

Today's objectives

What is PPG's sustainability strategy?

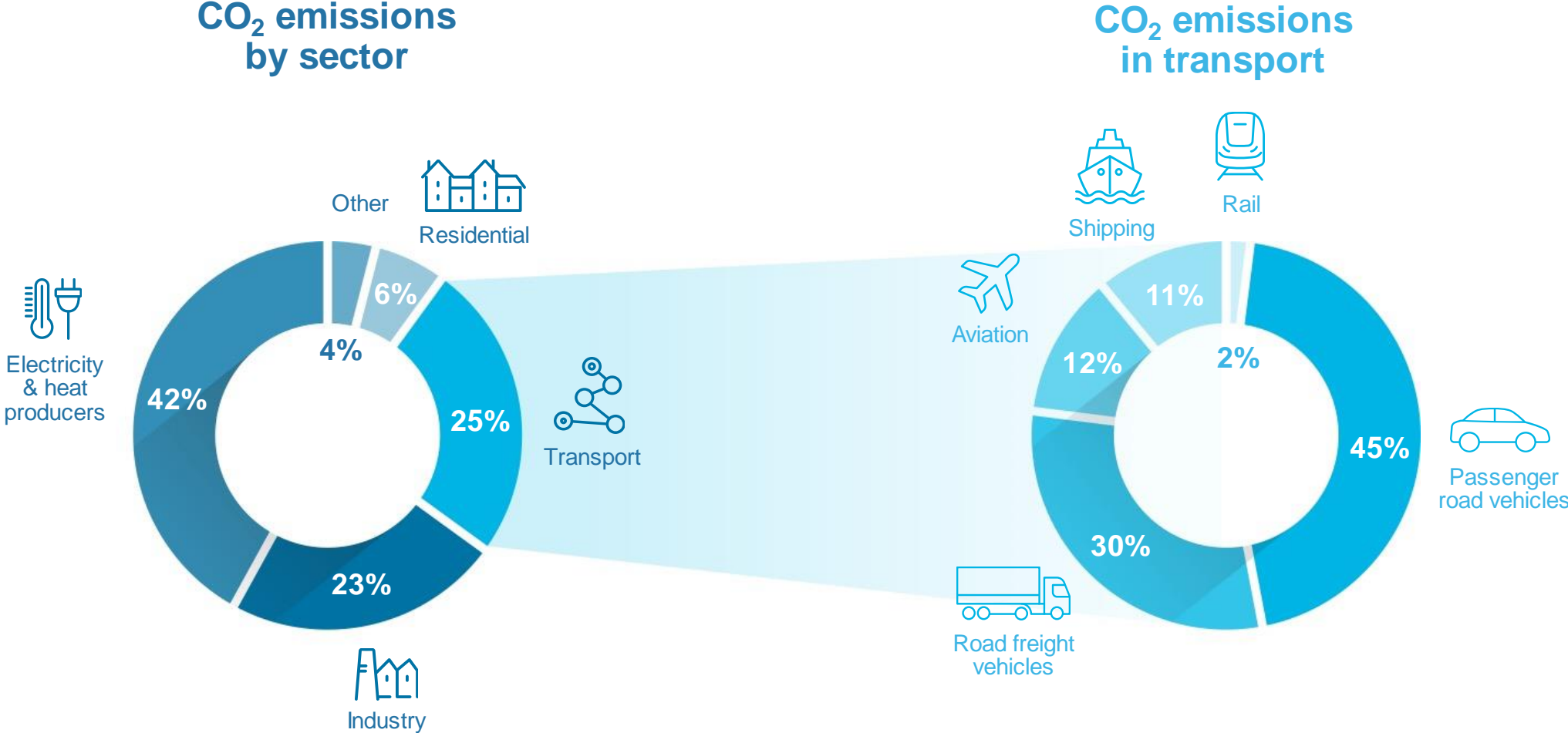
Cradle-to-grave carbon emissions for OEM coatings

What are the hotspots the industry can address?

Creating a level playing field for carbon footprint calculation

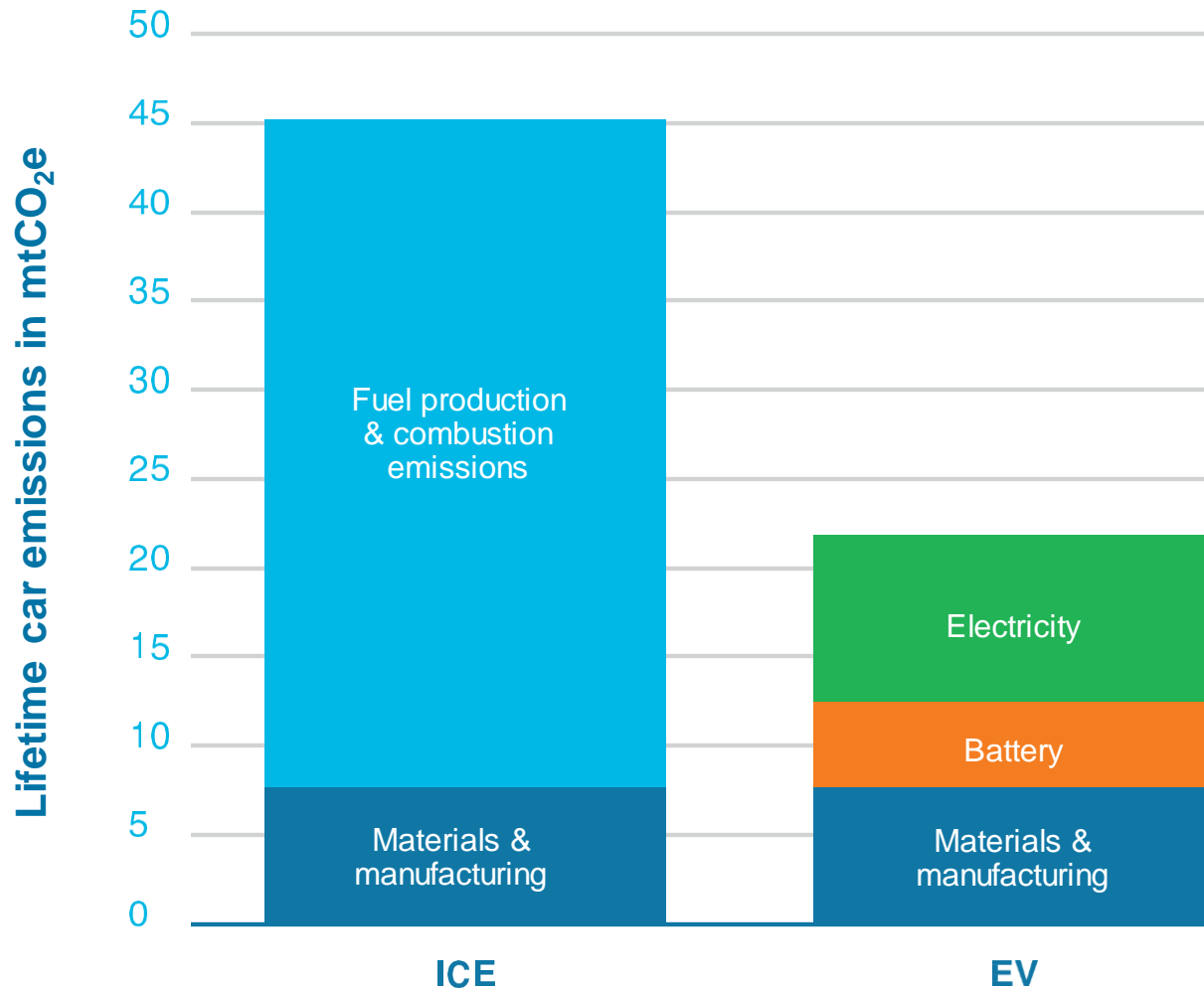


Transportation significantly impacts GHG emissions worldwide



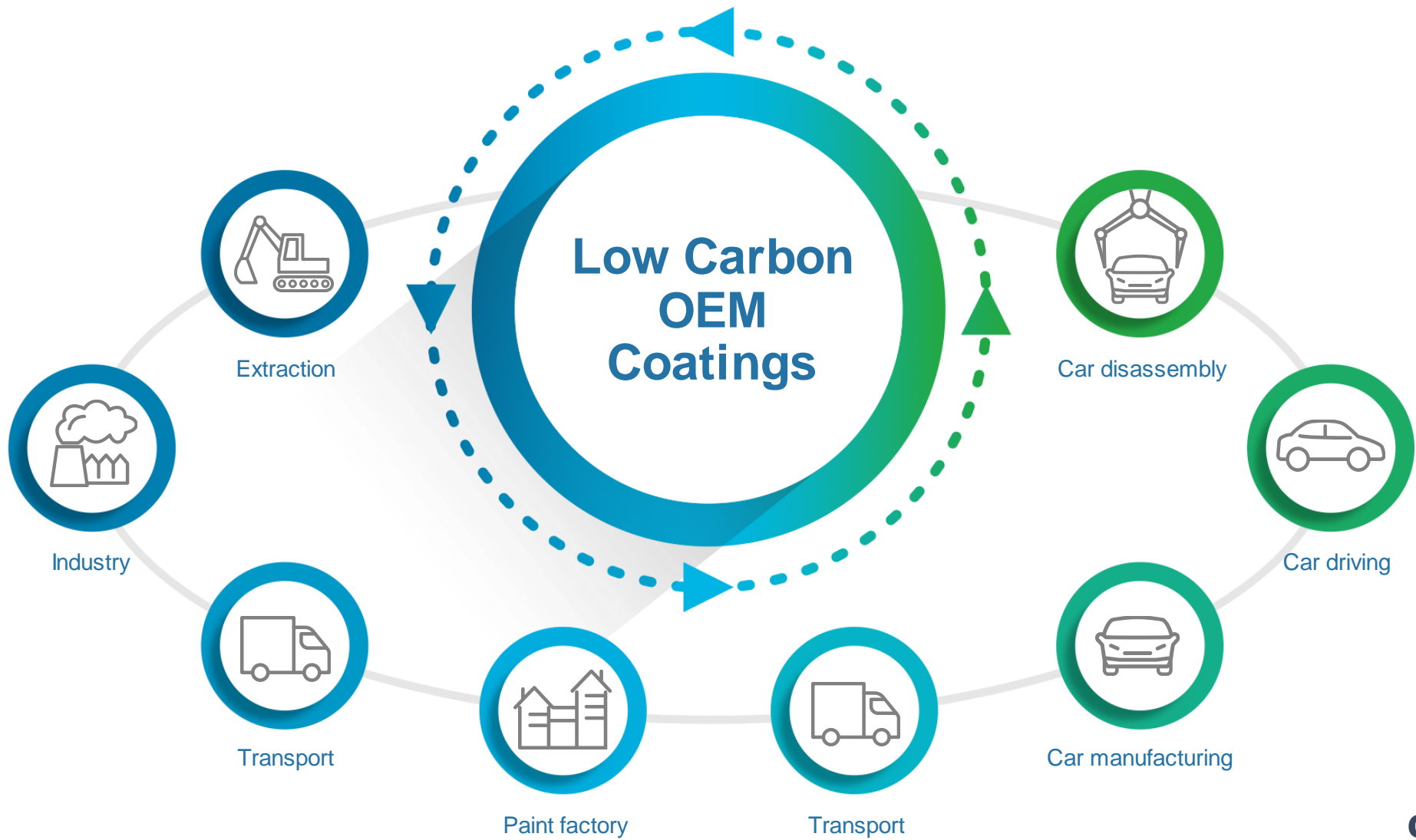
Source: International Energy Association. IEA and IPCC (2018) Summary of Policymakers

Electrification divides CO₂ emissions by 2

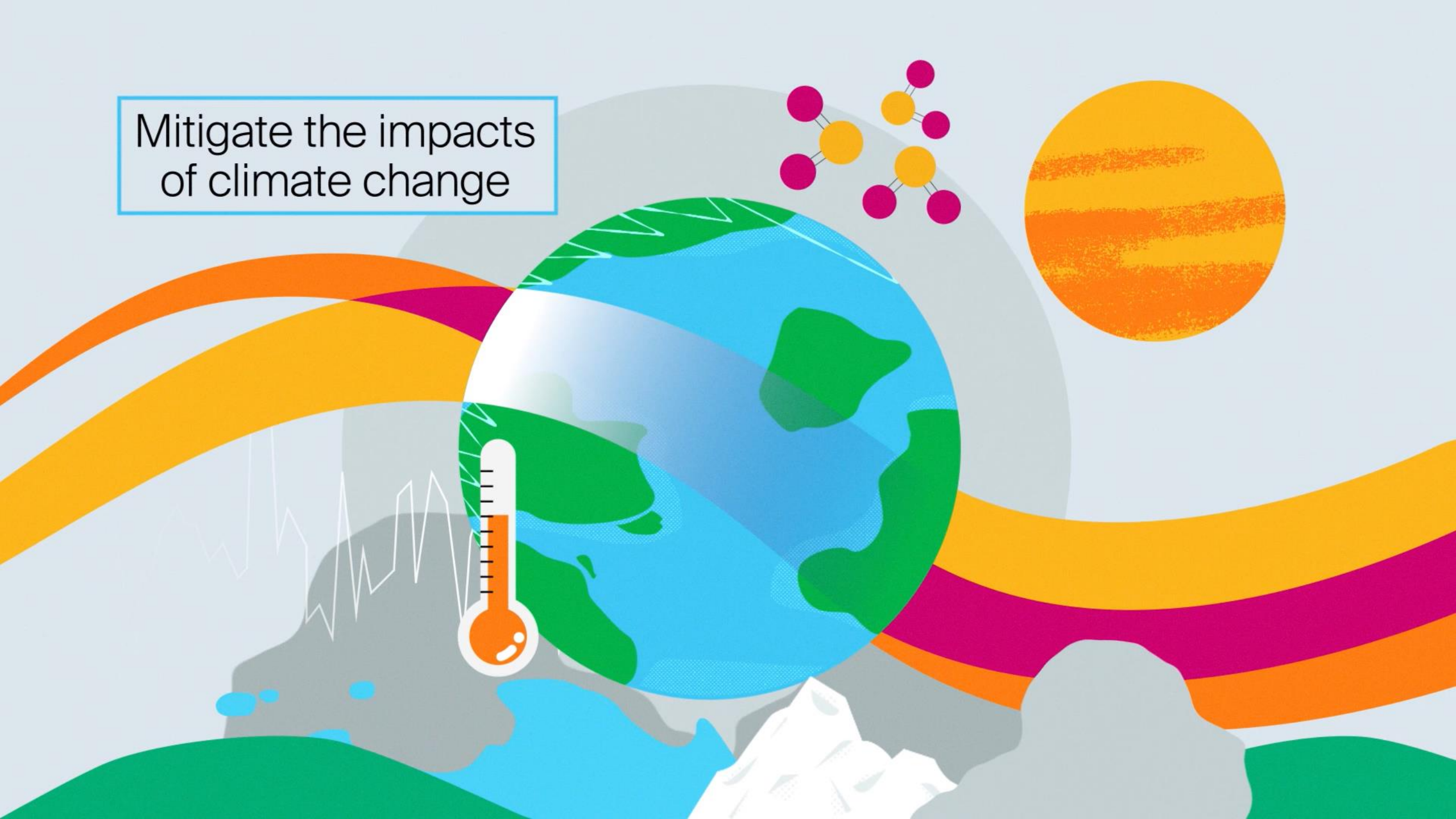


- BEV cars emit c.50% less CO₂ than ICE over full life cycle...
- OEM manufacturing plants are moving to decarbonized energy...
- ...this will lift the materials to a CO₂ hotspot

Our journey to low carbon OEM coatings



Mitigate the impacts
of climate change



PPG 2030 ESG targets with 2019 baseline

validated science-based targets



15% ↓

reduction in water intensity at priority sites



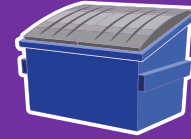
50% ↓

reduction in scope 1 and 2 greenhouse gas (GHG) emissions



30% ↓

reduction in scope 3 GHG emissions



25% ↓

reduction in waste intensity



100%

reuse, recycle or recover 100% of process waste



50%

sales from sustainably advantaged products



\$5MM

additional Colorful Communities funding, with all projects having an element of sustainability



100%

of key suppliers assessed against sustainability and social responsibility standards



100%

of employees go home safely each day

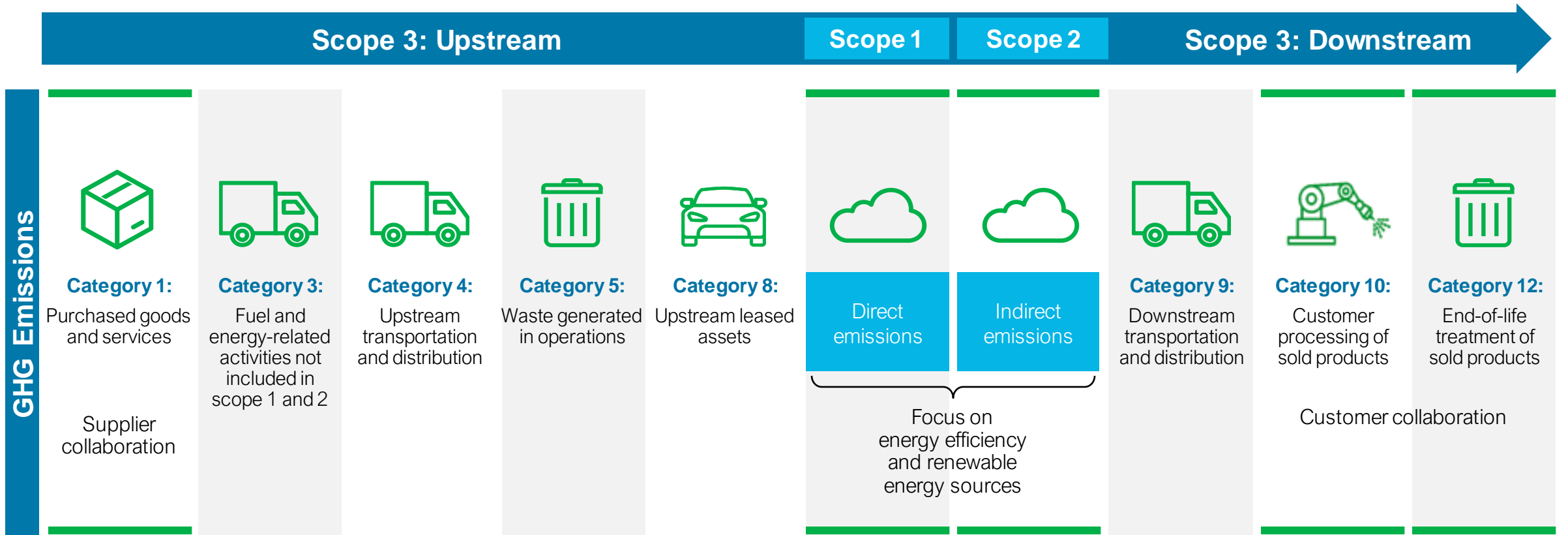


5% ↓

annual reduction in spill and release rate

PPG greenhouse gas emissions breakdown for 2019 baseline year

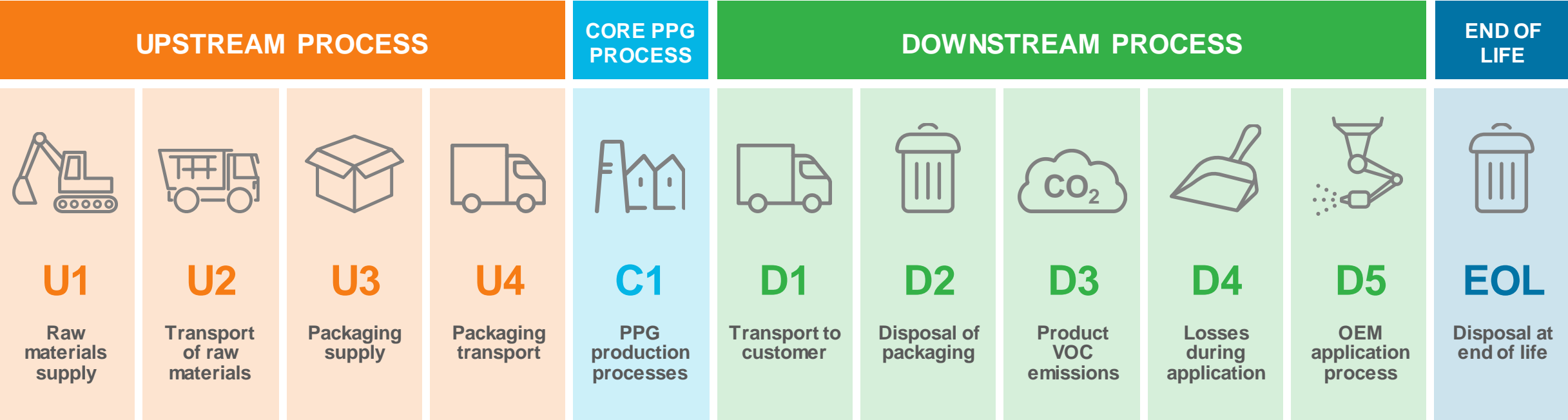
Science-based targets: **50%** reduction in scope 1 and 2 emissions by 2030
30% reduction in scope 3 emissions by 2030



Reduction focus

To select the best decarbonization solutions, it is key to look at the full life cycle impact

PPG assesses GHG emissions and other environmental impacts over entire value chain

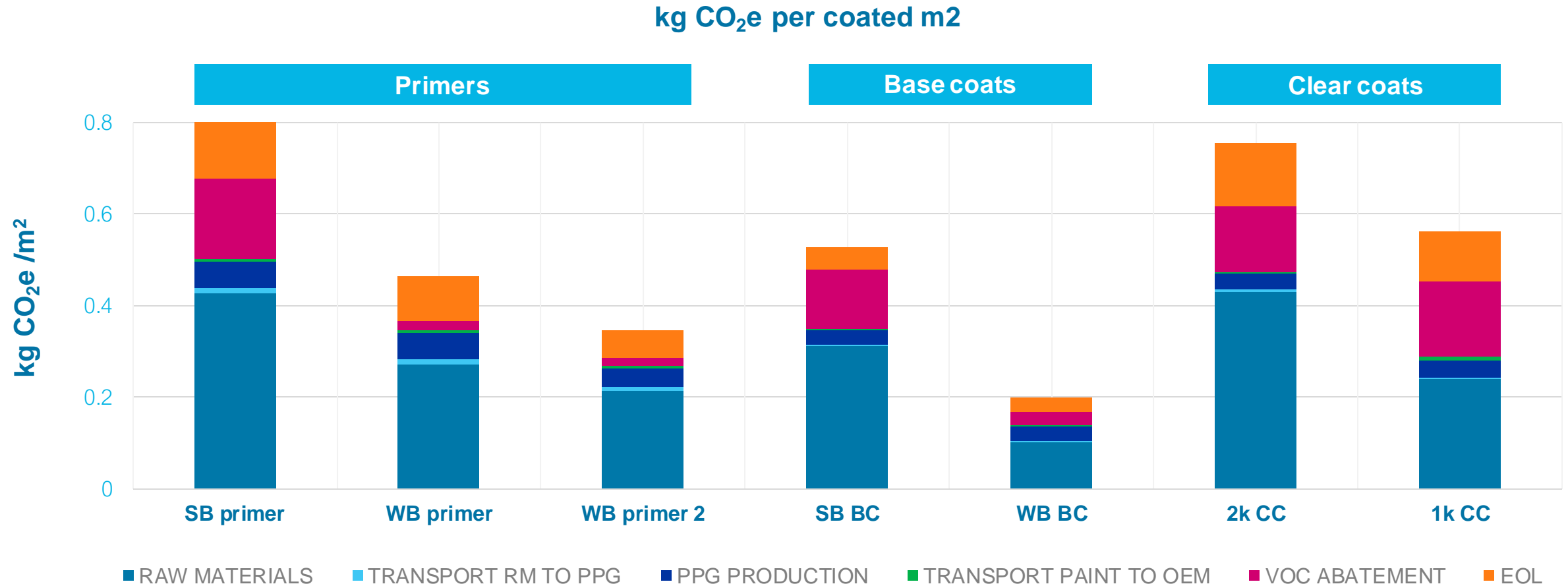


FROM EXTRACTION  TO END OF LIFE DISPOSAL

We must look at the total life cycle impact to define the best decarbonization options

Comparing deco layers technologies – excluding paint shop energy

Scope: Material only (Cradle to Gate + VOC + EOL)



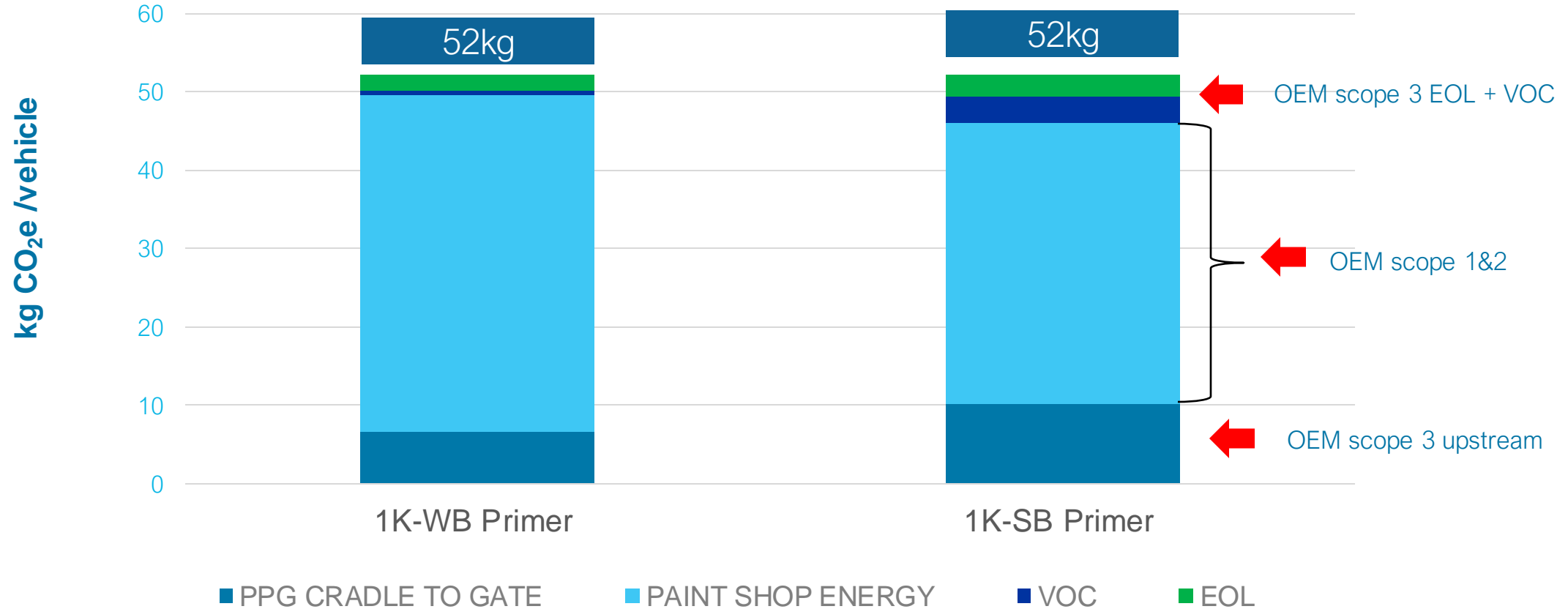
Average CO₂ contribution from the deco layers
From c.40kg (WB) to c. 55kg (SB) per vehicle

Source
PPG life cycle assessments according to ISO 14040/14044
SimaPro software v.9.4.0.1; primary data for PPG manufacturing; Raw Material and Transportation derived from Ecoinvent and Industry2.0

Reducing carbon footprint: SB or WB primer?

Scope: Cradle to grave

CO₂e per vehicle - Primer only (@theoretical transfer efficiency)

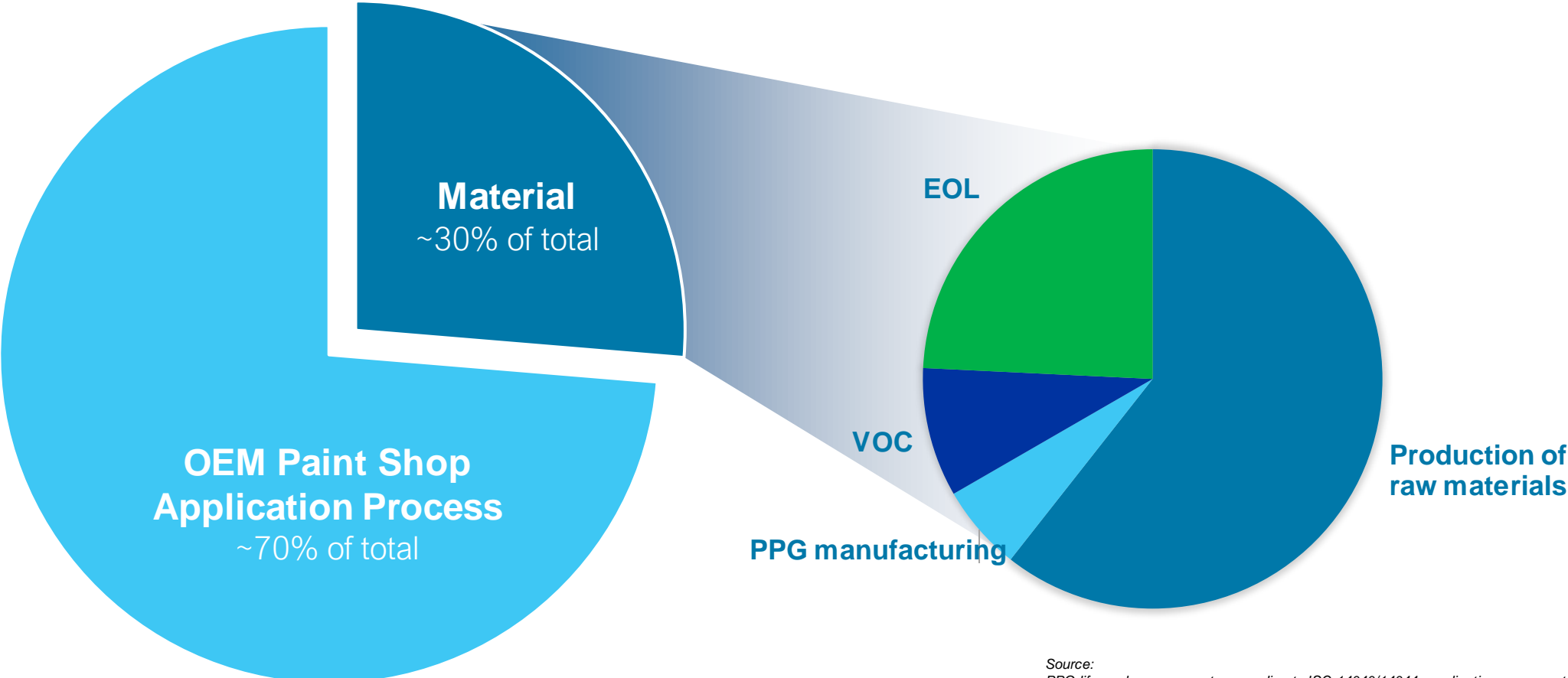


SB lower energy intensity benefit is offset by higher RM emissions

Source:
PPG life cycle assessments according to ISO 14040/14044; application process at OEM facility; energy consumption per vehicle calculated with PPG process modeling tool - average electricity conversion factor of 0.380kgCO₂e/kWh and a Natural Gas conversion factor of 0.201kgCO₂e/kWh

GHG emissions from OEM paint material + paint shop process

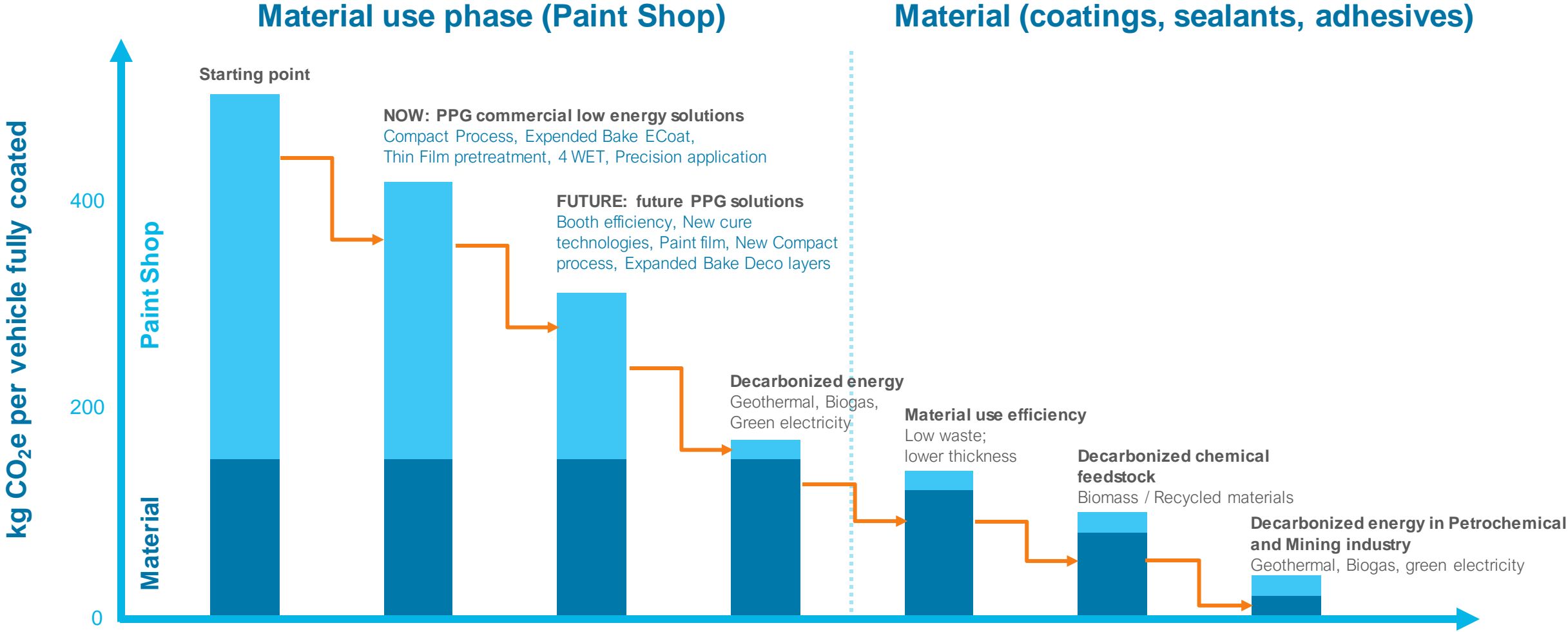
Pie charts show an average of GHG contribution stages for coating layers applied on a vehicle



Source: PPG life cycle assessments according to ISO 14040/14044; application process at OEM facility: energy consumption per vehicle calculated with PPG process modeling tool - average electricity conversion factor of 0.380kgCO₂e/kWh and a Natural Gas conversion factor of 0.201kgCO₂e/kWh

#1 hotspot is the paint shop application process
#2 hotspot is raw material production (chemical industry & mining)

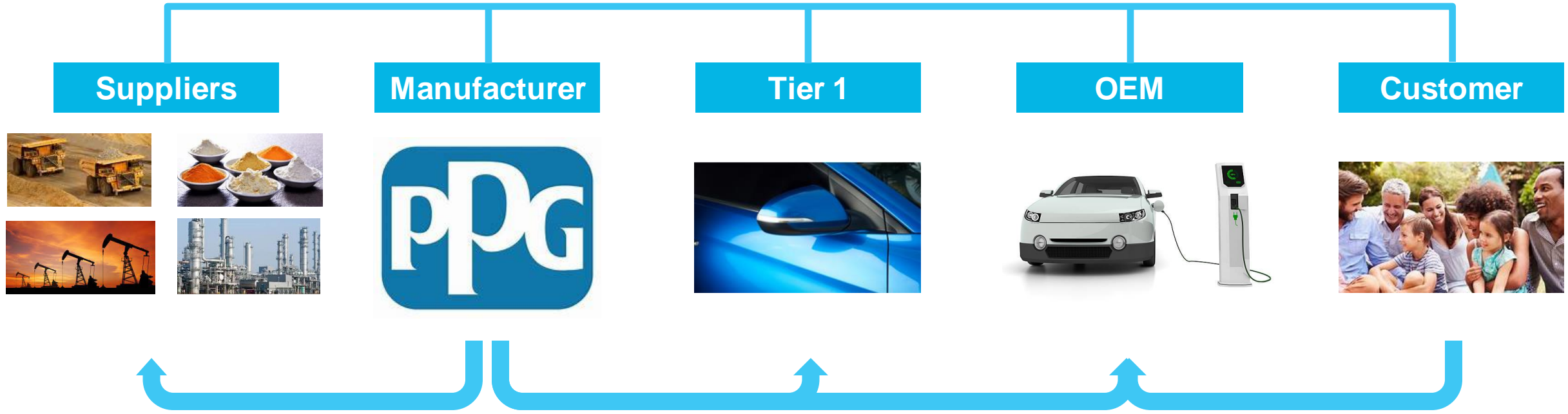
Innovation for low energy paint shop and low carbon footprint materials



Values are estimated average GHG emissions calculated for average electricity conversion factor of 0.380 and a Natural Gas conversion factor of 0.201 for Paint Shop process and using PPG Life Cycle Assessment method (Simapro) for the Material

PPG scope 3: 30% reduction by 2030

Collaboration



Delivering on scope 3 decarbonization requires collaboration across the entire value chain

OEM requests for scope 3 carbon footprint disclosing

Life cycle approach required

TESLA

Display This Question:

If Scope 3 GHG emissions allocated to Tesla's products Has your company done a Life Cycle Assessment... = Yes

Q35 Scope 3 GHG emissions allocated to Tesla's products

Report your total annual upstream Scope 3 GHG emissions allocated to Tesla's products below. Remember to use the allocation method previously to allocate the inputs and GHG emissions in this table. Figures reported in this table should only be for Tesla's products.

2022 TESLA total upstream Scope 3 GHG emissions: 1669 tCO₂e

End of Block: GHG emissions scope 3

Start of Block: Summary of GHG emissions

BMW

Assessment Sheet CO2e

BMW Contact person: Name: Christian Horvath, E-Mail: christian.horvath@bmw.com, Phone: +49 89 30 00 00 00, Date of completion: 2022/03/01

Information for question to be filled by BMW / supplier: Please check (X) identical to the document 'Agreement on the use and control of electricity from renewable energy sources' of electricity from renewable sources. Scope of consideration for scope 3 of electricity from renewable sources: Only the manufacturing process of scope 3 of electricity from renewable sources (the electricity from renewable sources is not included in the scope of the assessment). Declaration of primary data: The data is supplied by the supplier. Declaration of secondary data: The data is supplied by the supplier. Declaration of tertiary data: The data is supplied by the supplier. Declaration of quaternary data: The data is supplied by the supplier.

Input mask for award components to be filled by supplier: Table with columns for material details, carbon footprint, recycled content, and CO2e per kg.

VOLVO

9. Have you or your sub-supplier performed an LCA (Life Cycle Analysis) or EPD (Environmental Product Declaration) to calculate Carbon Footprint of a single or reference material component related to this business case? (If yes, please also attach results from this report with your quotation in YOS) | Yes/No

9.1. For each part number you are able to report estimated CO2 impact, list in the rows below: Use column C for part number and column D for CO2 impact, using additional rows as needed. (Use group required buttons on left to reveal additional)

9.2. Do you accept to consider to performing a LCA on this scope upon award/ESOW requirement? (scope of LCA to be agreed between supplier and Volvo R&D) | Yes/No

Volvo Scope 3 upstream: 3.77kg CO2e / kg of coating
Volvo Scope 3 downstream (End of Life): 1.61 kg CO2e / kg of coating

STELLANTIS

DO NOT DELETE OR ADD ANY COLUMNS - YOU CAN ADD LINES

New materials and components evaluation (SCOPE 3 - UPSTREAM)

1 - Part BOM	Material details	kg / unit	kg scraps /unit	Carbon Footprint				Recycled Content % in		Credits / avoided		Comments (including data origin and date of reference for carbon intensity of energy)
				kg CO2eq/kg	kg CO2eq per part	% Primary Data kg CO2eq	% Secondary Data kg CO2eq	% / kg	Total recycled content %	kg CO2eq/kg	CO2eq per part	
	Material: 1			8.57	0.957	100%	0%	0%				Data coming from GRISS database
	Material: 2											Confirm which material is CO2 emission related to
	Component 1											Confirm which material is CO2 emission related to
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TOYOTA

Dear Supplier,

As announced in the 2022 Annual Business Meeting (ABM), we will continue collecting Tier 1 Supplier CO2 emissions data this year. TME's ambition is to be Carbon Neutral (tCO₂e) by 2040 including scope 1, 2 & 3.

The 2022 survey covers parts and raw materials collected by TME (including export parts) for the period 1st January 2022 and 31st December 2022. We will collect this data at an individual production plant level.

Please see below the scope of this activity:

GHG Protocol Scope	Scope Description	To include?
Scope 1	Direct Emissions from your production plant emissions associated with fuel combustion in boilers, furnaces, etc.	Yes
Scope 2	Indirect Emissions from purchased electricity, heat & steam used/consumed at your production plant.	Yes
Scope 3	Indirect Emissions outside your production plant in g. emissions from your upstream operators from raw materials used in your parts, waste disposed & logistics information to get your parts from your supplier.	Yes*

*As explained in Annual Business Meeting, we will start collecting scope 3 emission data with this year's survey.

Carbon Footprint: need for an Industry Level Playing field

FROM

Inconsistency;
no alignment on
calculation practices

TO

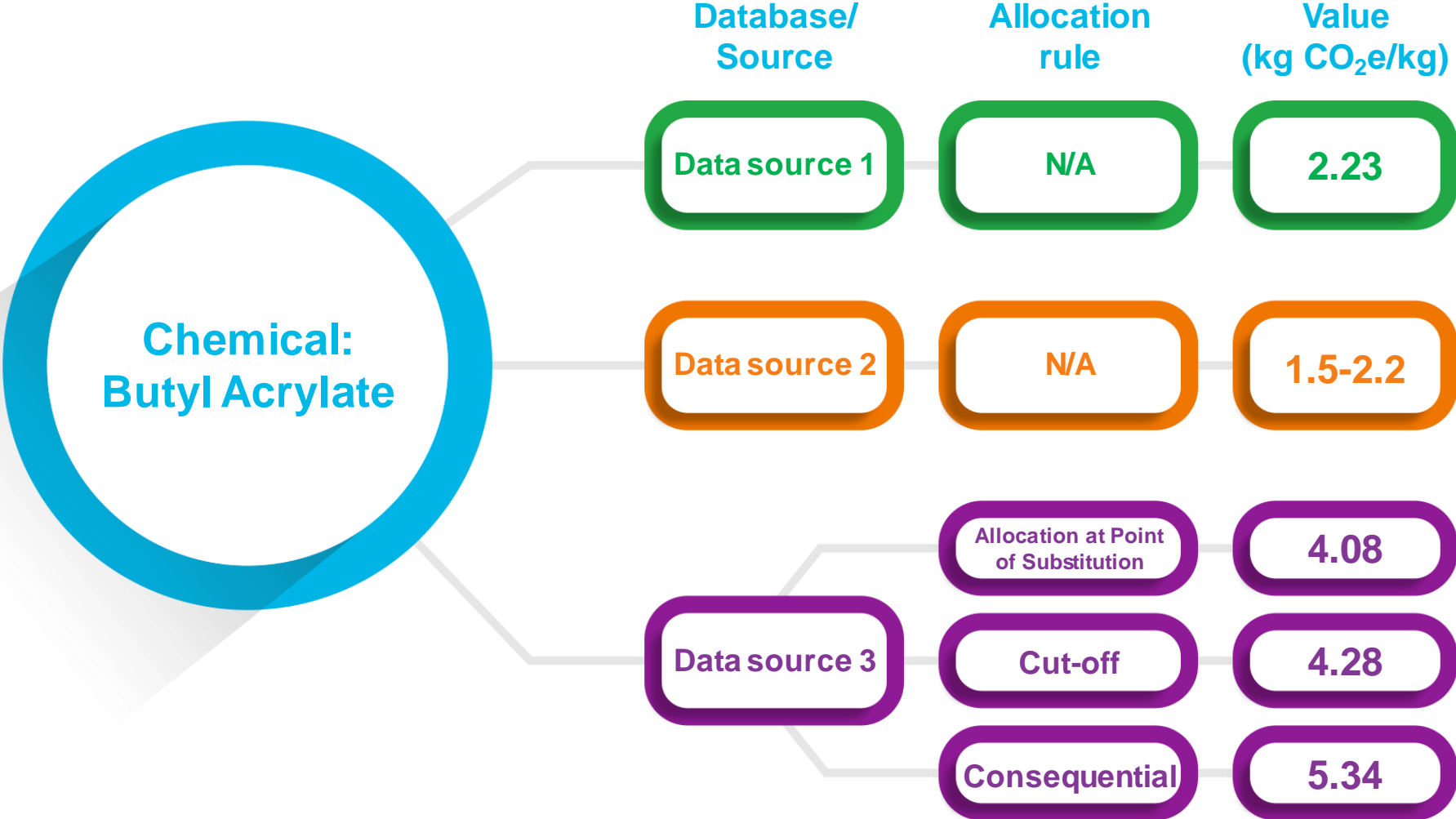
Industry alignment on:

- Scope of LCA
- Data source
- Calculation rules - GHG protocol and ISO standards
- Identified CO₂ hotspots to address

Assessing the Carbon Footprint of the **same product** by 3 different suppliers. **These results should be the same.**

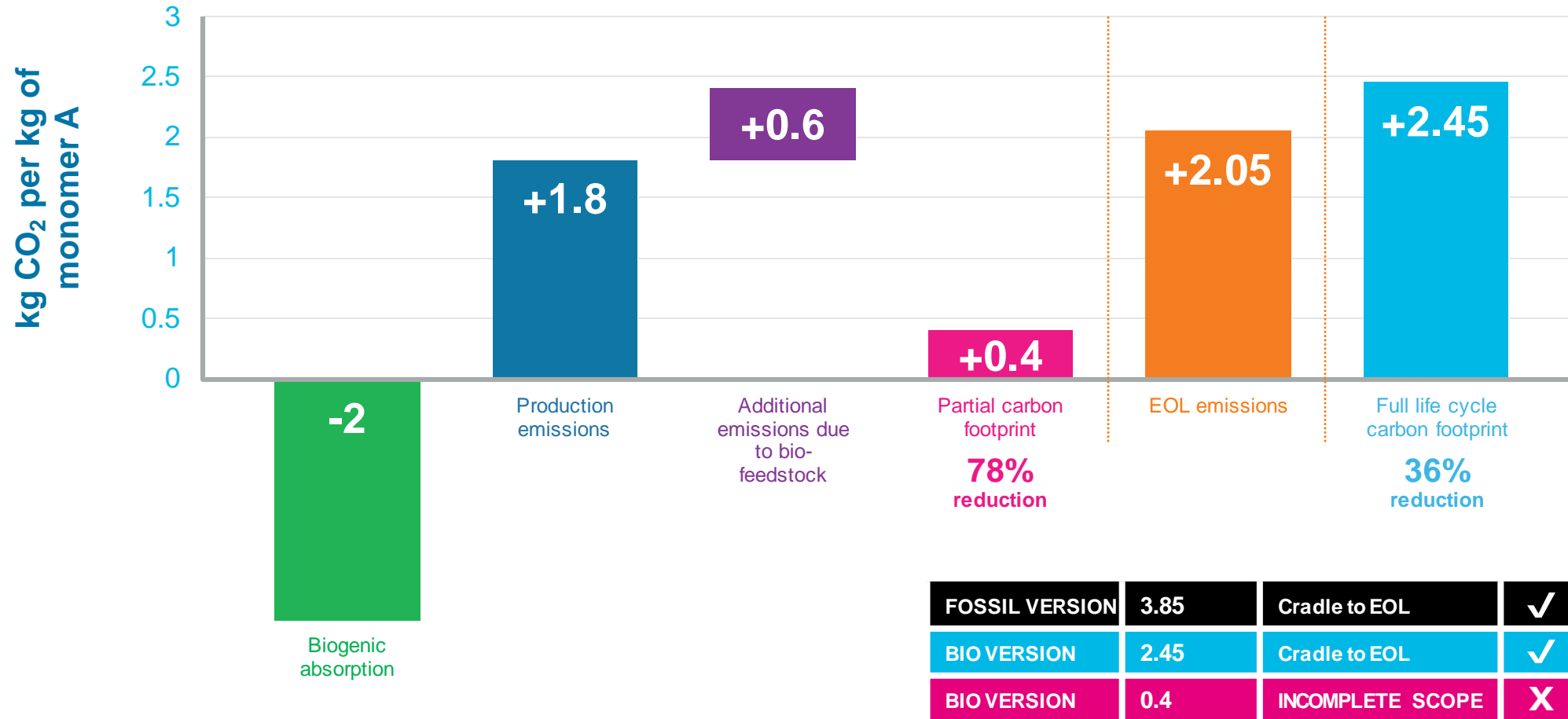


Example of typical data source issue



Example of typical scope issue

Biobased carbon footprint benefits should be claimed when the entire life cycle is considered



Source: PPG life cycle assessment method + proprietary supplier data

Industry alignment is required

Calculation rules

- Adopt calculation rules from SBTi and Green House Gas Protocol
- Define minimum requirement for data quality
- VOC emissions: photochemical ozone pollution only or CO₂ emissions too?
- EOL – landfill or full oxidation of the materials?
Every single C atom becomes CO₂ unless recycled

Identify solutions and quantify benefits

- Biobased chemicals: biogenic carbon true benefit is that carbonated content in the material comes from and go back to the atmosphere
- Recycled content: open loop vs. closed loop?
- What are the raw material CO₂ hotspots?
Can the OEM industry influence the chemical/mining sector?

To Meet the Challenge of Decarbonization...

We Need to define a level playing field enabling collaboration along the value chain

INDUSTRY LEVEL



Understanding:

Value chain carbon emission hot spots, what is material and where to focus our efforts for fast and large GHG emission reduction?



Create:

Common calculation rules: scope, reporting practices to enable the full supply chain to make the right decisions; create an Industry charter?



Data source:

Identify or create an OEM database; get it 3rd party verified

INDIVIDUAL COMPANY LEVEL



Contribute:

Align on CO₂ disclosure format to support Introduction of low emission, energy saving, positive impacting products



Innovation:

New processes and products to create a future business model that enables growth while limiting carbon impact

Create a level playing field to enable the industry to define a roadmap for low carbon emission OEM coating innovations



To learn more about PPG's environmental, social and governance progress:
ppg.com/sustainability

