

CLEPA Inputs for the A-LCA IWG at GRPE

20th of March 2023

A-LCA-05-04

VEHICLE LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY

WW Supplier Message



Reminder of
CLEPA presentation
by 10/24/2024

Supplier Industry needs a harmonized set of rules
for the cradle to gate CO_{2e} emissions of automotive components
to improve CO_{2e} footprint in a competitive environment at affordable cost

Supplier (CLEPA/JAPIA/MEMA) are willing to support actively the GRPE activity
on LCA CO_{2e} footprint rules for automotive product categories



VEHICLE LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY

WW Supplier Message



Supplier Industry needs a harmonized set of rules
for the cradle to gate CO_{2e} emissions of automotive components
to **improve CO_{2e} footprint** in a **competitive environment** at affordable cost

Supplier (CLEPA/JAPIA/MEMA) are willing to support actively the GRPE activity
on LCA CO_{2e} footprint rules for automotive product categories



LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY FOR VEHICLES

CLEPA Working Structure Compromise Proposal



work areas			work elements	common	specific each area	comm
Life stages	Material production	Material & Material recycling 2		1 Overarching aspects	activity item and data	6 Fuel & Energy Cycle
	Parts production	Parts & Vehicle production 3			activity item and data	
	Inhouse parts production					
	Vehicle assembly					
	Use Phase	Use Phase 4			activity item and data	
	End of Life	End of Life 5			activity item and data	
Verification methodology transparency and consistency, data qualification and plausibility				Overarching aspects		
Drafting 7		Drafting				

Reminder of
CLEPA presentation
by 02/13/2023

Working Groups

1. Overarching aspects & verification
2. Material & material recycling
3. Parts & vehicle production
4. Use phase
5. End of life
6. Fuel & energy cycle
7. Drafting

LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY FOR VEHICLES

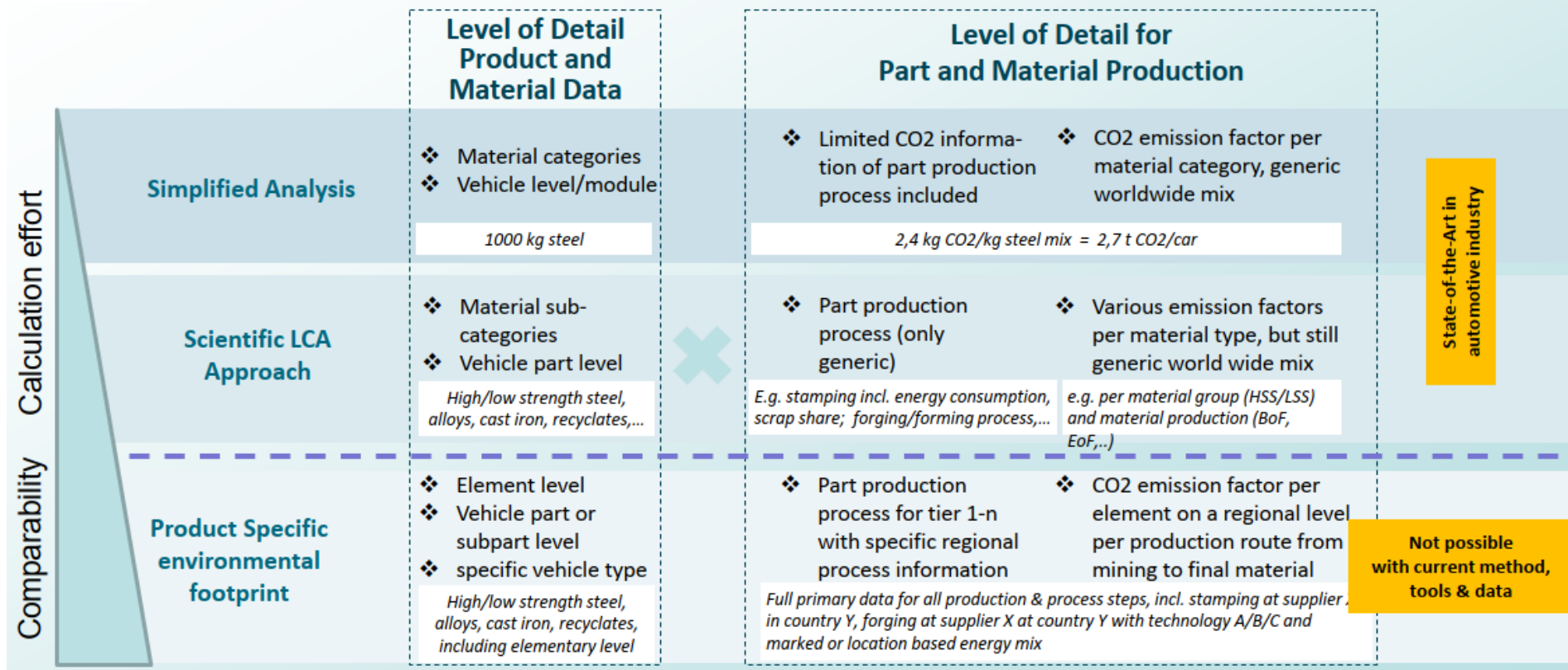


Overarching aspects



Granularity and Comparability

Reminder of
OICA presentation
by 05/31/2022



State-of-the-Art in automotive industry

Sufficient for Consumer Information and Technology Selection. e.g. GreenNCAP, CONCAWE

Not possible with current method, tools & data

LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY FOR VEHICLES



Overarching aspects



Granularity and Comparability

Reminder of
OICA presentation
by 05/31/2022

Calculation effort	Level of Detail Product and Material Data		Level of Detail for Part and Material Production		State-of-the-Art in automotive industry
	Simplified Analysis	<ul style="list-style-type: none">❖ Material categories❖ Vehicle level/module <div>1000 kg steel</div>	<ul style="list-style-type: none">❖ Limited CO2 information of part production process included❖ CO2 emission factor per material category, generic worldwide mix <div>2,4 kg CO2/kg steel mix = 2,7 t CO2/car</div>		
Comparability	Scientific LCA Approach	<ul style="list-style-type: none">❖ Material sub-categories❖ Vehicle part level <div>High/low strength steel, alloys, cast iron, recyclates,...</div>	<div>✕</div> <ul style="list-style-type: none">❖ Part production process (only generic)❖ Various emission factors per material type, but still generic world wide mix <div>E.g. stamping incl. energy consumption, scrap share; forging/forming process,...</div> <div>e.g. per material group (HSS/LSS) and material production (BoF, EoF,...)</div>		
	Product Specific environmental footprint	<ul style="list-style-type: none">❖ Element level❖ Vehicle part or subpart level❖ specific vehicle type <div>High/low strength steel, alloys, cast iron, recyclates, including elementary level</div>	<ul style="list-style-type: none">❖ Part production process for tier 1-n with specific regional process information❖ CO2 emission factor per element on a regional level per production route from mining to final material <div>Full primary data for all production & process steps, incl. stamping at supplier in country Y, forging at supplier X at country Y with technology A/B/C and marked or location based energy mix</div>	Not possible with current method, tools & data	

Sufficient for Consumer Information and Technology Selection. e.g. GreenNCAP, CONCAWE

Crucial for effective Decarbonization. Harmonized Methodology mandatory.

LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY FOR VEHICLES

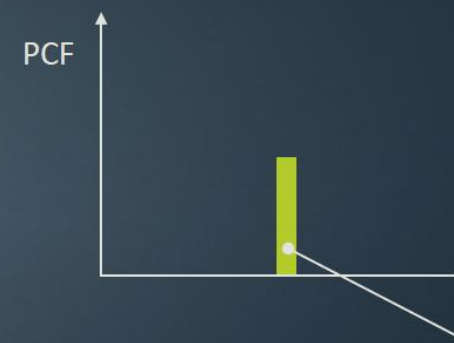


Overarching aspects

Reminder of
Catena-x presentation
by 10/24/2022

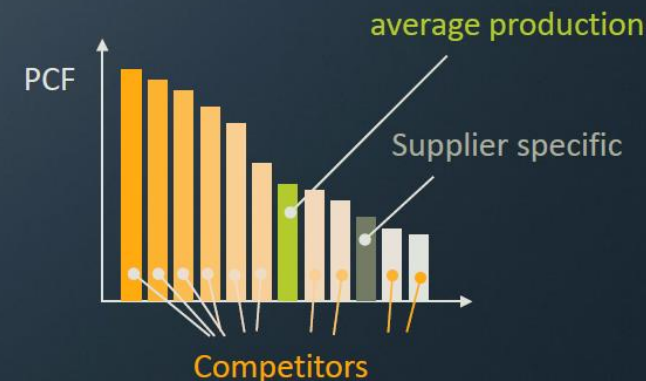
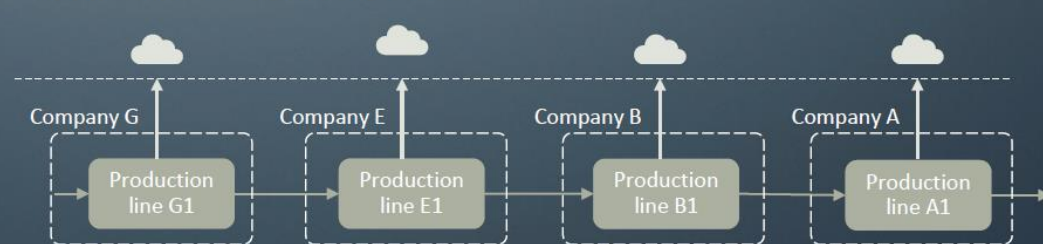
Average data blurs any differences in supply chains and fails to measure reductions in your supply chain

Established methods



Consistency ensured by Analysis from a single entity **but** results in PCF status only no decarbonization options

Supplier-specific, primary data



Competition on PCF enables informed supplier choice and fast decarbonization **but** harmonized method between various entities is crucial for comparability

© 2022 Catena-X or a Catena-X affiliate company

LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY FOR VEHICLES



Overarching aspects

Cut-off criteria

Secondary data (quality req.)

Allocation schemes

} Crucial for Comparability

→ WG 1

→ WG 1

→ WG 1

Waste & Recycling

- “Polluter pays” principle
- Recycled material enters free of burden from earlier product system



Chain of custody models

- Allowed within the same product system
- Carbon offsetting: Not allowed



Declared unit (during production):

- Declared unit is one piece of product one kilogram of material



Functional unit (as vehicle is assembled)

- gCO₂e/km (tbd) over lifetime per vehicle for passenger cars? Other vehicle types/segments?

→ Use Phase WG 4

Lifetime

→ Use Phase WG 4

LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY FOR VEHICLES



Overarching aspects

Scope:

- All life-cycle phases: All upstream emissions including upstream emissions directly related to the product system (without background system) ☒
- All vehicle types, all propulsion technologies ☒

Impact category:

- Green house gas warming potential GWP_{100y} : CO_2 equivalent (CO_2 -eq) emission as of IPCC AR6 (including carbon feedbacks and chemical effects) ☐

Analysis approach

- Attributional and step wise ☐

Base methodology and definitions:

- Normative reference ISO 14067 based on ISO 14040 and 14044 ☐

Reporting

- Activity data based (primary data) if satisfying quality requirements ☐
- Secondary data only if no complete primary data available and if satisfying quality requirements ☐

LIFE-CYCLE CARBON FOOTPRINT METHODOLOGY FOR VEHICLES



Overarching aspects

Guiding Principles of Methodology:

- **Quantitative comparability** of materials/components/products/vehicles in terms of CO₂e emissions
 - Conservative estimates mandatory on what is not known/measured
- **Globally applicable** and verifiable for enterprises of all sizes (global and SME)
- **Minimal effort** for quantification/verification

Thank you