Presentation Miljögiraff AB
2026-05-05

In search of sustainability

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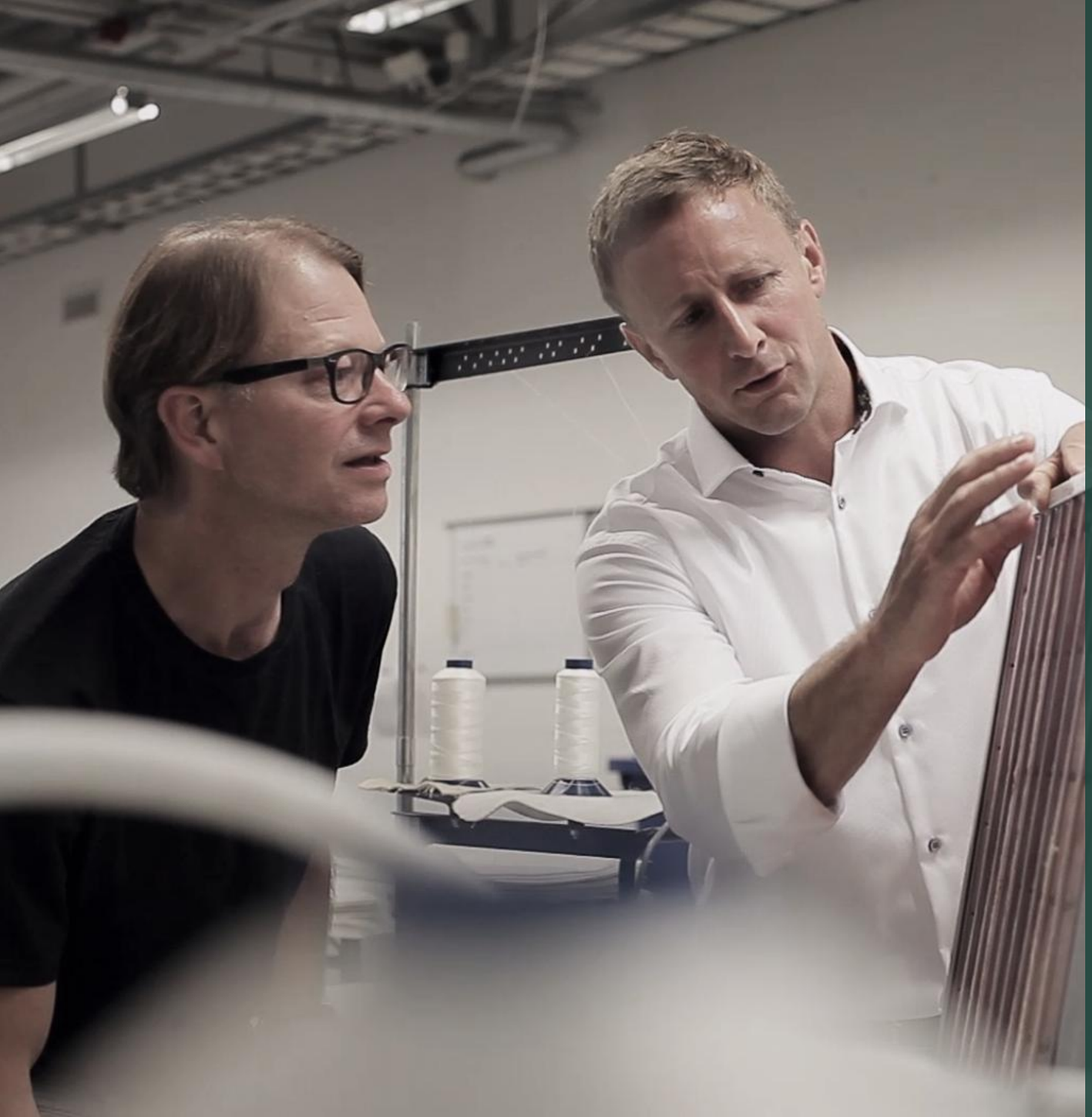
Main points

Why do we need LCA

LCA methodology



We have been creating sustainable development with a life cycle perspective since 2003

Miljögiraff offers support in developing environmental strategic knowledge and metrics for strategic decisions and process management.

We support you in ongoing efforts with evaluation and development so that you can drive sustainable development.

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Why do we need to conduct an LCA?

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Planetary Boundaries

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Why do we need Life Cycle Assessment?

To understand the total impact

To find strategies that lower the environmental impact

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LCA as a standardized method

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Method

“Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle”.

Definition av LCA enligt ISO – International Organization for Standardization (ISO 14044:2006). (ISO 14044:2006).

LCA is a method used to answer questions such as:

- How does the product affect the environment?
- What are the most important environmental impact categories?
- At what point in the life cycle does the impact occur?
- What solutions could be effective?

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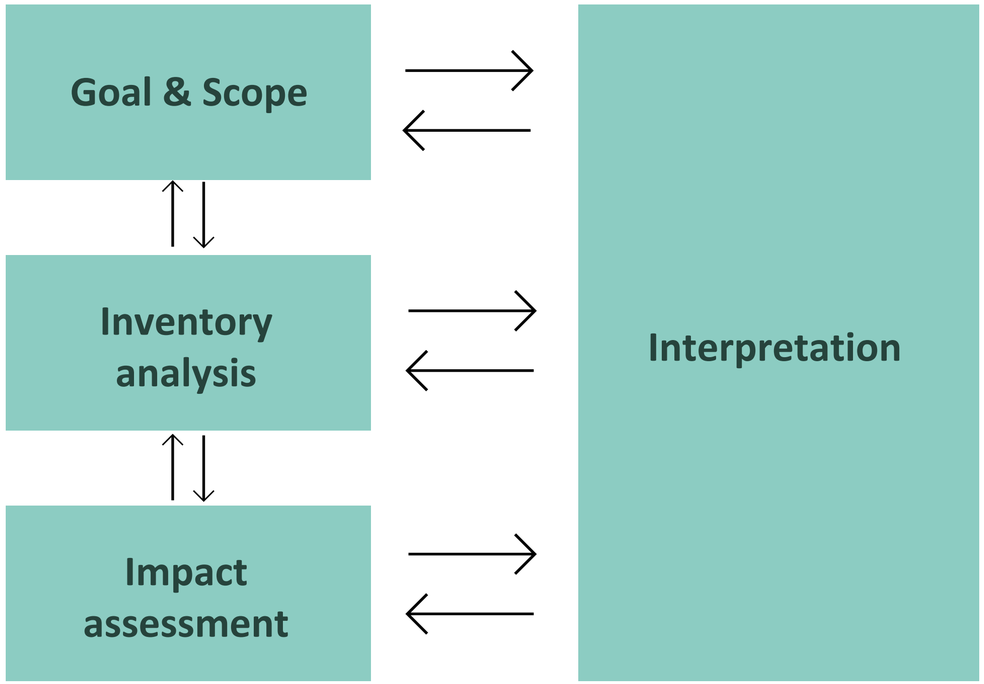
Standards to help us navigate

ISO - International Organization for Standardization

It ensures consistency, transparency, and credibility in Life Cycle Assessment (LCA) studies.

Life Cycle Assessment according to ISO 14040 - 14044



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Components for high quality LCA

Databases
All input data needs to be represented by Life Cycle Inventory (LCI) data. For this official databases can be used; for example, ecoinvent.

Impact assessment methods
An impact assessment method translates the input data into the environmental impact. Example of an impact assessment method is Environmental footprint 3.1 or IPCC 2021 GWP 100

LCA software
A LCA software tool is needed to build up a model of the product system using LCI data and applying impact assessment methods
Example of LCA software is SimaPro.

Sufficient knowledge to interpret the results

Create value with LCA

Product development	Strategy	Communication
Improvements in product and design decisions	Create guidelines for sustainability strategies	Sustainability report such as CSRD
Increase supplier engagement	Identify action for lower climate impact	Communication of climate impact to customers and for procurments
	Identify new business opportunities	Create EPD

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Woodcomposite

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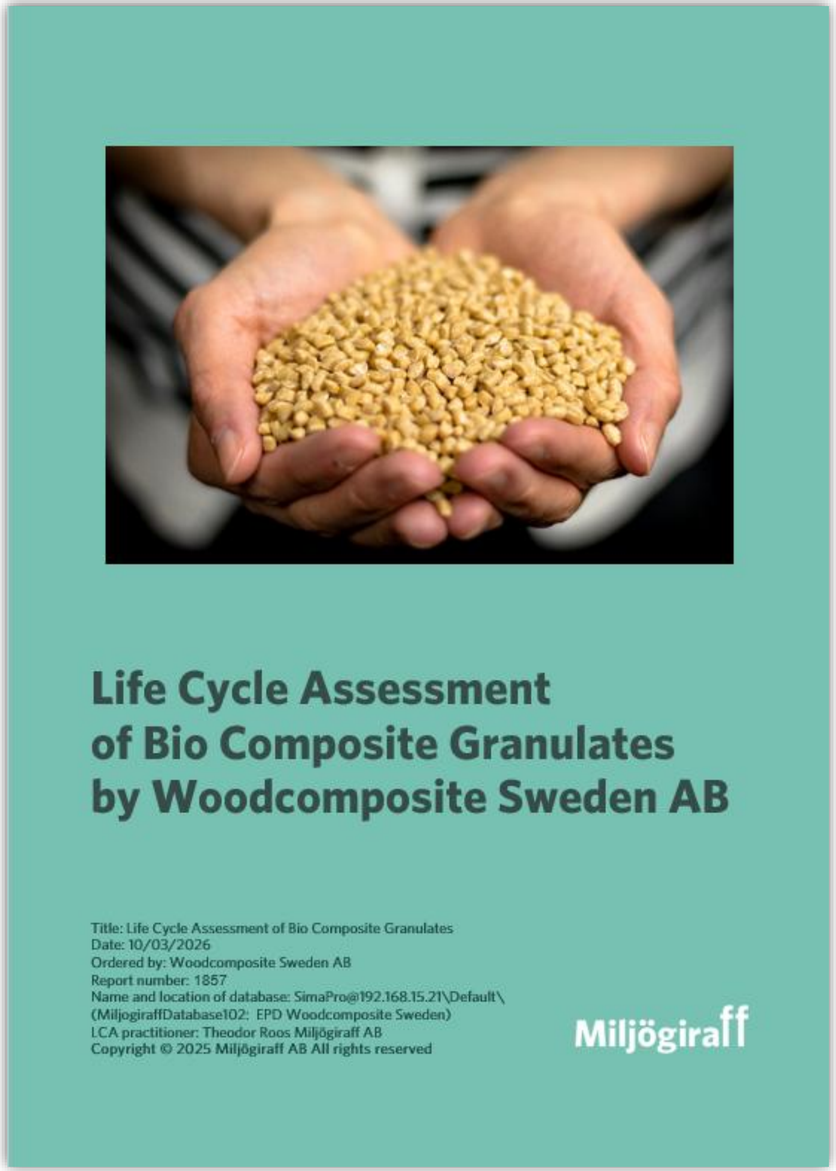
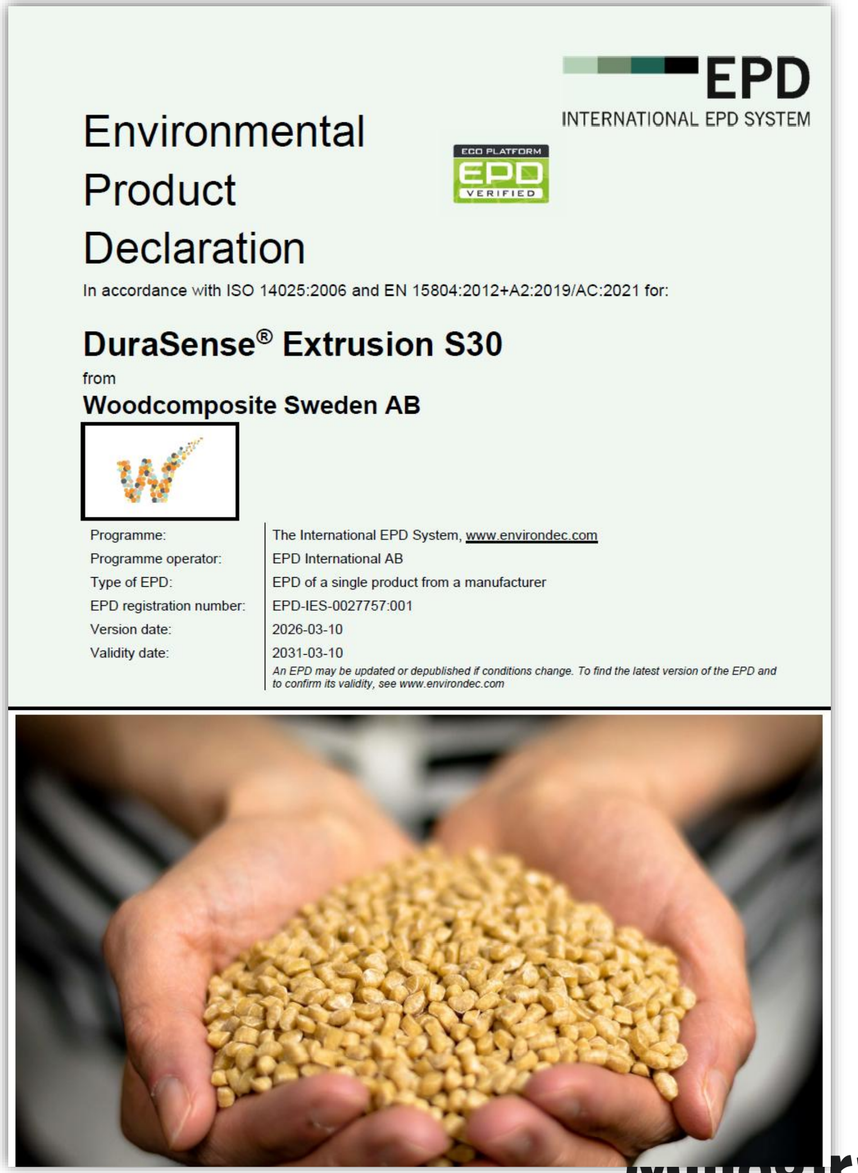
The Report

Report gives transparency





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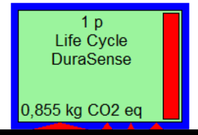
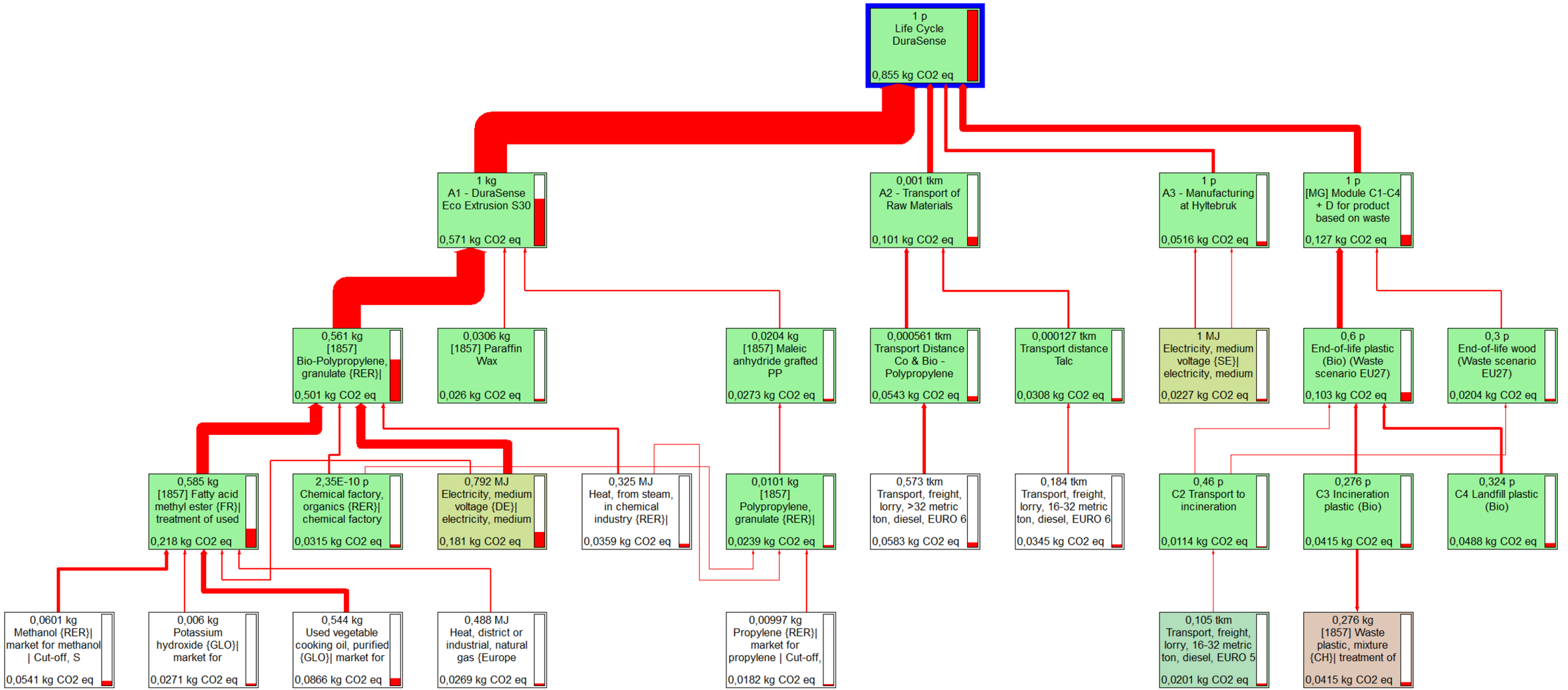
The Results



The Report



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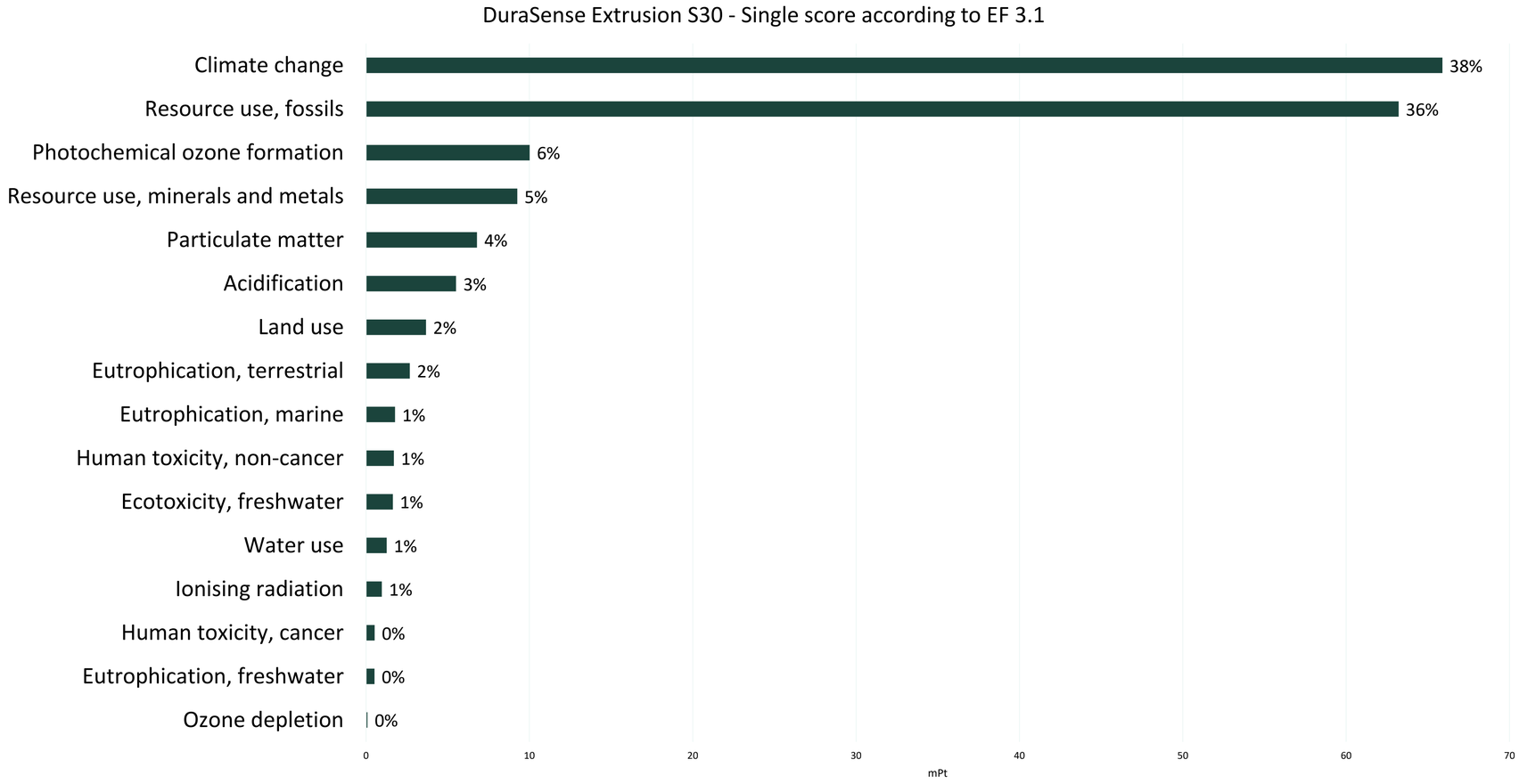
Results


DuraSense Extrusion S30 - Single score according to EF 3.1
Climate change
Resource use, fossils
Photochemical ozone formation
Resource use, minerals and metals
Particulate matter
Acidification
Land use
Eutrophication, terrestrial
Eutrophication, marine
Human toxicity, non-cancer
Ecotoxicity, freshwater
Water use
Ionising radiation
Human toxicity, cancer
Eutrophication, freshwater
Ozone depletion
38%
36%
6%
5%
4%
3%
2%
2%
1%
1%
1%
1%
1%
0%
0%
0%
0
10
20
30
40
50
60
70
mPt

Recommendations

- **Prioritise bio-based polypropylene and renewable raw material**
  The results show that replacing fossil PP with bio-based PP significantly reduces the climate impact in the raw material stage. Future product development should continue to increase the share of renewable polymers and optimise sourcing from low-impact, biogenic supply chains.

- **Improve end-of-life management to reduce dominant GWP contributions**
  Since end-of-life treatment accounts for 60–74% of total climate impact, the greatest improvement potential lies in shifting away from incineration. Increasing the recyclability of the material, designing for material separation, or enabling mechanical or chemical recycling pathways would substantially reduce end-of-life emissions.

- **Optimise product design for longevity and reduced material use**
  Reducing the overall amount of polymer needed per functional unit, increasing material efficiency, or designing products for longer service life will directly lower the total climate impact for both variants. Lightweighting and improved fibre–polymer interactions may further reduce PP demand.

- **Enhance circularity through take-back schemes or closed-loop recycling**
  Implementing take-back systems, partnering with waste handlers, or developing closed-loop processes for production scrap and post-consumer bio-composites could reduce reliance on incineration and improve resource efficiency. This would also increase the climate benefits beyond the system boundary (Module D).

- **Continue improving energy efficiency in manufacturing**
  While the manufacturing stage contributes relatively little, further reducing electricity demand or sourcing low-carbon electricity can strengthen the climate performance of both materials. Process optimisation, heat recovery, and efficient extrusion technologies can provide incremental benefits.

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Recommendations

We should not aim to do only what is good — we should aim to do what is as good as possible.

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Green Loop

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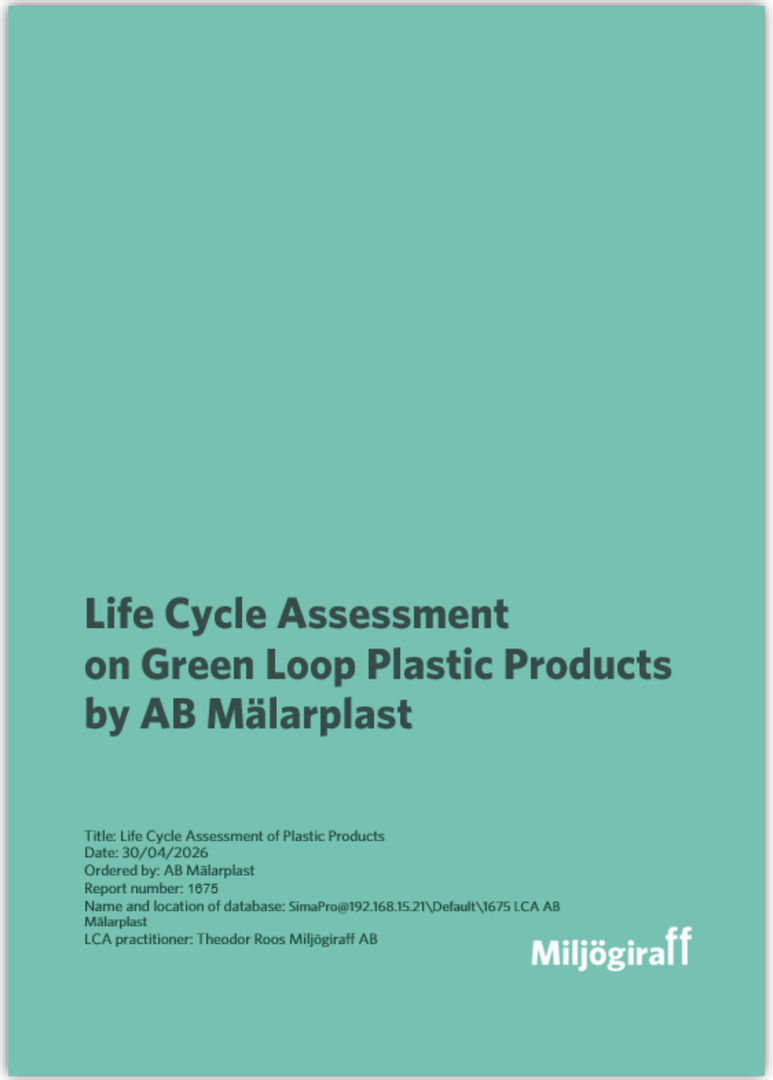
Green Loop

Why transperancy is key

System Boundary
Functional Unit



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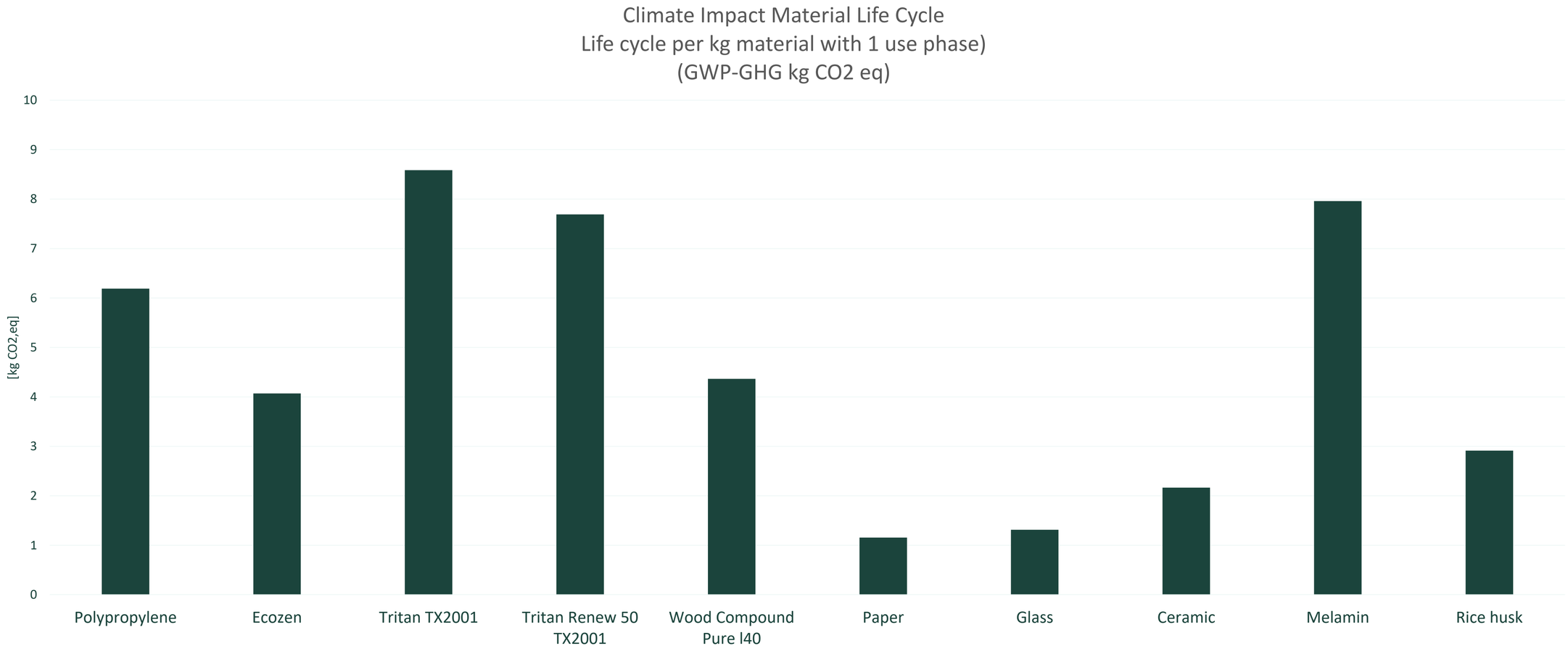
The Results



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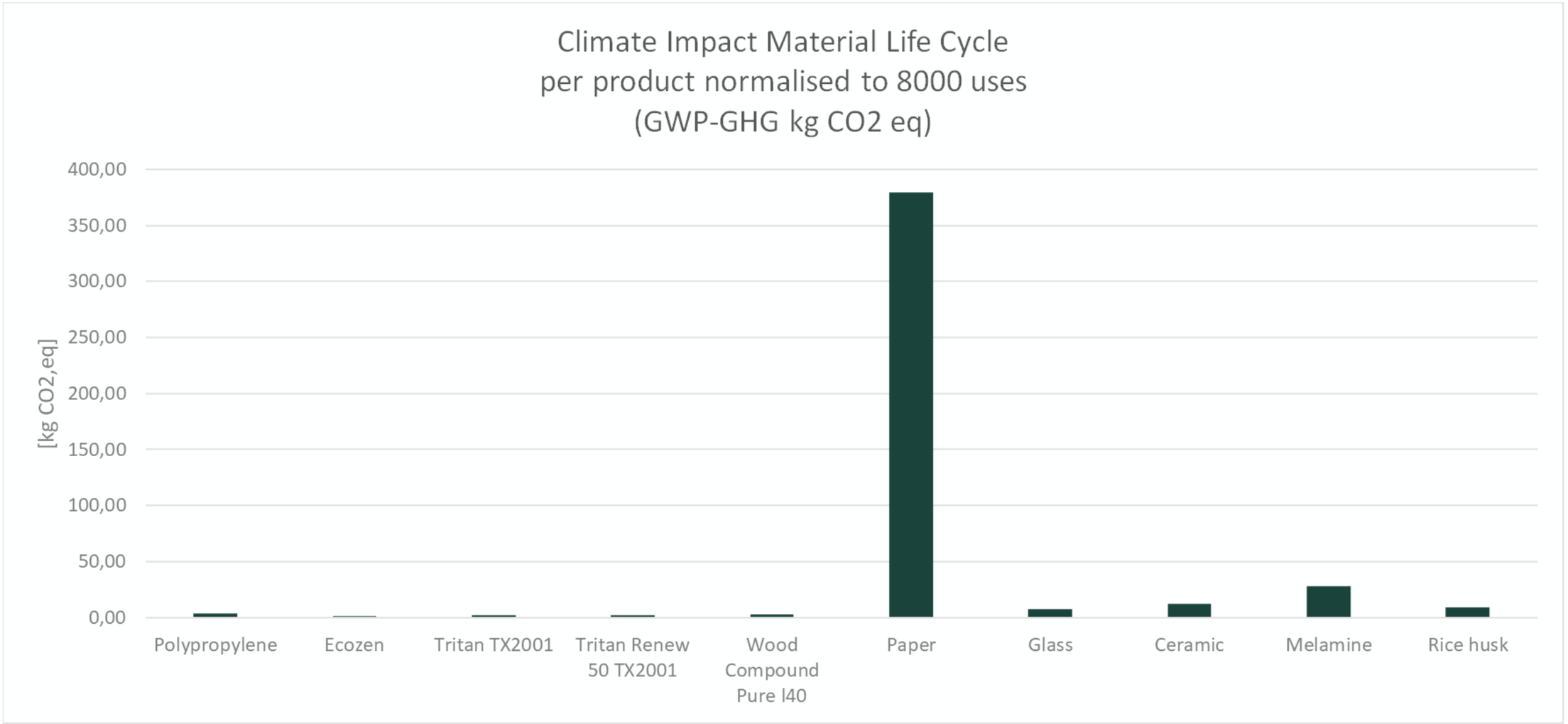
The Results



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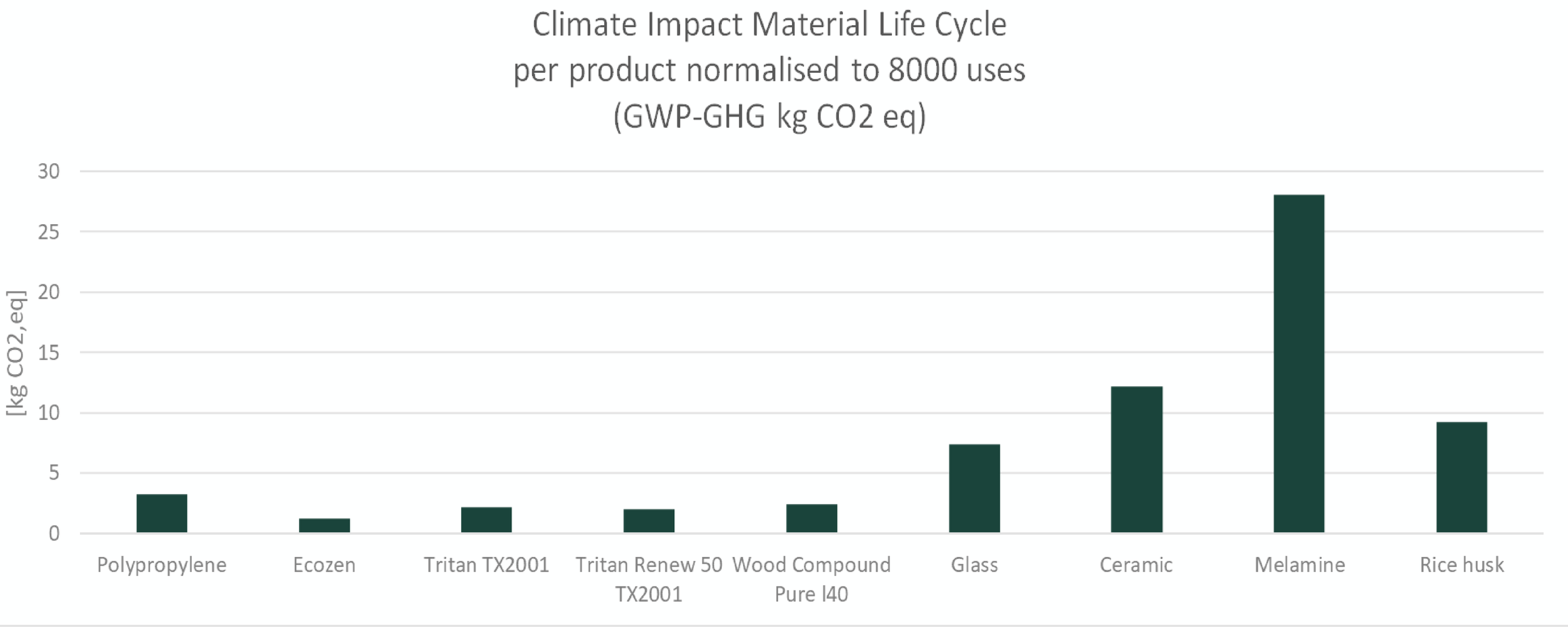
The Results



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Few materials, many products

Calculation-fil to extracte the GWP-GHG climate impact (kg CO2,eq.) on Mälarplasts Green Loop plastic products from cradle-to-grave

Developed by: Miljögiraff

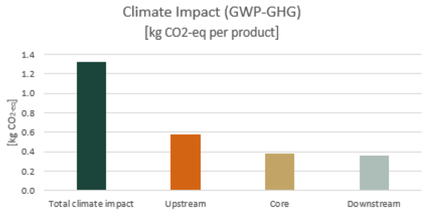
AB MÄLARPLAST
Sveriges grönaste plastföretag

Calculation tool for assessing the climate impact of Mälarplast's Green Loop products according to the GWP-GHG method, for a single product, from cradle to grave. The climate impact has been analysed and calculated in accordance with ISO 14040 and ISO 14044, based on operational data from 2022, with additional updated data from 2024. A comprehensive inventory of all operations and upstream activities forms the basis of the analysis. The results includes climate impact in kg CO_2 equivalents from cradle-to-grave, covering the entire production process, including raw materials, energy use, consumables, packaging, transportation and waste treatment at end-of-life. This baseline is used to

Step-by-step guide to gain relevant results,
1. Adjust relevant system parameters below in Green cells (B27-B29). Parameters reflects, amount of losses in producition, number of use-phases, and packaging type.
2. Adjust product-specific parameters in Green rows (32-89) and cells (B-D). Parameters defines, type of raw material, production site, and size of product.
3. After step 1 & 2 you can gain a more visual representation onresults of specific products by choosing relevant product in drop-down meny in cell A14.

Results per product

Green Loop Tallrik Ø24cm	Material: Polypropylene with 8 material use-phase(s) and with a weight of 0,000 kg	Climate Impact [kg CO2,eq]
Total climate impact		**1.32**
Upstream		0.579
Core		0.385
Downstream		0.356



Documentation on LCA model, methodology and more can be found in LCA report written by Miljögiraff
Source: Life Cycle Assessment on Green Loop Plastics Products by AB Mälarplast (Miljögiraff, 2025)
Disclaimer:
The calculation is based on specific data combined with generic data from Ecoinvent (v.3.10) database.
Note that raw data from Ecoinvent are under license and not allowed to be spread.

Parameters for calculation	
Losses in produktion (%)	10.38%
Number of use-phases	8
Packaging type	RELOOPEMB006

Produktnamn	Material	Production site	Product size (energy demand in recycling)	Total per use [kg CO2,eq]	Total [kg CO2,eq]	Upstream	Core	Downstream	Product weight [kg]
Green Loop Tallrik Ø24cm	Polypropylene	Mälarplast	Large	0.00083	1.32	0.58	0.39	0.36	0.112
Green Loop Tallrik Ø23,5 cm	Ecozen	Mälarplast	Small	0.00016	1.25	0.43	0.41	0.41	0.156
Green Loop Tallrik Ø18 cm	Ecozen	Mälarplast	Small	0.00008	0.65	0.23	0.21	0.21	0.082
Green Loop Djup tallrik Ø24cm	Ecozen	Mälarplast	Small	0.00014	1.08	0.37	0.37	0.35	0.133
Green Loop Djup tallrik Ø23,5cm	Ecozen	Mälarplast	Small	0.00017	1.39	0.48	0.45	0.46	0.176
Green Loop Djup tallrik Ø18cm	Ecozen	Mälarplast	Small	0.00009	0.71	0.25	0.23	0.23	0.090
Green Loop Mugg med handtag	Ecozen	Mälarplast	Small	0.00010	0.77	0.25	0.28	0.24	0.090
Green Loop Mugg med två handtag	Ecozen	Mälarplast	Small	0.00010	0.80	0.26	0.29	0.25	0.095
Green Loop Kantin GN 1/9x100 mm	Ecozen	Mälarplast	Small	0.00016	1.28	0.31	0.63	0.34	0.112
Green Loop Kantin GN 1/6x65	Ecozen	Mälarplast	Small	0.00018	1.43	0.35	0.70	0.38	0.127
Green Loop Kantin GN 1/6x150	Ecozen	Mälarplast	Small	0.00030	2.44	0.63	1.13	0.68	0.230
Green Loop Kantin GN 1/4x65 mm	Ecozen	Mälarplast	Small	0.00024	1.93	0.52	0.86	0.55	0.190
Green Loop Kantin GN 1/4x100 mm	Ecozen	Mälarplast	Small	0.00034	2.75	0.75	1.22	0.79	0.274
Green Loop Kantin GN 1/4x150 mm	Ecozen	Mälarplast	Small	0.00039	3.08	0.86	1.33	0.89	0.314
Green Loop Kantin GN 1/3x65 mm	Ecozen	Mälarplast	Small	0.00036	2.90	0.81	1.26	0.83	0.296
Green Loop Kantin GN 1/3x100 mm	Ecozen	Mälarplast	Small	0.00041	3.30	0.95	1.39	0.97	0.345
Green Loop Kantin GN 1/3x150 mm	Ecozen	Mälarplast	Small	0.00048	3.88	1.17	1.54	1.17	0.426

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