



BIO4HUMAN

Webinar 3

Environmental impacts of humanitarian organizations: how to reduce them with bio-based materials?

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Technical: Questions, slides, etc.

During event

Video, microphone, recording



- Video and mics are open for participants
- Please unmute yourself and turn on video when speaking
- This meeting is recorded and livestreamed
- Presentation and recording will be made public

Questions



- Ask anytime in chat
- Q&A will be live following questions in chat and asked live

After event

Presentation



- Recording will be shared on website <https://bio4human.eu/>
 - All registered will be notified via e-mail

Staying informed



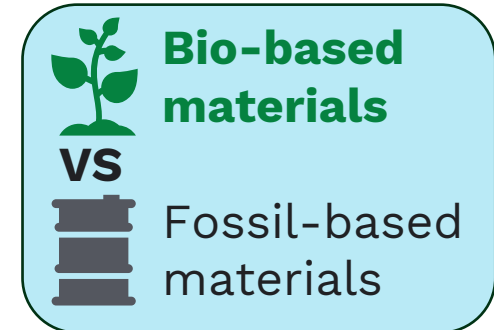
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Webinar content



1. Introduction to the European Bio4HUMAN project
2. The challenge and the avenues envisaged
3. The identified solutions
4. Comparative analysis of the kits
5. Conclusions and Q&A

- ▷ Project Name: Identifying bio-based solutions for waste management applicable to the humanitarian sector
- ▷ Horizon Europe, Cluster 6, CSA
- ▷ Duration: 30M (Start: 1 Jan 2024; End: 30 June 2026)
- ▷ 10 partners: multi-stakeholder approach
- ▷ 9 Work packages



GOAL = Reduce waste in humanitarian aid sector, using bio-based solutions



Objectives

Assess the scope to which bio-based innovative technological solutions and bio-based systems have the potential to be applied under the humanitarian context

Define and catalogue needs of the humanitarian sector in SWM

Assess the scope of available different bio-based innovative technological solutions and systems

Life Cycle Assessments of identified solutions

Conduct environmental LCAs of different bio-based innovative technological solutions

Map the process of LCA methodologies identification in the context of waste management solutions for humanitarian aid

Objectives

Socio-economic and governance aspects & Replication potential of identified solutions

Evaluate socio-economic and governance aspects of bio-based solutions identified

Conduct feasibility study for theoretically proposed solutions in 2 African countries

Development of guidelines and recommendations

Develop a set of guidelines and recommendations for policymakers, bio-based sector actors, humanitarian aid practitioners, and the scientific community

Bio4HUMAN Final Event



Location: Novotného lávka 200/5, 110 00 Staré Město, Prague, Czech Republic & Online sur Zoom

Date : Thursday, 28th May 2026

Time : 09:30-15:00 CET

Registration Deadline: Thursday, 21st May 2026

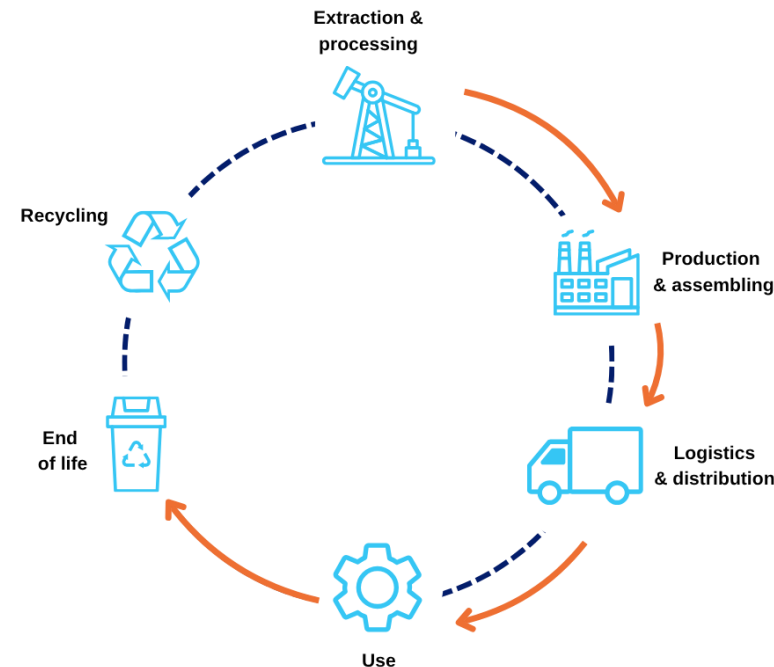
<https://bio4human.eu/bio4human-final-event/>

Challenges and possible solutions

Definition of Life Cycle Assessment:

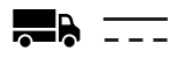
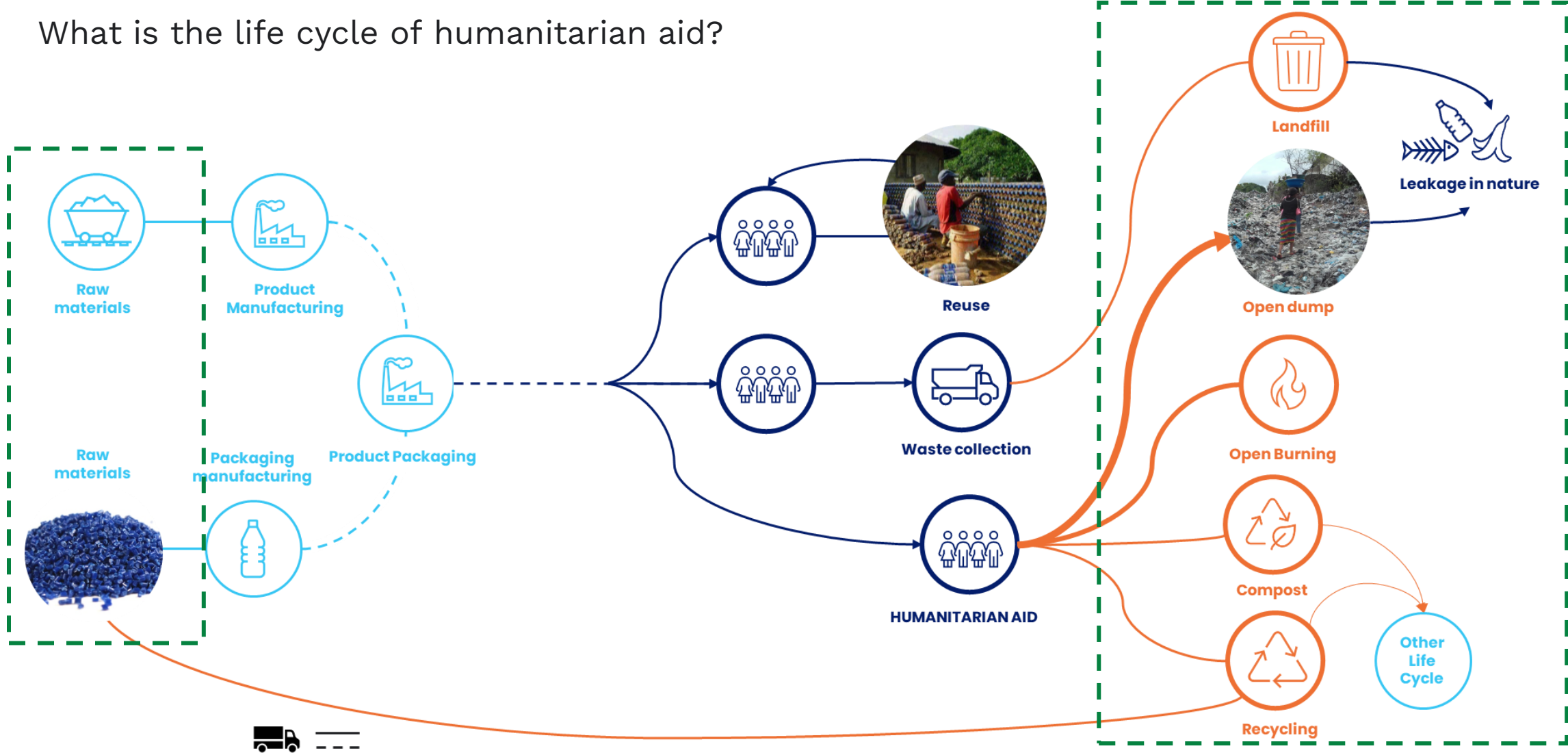
- Standardized assessment method (ISO 14040 et 14044) of environmental impacts, based on multi-criteria and a multi-stage analysis over the entire life cycle.

GOAL: to know and be able to compare the environmental impacts of a system throughout its life cycle



Challenges and possible solutions

What is the life cycle of humanitarian aid?



Considered courses of action – solutions



- To optimise waste management in a humanitarian context, the Bio4HUMAN project has identified 2 solutions:

- **Use of bio-based and biodegradable products and packaging**

Webinar 1:

Bio-based packaging solutions: environmental benefits and analysis of geographical variability

Focus on: PLA (Polylactic acid)

- **Implementation of end-of-life treatment solutions for bio-waste**

Webinar 2:

Organic waste treatment solutions: constraints and benefits.

Focus on: anaerobic digestion, conversion by black soldier fly (BSF) and compost.

→ W1: **Biodegradability** is key to reducing impacts.

→ W2: **Biodegradable solutions must be treated at end of life** in industrial or household **composts** or with solutions such as **anaerobic digestion** or **BSF** (*Biogas, food and fertiliser production*).

→ **Webinar 3: Which bio-based solutions are the most relevant to reduce the impact of humanitarian kits?**

The identified solutions _ products and packaging

• Reference scenario

- ✓ Oil container
- ✓ Water container
- ✓ Pouch for RUTF
- ✓ Bags for primary packaging
- ✓ Sanitary disposable pads
- ✓ Mosquito net
- ✓ PE laminating film for tertiary packaging
- ✓ Adhesive tape



• Solutions

- ✓ PLA bottle for oil and water
- ✓ Compostable pouch for RUTF
- ✓ Disposable bags from renewable resources
- ✓ Compostable disposable sanitary pads
- ✓ Biodegradable mosquito net
- ✓ Biodegradable laminating film for tertiary packaging
- ✓ Bio-based adhesive tape

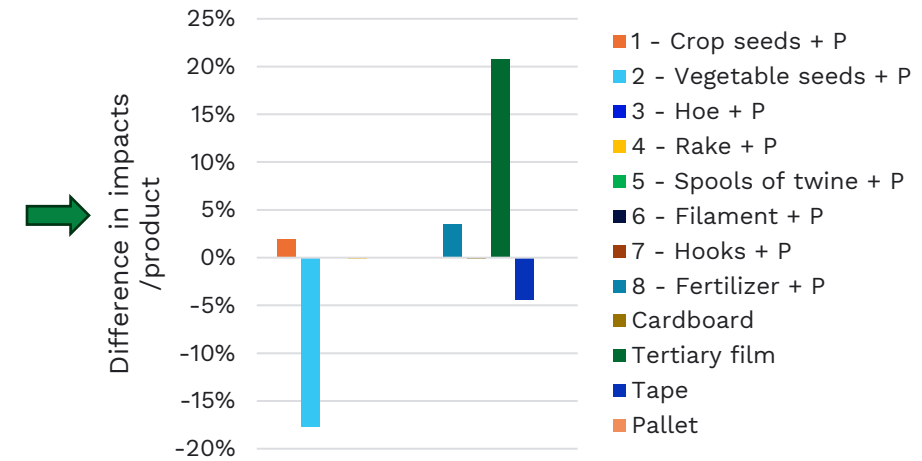
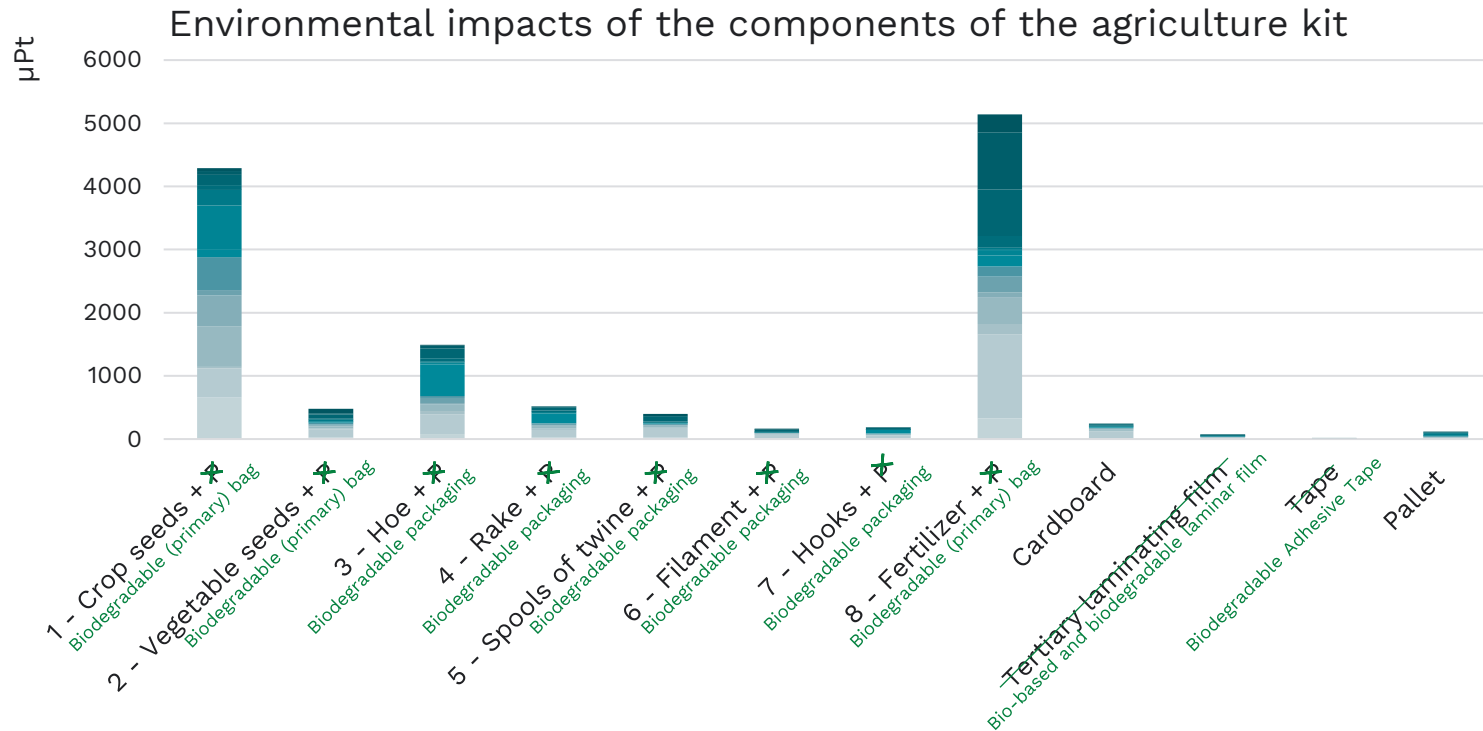


Compare solutions to the reference products



Item	Functional Unit	Reference flow – Bio-based Solution	Reference flow – Reference scenario
Water container	10 liter water container(s) that can store and dispense water for one month	5 x 2L PLA bottles = 5 x 69 g= 345 g	1 x 10 L PE bottle = 210 g
Oil container	6 liter oil container(s) capable of storing and dispensing edible oil	3 x 2L PLA bottles = 3 x 69 g= 207 g	2 x 3 L HDPE bottle = 2 x 157 g= 314 g
PE laminating film for tertiary packaging	1 m ² of film intended for use as tertiary packaging og the kits	37.2 g of bio-based film	27.6 g of LDPE film
Pouch for RUTF	To contain 92 g of RUTF	4.2 g of RUTF pouch	5 g of RUTF pouch
Bags for primary packaging	To hold 10 kg (primary packaging)	10.621 g/bag* 50 bags (each having 0.2 kg capacity) = 531 g	8.17 g of HDPE film and 2.52g of PP film= 10.69 g
Sanitary disposable pads	240 sanitary pads covering the needs of a menstruating person for one year	9.5 g/pads* 4 pads/cycle *5days/cycle*12 month= 2.28 kg of pads material	Disposable: 10 g/pads * 4 pads/cycle * 5 days/cycle * 12 month = 2.40 kg of pads material
			Reusable: 2 pads per year, each used twice per cycle = 0.6 kg
Mosquito net	Providing mosquito protection for a person for one year	206.4 g of polyester mosquito net	240.8 g of PLA mosquito net
For a whole kit	A complete kit delivered to a household, meeting the needs of a family of 2 adults, 2 children for 1 month	To meet the same functions as reference	Items and quantities indicated by humanitarian aid

Kit_agriculture



→ **Reduced impact for light content** (vegetable seeds)

→ Increased impact for dense content or supplied in large quantities (Fertilizers)

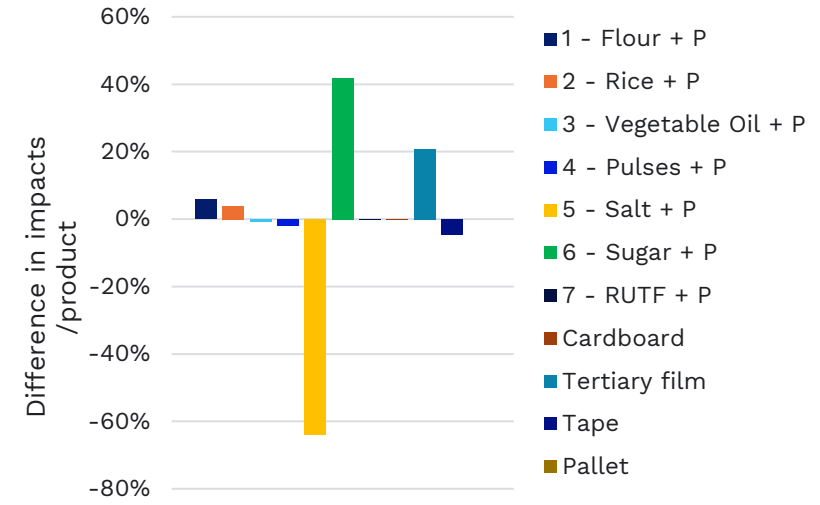
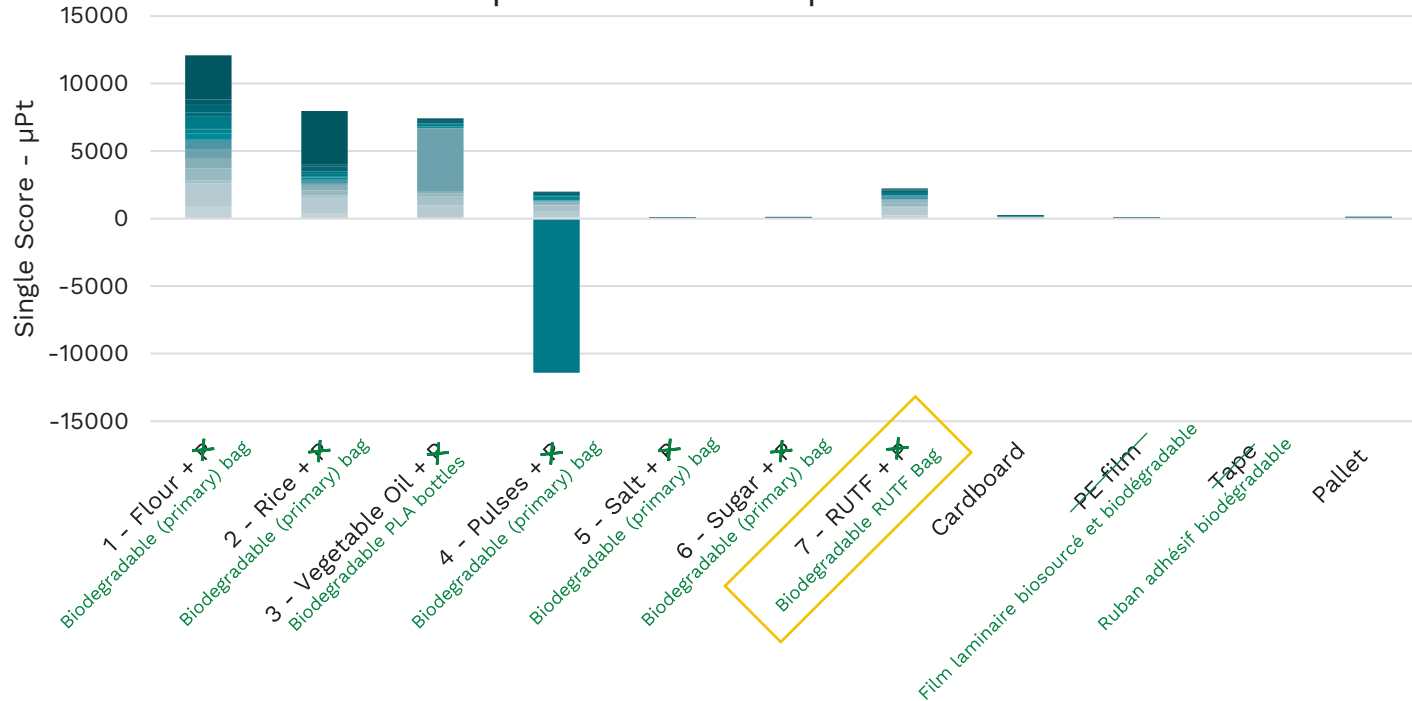
due to the more important mass of bio-based packaging to compensate for its lack of mechanical performance

→ Replacing the adhesive tape: beneficial but not so significant on the scale of the kit

→ Replace PE laminar film: not recommended for now

Kit_food

Environmental impacts of the components of the food kit



→ **Reduced impact for light content** (pulses)

→ Increased impact for dense content or supplied in large quantities (flour, rice)

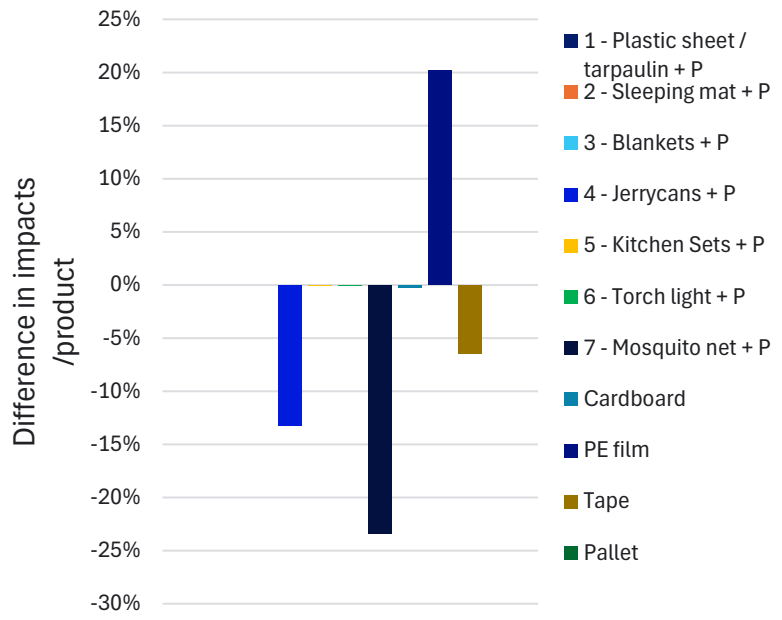
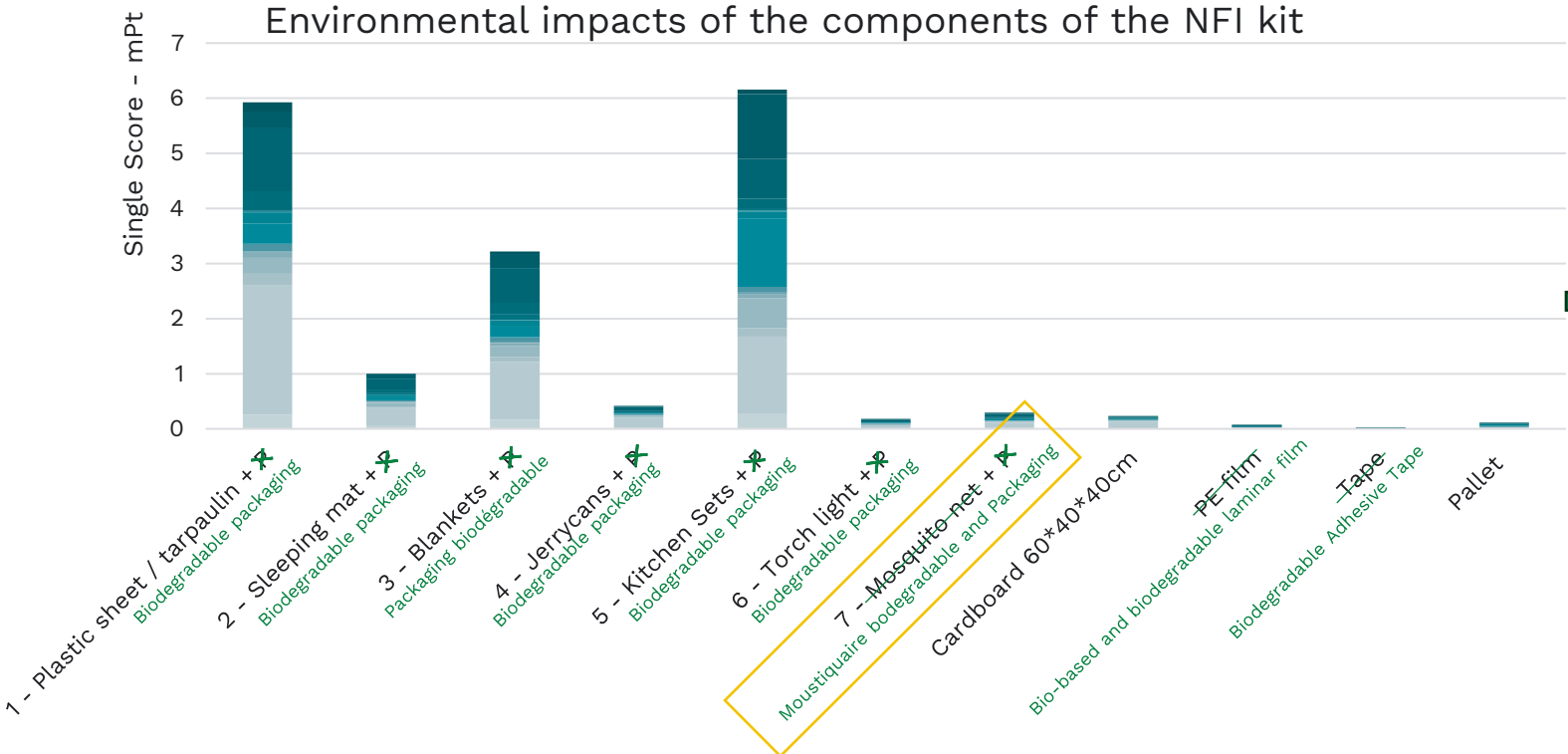
due to the more important mass of bio-based packaging to compensate for its lack of mechanical performance

→ Replacing pouch for RUTF : No visible impact on environment so interesting (low EoL impacts)

→ Replacing the adhesive tape: beneficial but not so significant on the scale of the kit

→ Replace PE laminar film: not recommended for now

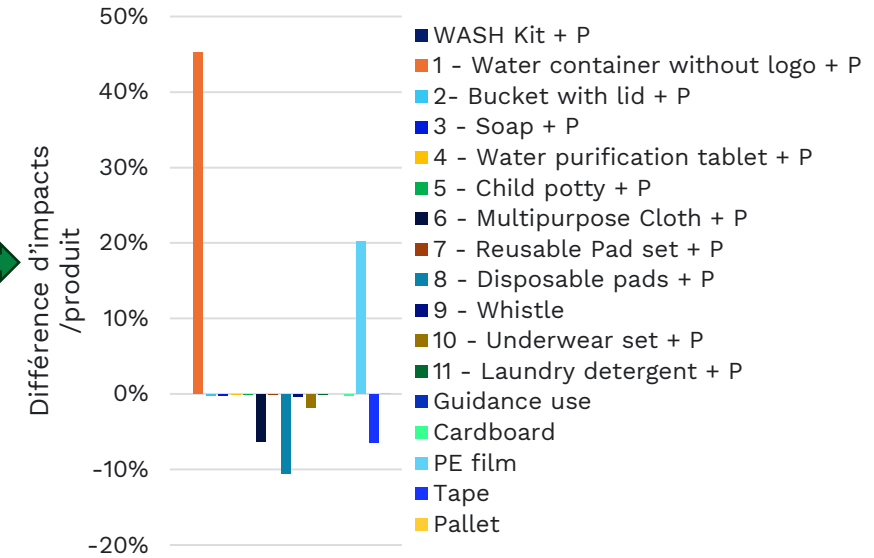
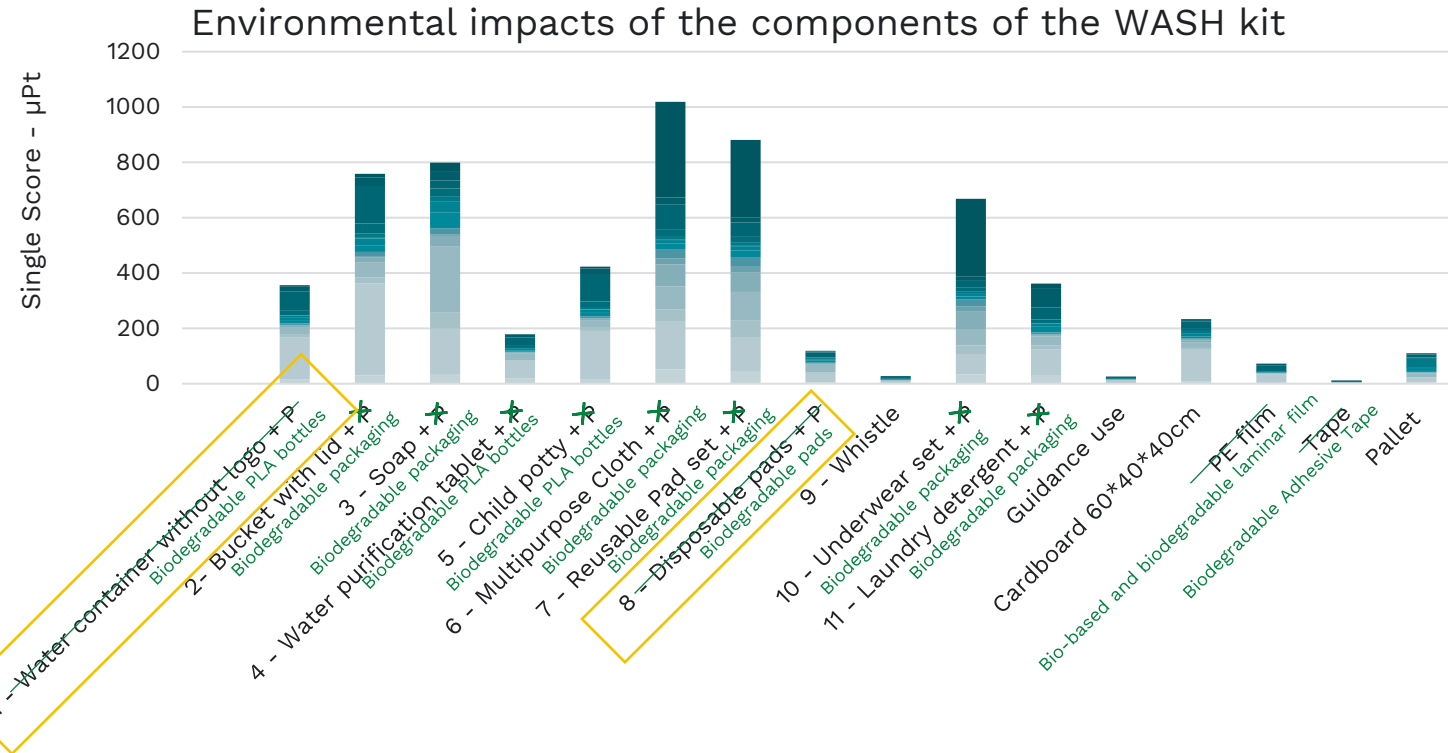
Kit_ NFI (Non-Food Item)



➔ **No impact for large items packaging**, low relative impact from packaging (blankets and cooking set) due to the more important mass of bio-based packaging to compensate for its lack of mechanical performance

- ➔ Replacing the **mosquito net** by a **biodegradable** one shows promise
- ➔ Replacing the adhesive tape: beneficial but not so significant on the scale of the kit
- ➔ Replace PE laminar film: not recommended for now

Kit_WASH



→ **Reduced impact for light content** (most items)

→ Increased impact for bulk content (water, **10L water container** with **five 2L PLA**)

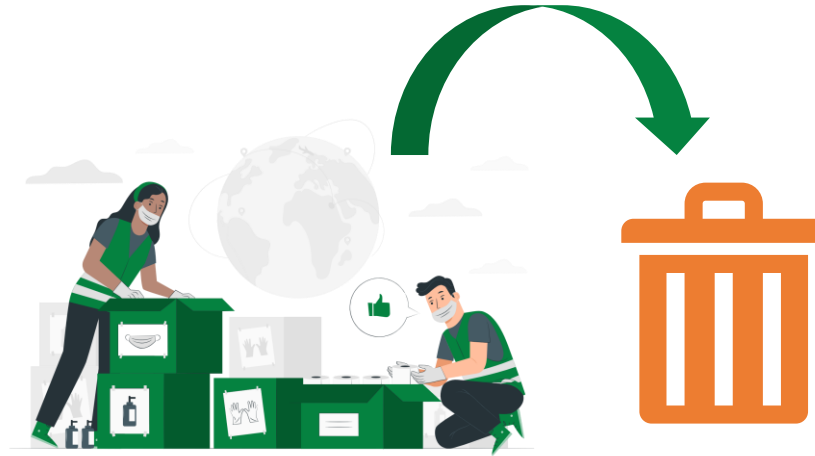
due to the more important mass of bio-based packaging to compensate for its lack of mechanical performance

→ Replacing **sanitary pads** = beneficial but not very significant on the scale of the kit

→ Replacing the adhesive tape: beneficial but not so significant on the scale of the kit

→ Replace PE laminar film: not recommended for now

Conclusions



End of life = main source of environmental impacts throughout the life cycle of humanitarian aid.



The most interesting solutions to reduce the impact of the kits would be

- **Bio-based and biodegradable packaging** for light components (i.e., seeds, dried legumes, empty jerry cans, mosquito nets, clothes) or delivered in smaller quantities (i.e., salt)
- **Biodegradable mosquito net**
- **Biodegradable disposable sanitary pads**
- **biodegradable adhesive tape** to a lesser extent

As a reminder, **biodegradable solutions must be treated at end of life** in industrial or house compost or with solutions such as anaerobic digestion or BSF.

Bio-based solutions are an alternative to fossil resources but do not particularly bring environmental benefits to the production stage. **Biodegradability is key to reducing impacts, especially in humanitarian contexts.**



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Thank you!

Stay updated on the project: inquiry@bio4human.eu



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