCAs to help practitioners build more sustainable and efficient supply chains tailored to humanitarian needs. This study provides a comprehensive overview and mapping of LCAs on relief items.

I - Objectives

This study aims to provide a clear, comprehensive mapping of completed LCAs for humanitarian food and non-food items. It also analyses how LCAs are currently used and what barriers exist in the humanitarian sector and gives recommendations to improve future LCA adoption.

The specific objectives of the LCA study are:

- To map LCAs for food and non-food items and reflect it on a LCA database.

- To provide the most widely used LCA methodologies in the humanitarian sector.
- To conduct an analysis of current LCA uses.
- To examine mechanisms for accessing LCA information, including barriers and ownership.
- To provide recommendations on how the humanitarian community could pool, access and update LCA information.
- To disseminate findings through workshops and webinars.

II - Methodology

The study used both quantitative and qualitative methods to review existing LCAs. It focused on broad questions about LCA access, implementation, and use, supported by targeted questionnaires[1].

LCAs, their methods, and tools were identified in two ways:

1) through online search, article citation, and LCA repositories; a targeted search for specific LCA items was carried out when an LCA relevant to the humanitarian sector was identified or when there was a need to find LCAs for items of special interest.

2) through interviews to key informants.

For LCAs, internet searches were conducted using the following tags: LCA, Life Cycle Assessment, Environmental Product Declaration (EPD), humanitarian, LCA repository, EPD repository, specific item.

A total of 37 interviews were conducted in two main rounds (see list of interviews in Annex IV). The first round focused on humanitarian organizations and institutions. The second round involved suppliers and experts. The study used purposive sampling, including DG ECHO specific recommendations, and conducted a snowball exercise to identify other relevant stakeholders from an initial list of key informants.

A total of 48[2] (28F,20M) key informants were interviewed: 26 (16F,10M) members of Humanitarian organizations (including UN Agencies, Red Cross/Red Crescent and INGOs), 6 (4F,2M) involved with platform/initiatives (including clusters), 6 (4F,2M) in the academic and consulting sector, 7 (3F,4M) suppliers (including manufacturers), and 3 (1F,2M) donors.

Interviews were recorded, transcribed and codified according to the following areas of interest: access, implementation, use, capacity, impact categories, local, data source, dissemination, etc. Further code reviews have included second and third line-codes. The study has utilized Claude platform (AI) as internet search engine for LCAs. Deepl; Perplexity and Chat GPT (AI) for text review. To enhance confidentiality the text reviewed changed key words during online review.

[1] See Annex III questionnaires
[2] Some interviews were group interviews participating more than one interviewee

III - LCA Methodologies, tools and features

This section describes the key LCA methodologies, tools, goals, boundaries, types of data, impact assessment methods and impact categories used for LCAs of humanitarian items in the database.

1) LCA Methodologies

Most of LCAs are conducted in accordance with the internationally recognised standards ISO 14040/44. It is noteworthy that several of the methodologies enumerated are derived directly from ISO 14040/14044, providing additional specifications for the elaboration of LCAs.

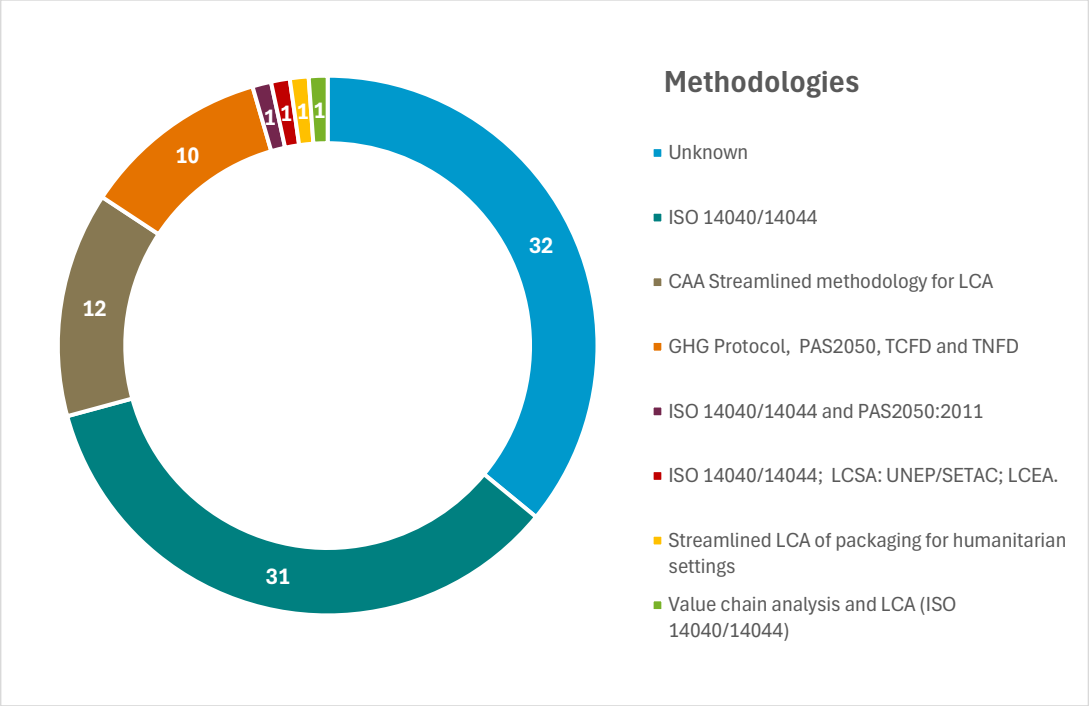
METHODOLOGY	DEVELOPED	DESCRIPTION	COMMENTS
ISO 14040/14044	ISO	ISO 14040:2006 describes the principles and framework for Life Cycle Assessment (LCA) and ISO 14044:2006 specifies requirements and provides guidelines for Life Cycle Assessment (LCA).	The internationally recognised methodology to conduct LCAs is the most widely used in the humanitarian sector. A significant number of methodologies build on these ISO standards, incorporating additional requirements to enhance robustness, consistency and comparability.
Product Environmental Footprint (PEF)	EC	The Product Environmental Footprint (PEF) method, based on Life Cycle Assessment (LCA), provides rules to quantify and communicate environmental impacts of products, including goods and services. Building upon global standards (e.g. ISO 14040/44) and other relevant approaches, PEF focuses on reducing impacts throughout the supply chain of products — from raw material extraction to waste management. It provides specific requirements for modelling material flows, emissions, and waste streams, enabling a thorough understanding and management of environmental impacts.	Following the framework standardise by ISO 14040-44, the PEF is structured in similar steps, yet providing further specifications necessary to achieve a higher degree of robustness, consistency, reproducibility, and comparability.

METHODOLOGY	DEVELOPED	DESCRIPTION	COMMENTS
CAA Streamlined methodology for LCA	CAA	The methodology has been derived and adapted from the ISO 14040:2006 Environmental management framework, with impact assessment conducted using the Environmental Footprint 3.1 indicator system. The focus is to analyse the most intensive areas of impact within the products' life cycle and pinpoint the scope of action for impact reduction. The methodology paper describes the steps taken to evaluate the life cycle impact of the products selected for this project.	First steps have been taken towards a sector-wide methodology for LCAs as part of this project.
GHG Protocol - Product Life Cycle Accounting and Reporting Standard	GHG Protocol	The Product Standard builds on the framework and requirements established in the ISO LCA standards (14040:2006, Life Cycle Assessment: Principles and Framework and 14044:2006, Life Cycle Assessment: Requirements and Guidelines) and PAS 2050, with the intent of providing additional specifications and guidance to facilitate the consistent quantification and public reporting of product life cycle GHG inventories	Focused only on the assessment of the carbon footprint of goods and services.
PAS 2050:2011	British Standards Institution	Specification for the assessment of the life cycle greenhouse gas emissions of goods and services	Focused only on the assessment of the carbon footprint of goods and services.
Shelter Methodology for the Assessment of Carbon (SMAC)[3]	BRE Trust, ECOP and the World Wildlife Fund	Tool to enable humanitarian operations to assess the level of carbon dioxide equivalents (CO2 eq) of shelter assistance after a disaster. Measuring CO2 eq includes not only CO2 but other gases generated in providing the assistance. SMAC is based on a cradle-to-grave approach, encompassing material extraction, processing, transport, packaging, use and disposal, in line with industry practice. The tool uses standard environmental product declarations to define the CO2 eq for materials commonly used in humanitarian construction. While primarily focused on shelter, SMAC can also be used for schools, markets or other types of basic construction.	Focused only on the assessment of the carbon footprint of goods and services.

[3] The SMAC was not used in any of the publicly available LCAs contained in the database.

METHODOLOGY	DEVELOPED	DESCRIPTION	COMMENTS
Streamlined LCA of packaging for humanitarian settings	WFP and Joint Initiative for Sustainable Humanitarian Assistance Packaging Waste Management	Methodology for conducting a streamlined Life Cycle Assessment (LCA) of packaging tailored to humanitarian assistance settings. It focuses on key environmental impacts using mostly secondary data and making assumptions to produce results quickly. It is ideally suited to better understand the blind spots and any major areas of focus within the life cycle of a product, or to make internal decisions about how to improve the sustainability of a product.	

The following figure shows how many LCAs use each methodology. The majority adhere or stem from ISO 14040/44 framework.



2) LCA Tools

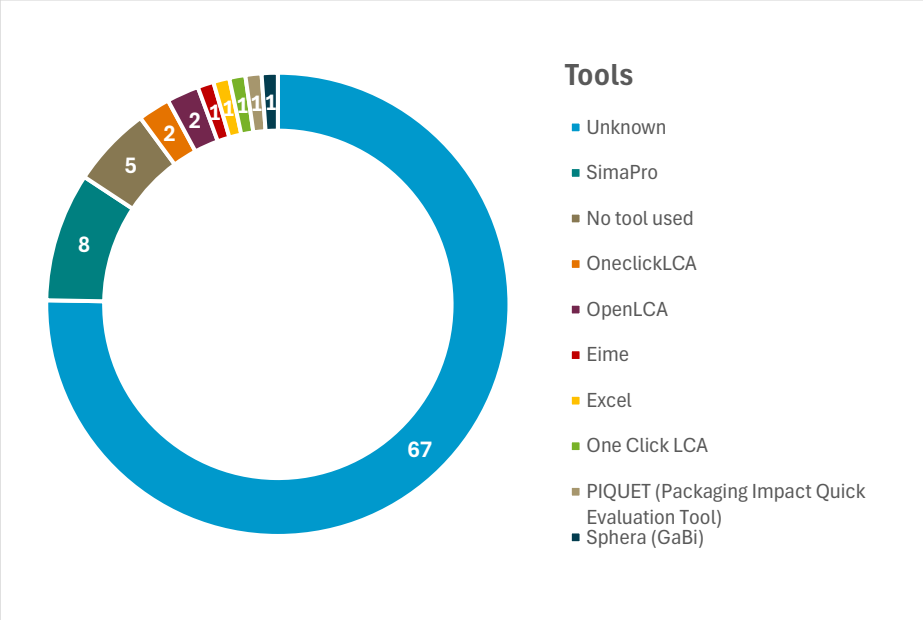
A variety of tools are available to facilitate the elaboration of LCAs[4] in humanitarian settings. Specialized software tools are used to calculate the environmental impacts of products and services. The table below lists the main tools found in this study LCA database:

TOOL	LINK	ACCESS	USED IN HUMANITARIAN SETTING

[4] There are LCA tool repositories available online, such as https://lca-software.org/directory/

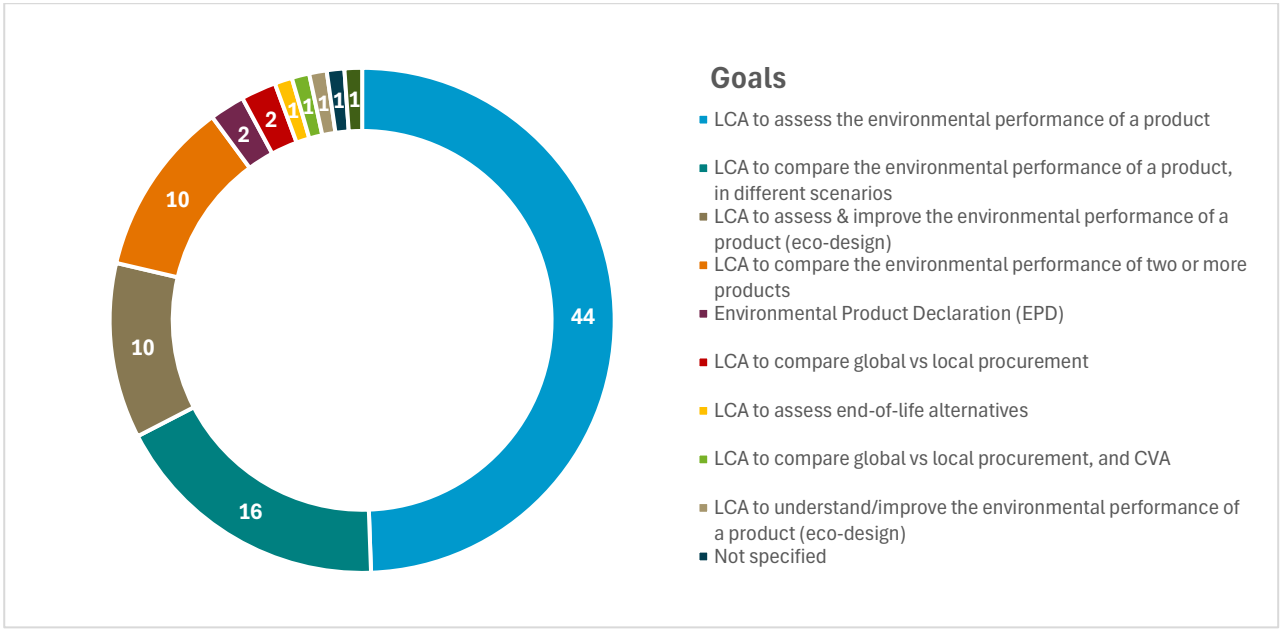
SimaPro	https://simapro.com/	Pay	Used in 6 LCAs
OneClickLCA	https://www.oneclicklca.com/	Pay	Used in 2 LCAs
OpenLCA	https://www.openlca.org/	Free	Used in 2 LCAs
Sphera (GaBi)	https://sphera.com/solutions/product-stewardship/life-cycle-assessment-software-and-data/	Pay	Used in 1 LCA
Eime	https://codde.fr/en/our-software/eime-presentation	Pay	Used in 1 LCA
PIQET	https://piqet.com/	Pay	Used in 1 LCA

It should be noted that, in 67 cases (75%), the specific software tools used for the LCAs were not documented in the reports available to this study. In five cases, no dedicated tool was used at all. Excel was used occasionally for simple calculations, like carbon footprint estimations, but it is not included as a specialized LCA tool in this review.



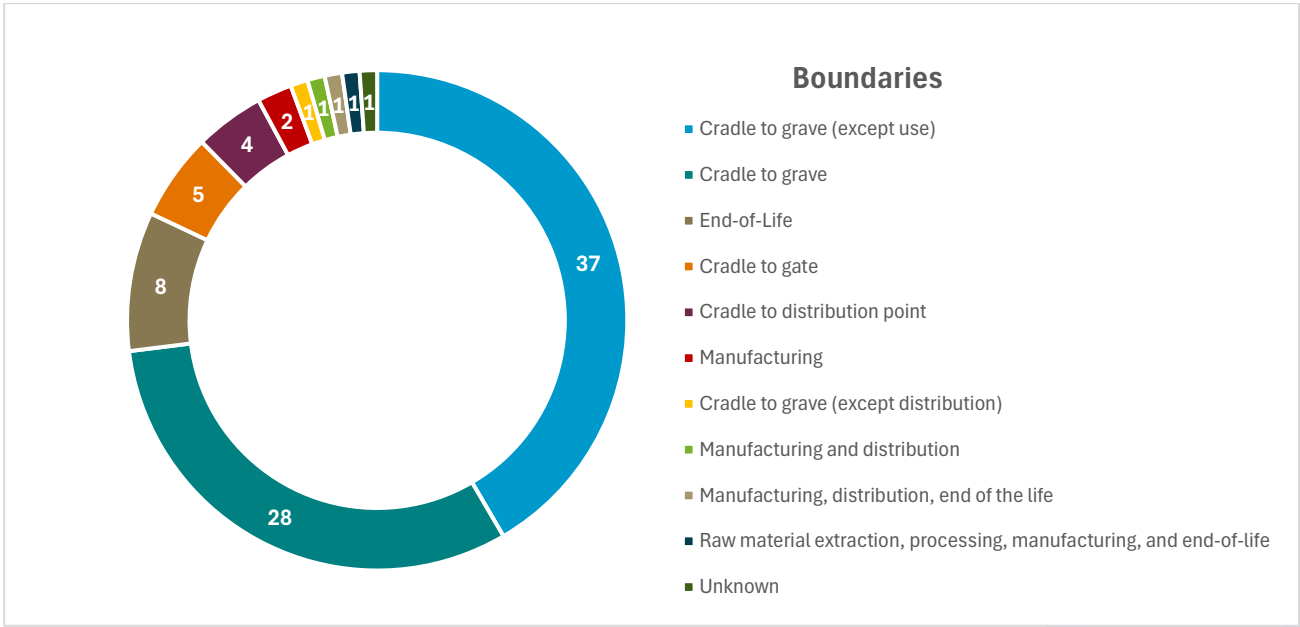
3) LCA Goals

The goals set for LCAs differ by case, but common purposes are product comparison, impact quantification, and guiding procurement. LCAs help humanitarian organizations compare products, measure environmental impacts, and support better decisions for sustainability. The database groups these goals to reflect the main reasons organizations use LCA in their operations.



4) LCA Boundaries

LCA boundaries determine which stages of the life of a product are assessed. 31% (28 of 89) of the LCAs in the database addressed the full life cycle (cradle to grave) of the product, while the rest captured only certain stages. The analysis revealed that 9% (8 of 89) of the assessed cases focused exclusively on the end-of-life phase of the product. This underscores how humanitarian organizations increasingly recognize the importance of understanding product end-of-life impacts and disposal.



5) Data types

The quality of data used in an LCA has a direct impact on the robustness and credibility of the results. LCAs typically rely on two types of data: primary and secondary.

Primary data (direct, measured, supplier-specific data)

Primary data refers to information **collected directly from the organisation, supplier, or facility involved in the process**. Examples include energy or water consumption measured at a manufacturing facility, transport distances provided by a supplier or bills of materials and production logs. For example, if a supplier provides the exact electricity consumption used to manufacture tarpaulins for humanitarian use, this is *primary data*. When primary data is complete and reliable, uncertainty decreases. However, poor-quality primary data may introduce more uncertainty than high-quality secondary data.

Main strengths:

- Very accurate and reflective of the real situation.
- Enables precise identification of environmental hotspots.

Main limitations:

- Time-consuming to collect; it requires supplier engagement and data-sharing.
- Data may be incomplete or inconsistent across suppliers.

Secondary data (database or literature data)

Secondary data refers to information **not collected directly from the specific process**, but instead obtained from external sources such as LCA databases, published literature, research institutes or consultants. For example, if no specific data is available for tarpaulin manufacturing, and a generic dataset for "plastic sheet, European market" is used, this is *secondary data*.

Secondary data introduces more uncertainty because it may not match the specific situation. However, good-quality generic data can be more reliable than poorly collected primary data.

Secondary data can be **average data** which represents a *combination or average* of several plants, suppliers, or technologies; or **generic data** based on models, estimations, patents, or expert judgement — not linked to one specific facility.

Main strengths:

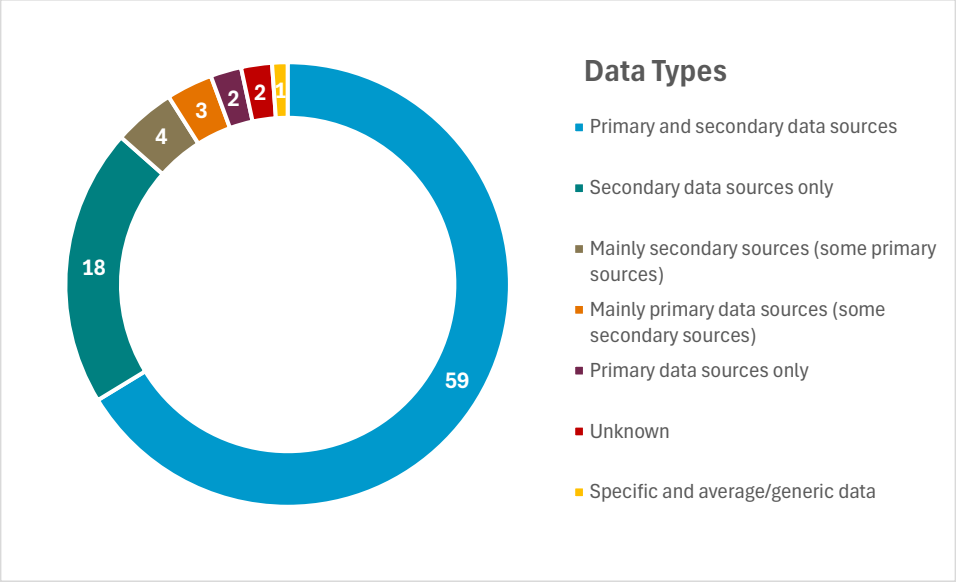
- Easier to obtain through existing databases.
- Represent processes the organisation cannot access (e.g., extraction of raw materials).

Main limitations:

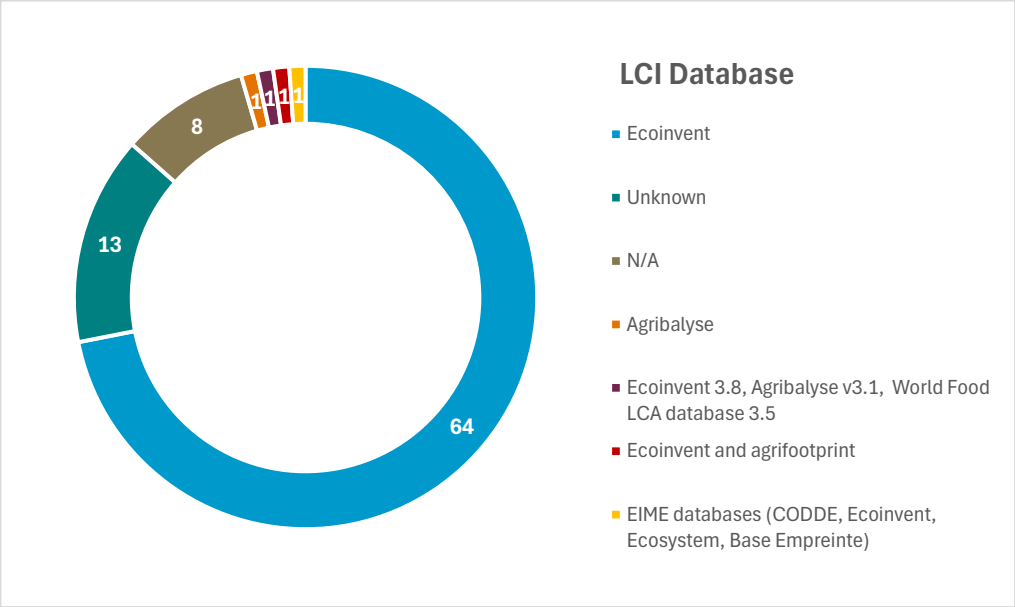
- May not reflect the specific supplier, country, or technology used.
- It can become outdated when databases are not regularly updated[5].

[5] Adapted from the ILCD Handbook, JRC European Commission, 2010

The next graph displays which type of data was used in the LCAs captured in the database:



The following graph reflects the main databases used in the LCAs analysed.



6) LCIA Methods

Life Cycle Impact Assessment (LCIA) methods are essential components of LCAs. They quantify the potential environmental impacts associated with products, processes, or services. These methods analyse the data from the inventory phase and translate it into meaningful indicators.

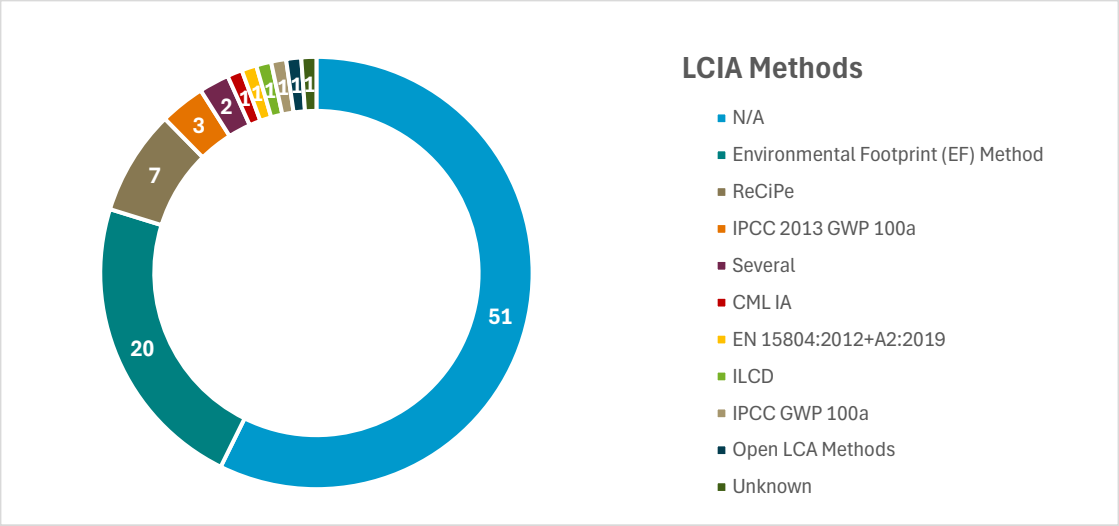
LCIA methods encompass a wide range of impact categories, like global warming potential, acidification, eutrophication, and human toxicity (OpenLCA Manual, 2025).

LCA and LCIA, what is the difference?

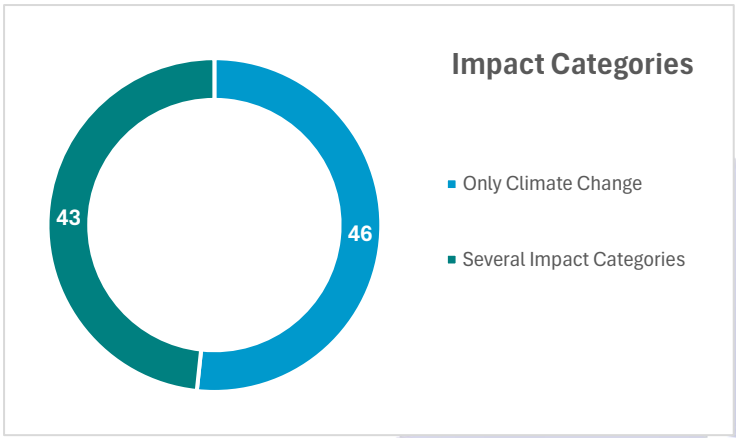
Life Cycle Assessment (LCA) refers to the process where the environmental impacts of products and services, across their entire life cycle, are calculated.

Life Cycle Impact Assessment (LCIA) is the third LCA step (according to ISO 14044) where LCI results are associated to environmental impact categories and indicators. This is done through LCIA methods that firstly classify emissions into impact categories and secondly characterize them to common units for allowing comparison (EPLCA website, accessed Nov

The LCIA methods used in the LCAs database are in the next graph. 22% of LCAs (20 of 89) use Environmental Footprint (EF) Method to measure the environmental impact of their products.



The impact categories covered in each LCA are shown in the database. They are further classified in those that cover only the global warming potential - climate change - (46 LCA, almost 52%) and those that capture several impact categories (48%, climate change impact being assessed in all of them).



Impact categories

Impact categories group potential environmental consequences of product life cycles. The impact categories covered in an LCA depend on the LCIA method used. For example, EU's Product Environmental Footprint (PEF) method, widely used in LCAs for humanitarian items, covers 16 impact categories:

- Climate Change (global warming potential): this indicator refers to the increase in the average global temperatures as result of greenhouse gas (GHG) emissions. The greatest contributor is generally the combustion of fossil fuels such as coal, oil, and natural gas.
- Ozone depletion: the stratospheric ozone (O3) layer protects us from hazardous ultraviolet radiation (UV-B). Its depletion increases skin cancer cases in humans and damage to plants.
- Human toxicity, cancer and non-cancer effects (2): these indicators refer to potential impacts, via the environment, on human health caused by absorbing substances from the air, water and soil.
- Particulate matter: this indicator measures the adverse impacts on human health caused by emissions of Particulate Matter (PM) and its precursors (e.g. NOx, SO2). Usually, the smaller the particles, the more dangerous they are, as they can go deeper into the lungs.
- Ionising radiation: the exposure to ionising radiation (radioactivity) can have impacts on human health.
- Photochemical ozone formation: ozone (O3) on the ground (in the troposphere) is harmful: it attacks organic compounds in animals and plants, it increases the frequency of respiratory problems when photochemical smog ("summer smog") is present in cities.
- Acidification: it can be caused by emissions to the air and deposition of emissions in water and soil. The most significant sources are combustion processes in electricity, heat production, and transport.
- Terrestrial, freshwater and marine eutrophication (3): eutrophication arises when substances containing nitrogen (N) or phosphorus (P) are released to ecosystems.
- Ecotoxicity, freshwater: this indicator refers to potential toxic impacts on an ecosystem, which may damage individual species as well as the functioning of the ecosystem.
- Land use: use and transformation of land for agriculture, roads, housing, mining or other purposes. The impacts can vary and include loss of species, of the organic matter content of soil, or loss of the soil itself (erosion).
- Water use: the abstraction of water from lakes, rivers or groundwater can contribute to the 'depletion' of available water.
- Resource use (fossil, minerals and metals) (2): the earth contains a finite amount of non-renewable resources, such as fossil fuels like coal, oil and gas or minerals and metals. The basic idea behind this impact category is that extracting resources today will force future generations to extract less or different resources

IV - Mapping of available LCA

In the mapping exercise, 96 LCAs[6] were identified, although only the information of 89 LCAs (classified by product) have been included in Annex I due to several reasons described in Section V.1 "access to LCAs" were not included into the database. 3 LCAs were in process of elaboration.

The main features of these LCAs are described in Annex I. Information is consolidated in an Excel sheet with filters to select specific data at various levels (sector, goal, boundaries…). The LCA information was obtained from the documents and technical reports that were available, accessible and shared at the moment of writing this report (September, 2025).

The mapping included humanitarian products assessed in each LCA, which were categorized into the following groups:

- ✓ Food: food items, packaging and related products.
- ✓ Health: health items including protective equipment.
- ✓ Logistics: items that support logistic operations (energy, transportation, garage).
- ✓ Nutrition: packaging, supplementary and therapeutic food.
- ✓ Shelter: includes tarpaulins, tents, and most of NFIs that are not specifically belonging to one sector
- ✓ WASH: includes jerrycan, hygiene kit and water treatment items.
- ✓ Other: includes LCAs with different group sectors, and other items not belonging specifically to the groups mentioned above.

The study assessed the LCA coverage of the humanitarian items, especially for the EU Relief capacities items within the stockpiles. The mapping evidenced that there are LCAs for most of the core relief items[7] (plastic tarpaulins, blanket, mattresses, kitchen set, solar lantern, jerrycan/bucket, tent/housing unit, personal clothes, hygiene kit), except for the personal clothes.

Other LCA of stockpile items belonging to health, WASH or education (health kits, latrine slab, school bags...) were very limited and/or not accessible. Some LCAS for items not unique to the humanitarian sector, could be found in impact assessment specific databases, such as *healthlcare.com,* or *agribalyse.*

30 LCAs have been commissioned by humanitarian organisations, 15 by humanitarian initiatives (CAA, WREC, consortiums, groups), 38 by suppliers, and 6 by academic organisations.

[6] The mapping of LCAs has focused on the identification and analysis of LCAs of humanitarian items. There are LCA reports that cover a single humanitarian product (e.g. Shneider Electric Mobiya solar lantern), LCA reports that cover several products (usually for comparison, e.g. Foldable Jerrycans vs buckets) or documents (usually technical reports) that include the information of several LCAs of humanitarian items (e.g. UNITAID report).

[7] The study uses the term *core relief items* to refer to a list of the most common non-food items typically distributed to meet personal and household needs.

V - Findings

1) Access to LCAs

Humanitarian organisations and other initiatives like CAA or WREC often publish LCA results openly. However, the study found several barriers to public access, such as the ability to generalize results for others and the protection of confidential information, which are major factors that hinder the LCA publication, especially by humanitarian suppliers.

The study assessed how the humanitarian community accesses and shares LCAs, and whether this information can be updated collectively. Humanitarian organizations identified the main barriers to share or access LCAs as:

- ✓ Reporting constraints: the need to prepare summaries and report relevant or generalizable results, which can be time-consuming and may require significant resources.
- ✓ External verification: the lack of external verification of LCAs limits their public release.
- ✓ Reputational impact: possible reputational risks of disclosing significant environmental impacts linked to a specific organisation.
- ✓ Legal implications: potential legal risks, especially when publishing manufacturer-provided information without prior agreement. In some cases, the final user does not hold the legal rights to the LCA itself, which limits how the results can be shared or published.

The LCA mapping also included inputs from several **suppliers**. Although some share their LCA reports with customers, only one product's supplier LCA was found to be publicly available. When asked about this, suppliers mentioned several reasons for not publishing their LCAs, as outlined below:

- ✓ LCAs include sensitive production information, such as material origins, supplier locations, and specific processes. However, stakeholders noted that confidentiality can be protected by publishing data ranges instead of exact figures, and by omitting names or specific locations.
- ✓ If LCA results are not as expected, it could limit their sharing.
- ✓ LCAs can be easily outdated: if there is any change on the product life cycle (specifications, locations of materials sourced, suppliers, changes on the factory or material processing) there is an impact on the LCA.
- ✓ Public release implies additional work and costs.

The LCA database was designed to easily find relevant LCAs based on specific needs. Most interviewees highlighted the importance of maintaining a live, regularly updated database, with a system to flag outdated LCAs and include new ones. In this context, the study identified several features to improve database accessibility:

- ✓ **Hosting:** the database should be hosted on a well-established platform relevant to its target users. Several possible hosting locations were reviewed. The WREC platform emerged as the preferred option (12 respondents), followed by CAA (6 respondents) and other hosting platforms (2 respondents).

  The intended users of the LCA mapping are humanitarian organisations, including logistics and operations professionals, managers, and other stakeholders. To improve dissemination, it was suggested linking the database from multiple platforms, such as global and regional cluster webpages, and specialised sites like REH, the Climate Charter, and Fleet Forum. A more visual interface, such as Power BI, is a potential way to enhance data presentation and usability.

- ✓ **Pooling and updating information:** the study proposes using an online questionnaire that reflects all LCA features in the database as the most efficient way to add and update records. This tool would allow LCA owners to submit new data, while the hosting entity performs a systematic review, suggested on a monthly basis. The review process aims to ensure that all updates include the necessary information and that the database remains current and accurate.

- ✓ **Limitations:** including supplier information may limit the choice of hosting platforms, especially when such data cannot be published on certain websites.

2) LCA Uses

LCAs are primarily used to identify environmental hotspots, for accountability and to develop product specifications. These uses contribute to inform operational and strategic decisions to reduce environmental impacts. LCAs support building organizations internal awareness.

This section explains how humanitarian organizations (HOs) report using LCAs, their reasons for developing them, and how they intend to use the information. It is important to note that most stakeholders interviewed have not conducted LCAs themselves; the process is usually outsourced, with HOs providing support along the process.

Some stakeholders said they have no plans to commission LCAs soon. A few indicated that LCAs are not the right tool for their needs and are using other methods to assess and reduce environmental impacts.

LCA practitioners consistently stated that it is not feasible nor necessary to carry out an LCA for every humanitarian item. LCAs are a powerful tool for understanding the environmental impacts of products and making strategic decisions, but completing one for every product would demand excessive resources and is not necessary in some cases (e.g. when the expected results are already known).

For instance, one interviewee noted that repeat LCAs for food items is unnecessary since major impacts at the food production stage are already well documented, so efforts should focus on promoting more sustainable farming practices. In this line, stakeholders agreed that LCAs should support actions to reduce environmental impacts.

The following specific uses were identified:

Identifying environmental hotspots

Several stakeholders (17) reported that LCAs are mainly used to identify and understand environmental hotspots — areas of significant impact — throughout a product's life cycle. This is considered their primary use, especially for assessing items used in humanitarian responses to identify those with the most critical environmental impacts.

Identifying environmental hotspots helps organisations focus their actions on activities or life cycle stages with the highest environmental impacts. This enables greater opportunities for reducing environmental harm. For example, the study found that most environmental impacts for humanitarian products occur during raw material extraction, production and end-of-life stages. By contrast, transportation, when it does not involve air freight, is usually less significant. Therefore, an organisation can prioritise suppliers that offer environmentally friendly products, even if they are farther from the distribution point, rather than suppliers located nearby with higher upstream impacts.

Most of humanitarian LCAs consistently showed that major environmental impacts occur in material extraction, production and end-of-life stages, if no air freight is involved.

Impact measurement and accountability

A particularly valuable reported output of LCAs is the generation of emission factors for specific humanitarian items (e.g. jerry cans, hygiene kits). Stakeholders highlighted the difficulty of finding appropriate emission factors adapted to humanitarian contexts. LCAs can provide baselines, enable updates, and strengthen organisational capacity to measure and report greenhouse gas emissions.

Climate Action Accelerator project - Accelerating the reduction of the environmental impact of humanitarian action

From 2023 to 2025, CAA has performed life cycle assessments of high-impact items to build an GHG emission factor and environmental impact database adapted to the humanitarian sector and identify key strategies to reduce environmental impacts.

Comparing

LCAs can be used to compare different products or a product in different scenarios:

1. LCAs are used to compare the environmental impacts of different products. They provide useful information for addressing environmental impacts and taking strategic decisions. However, comparing results from different LCAs whose goal is not comparison, is difficult because each LCA is highly specific.

In 2024 KLU conducted for the WORM project an LCA for bio-based solutions to understand and compare the environmental impact of using conventional vs bio-based materials in health products (facemasks, gloves, surgical gowns, protective boots, syringes & needles, sharps container, body bags, and temporary water/sludge bladder)

2. LCAs are used to compare the environmental impact of a single product across different scenarios. Here, one product is assessed in several situations—such as various uses or disposal options—to find out which scenario leads to the lowest environmental impact.

In 2023 the Michigan Technological University and the Western University conducted an Environmental Life Cycle Analysis of Manufacturing Options for Humanitarian Supplies: Drinking water containers, to determine the life cycle impacts for production and distribution of a bucket produced by Oxfam under various supply chain paradigms:

1) *centralized Oxfam traditional system*
2) *centralized commercial Chinese supply and distribution*
3) *quasi-centralized Field Ready supply and distribution*
4) *distributed supply and distribution system with 3-D printing*
5) *distributed supply and distribution system with 3-D printing and local waste feedstock,*
6) *distributed supply and distribution system with extrusion molding and local waste feedstock.*

Products specifications

LCAs help organisations design products with lower environmental impacts throughout their life cycle (eco-design). One of the main uses for LCAs is to set product specifications, often by comparing similar items with different types or amounts of material. As a result, some humanitarian organisations have changed their product requirements—mainly by altering materials or reducing product size. This approach depends on the ability to influence suppliers, and reflects a common view that addressing environmental impact needs joint action from the humanitarian sector, donors, suppliers, and authorities.

The example of the Life cycle assessment of ICRC new woven PE tarpaulin illustrates the use of LCA to assess the changes in environmental impacts when changing or planning to change product specifications

Donors play a key role by encouraging or requiring "eco-friendly" product specifications. Improved specifications can help standardise products. Initiatives like the Quality, Social and Environmental (QSE)[8] working group have already made progress in this area.

Suppliers informed of the progressive integration of product specifications more environmentally friendly in procurement tenders (mainly on integration of recycled plastics).

Some products must meet regulatory standards, and LCAs can provide valuable information to regulators about their environmental impacts. For these items—such as therapeutic foods or drugs—changing product specifications takes more time and requires a longer approval process.

Supporting decisions

LCAs help organisations make strategic decisions at the operational level to lower their environmental impacts. They support the creation of guidelines and policies for sustainable procurement and help identify proven best practices.

The WREC/CHORD LCA on humanitarian supply chain emissions and waste, provides actionable steps, such as improving planning and preparedness reducing environmental impact

[8] QSE conference 2024 report v2

For example, LCAs can guide procurement requirements by setting impact thresholds for further assessment, defining tender evaluation criteria, and shaping policies that promote sustainable purchasing.

While still in incipient stages, some humanitarian organisations have started to request LCAs as part of procurement tenders. At present, LCAs are, in general, not mandatory, and they are generally requested only for large product quantities or framework contracts. Suppliers have noticed a rising demand for environmental impact data, with more organisations seeking LCAs for humanitarian products when purchasing.

Beyond the LCA results, the exercise shows the need to focus on certain operational practices, for example shifting from using kits to bulk procurement in post-acute phases.[9]

Contribution to awareness

LCA results contribute to evidence-based decision-making by providing data to support choices. In some situations, the outcomes confirmed what was already expected, reinforcing existing views or knowledge. LCA evidence helps build awareness within organisations and promotes environmental awareness.

Participants involved in an LCA process described it as thorough and thought provoking, with many questions leading to internal reflection. This process helps organisations better understand their products' impacts and increases environmental awareness among staff.

3) LCA limitations

Life cycle assessment (LCA) can contribute to evidence-based decision-making. However, there are important limitations to its use. Firstly, it is complex. Secondly, it requires significant resources in terms of expertise, data access and generation, and finances. Thirdly, data limitations, purpose and context-specific factors can restrict comparability and generalisation. These limitations highlight the importance of collective and standardised approaches to enhance the use of LCAs.

Complexity

Elaborating LCAs is a complex process. It requires environmental knowledge, expertise in the LCA process and methods, and advanced technical skills to use the necessary software and tools. The process takes significant time, needs large amounts of data (which are not always available), and involves costs such as hiring consultants, getting licenses for secondary data, and paying for specialised programs.

Interpreting LCA results could be equally complex: technical and/or scientific reports include LCA results, which requires a certain level of understanding of the LCA methodology to draw conclusions in a correct and meaningful way.

[9] CHORD. Measuring and reducing the environmental impact of UNFPA's humanitarian supply chain. 2022 pag.60 Microsoft Word - 3_Sustainable SC @ UNFPA_Analysis and recommendations_Final full report.docx (last accessed 30 September 2025)

The elaboration of LCAs requires the definition of key parameters, such as the scope and goal of the study, the boundaries covered, the impact assessment method, type of data used, critical assumptions, etc. These parameters can vary significantly, adding a layer of complexity to interpret results.

This complexity creates barriers for organisations, and it is one of the most reported factors influencing the use of LCAs.

Resources needed

LCAs require specialised staff and human resources. HOS and suppliers often outsource LCAs. Few organisations have in-house capacities to elaborate LCA; some are developing these capacities. Seven respondents mentioned using an internal tool to assess environmental impacts, mainly carbon emissions. Over half of the interviewees use the Humanitarian Carbon Calculator (HCC).

LCAs are time-consuming. This the main barrier to expanding the internal capacity of humanitarian organizations to carry them out. Collecting and processing the data needed for LCAs — such as internal records, supplier information, emission factors, and end-of-life data — requires significant time and effort. These capacities are further constrained by the current sharp reductions in humanitarian funding.

LCAs require financial resources. Cost is widely mentioned as one of the main limitations. Costs are environmental specialist and consultant's time, access to specialised software or data and databases. Licensing databases such as Ecoinvent could cost a minimum of 1.765 EUR[10] per user per year. For small suppliers or local manufacturers, an LCA could be very costly.

The allocation of financial resources to perform LCAs is critically challenged, especially in the current context of funding reduction. The debate on the level of priority of environmental impact within humanitarian response has conflicting views. While there is a wide recognition of the importance to address environmental impacts within a 'Do No Harm approach', the fact that some environmental impacts, and in particular climate change, is mainly caused by the global north, could limit its prioritization.

Data quality and access

Data availability is challenging and one of the most frequently reported limitations affecting LCA use and results. It is difficult to obtain the data and information for the life cycle inventory (LCI) phase of the LCA (some practitioners reported this as the biggest challenge conducting LCAs). This is especially relevant for the use and end-of-life stages of a product, where visibility is often limited. Information of use and disposal is not always collected or assessed. LCA requires a certain level of systematization for data collection (at supplier, operational and logistic level), that it is not always in place.

Data from manufacturers and suppliers is often general and not disaggregated. It may also be incomplete or, in some cases, unavailable. This directly affects the LCA process, which then requires additional assumptions or estimates.

It is important to audit suppliers and verify that reported sustainable practices are implemented and that product lifespan and quality are reliable. Data validity can be improved through certification and/or systematic checks of production lines and product quality, increasing transparency from manufacturers and suppliers.

[10] www.ecoinvent.org (last accessed 30 September, 2025)

Although systematic supplier audits are challenging for most humanitarian organizations, joint initiatives can make such efforts more efficient and meaningful.

Existing databases are built on Western contexts and not always reflect local production or provide accurate data for humanitarian items. Furthermore, these contexts can vary significantly, with a considerable impact on assumptions and logistics processes.

Data limitations and inconsistency remain major obstacles: without access to high-quality, context-relevant, and up-to-date information, especially from manufacturers, LCAs may fail to deliver meaningful or comparable results.

LCA comparability

The specificity of LCAs generally limits their comparability, unless the LCA is designed to compare products. Two main factors are found to affect the comparability of LCAs:

First, several key parameters must be defined, such as the functional unit, system boundaries, data sources, databases, impact assessment methods, and impact categories. Although LCAs follow ISO standards, these parameters can be set in very different ways, which can greatly affect the results and make comparisons difficult or even impossible.

There is a need for a common framework to support LCA development and improve comparability. In this regard, CAA has developed a methodology[9] based on ISO standards that specifies certain parameters to ensure LCAs are comparable. Such guidelines should include clearly defined, agreed, and standardized assumptions.

Second, LCAs are highly context-based, which makes it difficult to compare products even when the same parameters are used.

LCAs are context based

When all life stages of a product are assessed in an LCA (i.e., cradle to grave), the results are automatically tied to a specific context. For example, a jerrycan produced in China but distributed, used, and disposed of in Uganda will have impacts linked to that full supply chain. This makes comparisons between products difficult, as their total environmental impact depends on where and how they are used and finally disposed.

Organizations often seek to understand the environmental impact of a product mainly during its production phase, usually to compare products and identify the more “environmentally friendly” option. However, LCAs limited to the production phase (i.e., cradle to gate) capture only part of the picture. Important life-cycle impacts are missed, which can lead to misleading conclusions and poor decisions.

A recent example illustrates this well: when comparing the carbon footprint of producing low-quality versus high-quality plastic jerrycans, the low-quality ones appear to perform better, as they use less plastic and therefore emit less carbon during production. However, this assessment only covers the production stage and focuses on a single impact category—climate change.

In reality, low-quality jerrycans last only a few months, while high-quality ones can last for years. Several low-quality jerrycans would therefore be needed to serve the same purpose. When the full life cycle is considered—including use and end-of-life phases—the overall environmental impact of low-quality jerrycans is actually higher.

The context-specific nature of LCAs makes generalization difficult. Results are often unique to a specific product, setting, or time period. This limits the ability to compare or benchmark items across organizations, reducing opportunities for shared learning and sector-wide improvement.

Even when environmental benefits are clear, translating findings into action—such as changes in procurement, product design, or policy—can be challenging. High costs, regulatory delays, and weak incentives in the supplier market often slow down progress.

Identification of actionable steps

The main goal of LCAs is to reduce the environmental impact and to improve understanding of where these impacts come from. However, LCAs do not always generate information that can be easily turned into concrete actions. Stakeholders highlighted the following key challenges:

- ✓ LCAs do not provide solutions to the impacts they identify. They quantify impacts but do not directly indicate which actions could reduce them. However, using LCAs to test different scenarios with available data and databases can help identify possible improvements.
- ✓ LCA results are not always generalizable, as the potential solutions depends on the specific context. For example, recycling options for packaging waste vary according to local waste management capacities. Therefore, general solutions should be applied with caution. Still LCA findings can often be adapted and applied to other contexts.
- ✓ It can be difficult to extract information from LCAs to support decision-making or to identify areas where humanitarian organizations can have an influence. The results can be complex and hard to interpret, leaving users uncertain about how to act. For instance, when two products perform differently across several impact categories, determining which one is more environmentally friendly can be challenging.

Other factors limiting LCAs

- ✓ LCAs can quickly become outdated as materials, manufacturing processes, transport methods, or disposal options change. Depending on their purpose, LCAs may therefore need to be updated or repeated regularly.
- ✓ Limited market availability of more sustainable products can hinder the actions aimed at reducing the environmental impact of supply chains. As a result, improvements may take time to materialize or may be difficult to apply in practice.
- ✓ Increased costs. While not all environmentally friendly alternatives are more expensive, some involve higher costs. This factor often limits the adoption of measures that would reduce environmental impacts.
- ✓ LCAs can cover multiple impact categories, but the assessment of plastic-related impacts remains limited. It has been reported that LCAs do not capture the full extent of plastic pollution. However, new initiatives are working to fill this gap by developing methods to map, measure, and forecast plastic leakage along the value chain — such as the PLP: Plastic Leakage Project.
- ✓ Some measures to reduce environmental impacts may require behavioural or cultural changes, which can make implementation difficult, for example, shifting from traditional farming practices or replacing rice with sorghum.

4) Local vs international procurement, in-kind vs cash interventions

As shown above, one of the main findings of LCA results is that usually transportation accounts only for a small percentage of the total environmental impact in the life cycle of a product, as long as air transportation is not used. This has direct implications on procurement decisions and concretely it informs **which could be the best option, environmentally speaking, to procure an item, locally or globally.**

Knowing that transportation is usually not so relevant, we should choose a product whose impacts at other life cycle stages are the lowest. Meaning that if a product manufactured internationally (or in general, at long distances from the final use) follows cleaner production processes or has lower impacts in material extraction than those happening at local level, the internationally procured item could have, overall, better environmental performance, even if transportation impacts are higher. For example, raw material extraction and energy provision are usually high impactful actions in Sub Saharan Africa which leads to high environmental impacts at raw material and production stages.

When we are comparing sustainable[11] versus regular (not sustainable) products this effect intensifies, as sustainable products would typically perform better than regular products in raw material, production and even end-of-life stages. For example, products may be manufactured using processes that reduce total and virgin material consumption through recycled content or by avoiding synthetic chemical inputs and minimise pollutant releases at end of life. Production plants may rely on renewable energy in manufacturing; or apply water-efficient and production methods that prevent soil contamination.

Product quality and durability are critical determinants of environmental sustainability performance. Technical specifications that ensure higher durability extend the functional lifespan of an item, reducing the frequency of replacement cycles and the associated upstream impacts of raw material extraction, manufacturing, and transport. As shown in the jerrycan case study (p. 22), products engineered to maintain structural integrity and performance under repeated or prolonged use significantly lower overall resource consumption and waste generation compared to lower-quality alternatives serving the same function.

In practice, items manufactured in line with recognised sustainability standards—using lower-impact materials and processes—and designed to exceed the typical one-year durability expectation in humanitarian contexts demonstrate significantly better environmental performance over their life cycle. Even when international procurement is required (provided air transport is avoided), these higher-durability and lower-impact products generally outperform locally available alternatives because they reduce resource extraction, manufacturing impacts, replacement frequency, and end-of-life waste generation.

Similarly, the relatively low contribution of transport to a product's overall life-cycle impact—when air freight is avoided—has implications for choosing between cash and in-kind distribution modalities. In-kind distributions allow humanitarian organisations to control the quality and sustainability performance of the items procured, whereas cash distributions typically result in beneficiaries purchasing goods available on local markets. In such cases, the key consideration is the environmental performance of locally available products. Moreover, even products bought locally through cash assistance may still have been imported, carrying similar upstream production and transport impacts as in-kind items. Conversely, when local markets offer sustainably produced, durable goods—and cash or local procurement channels can reliably access

[11] The authors acknowledge that the classification of a product as "sustainable" or not is not precise, unclear and depends on many factors. The authors refer to sustainable products as those products which have been eco-designed following environmentally friendly practices in raw material and production processes; and regular (not sustainable) products, as those which have not followed these measures.

them—cash or local procurement becomes the environmentally preferable option, as it reduces transport impacts and supports lower-impact production systems.

Summarizing, neither of the options (local vs global procurement, cash vs in-kind) is by default better or worst from an environmental point of view. The environmental implications have to be well assessed in each case, taking into consideration that usually what is most important is which resources were used, how the product is made and its quality/durability, rather than where it is procured from. It is key to understand the local market and which type of products are available, where they have been produced and how, and what is their environmental impact.

It is important to note that only the environmental perspective is being discussed here. Other aspects or implications of local vs global procurement (e.g. costs) or benefits of cash (e.g. improving/dynamizing the local economy or enhancing the dignity of beneficiaries) vs in-kind distribution are important, and all of them need to be taken into account when decisions are made.

VI - Recommendations

In this section are highlighted recommendations from both stakeholders and the authors of the study. These recommendations are intended for humanitarian organizations, non LCA experts, procurement teams, supply chain specialists, environmental advisors, donors, programme decision-makers, and partners involved in operational planning and policy development.

These recommendations aim to integrate environmental responsibility into operations and policies. They provide practical guidance for building greener procurement systems and deciding when and where to commission new LCAs. They also help prioritize actions to reduce environmental impacts and promote a culture that embeds LCA in daily practices and decisions.

Top 6 quick wins for humanitarian organizations

These are the most actionable and easily recommendations to be implemented:

- Be efficient with humanitarian resources, not every humanitarian product needs an LCA.
- Prioritize the use of humanitarian resources for actions that reduce environmental impacts.
- Choose suppliers that actively implement strategies and actions to reduce environmental impacts in their operations.
- When selecting products, give more weight to impacts from raw material extraction and production than to those from transportation.
- Prioritize items manufactured to environmental standards (e.g., low virgin material use, energy-efficient processes, non-toxic inputs) and designed for extended durability beyond the one-year minimum, to reduce replacements, waste, and life-cycle environmental impacts.

Recommendations are grouped into strategic, methodological, operational, sector collaboration, and procurement decision-making. The study authors identified which ones should be considered high priority.

Strategic recommendations: when to conduct LCAs?

1. **Conduct LCAs to assess the environmental impact of humanitarian products, when necessary.** LCAs are an excellent tool to understand the environmental impacts of products, especially when their whole life cycle and several impact categories are assessed. It is recommended to conduct LCAs whenever needed, to fill knowledge gaps, serving any or several of the goals highlighted in section III.3. However, it is not recommended to conduct LCAs without a clear purpose.

2. **Be efficient with humanitarian resources, not every humanitarian product needs an LCA.** As highlighted in this report, the elaboration of LCAs is complex and requires certain level of resources from Humanitarian organisations (human, time, data, financial, etc). Each product is unique, even when assessing the same type of item. Results vary by supplier, materials used, production processes, and manufacturing location. They also depend on the context, as LCAs reflect how and where products are used and disposed.

   HIGH

   Therefore, assessing the environmental impact of every humanitarian product is neither efficient nor necessary, and often not possible. In many cases, key environmental issues are already known. Conducting an LCA may not be necessary when the actions to reduce a product's impact are already clear, such as cutting weight or volume, improving durability, avoiding air transport, using renewable energy, or applying sustainable design and production practices.

   However, when there are uncertainties or doubts in product impacts it is especially important to conduct LCAs. For example, the QSE technical note[12] on recycled plastic highlights that using recycled plastic improves the environmental performance compared to using of virgin plastic, only if the recycled plastic has a good quality (ensuring its durability). The use of low-quality recycled plastic has, overall, higher environmental impacts than virgin plastics. LCAs are particularly valuable to quantify and measure impacts, building evidence to support these types of conclusions.

3. **Use available knowledge.** The number of LCAs on humanitarian products is increasing, expanding knowledge about their environmental impacts across life cycles. Many conclusions and trends can be drawn from existing studies, helping identify actions that reduce impacts in other products. For example, if several LCAs show that open waste burning causes high environmental and health impacts while recycling improves outcomes, there is no need to repeat studies to confirm the same results.

4. **Prioritize the use of humanitarian resources in actions that reduce environmental impacts.** It is important to note that the absence of a specific LCA for an item should not delay actions to reduce environmental impacts. When resources such as time, expertise, or funding are limited, they should focus on measures already known to lower a product's environmental footprint.

   HIGH

5. Harnessing **existing research funding and academic collaborations** to conduct LCAs. Academic partnerships and research funding can be leveraged to support LCAs, reducing the need for direct financing from humanitarian organizations. Collaborating with universities and research centres offers access to expertise and funding, making LCA implementation more sustainable and less reliant on project budgets.

[12] QSE Group – Technical note on recycled plastic V8 _ 2024-07-19. https://blogs.icrc.org/logistics/wp-content/uploads/sites/117/2024/08/QHSE-Technical-note-on-recycled-plastic.pdf (last accessed 30 September 2025)

Methodological recommendations

6. HIGH **Establish a common humanitarian LCA framework to enhance comparability and standardized reporting.** Although LCA methodology is standardized under ISO 14040 and ISO 14044, many parameters can still vary across studies, such as goals, system boundaries, impact methods, and impact categories. Most LCAs of humanitarian items follow these standards, but differences in these choices can cause confusion and make results hard to compare. A tailored LCA approach for the humanitarian sector is therefore recommended.

   Most stakeholders emphasized the need for a framework or set of guidelines to develop this type of methodology. The streamlined approach recently developed by CAA[13] and the ongoing WFP/UNEP LCA methodology for food commodities are useful steps in this direction.

   Parameters that could be standardized include system boundaries, databases (e.g. Ecoinvent), impact assessment methods (e.g. Environmental Footprint Method 3.1), covered impact categories, and whether results are critically reviewed. Several experts agreed that critical reviews might not be necessary for humanitarian LCAs, as these serve practical rather than scientific purposes.

   Standardizing these elements would make LCAs produced by different organizations more comparable. This would also prevent an organization to create an additional LCA when comparing products.

7. HIGH **If the objective of conducting or reviewing an LCA is to understand the full[14] environmental impact of a product, the LCA should cover all product's life cycle stages and relevant impact categories**. Excluding any stage may change the overall results, and omitting certain categories might miss key environmental impacts. The jerrycan example mentioned in this report, highlights the importance of assessing the entire life cycle and investing in high-quality, durable products.

   Partial LCAs that cover only certain life cycle stages or impact categories can still be very useful. They help analyse specific aspects of a product's impact, such as a cradle-to-gate study focusing on production or a carbon footprint assessment for reporting purposes. What matters most is that users clearly understand these partial studies and do not interpret them as representing the full environmental impact, which could lead to misguided decisions.

8. HIGH **"Translate" LCA technical reports for non-technical experts.** When organizations develop or commission LCAs, it is recommended that technical reports show clear results and actions to reduce environmental impacts understandable by non-environmental experts.

[13] CAA methodology. https://climateactionaccelerator.org/wp-content/uploads/2025/06/EPFL_LCA_methodology_v1.0.pdf (last accessed 30 September 2025)

[14] The authors are referring to "full" as LCAs covering all life cycle stages and all relevant impact categories, and "partial" LCAs as LCAs capturing only some life cycle stages or impact categories.

Operational recommendations

HIGH

9. **Engage environmental specialists.** It is essential that LCAs are conducted by qualified environmental specialists. While some organizations may have this expertise in-house, it is often preferable to outsource the work to specialized institutions such as universities, consulting firms, or independent experts. In-house environmental specialists should still be involved in interpreting LCA results and supporting decision-making to ensure actions effectively reduce environmental impacts, the ultimate goal of any LCA.

   Given the technical complexity of LCAs, non-environmental staff should not carry them out. Misinterpretation or oversimplification of results by non-specialists—who may already manage multiple responsibilities—can lead to inaccurate reporting, poor and counterproductive decision making affecting environmental impact reductions, greenwashing, or even reputational damage. A phased capacity-building approach can be used to develop simplified LCA competencies among technical staff and suppliers, but full assessments and interpretation must remain under the responsibility of qualified specialists.

10. **Work with suppliers**. Humanitarian organizations should collaborate with suppliers to help reduce environmental impacts. Even without a dedicated LCA, a basic understanding of key impact categories can guide effective action. Several stakeholders involved in LCAs have highlighted this approach as essential.

Recommendations for sector collaboration

11. **Advocate for free access to databases for humanitarian organizations**. Humanitarian organizations, given their mandate and contribution to society, should benefit from a free access to expensive databases (e.g. ecoinvent), tools and in general, LCA resources.

HIGH

12. **Make the LCAs elaborated publicly available**. It is recommended that LCAs be shared across the sector, so other organizations can benefit from these analyses and apply proven impact reduction strategies.

13. **Complement LCA repositories with the study database**. The authors have identified two primary LCA repositories for the humanitarian sector: the Climate Action Accelerator's Repository of Life Cycle Assessments and the Logistic Cluster's Life Cycle Assessment (LCA) Resource Hub.

    The preferred option is the Logistic Cluster's hub, since the Climate Action Accelerator focuses mainly on climate impacts rather than broader environmental issues. It is recommended to promote inclusion of these database links on all relevant cluster pages and sector-specific platforms, such as REH, the Climate Charter, and the fleet forum, to improve dissemination. Creating an online submission system and a regular review process by the host entity will also help keep the repositories up to date.

Recommendations for procurement decision-making

14. **Improve procurement planning to reduce environmental impacts**. Advance planning of procurement can enable better environmental decisions in humanitarian responses. For example, pre-selecting suppliers who use sustainability practices, choosing products with lower impacts (with

or without an LCA), and preferring items with reduced transport emissions, such as those shipped by sea or road, can improve outcomes. Identifying high-quality products and forecasting needs in advance also supports environmentally sound choices.

15. Create and/or use existing environmental criteria for the selection of products (i.e. green procurement[15]).

16. HIGH Choose suppliers that are integrating environmental impact reduction strategies and actions in their processes, such as using renewable energy, biodegradable materials or avoiding/reducing toxic chemicals. Prioritize suppliers whose sustainable practices have been certified by a recognized and trustworthy third party.

17. HIGH In product selection, give higher priority to the impacts at raw material extraction and production stages, rather than those associated with transportation (e.g. buying sustainable products, with low environmental impact in raw material extraction and production stages, regardless of where they are bought)[16].

As mentioned above, the recommendations aim to reduce environmental impacts. However, LCA results should not be used alone. They need to be considered within a broader analysis that also includes social and economic dimensions, as well as other priorities for humanitarian organizations—such as localization policies and community needs. Taking this holistic approach leads to more sustainable, inclusive, and effective decisions.

VII - ANNEXES

- Annex I: LCA Database (excel)
- Annex II: LCA documents
- Annex III: Questionnaires used for the interviews
- Annex IV: List of interviewed organizations

[15] E.g. CAA Toolkit procurement or Green Procurement Specifications - By Sector (WREC)
IFRC sustainability criteria:
https://ifrcorg.sharepoint.com/:w:/s/IFRCSharing/EeluIS7YQRhPvHKVKjpUqg8BI14xMX9RCKkT3jgId6lPEQ?rtime=qEa1VhwL3kg
(Last accessed 30/09/25)
[16] see section 4 Local vs international procurement, in-kind vs cash interventions

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