



degrAway

GREEN ACCOUNTING

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Climate change, quality of ecosystems

Impact Categories	Total emission cap ⁻¹	1 capsule	The raw material for billion capsules	The emissions of 1 billion capsules
	kg CO ₂ -eq cap ⁻¹	g capsule ⁻¹	kg	kg CO ₂ -eq
Aluminum Capsule	$1,08 \times 10^{-3}$	0,95	950 000	1 081 900
Polypropylene (PP) Capsule	$2,08 \times 10^{-3}$	2,20	2 200 000	2 079 200
Home-Compost (HC) Biopolymer Capsule	$3,72 \times 10^{-4}$	2,50	2 500 000	372 000

In the study, we excluded the values for Transport and Secondary packaging from the analysis as they are not relevant to the current assessment. Biopolymers present a promising alternative to aluminum and polypropylene in coffee capsule production. According to the Life Cycle Assessment (LCA), the sustainability benefits of bioplastics are particularly evident when they are disposed of through household composting, which reduces environmental impact and minimizes the need for industrial composting. Their advantage is maintained even in the ten-year disposal scenario recommended by EU guidelines, further strengthening their competitive edge over fossil-based materials. Overall, the use of biopolymers supports the development of sustainable packaging solutions and a circular economy."

Source: [ScienceDirect](#)



Bio-Based Coffee Capsules — An Eco-Friendly Solution

Benefits:

Appealing to Environmentally Conscious Consumers:

Waste Reduction: Bio-based capsules significantly reduce waste and minimize environmental impact.

Guilt-Free Enjoyment: Compostable capsules allow consumers to enjoy their coffee without environmental guilt.

Cost Efficiency:

Minimized Collection Costs: Compostable bio capsules greatly reduce the costs associated with collection and recycling of capsules.



Cost Factors – Traditional Capsules:

Collection and Logistics Costs:

Collection Points Setup: High costs associated with setting up and maintaining collection points.

Transportation: Significant expenses related to the collection and transport of used capsules.

Processing Costs:

Inspection and Cleaning: Required processes for inspecting and cleaning materials.

Recycling: Special processing requirements for aluminum capsules.

Training and Wages: Costs related to training and wages for personnel at collection points.

By introducing bio-based capsules, Nespresso not only meets the needs of environmentally conscious consumers but also manages packaging waste more cost-effectively.

Emission Accounting Framework



We conduct a comprehensive Life Cycle Assessment (LCA) for the production and entire supply chain of DAT1, enabling precise measurement of emission reductions achieved.

- **Comprehensive LCA Analysis of the Entire Manufacturing Process**
 - **Cradle to Gate:** Detailed emission tracking based on data from the entire value chain using our developed methodology.
- **Emission Reduction Potential:**
 - **Comparative Analysis:** Detailed accounting allows for the identification of emission reductions compared to previous capsule materials.
- **Transparency:**
 - **Detailed Reporting:** Transparent data services available to our partners, validated by independent third parties.

Net Zero Capsule

Our emission calculation methodology not only assesses the impacts of bio-plastic production but also recommends specific reduction steps to significantly neutralize manufacturing emissions.

This is achieved through a combination of our developed accounting system, the negative emissions provided by bio-plastics, and the carbon credits generated by participating farmers in the supply chain.

Our strategic agricultural innovation partner's biologically-based solutions support increased biodiversity and the decarbonization of the green coffee supply chain, aiding in achieving net-zero emissions before the set deadline.

This integrated approach not only ensures sustainable development but also fosters continuous innovation, aligned with long-term environmental goals.



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