LCA | Hygienic Pads

Description of Items

Single-use Pad
- Usage: 10 per period
- Materials: Polyethylene, paper, glue, wood pulp
- Mass: 11g

Reusable Pad
- Usage: 2 per period
- Materials: Polyester, cotton
- Mass: 43g

Functional unit

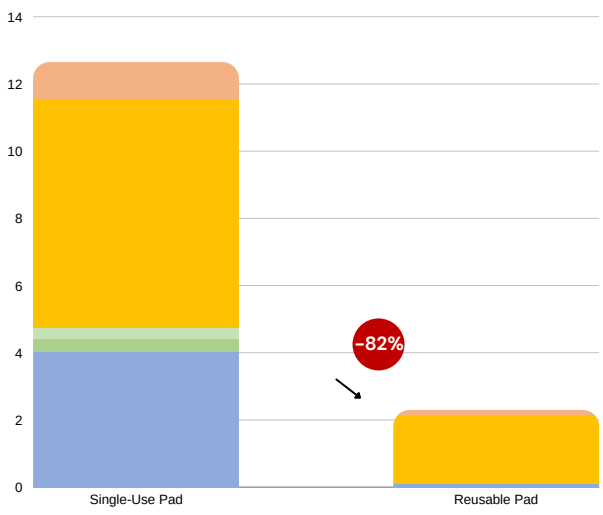
Use of pads for 12 periods

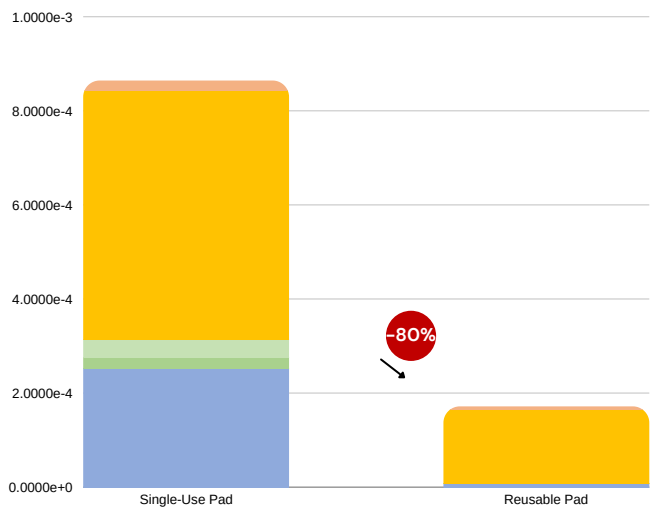
Item	Pads per period	Reference Flows
Single-Use	10	120
Reusable	2	2

Assumptions

Single Use pads are assumed to be bought locally whereas reusable pads are assumed to be produced in India and shipped to distribution location. Washing of hands assumed after every use of single-use pad, laundry assumed for reusable. All waste is burnt

Results of the computation





Stage	kgCO₂e	
	Single Use	Reusable
Raw Material	4.0302	0.1161
Production	0.3809	0.0184
Transportation	0.3273	0.0001
Use	6.8400	2.0160
End-of-Life	1.0734	0.1462

Stage	Human Health	
	Single Use	Reusable
Raw Material	2.53E-04	7.98E-06
Production	2.19E-05	5.70E-07
Transportation	3.94E-05	7.84E-09
Use	5.29E-04	1.57E-04
End-of-Life	2.11E-05	6.12E-06

Key Contexts

This study is uses the work of *Fourcassier, S. et al. (2022)* to establish GHG Emission Factors for single-use & reusable hygienic pads adapted to the humanitarian context, and analyse the environmental impact of the product's life cycle to identify key levers for impact reduction through a comparison between the two products for an extended time period.

Hygienic or sanitary pads are procured in large volumes by humanitarian organization. A standard single-use pad can only be used for up to **4 hours**, and therefore creates a large volume of waste due to its use. A reusable pad can be washed and reword repeatedly for up to **2 years**. This study compares these products to shed light on impact reductions that can take place in these contexts.

In humanitarian contexts, **water supply could be precarious and high-impact**, therefore this study takes into account the use of water to formulate the cradle-to-grave factor for these pads. Additionally, the use of soap and water to wash hands in considered during the use phase of the single-use pad, to further reflect its wastefulness.

Analyses

Changing the type of hygienic pad used can significantly lower the impact of the item, when assuming effective reuse of the pad, in this case for 12 periods, the **reduction in climate change is 82%** and **impact on human health is 80%**

The impacts to local ecosystems and water systems must be studied to expand on this result.

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	
		Single-Use	Reusable
Cradle-to-grave	N/A	0.11	1.15
Cradle-to-gate	3.1 Purchased Goods	0.04	0.07

References

Fourcassier, S. et al. (2022) 'Menstrual products: A comparable Life Cycle Assessment', Cleaner Environmental Systems, 7, p. 100096. Available at: https://doi.org/10.1016/j.cesys.2022.100096.

Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. '*The ecoinvent database version 3 (part I): overview and methodology*'. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at: http://link.springer.com/10.1007/s11367-016-1087-8.

Rajput, A., Tobin Greene, C. and Schmid, S. (no date) 'Life Cycle Assessment (LCA) Methodology'. Available at: https://climateactionaccelerator.org/wp-content/uploads/2025/06/EPFL_LCA_methodology_v1.0.pdf.

Repository of life cycle assessments - Climate Action Accelerator (2025). Available at: https://climateactionaccelerator.org/repository-of-lifecycle-assessments/.

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.

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