Erica Cirino, Communications Manager, Plastic Pollution Coalition

Chelsea Ali, Supply Chain Specialist, ShelterBox

Patrick Oger, Project Manager, Eco-Design Tarpaulin, ICRC-IFRC-UNHCR and Sustainable EHI Project, ICRC-IFRC

PACKAGING MATTERS WEBINAR

Using bioplastics in packaging: What do humanitarians need to know?

Tuesday 11th April
15:00-16:00 CET
09:00-10:00 EST

https://tinyurl.com/JI-webinar4-reg

JOINT INITIATIVE FOR SUSTAINABLE HUMANITARIAN ASSISTANCE PACKAGING WASTE MANAGEMENT

USAID FROM THE AMERICAN PEOPLE
ACTED
CCCM CLUSTER SUPPORTING DISPLACED COMMUNITIES
CRS CATHOLIC RELIEF SERVICES
CONCERN worldwide
DRC DANISH REFUGEE COUNCIL
European Commission
Global Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter
ICRC
IFRC
IOM THE UNITED NATIONS MIGRATION AGENCY
LOGISTICS CLUSTER
REH Réseau Environnement Humanitaire
ShelterBox
Save the Children
UKaid from the British people
UNHCR The UN Refugee Agency
UN environment programme
OCHA
JOINT ENVIRONMENT UNIT
TOGETHER FOR A BETTER RESPONSE
unrwa الأونروا
WELT HUNGER HILFE
WFP World Food Programme
World Vision
WREC

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Golden rules

Please introduce yourself in the chat box at the start of the meeting

Please mute your microphone unless you are speaking

We encourage you to turn on your camera, in a spirit of participation

Please ask questions in the chat box or by raising your hand

The meeting will be recorded (please alert us if this poses a problem)

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What is the JI?

Partner-driven initiative, 23 humanitarian stakeholders

Reduce environmental footprint of humanitarian action, looking specifically at packaging waste

Holistic approach - upstream and downstream

Supports information & knowledge-sharing across the hum sector: webinar series part of this

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Agenda

Time	Agenda item	Speaker
15:00 – 15:15	Welcome & learnings from the Guidance Note "Alternatives to conventional plastics"	Joint Initiative
15:15 - 15-25	The problems with plastic, bioplastic & single-use, and the benefits of zero-waste solutions	Erica Cirino, PPC
15:25 - 15:35	How do recycled, bio-based and petroleum-based PE compare?	Patrick Oger, ICRC
15:35 - 15:45	The challenge of oxo-degradable bags for packaging	Chelsea Ali, ShelterBox UK,
15:45 - 16:00	Open discussion	Q&A

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Alternatives to virgin plastics: JI findings

Guidance note on alternatives to plastics (find it here! https://tinyurl.com/JI-alternatives)

Research started in Nov 2022 on various "alternatives" to conventional plastic packaging (biodegradable, compostable, bio-based, cotton bags, paper/cardboard, recycled plastics) in consultation with tech experts and practitioners

Aim : to better understand the characteristics of alternatives, some of the challenges and potential benefits **as a first step** to help humanitarians make informed decisions.

Some findings:

- No straightforward answer, all alternatives present challenges and should not be considered as "quick fix" solutions

- Regarding biodegradable/compostable packaging:
  - Overall carbon and environmental footprint is not necessarily lower than that of conventional plastics
  - End of life management challenging in hum settings (specific conditions needed to decompose, separate collection)
  - Conserving the packed items and its durability is a challenge

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Bio-based plastics

- Significant land use required for production; might be competing with food prod., & contributing to deforestation
- Production is carbon intensive
- Not necessarily biodegradable

Jute/cotton bags:

- Only better than conventional plastic bags from a carbon emissions perspective if they are reused 30 times (not always the case) : even higher if the plastic bag is used many times over many years
- Cotton is very water intensive (production)

Oxo degradable plastic must be avoided as it produce microplastics. Is banned in some countries.

Conclusion:

- We need to collect more evidence on the use case of these materials and carry out LCA to make informed decisions
- Conventional plastics are cheap, solid and may last for a long time: difficult to move away from this.
- Where possible, eliminate or reduce plastic packaging or design packaging so that it can be reused many times
- Support reuse, repurpose and recycling – keeping materials in circulation.

The problems with plastic, BioPlastic, & single-use… and the benefits of zero-waste solutions

Single-use is not circular—and should not be the focus of solutions to plastic pollution

plasticpollutioncoalition


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PLOS BIOLOGY

OPEN ACCESS

PERSPECTIVE

Are bioplastics the solution to the plastic pollution problem?

Sandra Pascoe Ortiz

Published: March 22, 2023 • https://doi.org/10.1371/journal.pbio.3002045

We live our lives immersed in plastic pollution: a problem that is becoming more acute. Viable alternatives that can reduce plastic pollution are being sought. Could bioplastics be the hoped-for solution to this problem?

Production of waste

Toxic additives

Environment International

Volume 145, December 2020, 106066

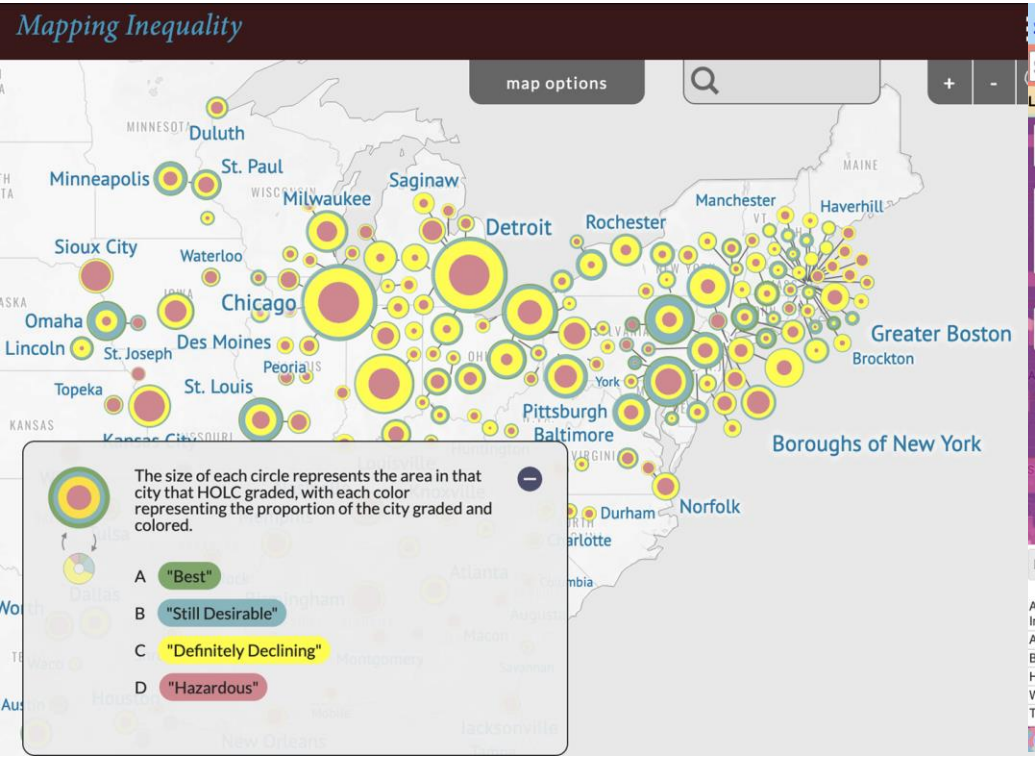
Are bioplastics and plant-based materials safer than conventional plastics? *In vitro* toxicity and chemical composition

Lisa Zimmermann [a], Andrea Dombrowski [a], Carolin Völker [b], Martin Wagner [c]

Highlights

- Most bioplastics and plant-based materials contain toxic chemicals.
- Cellulose and starch-based products induce the strongest *in vitro* toxicity.
- Most samples contain >1000 chemical features; the maximum is 20,000 features.
- The material type does not predict toxicity or chemical composition.
- Bio-based/biodegradable materials and conventional plastics are similarly toxic.

INJUSTICE


Mapping Inequality
map options
Duluth
Minneapolis
St. Paul
Milwaukee
Saginaw
Detroit
Rochester
Manchester
Haverhill
Sioux City
Waterloo
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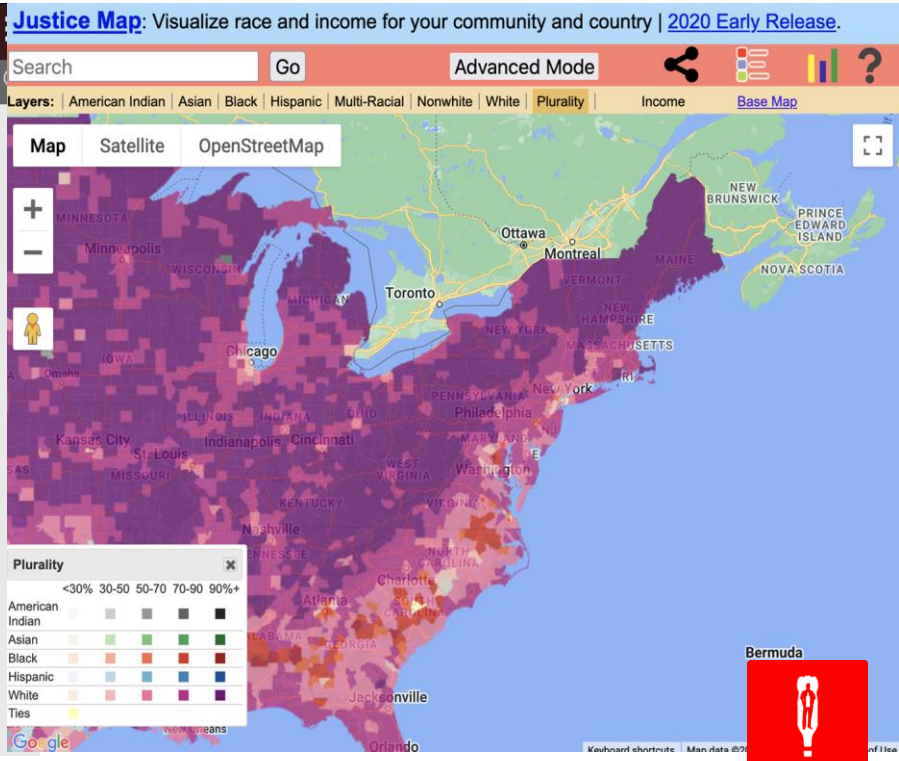
Omaha
Lincoln
St. Joseph
Des Moines
Peoria
Topeka
St. Louis
Greater Boston
Brockton
Pittsburgh
Baltimore
Boroughs of New York
Norfolk
Durham
The size of each circle represents the area in that city that HOLC graded, with each color representing the proportion of the city graded and colored.
A "Best"
B "Still Desirable"
C "Definitely Declining"
D "Hazardous"


Justice Map: Visualize race and income for your community and country | 2020 Early Release.
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Layers: American Indian | Asian | Black | Hispanic | Multi-Racial | Nonwhite | White | Plurality | Income
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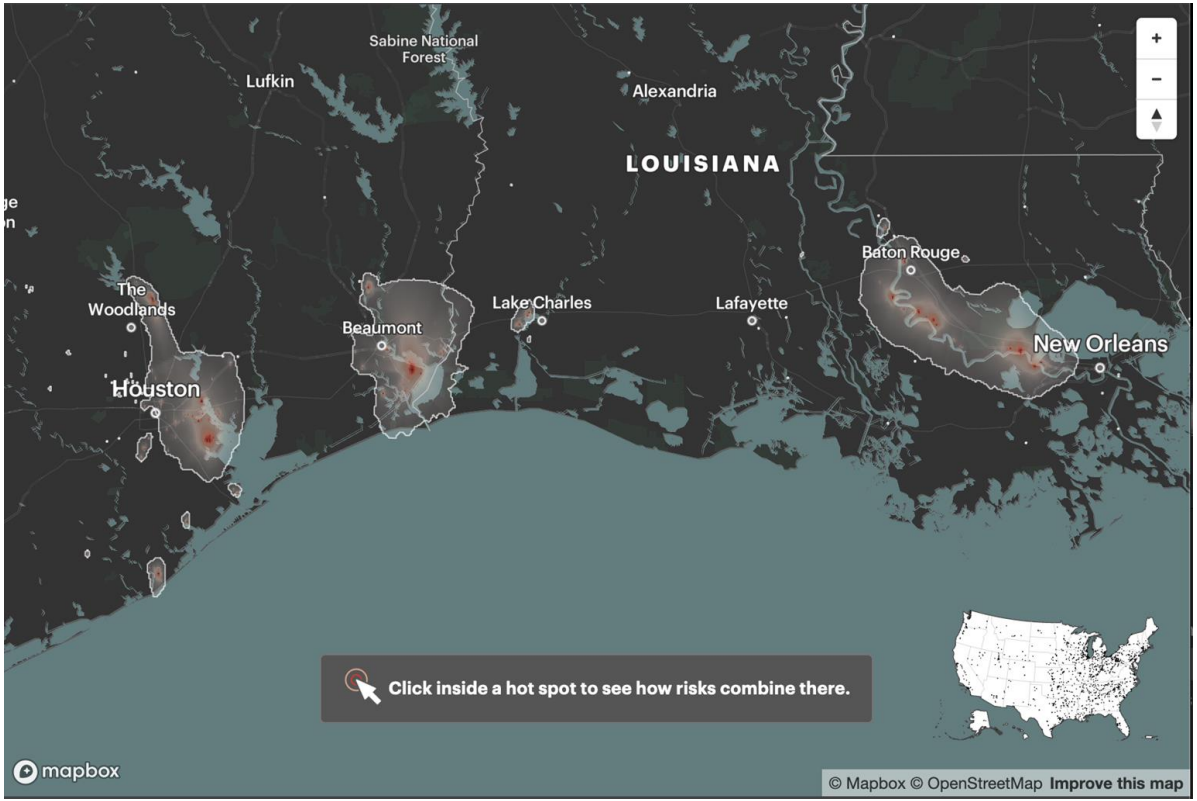
Injustice continued

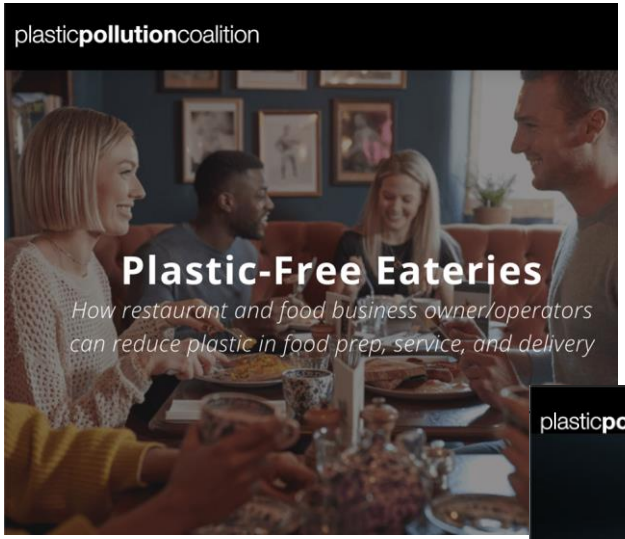


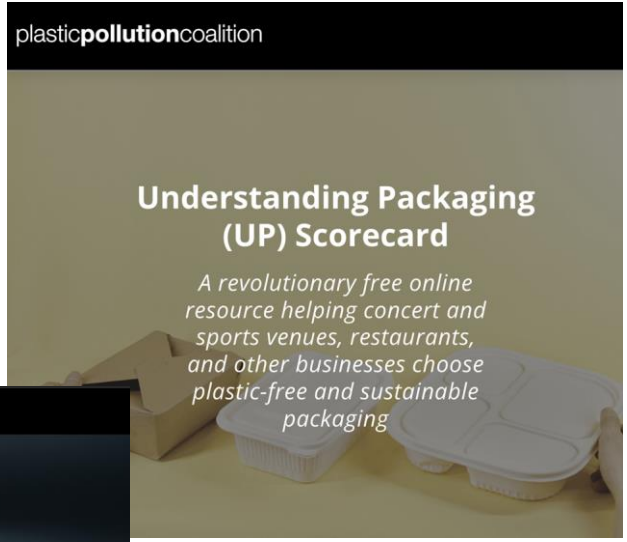
plasticpollutioncoalition

Zero-waste solutions

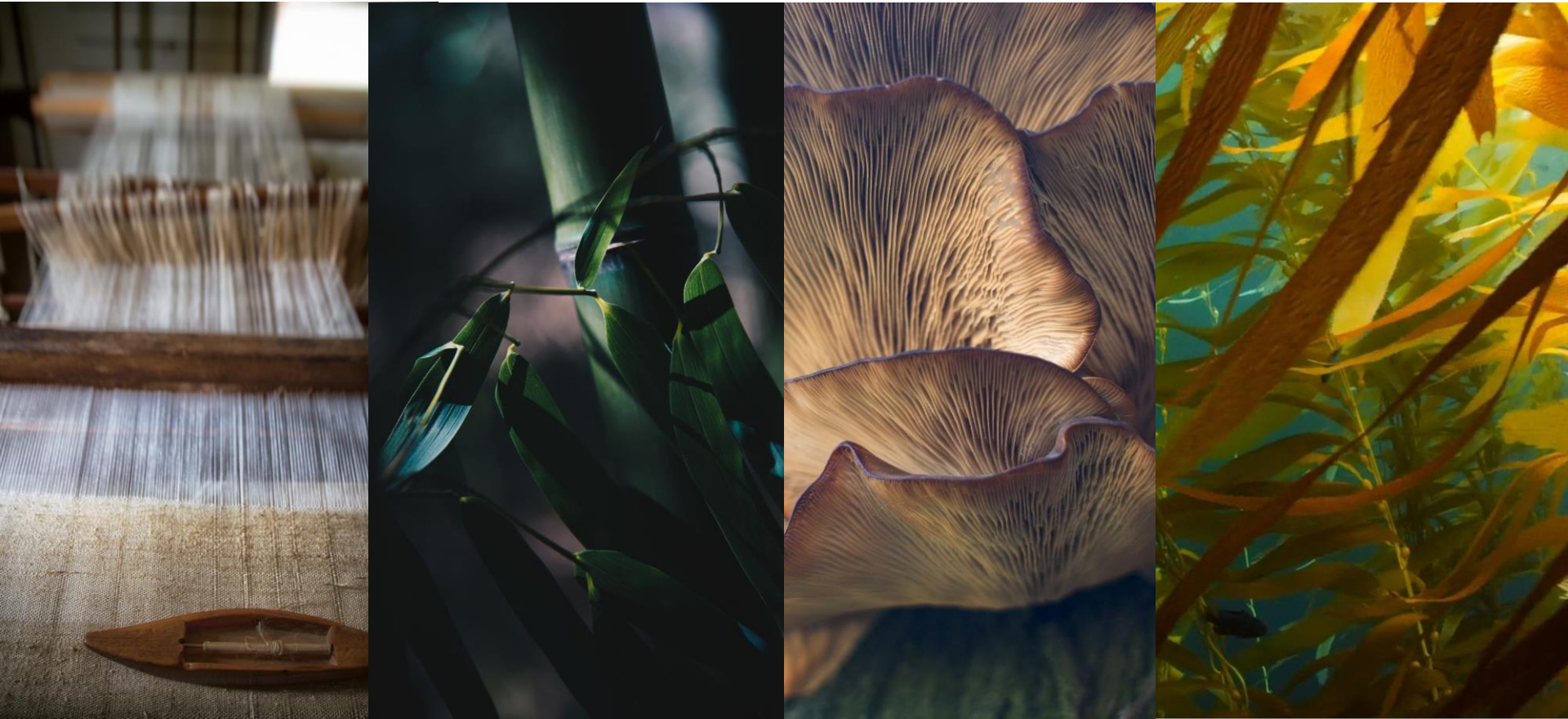
Shift: business practices, culture, individual behaviors, policies

Some Helpful resources





If single-use...choose nontoxic, regenerative materials



If single-use...choose nontoxic, regenerative materials

Eco Design Tarpaulin Project ICRC/IFRC/UNHCR

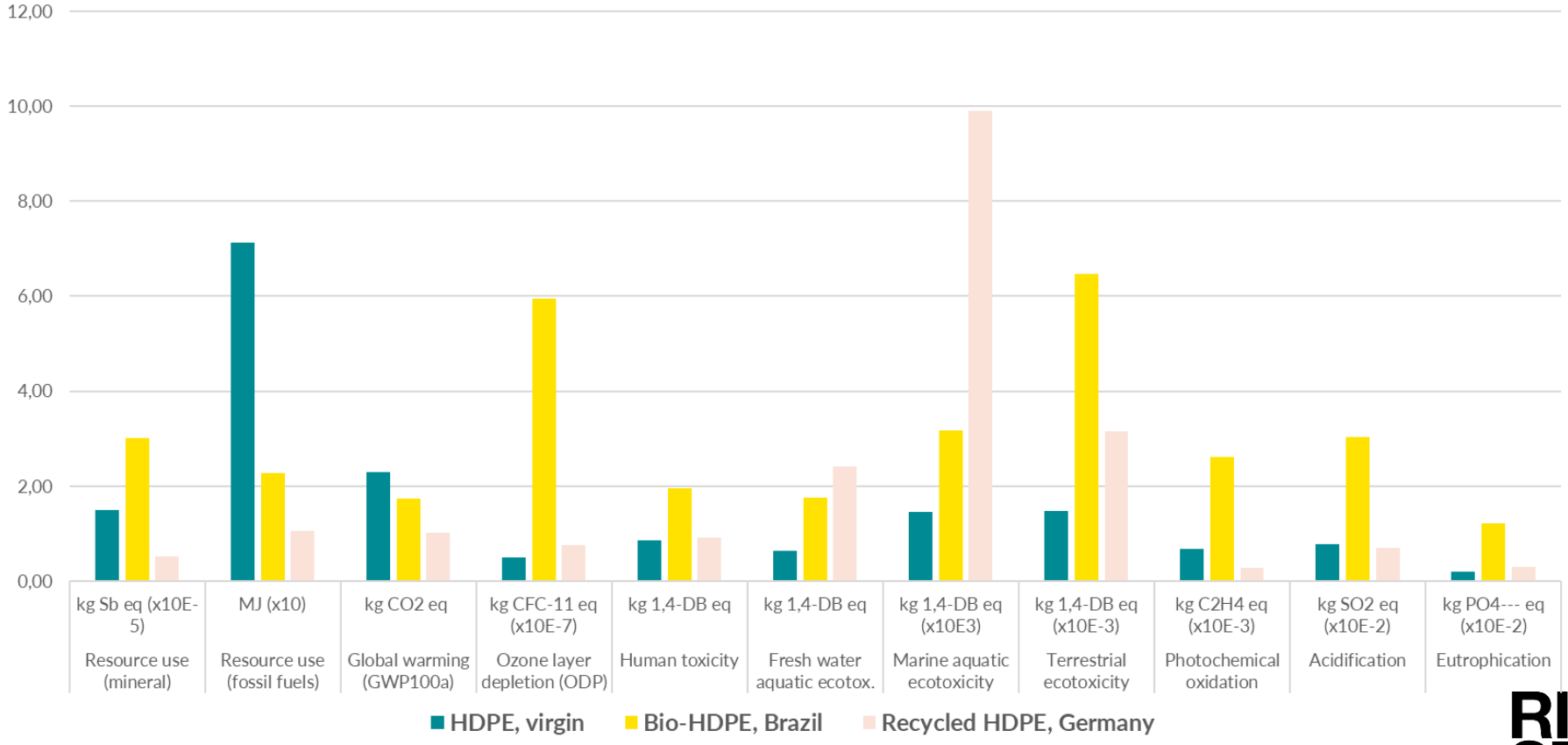
Position of the Project towards using Biobased Polyethylene (PE) to make tarpaulins

The Life Cycle Analysis (LCA) demonstrates that the biobased PE has 9 out of 11 environmental impacts higher than fossil-based PE.

It is not intended to use bio-based material potentially competing with food production. There is no standard that certifies biobased PE made from non-food materials.

Therefore, the biobased material is disqualified for the usage as tarpaulin, in our specific usage, considering the current state of the technology.

LCA comparing the environmental impacts of virgin, bio-based and recycled PE



*Please note that some impacts have been scaled and should be multiplied by the factor shown on the x-axis.

RISE Research Institutes of Sweden AB

Polymer, fibre and composite - Material, Process and Recycling

Project note: Biobased polyethylene

Biobased PE has 24% lower global warming potential (GWP) and 68% lower resource use (fossil) than virgin PE.

However, biobased PE has the highest impact for the categories resource use (mineral), ozone depletion, human toxicity, terrestrial ecotoxicity, photochemical oxidation, acidification, freshwater toxicity, marine aquatic toxicity and eutrophication (9 out of 11 impact categories), compared to recycled and virgin PE. This is mainly due to sugarcane production activities, e.g., harvesting and transferring sugarcane, use of fertilizer, etc., and also, the use of sodium hydroxide in the bio-ethylene production2.

Recommendation:

Even though bio-based PE could completely replace fossil-based PE in the manufacturing of the tarpaulin, several concerns need to be taken into consideration before deciding on its usage.

This includes:

- Scarcity of the bio-based PE on the market and higher prices
- Highest environmental impact on 9 out of 11 impact categories in the LCA performed within this project
- Potentially conflicting situation between food production and plastic production

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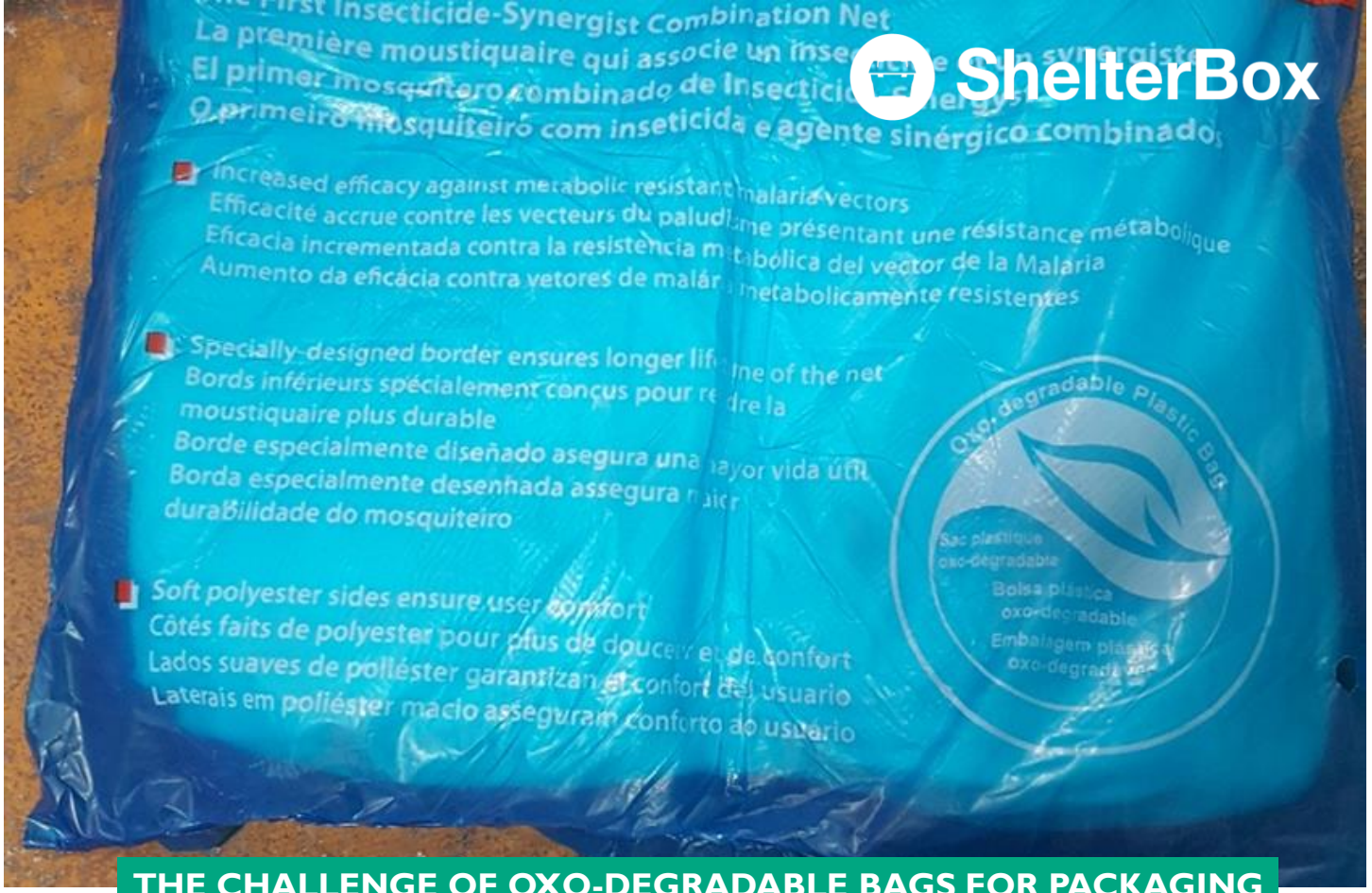


THE CHALLENGE OF OXO-DEGRADABLE BAGS FOR PACKAGING

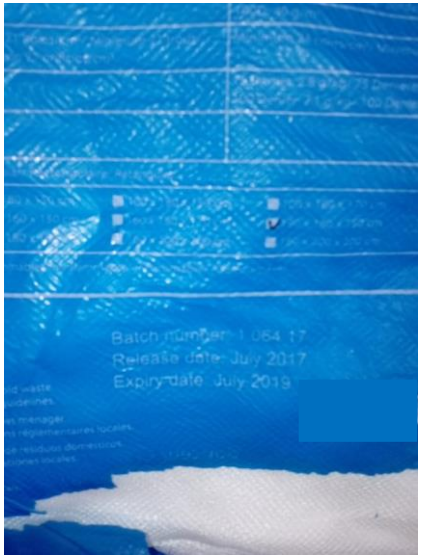
Chelsea Ali - ShelterBox

Oxo-degradable Packaging – An environmentally friendly alternative?

- Until 2019, all mosquito nets ShelterBox purchased from our supplier were packaged in oxo-degradable bags.
- These appeared to be a more environmentally-friendly packaging option, as in the right conditions the bag would in theory degrade.
- However, we encountered several challenges with these bags, both in prepositioning stock in warehouses, as well as purchasing stock direct for a response.
- As a result, ShelterBox no longer uses oxo-degradable packaging for mosquito nets and has moved to standard single use plastic bags since mid-2019.

Prepositioning Stock

- In 2019, ShelterBox was contacted by one of our prepositioning warehouses to inform us that the mosquito net packaging was degrading.
- Upon inspection by the warehouse staff, it was discovered that the majority of the individual mosquito net bags were degraded to varying extents.
- The stock had been stored in prepositioning for approx. 1 year and so was not expected to have degraded in the warehouse.
- The supplier was notified of the issue and samples of the nets in the degraded bags were couriered to the supplier for testing, to understand if the exposure to the air had affected their efficacy.
- The supplier agreed to reimburse ShelterBox for the stock affected by the degraded packaging.
- Once this issue was discovered in one warehouse, we required all prepositioning warehouses holding mosquito net stock to conduct an investigation to see if this had affected other mosquito nets.



India Response 2021

- In 2021, ShelterBox was responding to a flooding event in Odisha, India.
- The mosquito nets purchased were from the Indian distributor of ShelterBox's global supplier.
- However, when the stock arrived at the partner's warehouse, all 3,600 x mosquito nets were found to have packaging that had severely degraded.
- The supplier offered to provide replacement nets, however given the significant impact this would have on the response and distribution timelines, this option was declined.
- The supplier was able to confirm that recent testing of the nets had taken place and they were still effective and safe to distribute. The decision was taken to repackage the nets in locally purchased paper bags with instruction sheets, in order to ensure distributions could go ahead as planned.

Key Lessons Learned

1. Resolving these issues with the supplier took a lot of staff time. For the India response, this was approx. 27 hours of staff time which diverted staff away from project activities.
2. Oxo-degradable may sound like a more environmentally-friendly option, but the reality was that the bags degraded into lots of smaller pieces of plastic, which are then harder to recycle / dispose of.
3. There is the potential for stock to become unusable / unsafe for distributions, which then in turn creates additional waste products.

Image: NO TIME TO WASTE © Tearfund 2019

Any Questions?

To find out more

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