Composites International

SMC as Sustainable solution

Study Case Flamevex

SMC CREATE 2023 – Prag

Grégoire BRZOZOWSKI – Cédric Defaye

Agenda

1. IDI Composites International Europe

   Local Company Global Footprint

2. Global Sustainability figures

   Expectations of the industry to preserve the planet

3. Roadmap Sustainability IDI:

   IDI & SMC as part of the challenge

4. Case study : Sustainability through applications : FLAMEVEX™ Flame Resistant Lightweight Composites

   Sustainable application for SMCs

IDI COMPOSITES INTERNATIONAL EUROPE

Global Manufacturing

Worldwide & Strategically Located

- Maximizing a multi-directional supply chain and customer service
- Providing consistent, high quality products to OEMs and custom molders globally

Manufacuting Site		Products	R & D Centers
North America	Noblesville	BMC & SMC	R&D Center in Noblesville (IN)
	Puerto Rico	BMC	
	Mexico City	BMC & SMC	
China	Jinshan	BMC & SMC	Supported by EU & US
Europe	Oldbury	BMC	R&D Center in Vineuil (F)
	Vineuil	BMC, SMC	

BMC • Bulk Moulding Compound
CIC • Continuous Impregneted Compound

Moulding

- ✓ Injection
- ✓ Cycle time : < 1 mn

Parts

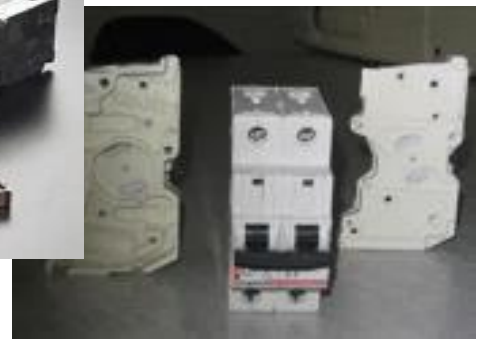
- ✓ >100.000 parts
- ✓ Small-medium parts
- ✓ 0.025 m² up to 2m²

- ✓ Integration of function : High
- ✓ Tensile strength : Medium
- ✓ Impact resistance : Medium
- ✓ U.V Resistance : Medium
- ✓ Aspect : Decor and / or grind surface
- ✓ Fire Resistance

Industrial

IDI **GREEN**

IDI
WATT



IDI **TRANSLAMP**

SMC • Sheet Moulding Compound

IDI Composites® International

Moulding

- ✓ Compression
- ✓ Cycle time : 1 < t < 3 mn

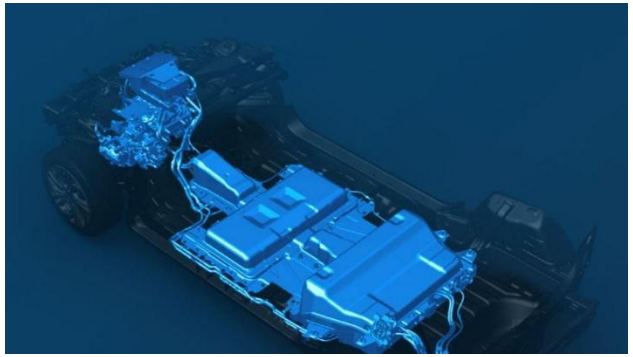
Parts

- ✓ >10.000 parts
- ✓ Variable Design
- ✓ 0.025 to 4 m^2
- ✓ Integration of function : Medium
- ✓ Tensile strength : High
- ✓ Impact resistance : High
- ✓ U.V Resistance : High
- ✓ Aspect : Decor and / or grind surface
- ✓ Fire Resistance

IDI
WATT

ULTRIUM™
Carbon Fiber Composites

NODORINITE™
Low Odor / Low VOC Composites



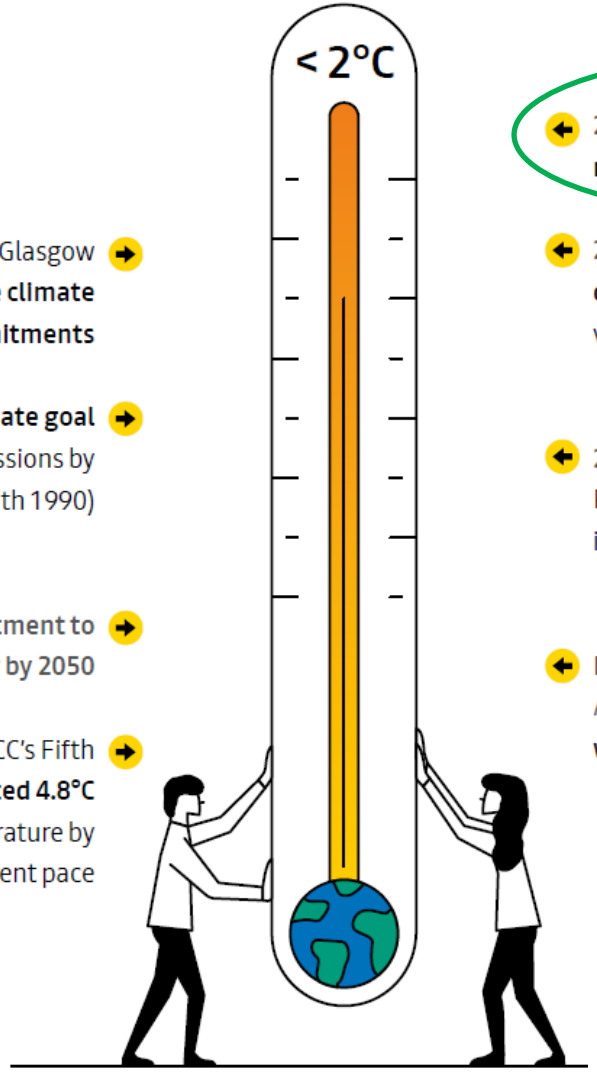
FLAMEVEX™
Flame Resistant Lightweight Composites

SMC CREATE 2023

GLOBAL SUSTAINABILITY FIGURES

Global Sustainability figures

Global Warming and targets



Nov. 2021 › COP 26 in Glasgow (Scotland). **Goal: accelerate climate commitments**

Apr. 2021 › **New EU climate goal** (55% reduction in GHG emissions by 2030 compared with 1990)

Dec. 2019 › EU commitment to carbon neutrality by 2050

Nov. 2014 › IPCC's Fifth Assessment Report. **Projected 4.8°C increase** in average temperature by 2100 at the current pace

2050 › Europe, the first carbon-neutral continent

2035-2040 › Probable end to sales of new ICE vehicles in Europe (to be voted in 2022)

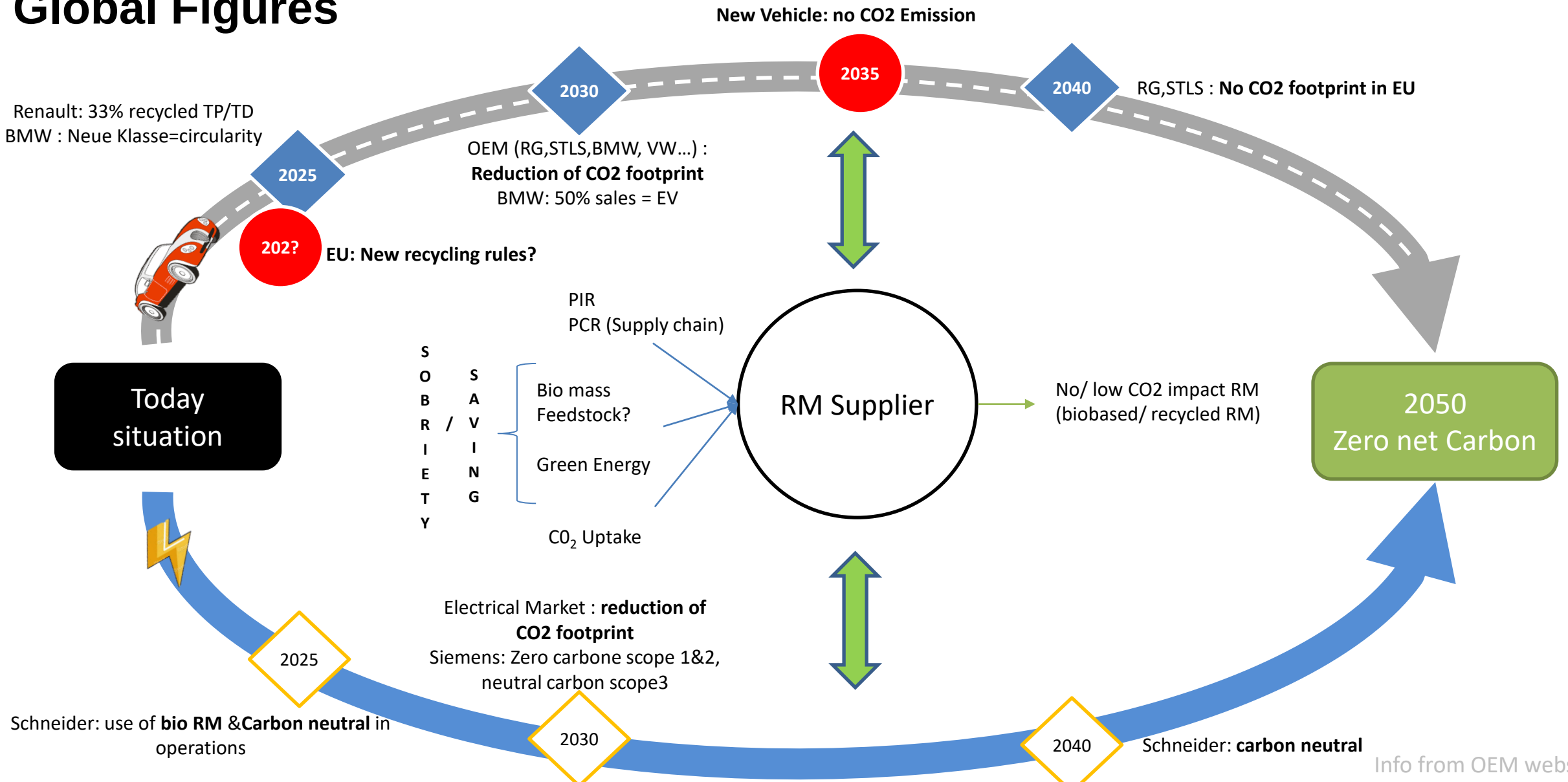
2019-2024 › European Green Deal. Priority given to climate-oriented investments and regulations

Dec. 2015 › COP 21 (Paris Agreement). Goal for 2100: well below 2°C

https://www.renaultgroup.com/en/our-commitments/environment-carbon-neutrality/the-new-policy-landscape/

Global Sustainability figures

Global Figures



Info from OEM website

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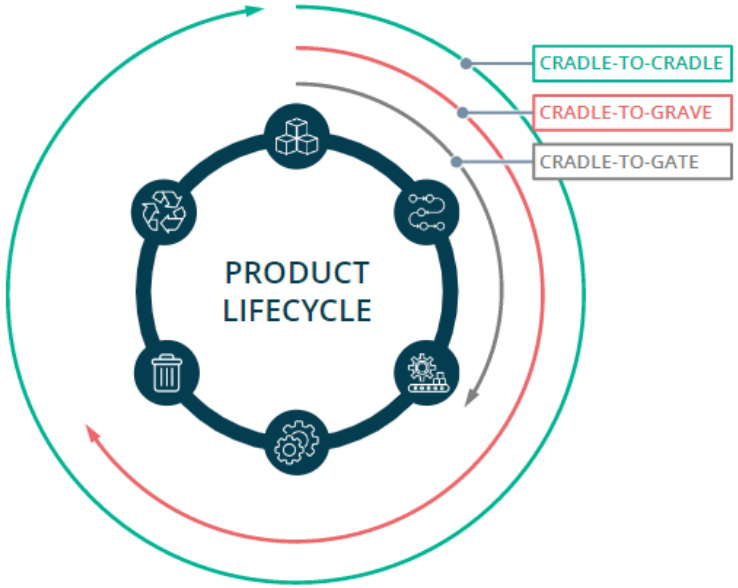
Global Sustainability figures

A Tool to monitor CO2 emissions : Life Cycle Assessment

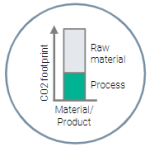


- Cradle-to-gate
  - Assessment from resource extraction (cradle) to factory gate (gate), before it is transported to the consumer/OEM. Use phase and disposal phase are not investigated.
- Cradle-to-grave
  - Assessment from resource extraction (cradle) to disposal phase (grave).
- Cradle-to-cradle
  - Closed loop system → circular economy
  - Specific kind of cradle to grave assessment, exchanging the waste stage (grave) with a recycling process that makes it reusable for another product (new cradle).

ISO 14040/44

IMPACT CATEGORY

- Global warming potential for 100 years: GWP100 in [kg CO_2e] acc. to CML 2001 (Aug. 2016)

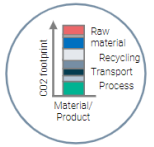


TOP DOWN LCA

Qualitative CO2 footprint

Focus on key CO2 root causes

Range of footprints
Data is mostly estimated
Shows main contributors
Point of investigation
Starting point of development of new application



BOTTOM UP LCA

Quantitative CO2 footprint

Detailed sub-system analysis

Footprint with <90 % accuracy
Primary data should be available
Shows detailed contribution
Validation of product

Global Sustainability figures

Which way to follow ?

2 contrasted scenarios describing **2 different decarbonation pathways** have been modelized.

They rely on **2 main levers**:

1. Technology innovation

2. Consumption behaviour changes

ROADMAP SUSTAINABILITY IDI

Roadmap Sustainability IDI

Commited to reduce CO2 emission with transportation : FRET 21

White roof painting to improve albedo effect

Lockrooms are heated by warm air/water coming from workshop.

Reduce the wastes by molding packaging reinforcement

Producing Green formulas from Bio based and sustainable raw material

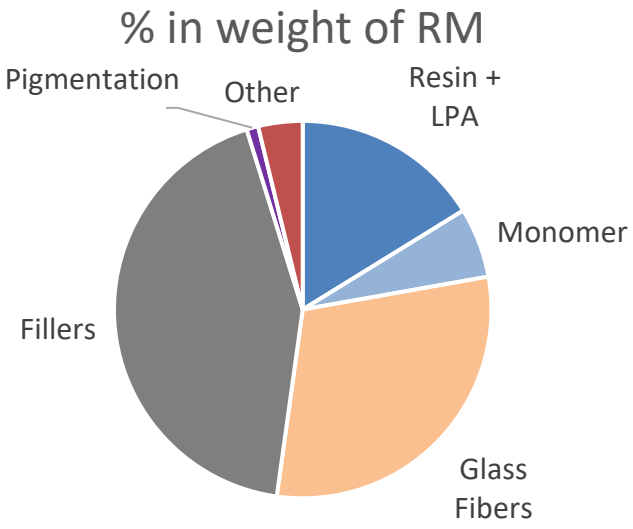
Changing all internal office lighting by LED to decrease energy consumption

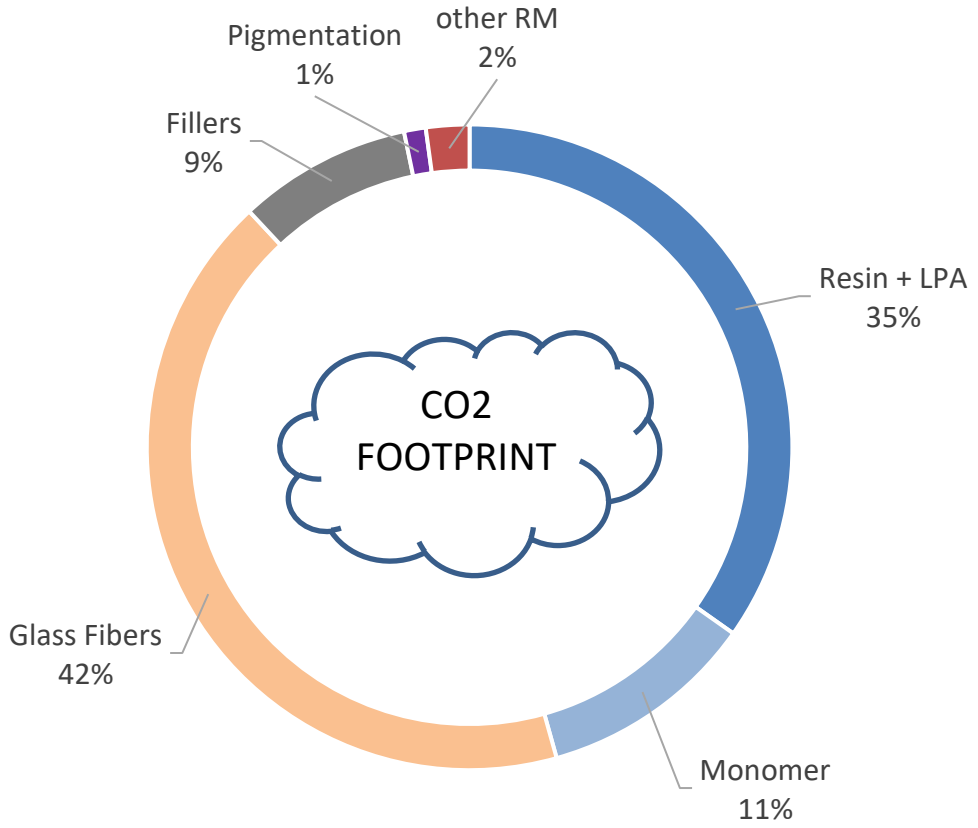
No pyrolysis (Gas consumption reduction) of our emissions but bacteria heating styren

Roadmap Sustainability IDI

IDI Green : Sustainable Formulation

- Preliminary results on general purpose SMC



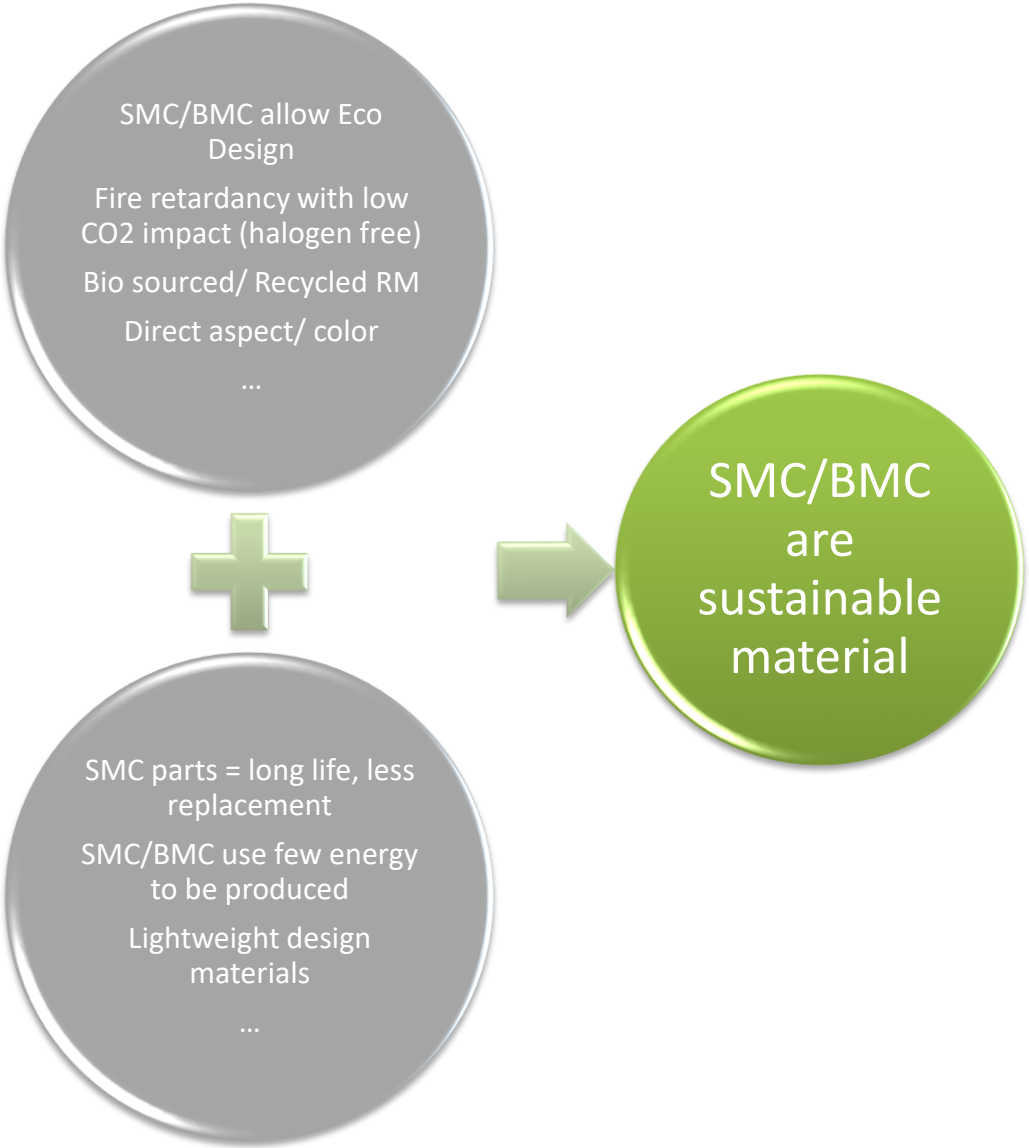


Roadmap Sustainability IDI

SMC as sustainable

Pro-techno Scenario

Sobriety Scenario



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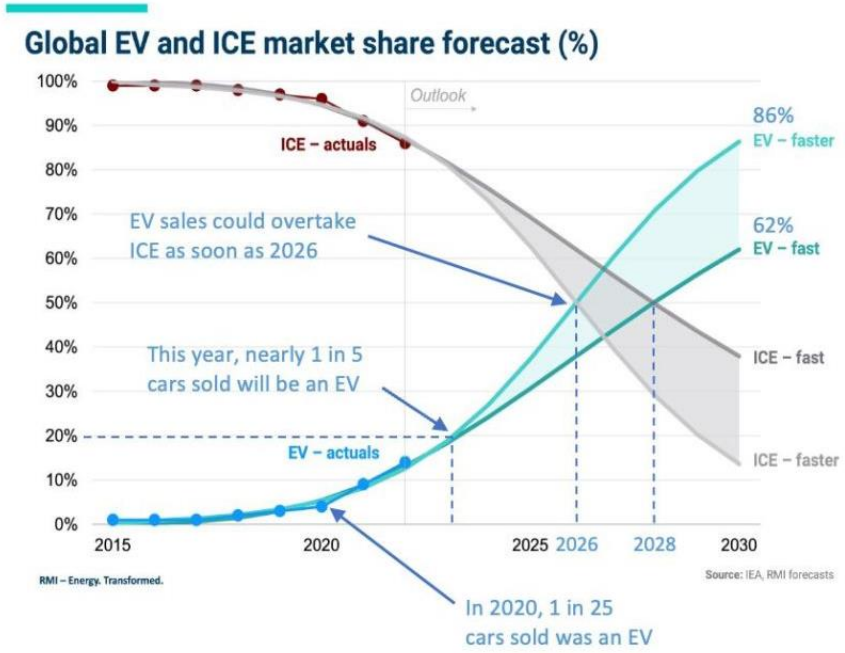
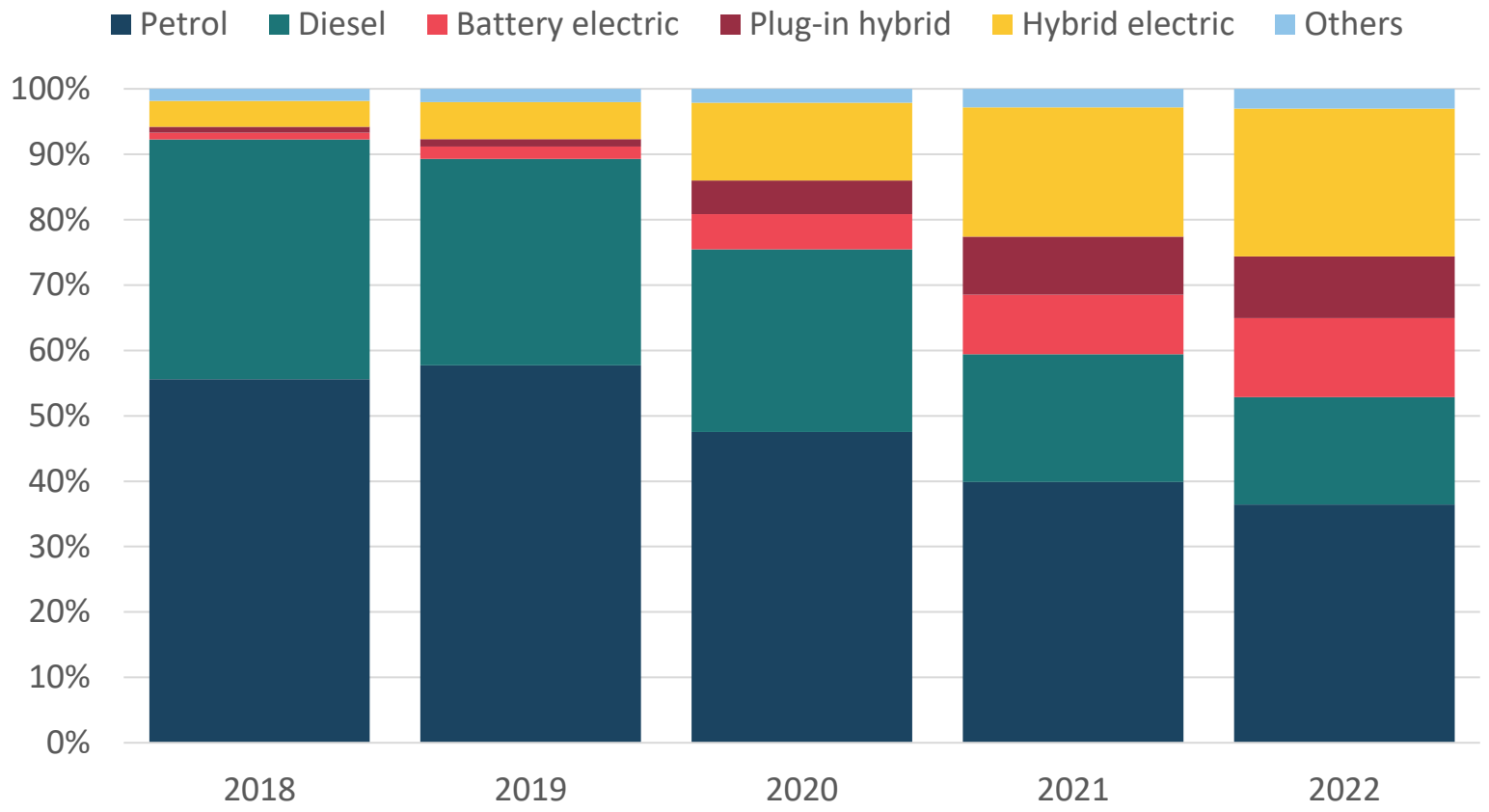
CASE STUDY : FLAMEVEX™ Flame Resistant Lightweight Composites

SUSTAINABILITY THROUGH APPLICATION

Sustainability Through application

EV Sales WW and in Europe





https://www.acea.auto/figure/fuel-types-of-new-passenger-cars-in-eu/

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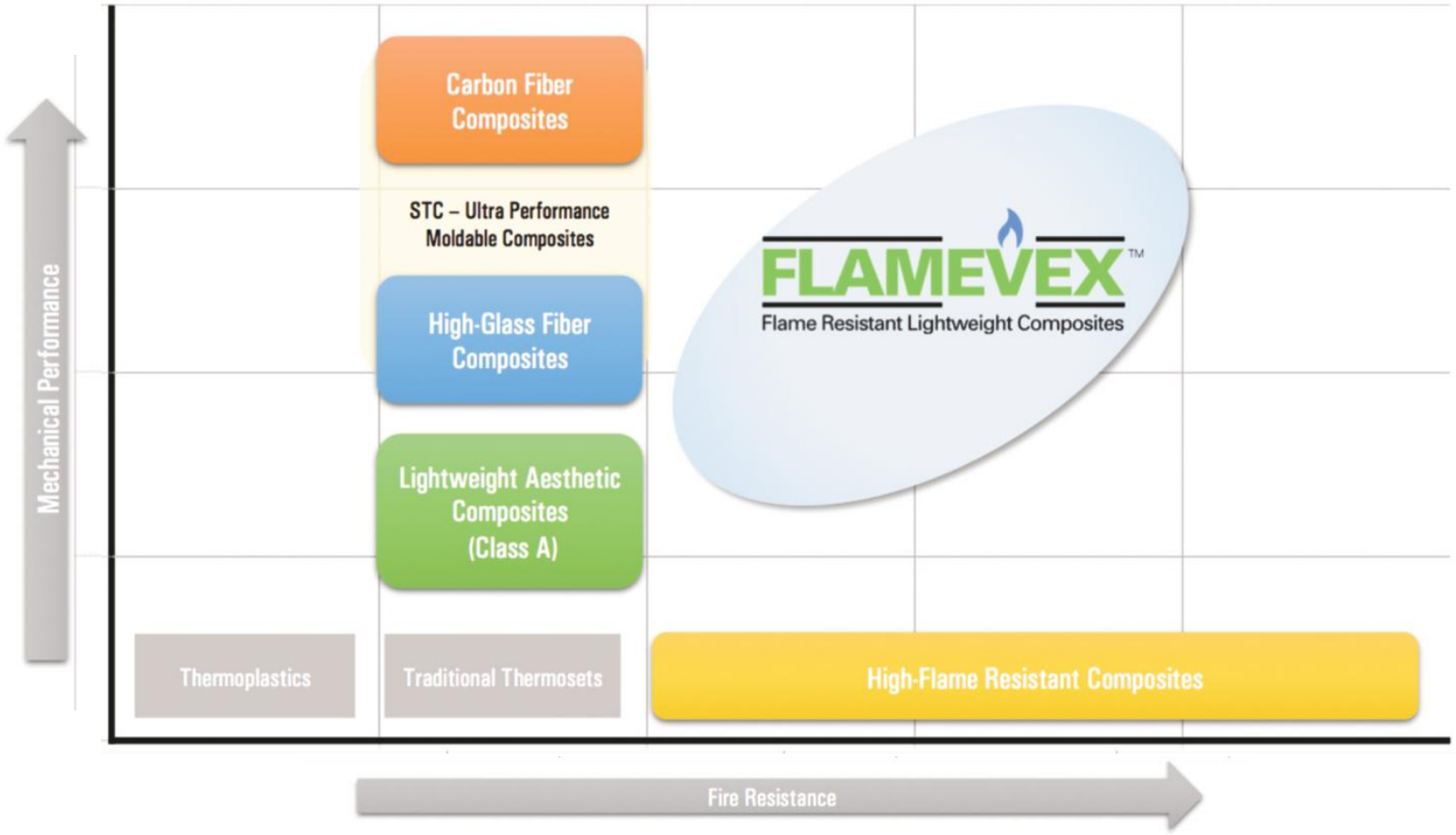
Sustainability Through application

Flamevex Grades



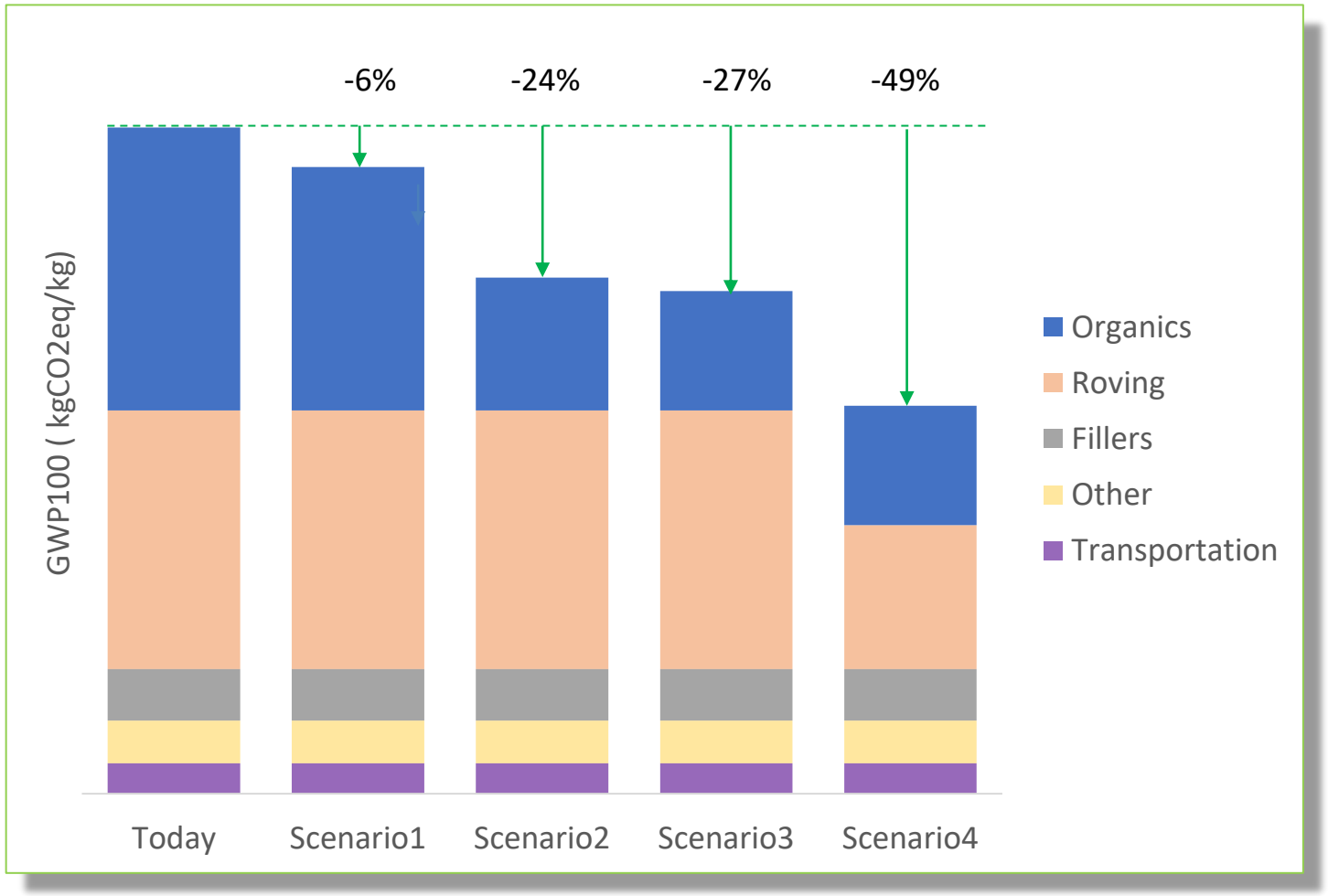
Sustainability Through application

Project description

- Battery Cover for **BEV**
- Transition from ICE vehicles to EV => **CO2 footprint reduction**
- **1 Platform** : 6 versions, >15 vehicles
- **Eco-design** : Thin part <3mm – less weight => better mileage + less Material CO2 impact
- **Halogen free** Material
- No **Painting needed** / Rust free / corrosion free
- **Automotive related cost**
- **SMC Locally** produced & Molded to **limit supply chain** CO2 Footprint

Sustainability Through application

CO2 fooprint: next steps

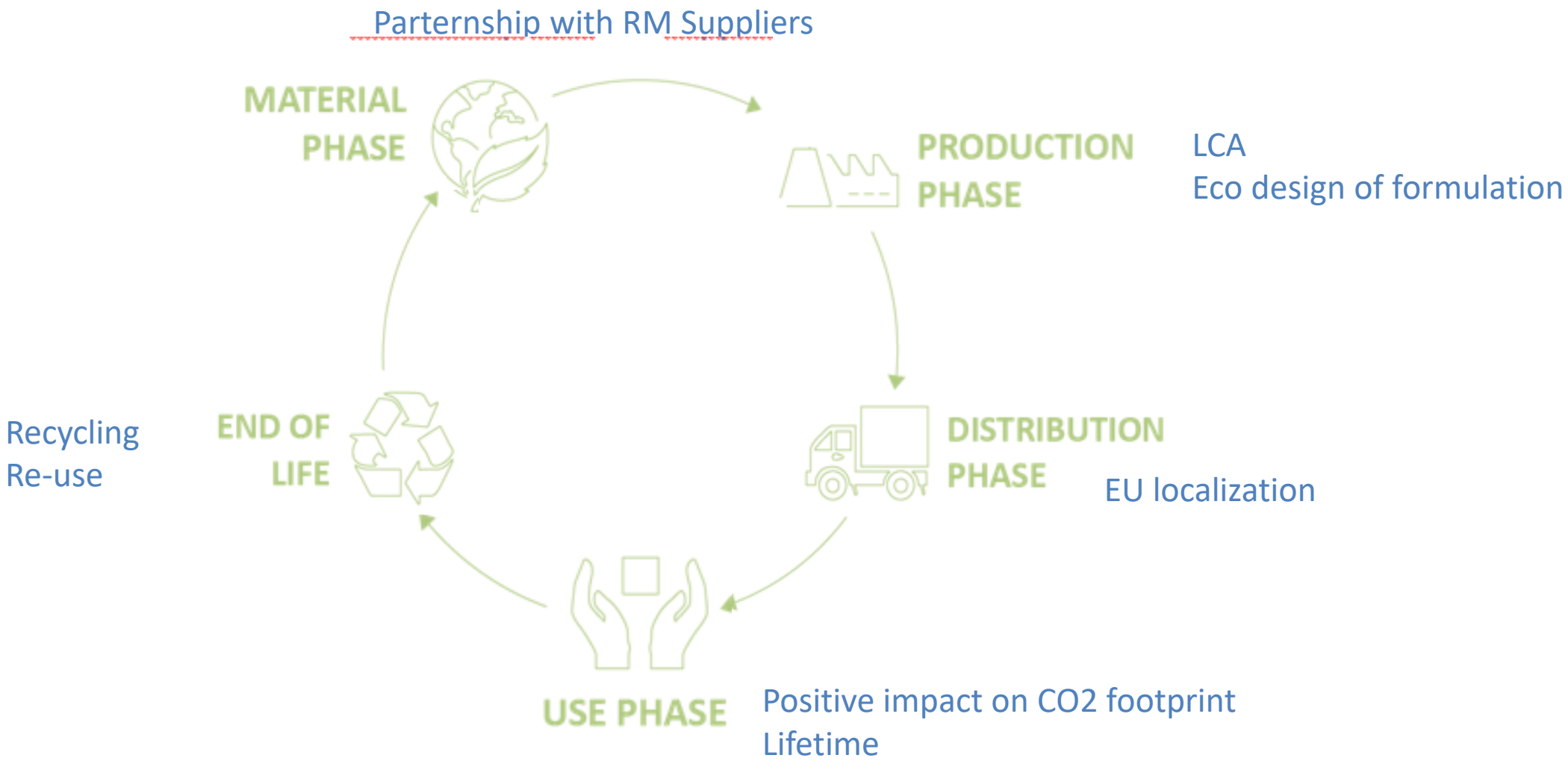


Different scenarii for reducing CO2 footprint of SMC:

- Bio sourced RM
- Recycled RM
- RM Suppliers choice
- Recycling partnership

SMC as sustainable solution

Conclusion



THANK YOU FOR YOUR ATTENTION

Some Questions ?

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