

Life Cycle Assessment (LCA) of ski skins: a case study of an industrial Swiss company

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LCA basically assess environmental impacts throughout the life cycle of a product. Here, a cradle-to-gate scope is used, taking into account upstream and internal production processes. Four impact categories are examined that are related to climate, abiotic and water resources, and human toxicity.



The final goal is to determine hot-spots within the value chain (processes generating high ecological impacts) and to mitigate it.

To do so, a Functional Unit (FU) of 1,000 m² of ski skins is chosen. It relates to the 2022 production.

OBJECTIFS ET RÉSULTATS

Determining these so-called "hot-spots" would allow the company to implement strategies aiming at reducing its environmental impact. In doing so, it will be compliant with the business strategy of the Oberalp Group (parent's company) and with the national climate goals. One important objective was to assess to what extent the company was financially concerned by two instruments of the Swiss climate policy: CO₂ levy and Emission Trading System (ETS). The results showed that it was not concerned by either as no fossil fuels were needed at the factory plant (taxed by CO₂ levies) and the approximate annual carbon footprint for the 2022 production was lower than the ETS threshold (2,756.48 << 25,000 t CO₂ eq). The other results are summarized within the table below where GWP = Global Warming Potential, ADP = Abiotic Depletion Potential, UDP = User Deprivation Potential, ADI = Acceptable Daily Intake.

	Impact contributor	GWP [kg CO ₂ eq]	ADP [kg Sb eq]	UDP [m ³ eq]	ADI [CTUs]
Model "Free 2.0"	Overall	14,106.40	$6.94 \cdot 10^{-2}$	-2,724.89	$1.82 \cdot 10^{-5}$
Model "Climb pro S-glide"	Overall	21,989.42	$7.35 \cdot 10^{-2}$	-880.94	$3.36 \cdot 10^{-5}$
Model "Climb pro mohair"	Overall	35,669.40	$9.47 \cdot 10^{-2}$	679.38	$5.77 \cdot 10^{-5}$

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