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Product Carbon Footprint for kozoommweo

Total PCF: **37.46 kg CO2e**

Functional Unit: **1.0 unit**

System Boundary: **Cradle-to-Gate + Use & EoL**

Total Product Footprint Lifecycle Stage Breakdown (Positive Emissions)

Materials	27.74 kg
Per 1.0 unit of kozoommweo	
Use Phase	12.50 kg
Carbon Intensity	0.96 kg
Logistics	
Outbound Logistics	0.83 kg
Based on 1.0 functional unit	
Manufacturing	0.81 kg
End-of-Life (Removal)	-5.38 kg

Top Material Hotspot

Aluminum Casing

17.50 kg CO2e (63.08% of material impact)

Material Impact Breakdown

Aluminum Casing	17.50 kg
ABS Plastic Housing	4.20 kg
PCB	2.25 kg
Li-ion Battery	2.00 kg
Other Materials	1.79 kg

Highlights & Hotspots

- **Material Impacts Dominate:** Raw material acquisition and pre-processing contribute the largest share (approx. 74%) of positive emissions due to energy-intensive materials like Aluminum and complex electronics.
- **Significant Use Phase Contribution:** The product's use phase accounts for about 33% of positive emissions, driven by electricity consumption over its 5-year lifespan and the regional grid mix.
- **Net Carbon Removal from EoL:** High recyclability (80%) and robust take-back programs result in a net carbon removal (-5.38 kg CO₂e) during the End-of-Life stage, showcasing circular economy benefits.

Recommendations for Reduction

1. **Material Optimization:** Source lower-carbon alternatives, increase recycled content, and explore lightweighting for high-impact materials.
2. **Renewable Energy Sourcing:** Expand renewable energy use in manufacturing beyond the current 75% and encourage supply chain partners to do the same.
3. **Use Phase Efficiency:** Enhance product energy efficiency during operation and educate consumers on sustainable usage to reduce downstream emissions.
4. **Logistics Optimization:** Improve transport routes, increase load factors, and consider lower-emission modes, particularly for inbound logistics.
5. **Enhance Circularity:** Continue strengthening take-back and refurbishment programs to maximize material recovery and avoided emissions.
6. **Primary Data Collection:** Implement robust systems for collecting primary data from suppliers to continually improve PCF accuracy.