



2026

Notebook NTT Book B15

Product Carbon Footprint

Prepared by Plan Be Eco

14.05.2026

Methodology

How do we calculate the carbon footprint?

Product Carbon Footprint Methodology

The product carbon footprint (PCF) assessment was conducted in accordance with the GHG Protocol Product Life Cycle Accounting and Reporting Standard and aligned with the principles of ISO 14067. The objective was to quantify the total greenhouse gas (GHG) emissions associated with a plastic packaging product across selected life cycle stages.

The following stages were included in the assessment:

- Material acquisition (raw material extraction and processing),
- Production processes (on-site manufacturing activities),
- Transportation (logistics from suppliers to the production site and/or to customers),
- Utilization phase (typical use by end users, where relevant).

Emissions were calculated in terms of carbon dioxide equivalents (CO₂e), covering all relevant GHGs as defined by the GHG Protocol. The analysis was based on a combination of primary data (e.g., material inputs, energy consumption) and secondary data for background processes, including emission factors from reputable databases such as

- UK Government GHG Conversion Factors for Company Reporting 2024
- Aerospace Industry Tool for Calculating Scope 3 Greenhouse Gas Emissions of Purchased Goods & Services and Capital Goods
- BEIS
- Circular Ecology
- Exiobase

This PCF enables identification of emission hotspots along the value chain and supports informed decision-making for emission reduction and product optimization.

Uncertainty Statement

This PCF assessment relies on a combination of primary activity data and secondary emission factors from established databases. Uncertainty arises from the following sources:

- Emission factors: Secondary data from databases (UK GHG Conversion Factors 2024, Exiobase, Circular Ecology) carry inherent variability and may not precisely reflect site-specific conditions.
- Use phase: Electricity consumption is based on declared annual energy demand (17,96 kWh/year) and a minimum product lifespan of 4 years. Actual use patterns may vary by end-user.
- Material acquisition: Spend-based estimation methods for electronic components introduce higher uncertainty than primary supplier data; this category represents the single largest source of modelling uncertainty.

The overall results are considered indicative of the product's relative emission profile. Replacing spend-based estimates with primary supplier data in future assessments would materially reduce uncertainty for the dominant emission category.

Basic information:

Parameter	Value
Product Weight	1,72 kg
Minimum Product Lifespan	4 years
Location (Energy Grid)	Poland
Annual Energy Demand (TEC)	17,96 kWh / year
Global Warming Potential (GWP100)	218.75 kg CO ₂ e / pcs

Carbon footprint results

This report was prepared in accordance with the life cycle assessment (LCA) methodology for the product Notebook NTT Book B15 as of April 29, 2026

Carbon footprint

The carbon footprint of one piece of Notebook NTT Book B15 is 218,7543 kg co2e

218,75 kg CO₂e

Phase	kg CO ₂ e / 1 pcs
Material acquisition	98.9883
Transport upstream	30.5694
Production processes	21.2662
Transport downstream	3.2832
Use phase	59.5913
Utilization phase	11.0270

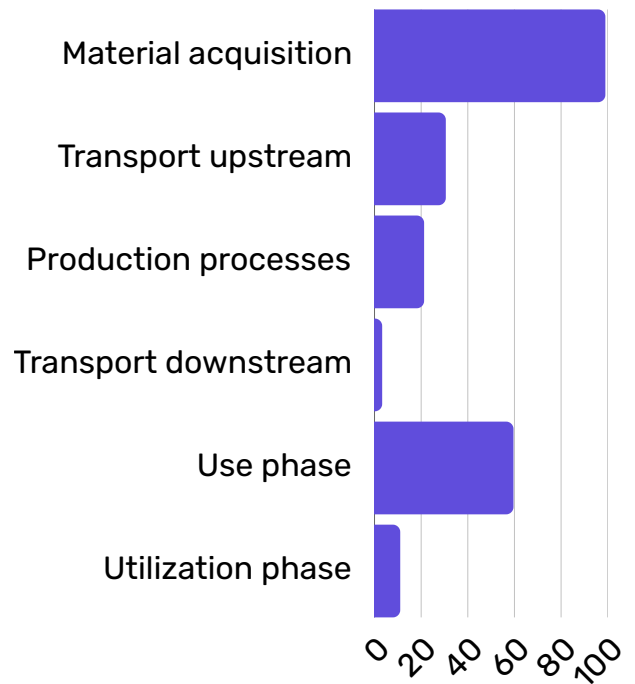


Chart 1. Distribution of Product Carbon Dioxide Equivalent Emissions Across LCA Phases

Table 1. Distribution of Product Carbon Dioxide Equivalent Emissions Across LCA Phases

kg CO₂e

Analysis of Results:

Hotspot Analysis

Raw materials (A1: 98.99 kg CO₂e, 45.3%) is the dominant life cycle stage. Within this category, active electronic components account for 97.9% of stage emissions (96.86 kg CO₂e, 44.3% of total), reflecting the high emission intensity of global electronics supply chains. Passive electronic components contribute a further 1.9% of stage emissions (1.91 kg CO₂e).

Use phase (B1: 59.59 kg CO₂e, 27.2%) captures electricity consumption over the operational lifetime. The Polish energy mix is identified as a contributing process (3.32 kg CO₂e); results are sensitive to the carbon intensity of the end-user's electricity grid.

Transport of raw materials (A2: 30.57 kg CO₂e, 14.0%) represents a material secondary hotspot, driven by the global sourcing of electronic sub-components.

End-of-life treatment (C4: 26.31 kg CO₂e, 12.0%) contributes non-negligibly, with mixed e-waste landfill disposal (15.28 kg CO₂e) and open-loop recycling (11.03 kg CO₂e) together accounting for the full stage impact. Transport to customer (A4) and manufacturing processes (A3) together represent less than 2% and are not material hotspots.

Summary and Conclusions

The life cycle carbon footprint of the assessed product is 218.75 kg CO₂e per unit (ISO 14040/14044, cradle-to-grave).

Three hotspots drive the result: material acquisition (A1, 45.3%), dominated by active electronic sub-components; the use phase (B1, 27.2%), driven by operational electricity consumption; and raw material transport (A2, 14.0%). Together they account for over 86% of total emissions.

Key reduction opportunities:

- Component sourcing – active electronic components represent a single, outsized hotspot at 44.3% of total emissions; engaging suppliers on renewable energy procurement or increasing recycled material content offers the highest reduction potential
- Energy efficiency – reducing device power consumption directly lowers use-phase emissions, with disproportionate impact in carbon-intensive grid markets such as Poland
- End-of-life design – C4 accounts for 12% of the footprint; design for disassembly and certified e-waste take-back programmes can shift waste streams toward closed-loop recycling and reduce landfill-related emissions

Summary

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