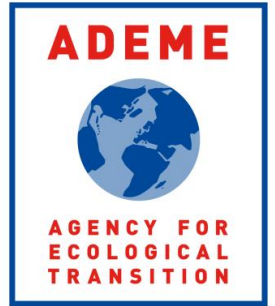




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UNECE – GRPE Workshop Carbon LCA of Vehicles

E4T2040 project, Base Carbone[®] and Bilan Produit[®]

E4T2040 project : IFPEN, cofunded by ADEME

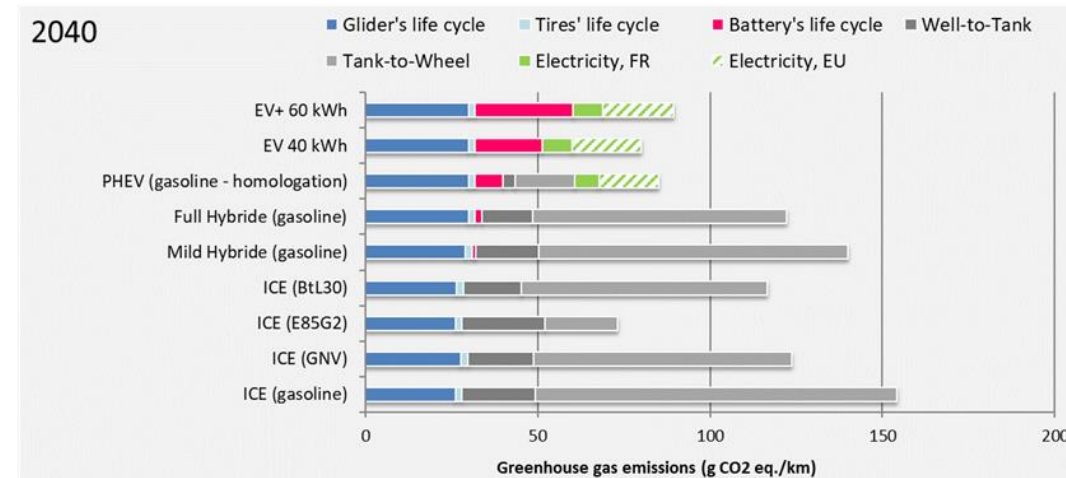
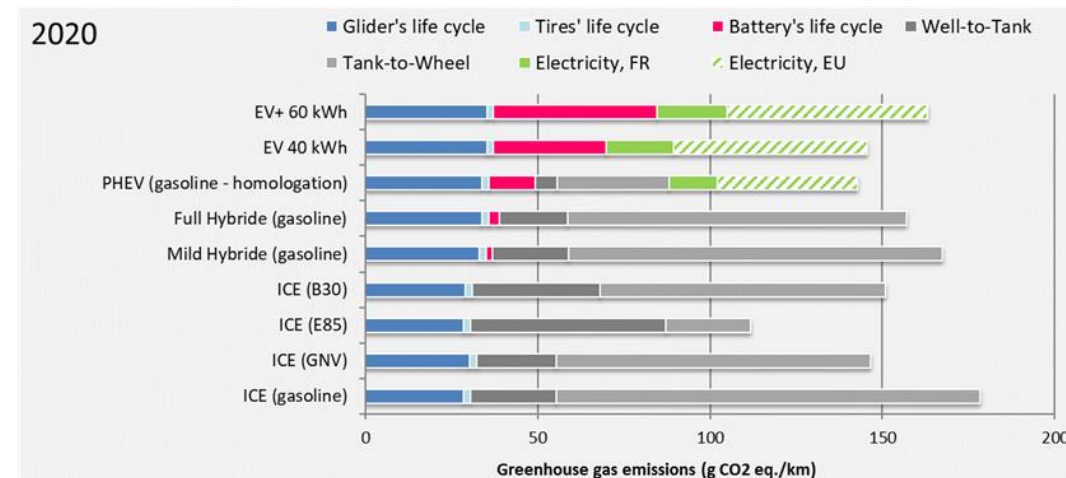
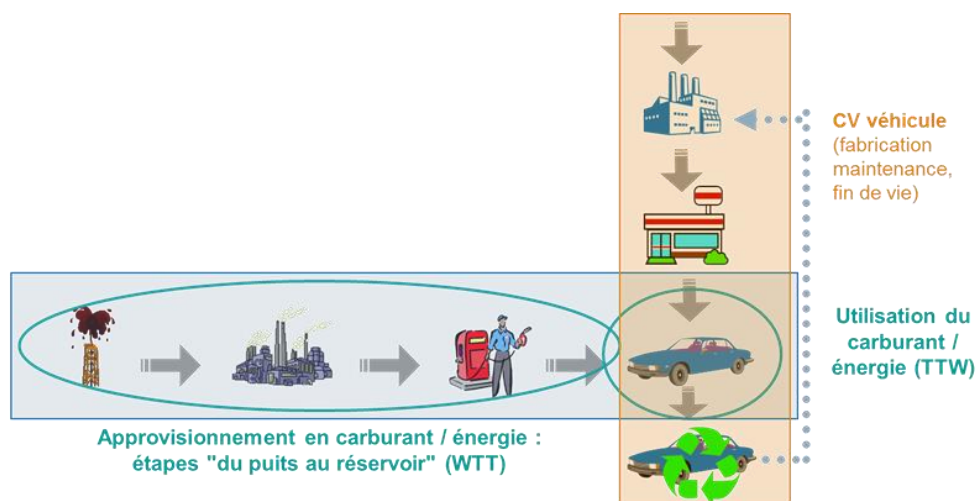
Comparison of Energy Balance, TCO, Environmental Impacts in 2020 & 2040



- Road Transport
- Various powertrains and fuels depending on vehicle type :
 - Gasoline or Diesel including HEV and PHEV, GNV, FCEV, BEV
- Energy efficiency : simulation on « real use cycles »
- Hypothesis for technical evolutions until 2040 (powertrains and vehicles)
- TCO based on fuel efficiency calculation + incentives

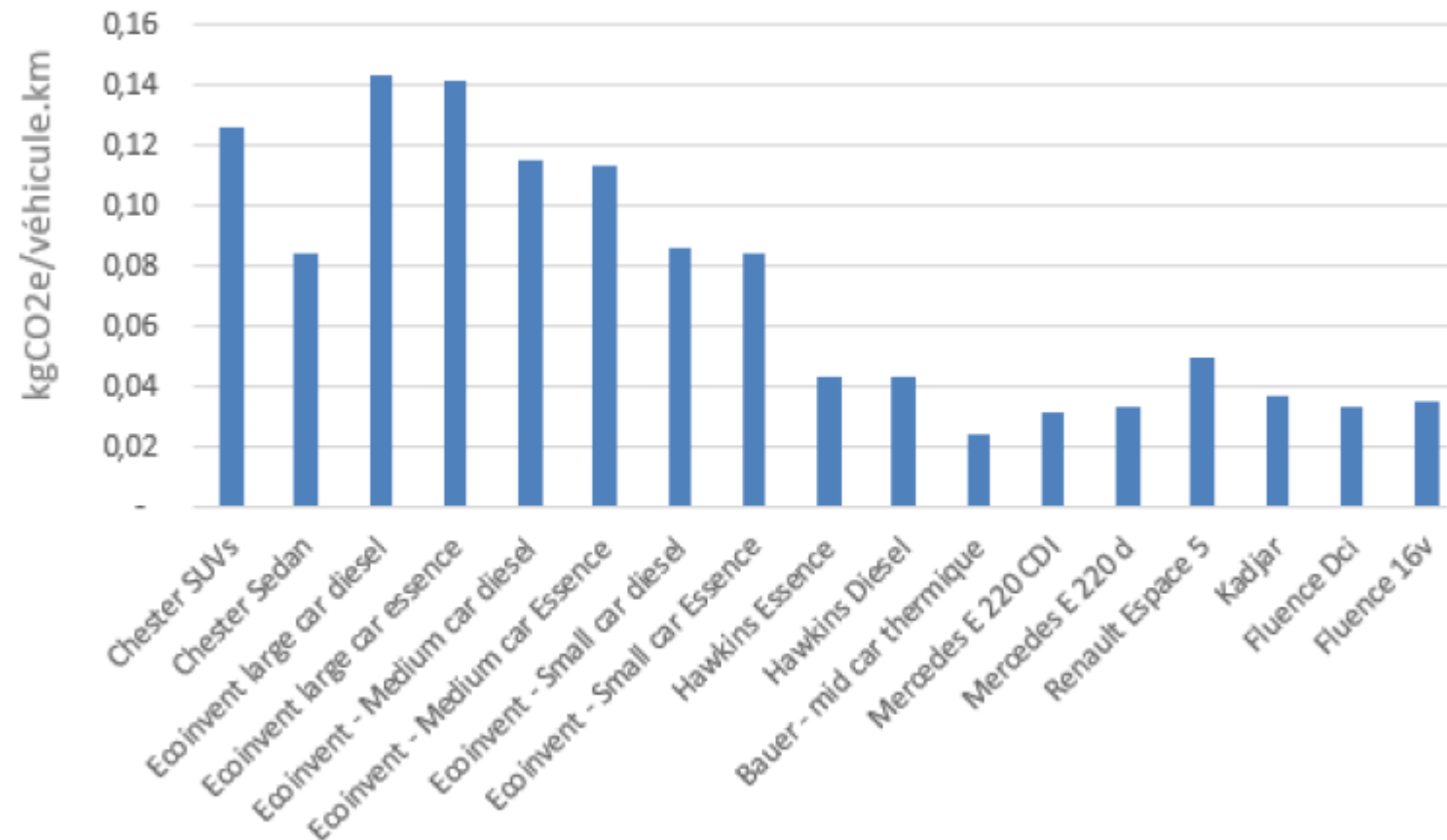
LCA in the E4T2040 project

- WtT for fuel/energy and vehicle life cycle : BoM, EcoInvent, former LCAs, GREET,...
- Fuel/energy use from detailed simulation
- Emissions from COPERT (« real use » incl non exh)
- Road and refuelling infrastructures out of scope



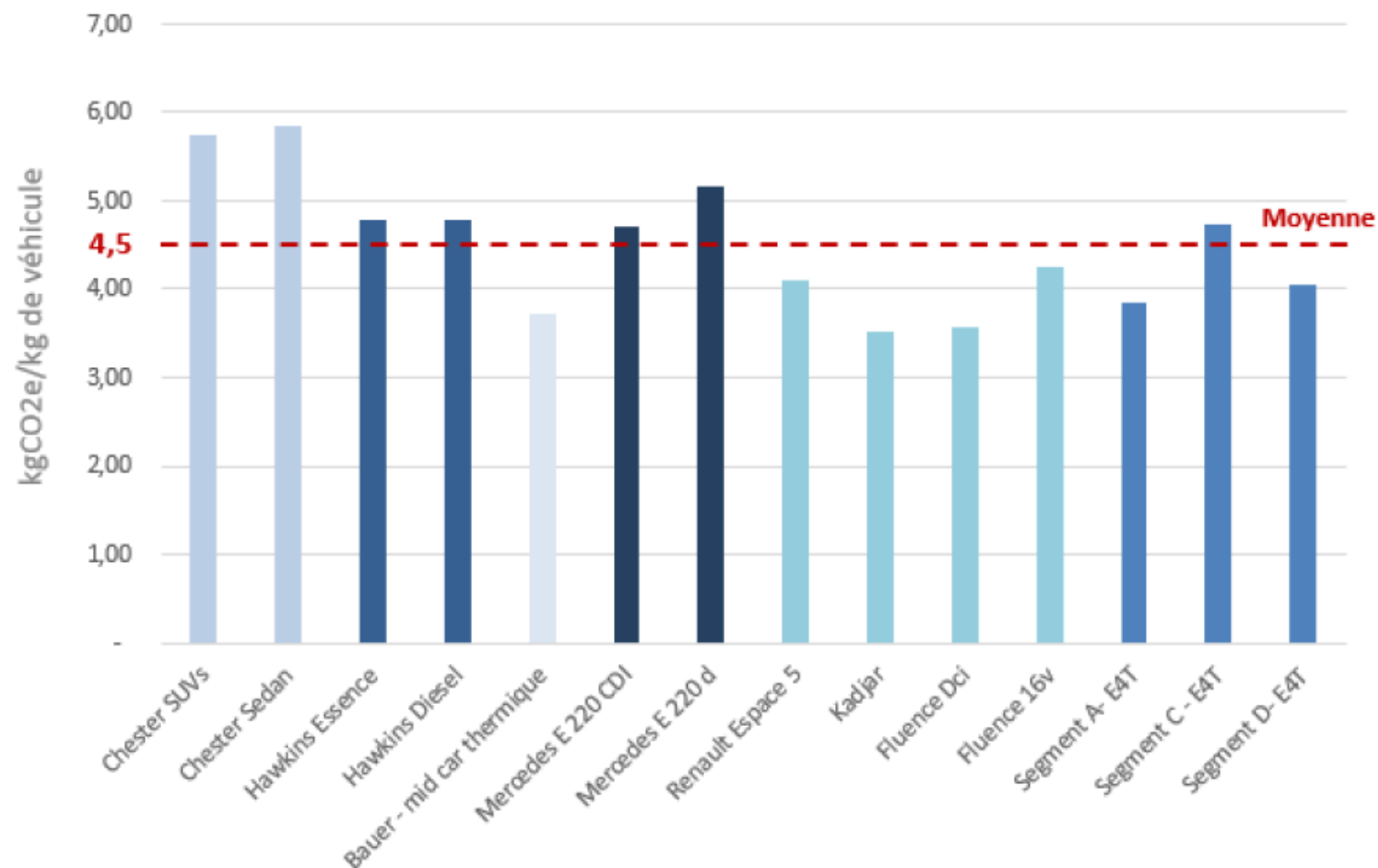
Base Carbone[®] - Vehicle manufacturing EF (1/2)

- Analysis of several LCA studies and the Ecoinvent database to calculate the greenhouse gas emissions per km for vehicle manufacturing
- Significant differences partly due to varying assumptions about total travelled distance (150 to 250,000 km) and the lifetime (10 to 15 years) of the vehicle



Base Carbone[®] Vehicle manufacturing EF (2/2)

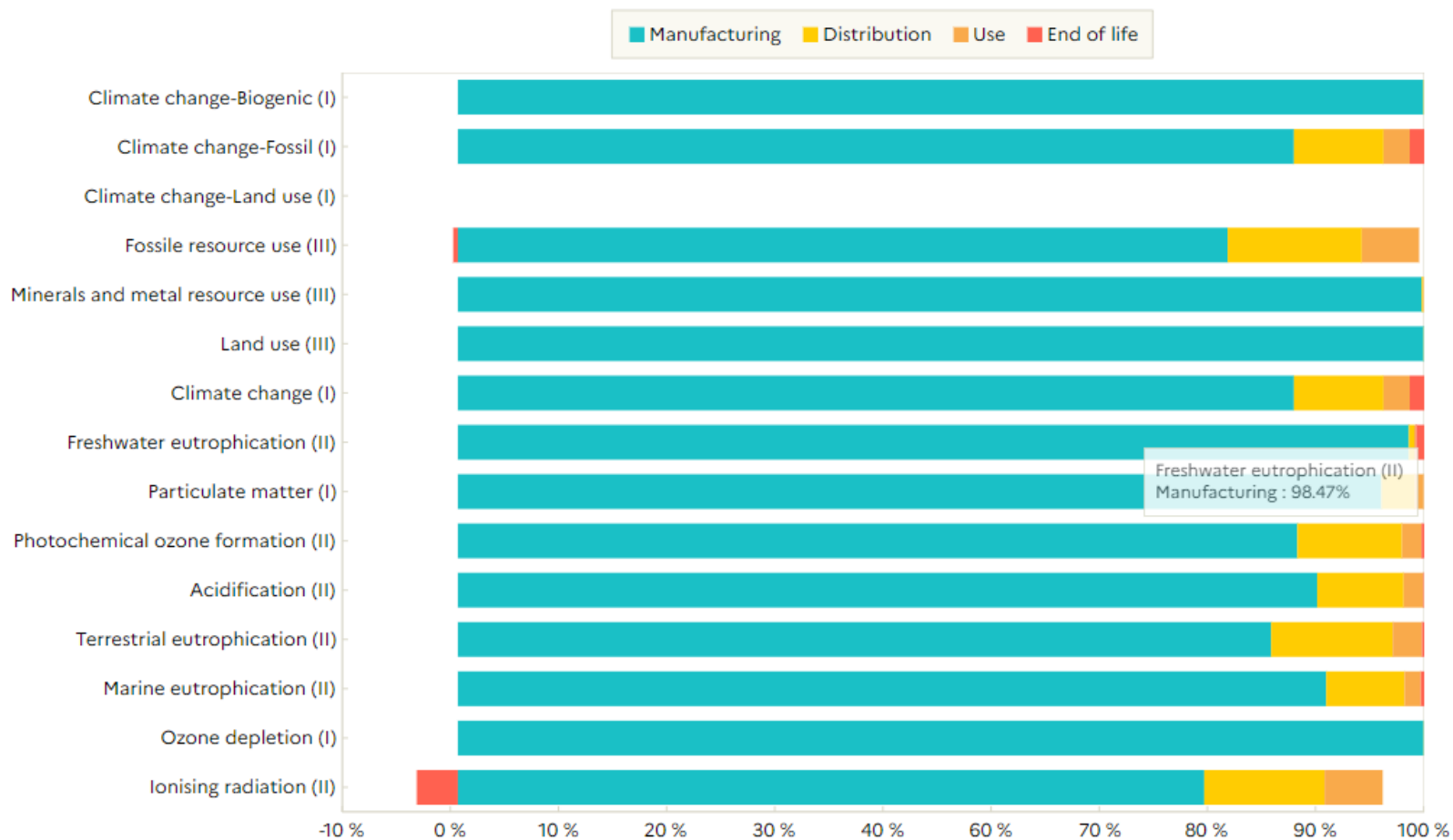
- Calculation of CO_{2eq} emissions per kg of vehicle by considering the mass of each vehicles -> lower dispersion of values between each study
- Mean value : 4.5 kgCO_{2eq}/kg of vehicle (for gasoline et Diesel vehicles only)
- More information : <https://bilans-ges.ademe.fr/en/accueil>



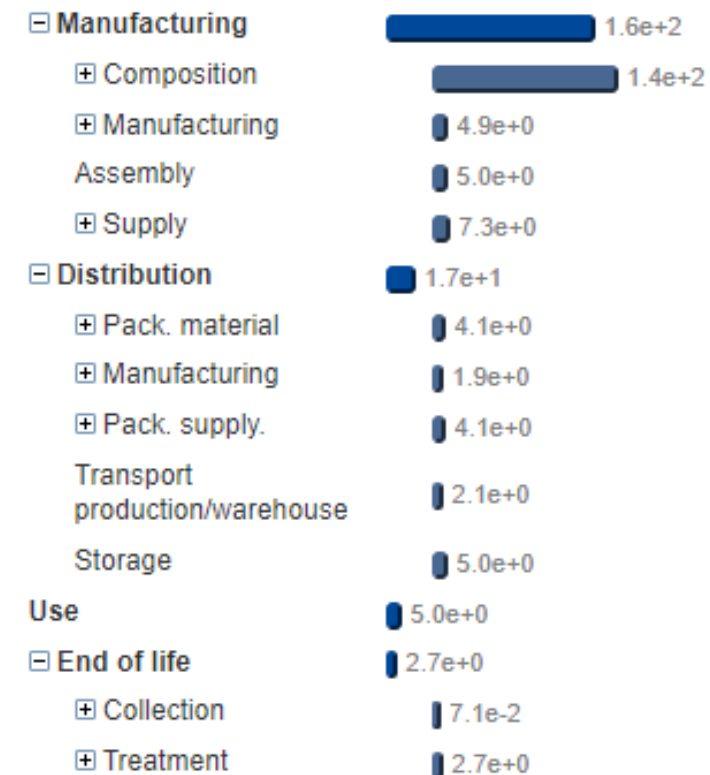
Bilan Produit[®] - General information

- A simplified tool for assessing the environmental footprint of products or services.
- A tool to raise awareness of eco-design and the life cycle and multi-criteria approach.
- Based on the Life Cycle Assessment (LCA) based on three principles :
 - A functional approach: evaluation of the environmental impacts induced by the function performed by the product.
 - A life cycle approach: all stages of the product's life are taken into account, from the extraction of raw materials to its disposal at the end of its life.
 - A multi-criteria approach: material and energy consumption, discharges and emissions into the air, water and soil pollution are quantified at each stage of the life cycle and expressed according to various indicators.
- Environmental impact indicators evaluated on the basis of the models/methods recommended by the European Commission in the context of the PEF work (EF package 3.0).
- Bilan Produit[®] is currently built for consumer products, mainly from the furniture, textile, tourism and electronics sectors ; **an adaptation to the automobile is being considered**

Bilan Produit[®] - example of results



Focus on climate change impact category



More information : https://base-impacts.ademe.fr/bilan-produit2/general_general-product



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Thank you for your attention

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