

Find us at stand 239 – near the Shell networking lounge.

Reducing Product Carbon Footprints of Lubricants – From business values to understanding lubricant PCF

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Why do companies in the
lubricant, grease and chemical
value chain work on product
carbon footprints?

Why do companies work on product carbon footprint calculations?

Because product carbon footprint calculations create business value!

Reputation and customer relation

- Appeal to customers, investors, and employees
- **Your customers request them**

Risk Mitigation

- **Compliance with laws and policies – ESPR/CSRD**
- Strategic planning

Cost Reduction

- Optimize material and energy efficiency
- Optimize procurement of material and energy

Revenue Increase

- Higher margins for low-emission products
- **Green company marketing**

How can we achieve these
business values and calculate
product carbon footprints?

With Trust & Consistency

- Be transparent and open about your approach
- Stick to existing standards, accepted by industry
- Get the methodology and its application certified



Lubricants Life Cycle Assessment and Carbon Footprinting—Methodology and Best Practice

UEIL/ATIEL and API method, TfS, Catena-X, PEF & ISO standards



Certified Calculation Method
Regular Surveillance



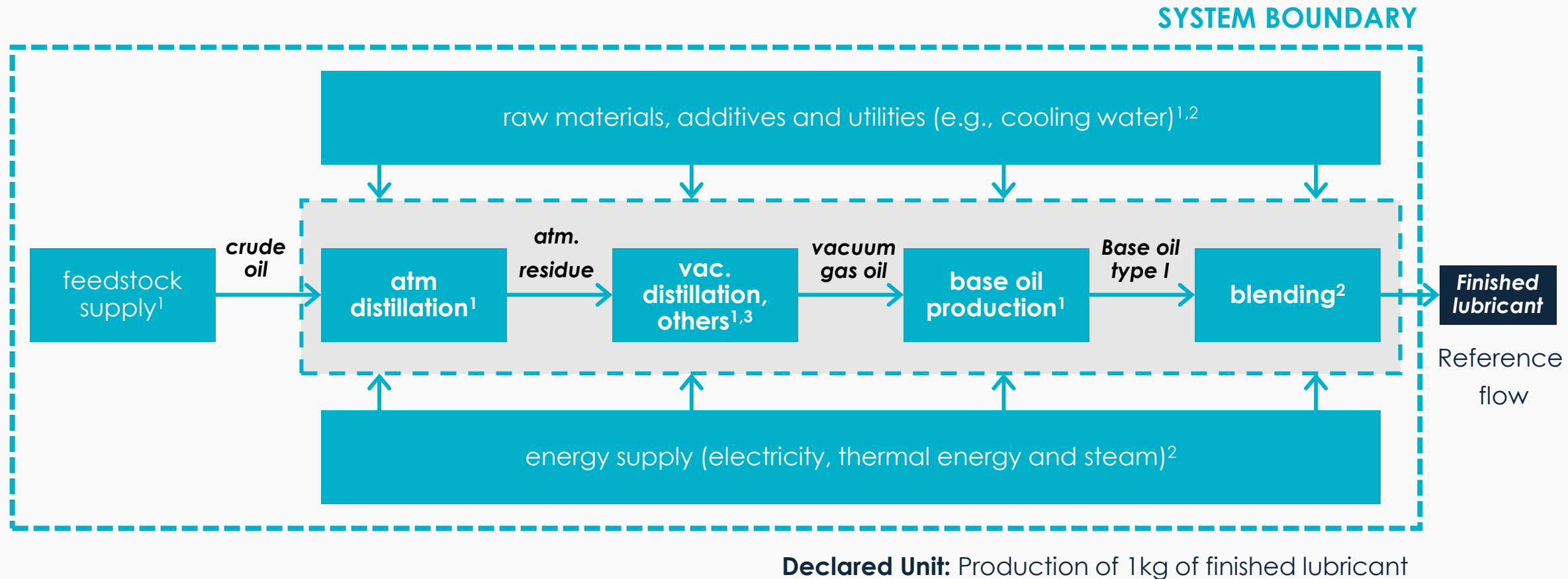
www.tuv.com
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3rd party certification

For Carbon Minds to be compliant with UEIL/ATIEL, TfS and relevant ISO standards

What does a product carbon footprint of a lubricant look like, if current standards are applied and how can we reduce it?

1. Mapping the Supply Chain: Lubricant Production Process and System Boundaries



LCI data sources:

(1) cm.chemicals v2.1 2024.

(2) ecoinvent 3.10

2. Understanding Emissions in Lubricant PCF: Key Drivers and Impact Areas

Crude Oil Supply Drives Emissions

- Crude oil supply accounts for 36% of total lubricant carbon footprint.

Base Oil Production Is Emissions-Intensive

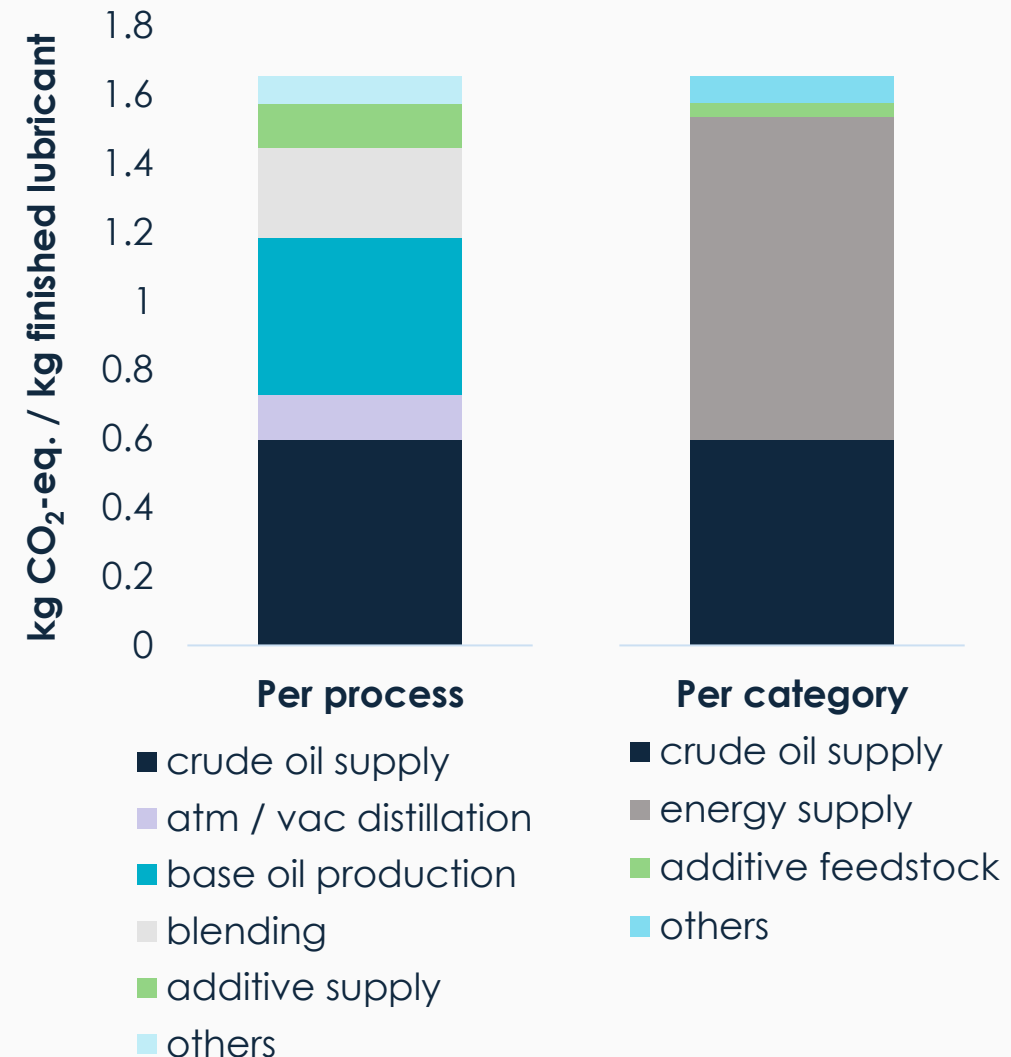
- Base oil production is a key contributor due to significant energy consumption, with up to 28%.

Additives Can Significantly Affect Impact

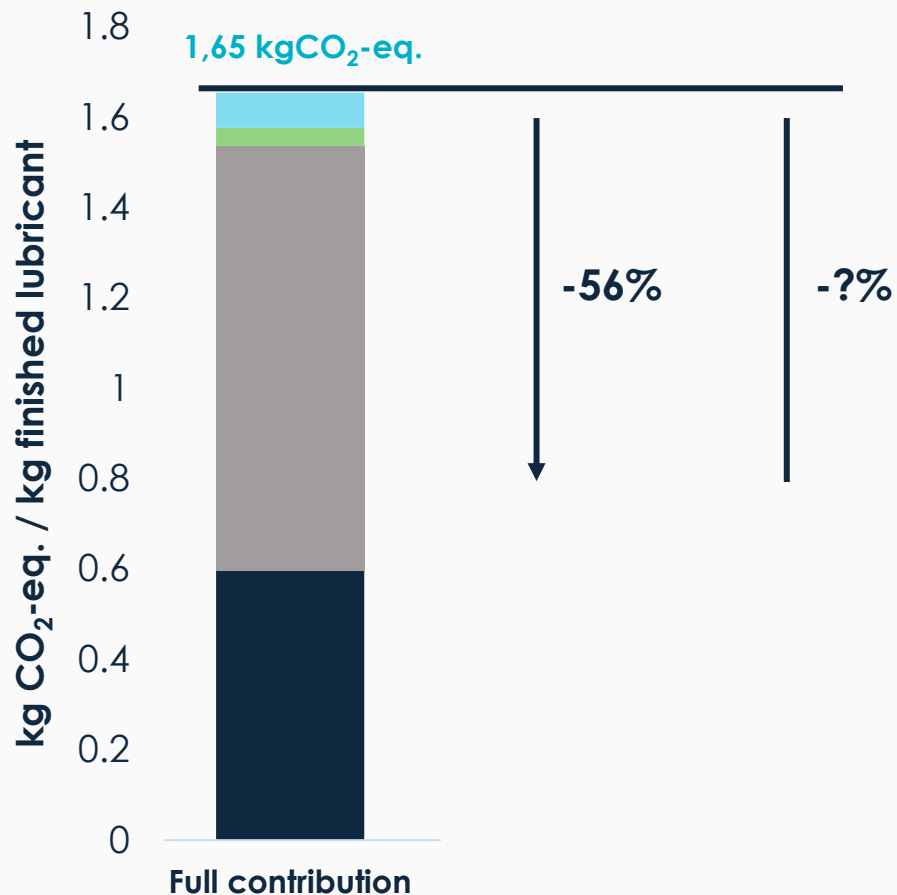
- The impact of additives can contribute up to 8% of the total footprint, depending on the formulation.

Energy-Use Is Single Largest Contributor

- Energy use from feedstock supply is the single largest impact along the value chain with approx. 57%.



3. Maximizing Emission Reductions in Lubricant PCF



- direct emissions + others
- additive supply
- energy supply
- crude oil supply

1. Decarbonizing Energy: Up to 56%

- Transition to renewable energy in production facilities.
- **Electrification of thermal processes** by transitioning to electric heat pumps or low-emission hydrogen

2. Feedstock Shift: The remaining GHGs

Adopt biomass-based and CO₂-based feedstocks to significantly upstream emissions

Use re-refining of oils to replace virgin materials, thereby reducing overall emissions.

Integrate low emission hydrogen in refining processes to reduce over emissions.

Thank you!

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**23rd of October: MASTERING PCF:
LUBRICANTS AND GREASE PRODUCERS**

**Our next
webinars**



**25th of September
SCOPE 3.1 EMISSIONS**