BIO4HUMAN

D4.2. Gap Analysis Report
Annex 4. Summary of interviews with humanitarian supply chains leaders (Task 4.2.2)

Scope:

This is the report from investigation line in Task 4.2.2 of Work Package 4 dedicated to present the outcomes of interviews with supply chain leaders. This research was aimed to pinpoint gaps in humanitarian supply chains concerning Solid Waste Management (SWM). To identify these gaps using a 36-question survey, are being conducted.

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1. Introduction

The objective of this part of the project is the identification of gaps in the humanitarian supply chains in terms of Solid Waste Management (SWM).

The functioning of the supply chain and the current techniques and technologies used to manage the solid waste generated are the key to identifying those gaps on the different stages of it.

2. Methodology

A humanitarian supply chain is, in general, divided into four stages:

1. Identification of needs: understanding the gaps and needs in field-based operations.
2. Conceptualization and planning: preparation of the humanitarian operation with the information collected on the previous stage.
3. Procurement: local, regional, or international purchasing of goods and products.
4. Logistics: includes transportation from Europe to the destination, storage throughout the chain, operational logistics at final destination, etc.

To identify the gaps in the humanitarian supply chains, several interviews have been done to leaders from the different stages.

The interview has 36 questions divided in the following groups:

Table 1. Groups of questions

Groups of questions	Stages of the humanitarian supply chain
Introduction	-
Identification of needs	Identification of needs
Conceptualization and planning	Conceptualization and planning
Purchase of products	Procurement
Goods in warehouse of destination	Procurement – logistics
Transport to the country of destination	Logistics
Transport to final destination	Logistics
Storage at final destination	Logistics
Operational logistics at final destination	Logistics

The interviews have been done with humanitarian supply chain leaders, always trying to collect information from every stage of the chain.

The estimated time for the interview is 1 hour. As the complete functioning and overview of the humanitarian supply chains is complex, leaders tend to be experts in only one or two of the stages of the chain. Therefore, the introductory questions are key to place in which stages the interviewees are experts so the time of the interview can be better used.

There have been two interviewers, one doing questions and taking some notes, and the other one taking notes. Transcription AI's can be also used to make sure all the information is noted.

Since finding leaders of humanitarian supply chains is not an easy task, is important to establish a network of contacts from those interviewed.

Once the interviews are finished, the information is transcribed into an excel sheet where the supply chains are analyzed (view Annexes 1, 2, 3 and 4). Each stage of the supply chain is evaluated from different points of view:

Table 2. Points of view

Points of view to evaluate one stage of the supply chain
Implementing entity
Key SWM supporting elements
Tools and technologies used in humanitarian aid
Waste generated

Logistical and organizational solutions used to manage SWM
Tools and technologies applied up to date

- **Implementing entity: entities overseeing a particular stage of the Supply Chain.**
- **Key SWM supporting elements:**

Staffing

1) Appropriate staffing in logistics; appropriate technical expertise in logistic organization, optimization, assessments and mapping of resource and logistical needs, cooperation in logistic aspects with other operator in the region/country.

2) Staff with capacity to assure proper risk assessment, blockages, bottlenecks, and plan possible remedies.

3) Staff to provide assessment of the security situation along the entire supply chain and consider reduction or avoid security risks along transport routes.

Logistic optimization and joint approaches

1) Information sharing with other organizations working in the region/country to promote efficient (re-)use of resources post-implementation.

2) Cooperation with specialized logistic units.

3) Planning of transport routes to ensure the reduction of carbon emissions.

4) Identification and cooperation with local private and public entities dealing with SWM.

Greening

1) Clean-up of the residues along supply chain during operation and after the action.

2) Collection, concentration, and segregation of residues during operation.

3) End-of-life of packaging waste and distributed items, including possible ways to apply 4R approach (Reduce, Reuse, Repair, Recycle/Recover) for packaging and Non-Food Items (NFIs).

4) Reuse, Repair and End-of-life of vehicles and equipment employed during the operation or remaining humanitarian items.

5) Use of appropriate means of transport to reduce the consumption of fossil energy.

6) Information sharing with other organizations working in the region/country to promote efficient (re-)use of resources post-implementation.

7) Use of renewable energy sources whenever possible along with appliances with lower energy consumption.

Humanitarian development – peace nexus approach

1) Working with local populations to build the capacity of local communities and markets.

2) Limiting community vulnerability to crises.

3) Strengthening capacity to recover quickly after a human or natural disaster.

4) Supporting professionalization of local market actors.

5) Working with local government authorities, for example, to develop their capacity to manage humanitarian aid and SWM.

6) Improve transport routes and infrastructure, and to incorporate temporary humanitarian supply chains into existing ones.

- **Tools and technologies used in humanitarian aid:**

1) car vehicle.

2) trucks.

3) office equipment.

4) water or fuel tanks.

5) ICT tools.

6) power generator.

7) other technical equipment, etc.

- **Waste generated: Examples of food assistance packaging by commodity type, examples of non-food items by sector.**
- **Logistical and organizational solutions used to manage SWM:**

1) Waste collection (direct collections from waste "producers" and at the collection points).

2) Waste concentration and storage.

3) Waste segregation (primary segregation – households, companies, public entities, and secondary segregation – at waste collecting units or waste storage).

4) Waste valorization.

5) Waste reverse logistic.

6) Procurement of waste by local businesses.

7) Exporting of waste to another countries.

- **Tools and technologies applied up to date:**

Tools:

1) waste containers.

2) organized and managed storage places.

3) collection equipment

4) segregation equipment.

5) local waste pickers.

6) other tools.

Technologies:

1) Composting – production of organic fertilizers.

2) Vermicomposting (worm composting).

3) Anaerobic digestion – fermentation.

4) Black soldier flees (BSF) – composting technology.

5) Pyrolysis (charcoal, oils and biogas production).

6) Green energy technologies, including biogas plants and biogas production from animal waste.

7) Mushrooms production.

8) Other technologies.

3. Sources of the investigation

The sources of the investigation are two:

1. Interviews done with humanitarian supply chain leaders and workers.
2. Webinar of People in Need (PIN) and Polish Humanitarian Action (PAH).

The interviews have been the main source of information. From the database of different humanitarian aid organizations, nineteen people were contacted by e-mail. There interviews were made with representatives of the International Committee of the Red Cross (ICRC), the World Food Programme (WFP), The Logistics Cluster - WREC Project (WREC), The International Federation of Red Cross and Red Crescent Societies (IFRC).

Table 3. Interviews

Interview 1 (12th December 2024)	WFP	WREC
Interview 2 (12th December 2024)	ICRC	ICRC
Interview 3 (31st January 2025)	IFRC	-

The first two interviews were on the same day and the duration was almost 90 minutes for both. The interviewees had knowledge and experience in "Procurement" and "Logistics". Currently, the objective is to get more interviews from every stage of the supply chain but specially from "Identification of needs" and "Conceptualization and planning". Contacts were made with new leaders from ICRC and WFP to get in touch with stakeholders from every stage of the supply chain.

The webinar was held on November 20th, 2024, and was made by representatives of PIN and PAH. The information of the webinar was useful to understand the humanitarian supply chain gaps from the logistics point of view.

4. Summary

The collected data in each supply chain stage is in the annexes 1, 2, 3 and 4. Below is a summary of the information collected from the interviews and the webinar:

4.1 Identified gaps

1. Waste generated at the end of the supply chain

There aren't waste collections systems at the end of the supply chain, which is the stage where the biggest amount of them is produced. The most common operation at the end of the supply chain is incineration.

It is related with the "Operational logistic at final destination", and in general with the whole supply chain, because depending on the functioning of it, the amount of waste is lower or higher.

2. Biodegradability

Biodegradability generates bigger amounts of waste because of the durability. Packaging tends to break down before and products have to be repacked.

It is related to all the stages of the supply chain when packaging, re-packaging or even waste is produced.

3. NGOs in charge of waste management

NGOs principal activity is not waste management, due to the complexity of its functioning, it is hard to deal with it at the same time with their main activities. Waste management is not the priority for NGOs.

It is mainly related with “Operational logistics at final destination” stage because it is where most of the waste is produced.

4. Wastes from workshops

Finding local workshops at the final destination so wastes from vehicles are not managed by NGOs.

Related with transport stages.

5. Identification of needs and Conceptualization and planning

If the objective is to reduce the amount of plastics, these parts of the supply chain should work together to make a better planning so goods and products are always available to be used.

Related with “Identification of needs” and “Conceptualization and planning”.

4.2 Best practices

1. Upstream reduction of wastes.

Reduction of the wastes while conceptualization and planning, and identification of needs stages when purchasing products and services.

From WFP interview.

2. Ecodesign (as a possible good practice)

Design from the beginning products with less quantity of plastic in order to reduce the use of it. Also eco-design could help to recyclability, re-use, etc.

From ICRC interview.

3. Guidelines for purchasing products.

Strict rules and guidelines for purchasing products in order to justify the amount of money spent.

From PIN and PAH webinar.

Procurement policies structured in 4 levels depending on the amount of money that is going to be used.

From IFRC interview.

4. Reducing transport

Reducing transport trying to find close suppliers to the zone of destination. This will help to reduce the carbon footprint.

4.3 Missing information

1. There was a lack of information regarding “Goods in warehouse destination” related with:

   a. Logistical and organizational solutions used to manage SWM
   b. Tools and technologies applied up to date
2. There was a lack of information regarding “Custom clearance” related with:
   a. Implementing entity
   b. Key SWM supporting elements
   c. Tools and technologies used in HAs
   d. Waste generated
   e. Logistical and organizational solutions up to date
   f. Tools and technologies applied up to date
3. There was a lack of information regarding “Transport to the destination country” and “Transport to the final destinations” related with “Tools and technologies applied up to date”
4. There was a lack of information regarding “Storage at the final destination” related with:
   a. Logistical and organizational solutions used to manage SWM
   b. Tools and technologies applied up to date
5. There was a lack of information regarding “Operational logistic at final destination” related with:
   a. Implementing entity
   b. Key SWM supporting elements
   c. Tools and technologies used in HAs

5. Conclusions and recommendations

The longer the supply chain, the more difficult it is to manage, and bigger quantities of wastes are produced. Nearly 90% of waste is produced due to the logistics operations, almost 9% of waste comes from procuring and storage of products. The rest comes from the stages of “Identification of needs” and “Conceptualization and planning”. The quantity of each stage of the chain depends on a lot of factors like country of destination, economic situation of the country, logistics network and infrastructures.

Environmental impact and sustainability criteria are often considered for choosing a supplier of goods/products, but they are not considered as key, the most important part of the supply chain is to provide the goods above everything and with a good timing. The representative of IFRC, who has experience working in DRC with humanitarian aid, says that sustainable criteria are previously defined by the funders, which is also important to understand where the gaps start. Also, money is important when deciding between different suppliers or goods/products. Biodegradability is not considered as a criteria because it affects directly the lifetime and resistance of logistics. Reuse is the best criteria, but it depends on the country and it’s not easy to be applied.

Referring to procurement, the priority should be to purchase products from local suppliers as much as possible, but sometimes goods/products can’t be found depending on the location and the situation of it. When is not possible, the

purchases should be done regionally or internationally, depending on the availability of the products and the money that can be spent. In DRC they have a database with the local suppliers and their availability depending on multiple factors, the purchasing of goods depends on the policies of procurement. For big purchases is easier to do them internationally.

The quantity of wastes produced during the purchasing stage isn't really high, but it can influence the rest of the supply chain directly, so the identification of needs team from an NGO and the planning team from the same NGO should cooperate to reduce the wastes downstream. There is not too much awareness with wastes generated in the supply chains because they consider it secondary.

Planification is key to reduce the quantity of products that are not usable after long time waiting and the arrival to the location.

Some of the tools than can be common in Europe for example in terms of ERP, are not accessible in the destinations. Looking for innovative tools is important but at the same time, teams should bear in mind the availability of them in different conditions.

Some people in charge of different parts of the supply chains think that mentality has a connection with the quantity of waste produced. A common opinion inside the sector is that NGOs have a problem with waste management as their main activity is not environmental control, that is why sustainable criteria are not as important as they should be, the solution that they consider is to create specific environmental NGOs. At the same time, local suppliers should be aware of the impacts of doing non sustainable purchases. Changing their mentality is key to help them develop a more responsible role with the environment.

Nowadays eco-design is very used to reduce plastics of the products. Some of the interviewees insist that NGOs have a lot of difficulties to do a proper solid waste management due to the conditions of the locations where they work. Eco-design can be helpful to introduce concepts as recyclability and re-use.

The most important conclusion, that came from the representative of IFRC who works face to face with humanitarian aid in DRC, is that solutions must come from the first stages of the supply chains because the situation of these countries does not help to develop or even test some of them. Solutions should be related with sustainable criteria with the products mostly used for humanitarian aid as well as packaging etc. Technologic, small scale and big scale solutions are good ideas but really difficult to implement due to the situation.

For more information regarding the interviews please contact the Bio4HUMAN Project Coordinator.