LCA | Soap Bar

Description of Item

Body Soap Bar

- Mass: 260g
- Contents: 100% crude palm oil, sodium chloride, sodium hydroxide
- Plastic packaging material: LDPE film

Functional unit

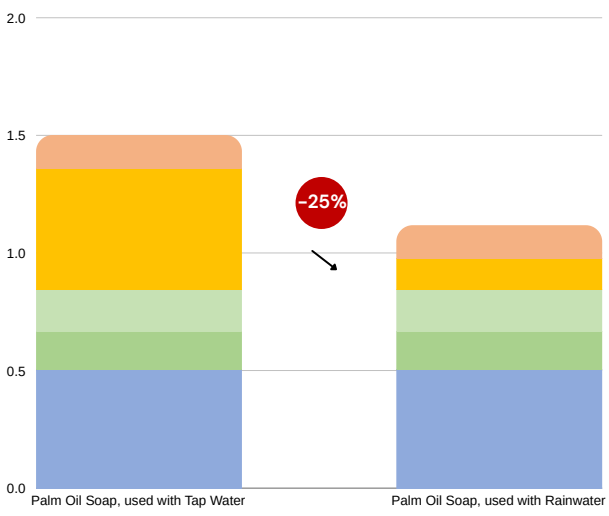
1 soap bar, 50 uses per bar

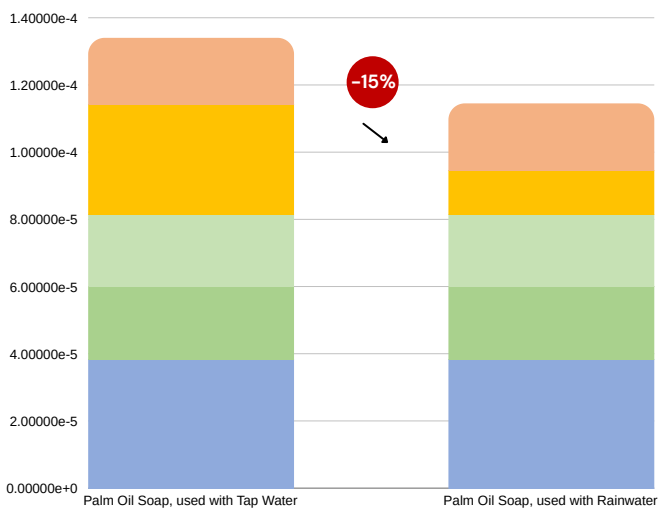
Item	Use life	Reference Flows
ALL	1	1

Assumptions

All variations are locally manufactured with the base oil imported via sea freight. Use phase includes 10 L water per use, generating wastewater at end-of-life. Packaging is assumed to be dumped in open pits.

Results of the computation





Stage	kgCO₂e	
	Scenario 1	Scenario 2
Raw Material	0.51	0.51
Production	0.16	0.16
Transportation	0.18	0.18
Use	0.52	0.13
End-of-Life	0.14	0.14

Stage	Human Health	
	Scenario 1	Scenario 2
Raw Material	3.83E-05	3.83E-05
Production	2.18E-05	2.18E-05
Transportation	2.15E-05	2.15E-05
Use	3.26E-05	1.31E-05
End-of-Life	1.99E-05	1.99E-05

Variations (% from baseline figures presented above)

To use alternative oils

Computation made by considering 100% palm kernel oil and 100% coconut oil

kgCO2e
Kernel +7% | Coconut +3%
Human Health
Kernel +6% | Coconut +40%

To use renewable energy for production

Computation made by considering 100% of heat from municipal incineration

kgCO2e
Better Heat -4%
Human Health
Better Heat -1%

To use a low-impact water supply

Computation made by considering harvested rainwater

kgCO2e
Rainwater -25%
Human Health
Rainwater -15%

To eliminate packaging

Computation made by considering no packaging with 100% crude oil

kgCO2e
Packaging-free -3%
Human Health
Packaging-free -2%

Analyses

The water usage during the use phase, as well as the raw material of the soap (i.e. vegetable oils) make up the majority of the impact of the soap. **Improving water supply can lead to 26% lower GHG emissions and 15% lower impact on human health**.

While **palm oil is commonly used and remains an impact-efficient choice**, it is important to consider its significant deforestation effects. RSPO-certified palm oil could be considered; its impacts were not modelled due to missing data on human health impacts.

Emission factors

The values displayed here are not per functional unit but per item. These values can be used to compute a carbon footprint of an organisation and can be adapted to a specific case using the tool

Name	GHG Protocol Categories	kgCO2e/unit
Cradle-to-grave	**N/A**	**1.5**
Cradle-to-gate	3.1 Purchased Goods	0.67
Distribution freight	3.4 and/or 3.9 Transportation	0.18
Use phase	3.11 Use of distributed product	0.52
End-of life	3.12 End of life of distributed product	0.14

References

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About this project

Designing methodologies and performing life cycle analyses of high-impact items to build a GHG emission factor and environmental impact database adapted to the humanitarian sector with the goal of identifying key strategies to reduce environmental impacts.

EPFL EssentialTech Center:
Dr. Grégoire Castella, Dr. Cara Tobin, Emeline Darçot

EPFL LEURE:
Dr. Sascha Nick, Ashima Rajput

International Committee of the Red Cross (ICRC):
Anna Maria Liwak, Carmen Garcia Duro

Climate Action Accelerator:
Bruno Jochum, Sonja Schmid, Paolo Sévègnes

Associated expert:
Dr. Damien Friot