

# Product life cycle report

Libra Partners





# Environmental Life Cycle Assessment, LCA

An LCA (Life Cycle Assessment) analysis determines the environmental impact of a product or system throughout its life cycle and identifies the most carbon-intensive stages of the manufacturing process. A product's life cycle consists of raw materials, production, transportation, use and end of life (disposal/recycling) phases.

The steps in an LCA analysis include defining the purpose and scope, life cycle analysis (input-output analysis), assessing the environmental impact of the product, and interpreting the results.

## Guidelines

**The LCA analysis methodology is defined by the following documents:**

- ISO 14040 - Environmental management, Life cycle assessment, Principles and structure
- ISO 14044 - Environmental management, Life cycle assessment, Requirements and guidelines
- ISO 14025 - Environmental labels and declarations, Type III environmental declarations, Principles and procedures
- Product Environmental Footprint Category Rules Guidance (PEFCR).
- Product Category Rules (PCR) - a document containing recommendations for performing an LCA analysis of a specific product or product from a specific industry.

## Date of creation of the analysis

August 2023.

The analysis was based on data obtained by Libra Partners.

# Manufacturer details

## Organization

Libra Partners



## Description of the organization

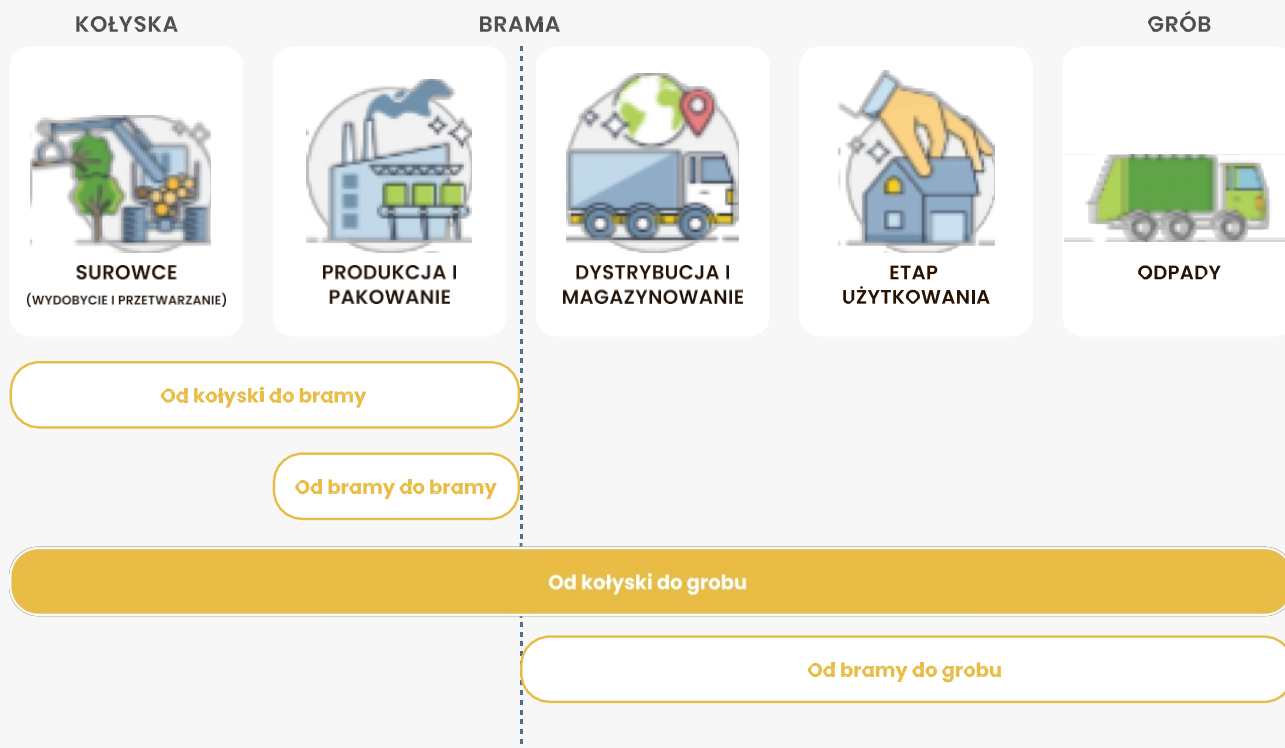
Libra Partners is a manufacturer of innovative recycled plastic pallets. The pallets are characterized by low weight and high strength, confirmed according to the ISO 8611 standard. Libra Partners' main goal is to care for the environment, hence the organization gives plastic waste a "new life" by producing pallets from it. Libra Partners is creating a Closed Circuit Economy. By using the company's products, they have a chance to reduce their carbon footprint and CO2 emissions.

## Contact information

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# Scope of LCA analysis



For the purpose of this analysis, NPCR 023 Packaging products and services, The Norwegian EPD Foundation document published in 2019 and valid until 2024, was used.

Based on the document, the scope of the analysis was established - **from cradle- to-grave (cradle-to-grave)** covering the entire product life cycle, consisting of the product phase, supply phase, use phase and end-of-life phase.

- The **product phase (A1-A3)** includes the processes involved in obtaining and transporting raw materials and producing the product.
- **The delivery phase (A4)** is associated with the transportation of the finished product to the distribution point.
- **The use phase (B1-B2)** includes distribution of the product to the customer and maintenance and repair.
- **The end-of-life phase (C1-C4)** are the processes involved in processing and disposing of waste generated at the end of a product's useful **life**.

## Category

The environmental impact category presented in this report is the product's carbon footprint, expressed in kilograms of carbon dioxide equivalent (kgCO<sub>2</sub>eq).

# Product information

## Product name

Standard pallet Model MW01

## Product certifications

ISO 8611

ISO 9001 - under implementation

## Location of the production site

Sieradz, Poland



## Product information

<b>Product name</b>	Standard pallet Model MW01
<b>Product identifier</b>	-
<b>Product description</b>	Standard pallet designed for all industries. Manufactured from recycled HDPE raw material, according to strict ISO 9001 management system control (under implementation)
<b>UN CPC Code</b>	Not
<b>NACE Code</b>	applicable
<b>Geographical scope</b>	Not applicable
	Europe

## LCA assumptions

<b>Functional unit Basic material Product</b>	1 pallet (pcs.)
<b>dimensions Product</b>	HDPE 50%, recycled HDPE 50%
<b>volume Product weight</b>	1200 mm x 800 mm x 144 mm
<b>Reference useful life Data</b>	0,138 m3
<b>collection period</b>	9 kg
<b>Database Scope of analysis</b>	70 loading/unloading cycles
	-
	AIB 2022, Defra 2023
	Cradle-to-Grave





# Results of the analysis

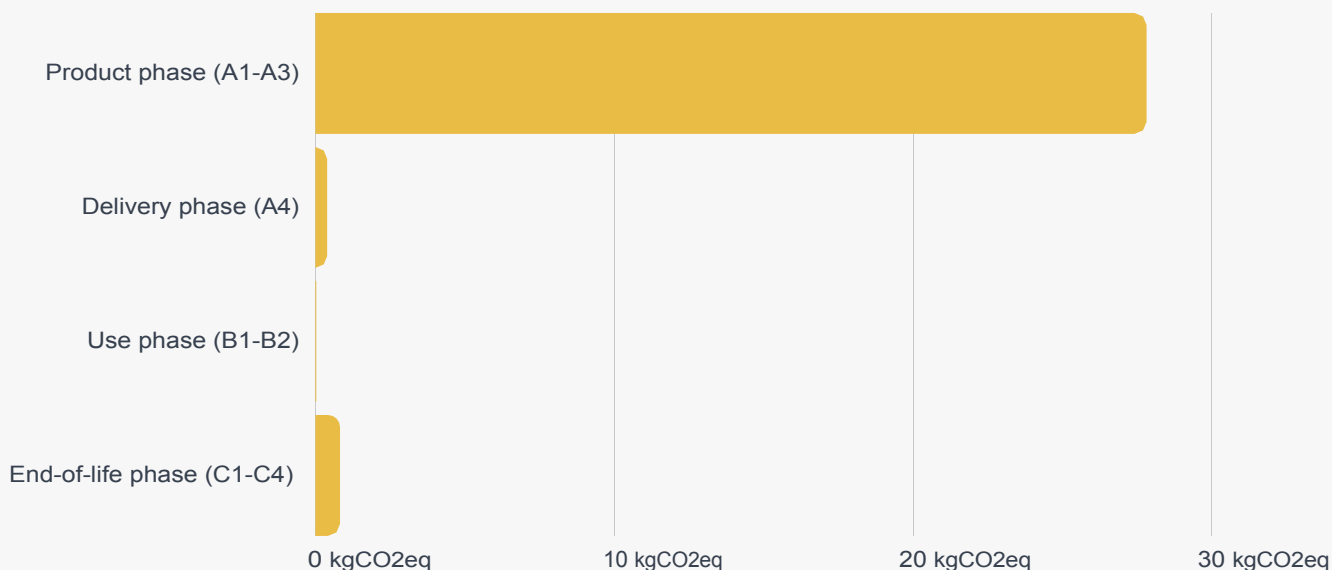
The carbon footprint of one product unit (one pallet) is **29.0549 kgCO<sub>2</sub>eq**. Product

phase (A1-A3) - 27.8413 kgCO<sub>2</sub>eq

Delivery phase (A4) - 0.3846 kgCO<sub>2</sub>eq

Use phase (B1-B2) - 0.0155 kgCO<sub>2</sub>eq

End-of-life phase (C1-C4) - 0.8136 kgCO<sub>2</sub>eq



## Expert commentary

The results suggest that the main emissions are related to the product phase (raw material acquisition and production process), while the supply, use and end-of-life phases have a relatively small impact on the carbon footprint. The main share of the product phase's emissions is accounted for by the raw materials used in production - 50% are virgin, 50% are recycled. Distribution of the finished product is done without intermediaries, and no additional resources are needed for use - the low emissions in the supply and use phases are a result of this. The company uses a closed-circuit economy, the products after use are ground and reused as raw material for the next pallets.

Further analysis may include exploring available strategies to improve the energy efficiency of the manufacturing process, reduce material consumption, increase the proportion of recycled raw materials and optimize logistics to minimize environmental impact.

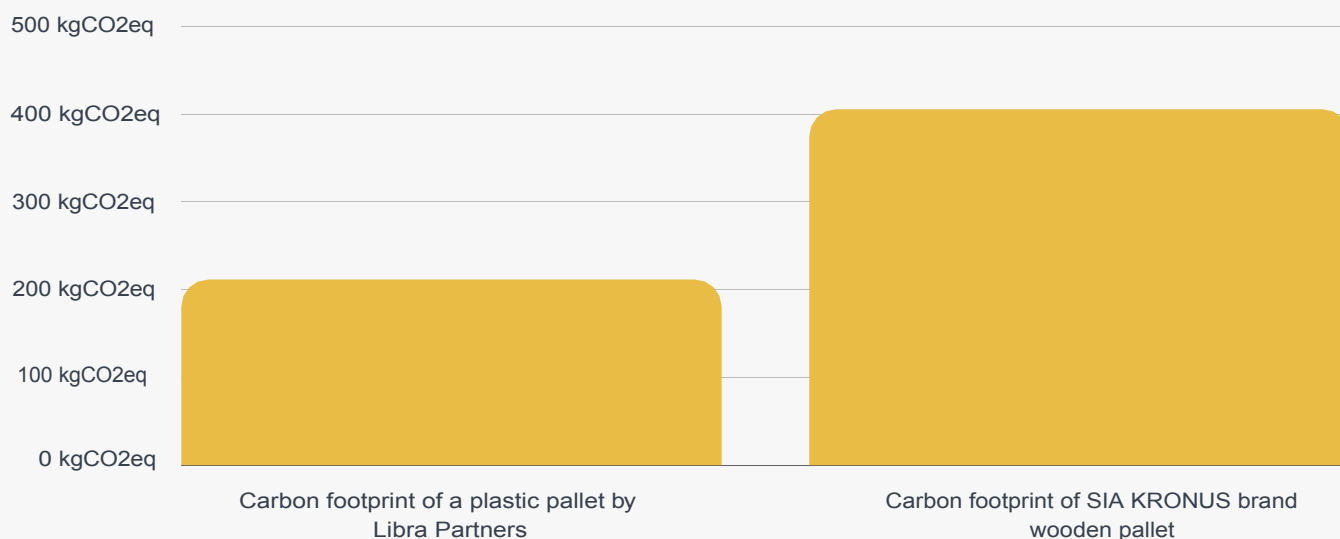
## Comparison of results

A comparative analysis of the results of the LCA analysis of the pallet manufactured by Libra Partners discussed in this paper with the wooden pallet manufactured by SIA KRONUS was performed. The results of the LCA analysis for the wooden pallet were obtained from the environmental product declaration (EPD) published on April 5, 2023 and approved by EPD International.

Both LCA analyses were conducted to the same extent (cradle-to-grave).

The wooden pallet from SIA KRONUS\* and the plastic pallet from Libra Partners have the same purpose and dimensions. They differ in weight - the wooden pallet weighs 24 kg, while the plastic pallet weighs 9 kg, which is due to the use of lighter materials by the manufacturer Libra Partners.

- Carbon footprint of Libra Partners brand plastic pallet (per m3): 211 kgCO<sub>2</sub>eq.
- Carbon footprint of SIA KRONUS brand wood pallet (per m3): 405 kgCO<sub>2</sub>eq.



\*Environmental Product Declaration SIA KRONUS S-P-08950, 2023.

## Bibliography

- NPCR 023 Packaging products and services, The Norwegian EPD Foundation, 2019
- Environmental Product Declaration SIA KRONUS S-P-08950, 2023
- Department for Energy Security and Net Zero (DESNZ) and Department for Environment, Food and Rural Affairs (Defra), Conversion factors 2023
- Association of Issuing Bodies (AIB), European Residual Mixes 2022

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# Environmental footprint of the product

A product's environmental footprint is a measure of the greenhouse gas emissions associated with the production, distribution, use and post-processing of a product.

To calculate it, a Life Cycle Assessment (LCA) method is used to estimate the total greenhouse gas emissions associated with a product and to identify the most carbon-intensive steps in the production process.

## The LCA method includes four steps:

1.

### Defining the boundaries of the system

In this stage, the scope of the system under study is defined, i.e. the boundaries within which greenhouse gas emissions will be considered.

2.

### Life cycle analysis

At this stage, the amount of greenhouse gas emissions at each stage of the production process and during transportation, storage and use of the product is determined.

3.

### Impact assessment

This stage determines the impact of greenhouse gas emissions on the environment, such as climate change, land degradation or water consumption.

4.

### Interpretation of the results

Life cycle analysis helps determine which steps in the production process generate the most emissions and what actions can be taken to reduce a product's carbon footprint.



## Product sustainability

1. Data entry into the form
2. Generate product environmental reports
3. Increase the competitiveness of the product

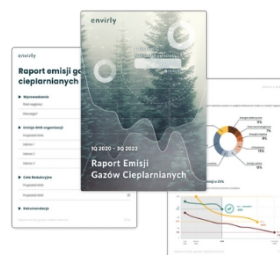
# ENVIRLY

Envirly is a comprehensive solution in the form of a web-based platform for organization carbon footprint management, product and ESG reporting. It supports in collecting data, analyzing and monitoring emissions, and setting reduction targets and tracking their achievement.

1.

## ESG sustainability reporting, GRI

Envirly provides a tool for full ESG reporting in accordance with international standards and guidelines. In addition, the tool can be used by companies to apply for ESG certifications and ratings, such as CDP, S&P Global Ratings MSCI, SAM.



2.

## Organization's carbon footprint GHG Protocol, ISO 14064-1

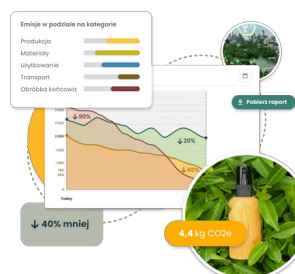
Envirly's innovative approach is based on 3 foundations: data analytics, creating a company's "emissions twin," and facilitating process optimization to reduce CO2 emissions. All this in compliance with the international GHG Protocol and ISO 14064-1 standards, confirmed by an independent TUV Nord audit.



3.

## Environmental footprint of the product PCF, LCA, EPD

Calculate a product's carbon footprint with a Life Cycle Assessment (LCA) method that estimates the total greenhouse gas emissions associated with a product and identifies the most carbon-intensive steps in the manufacturing process. Enter data into an intuitive form and generate Environmental Product Declarations (EPDs) with ease.



## Contact

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