



Emission in transport how to measure them?

International Conference on Mobility Challenge 2021
Ecole CentraleSupelec Université Paris Saclay
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who we are

- ✓ we are a team of **certified carbon consultants** and **tech experts** with **40 years** combined experience in the financial sector
- ✓ we help our customers deliver impact, **focus their resources**, act on **what truly matters** and communicate with confidence on **climate**
- ✓ we are a **benefit company** (“entreprise à mission”) with a mission to make company carbon performance widely accessible to reduce emissions



« Le premier cargo de gaz naturel liquéfié neutre en carbone est arrivé en Europe ! »





InLinkUK



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Shell Go+ members are now driving carbon neutral, helping to protect and replant forests. Join them today!



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WHEN YOU GO+ IT

GO WELL



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The more you drive, the more you clean air

Prototype shown. Production model to be introduced in your region and country may vary.

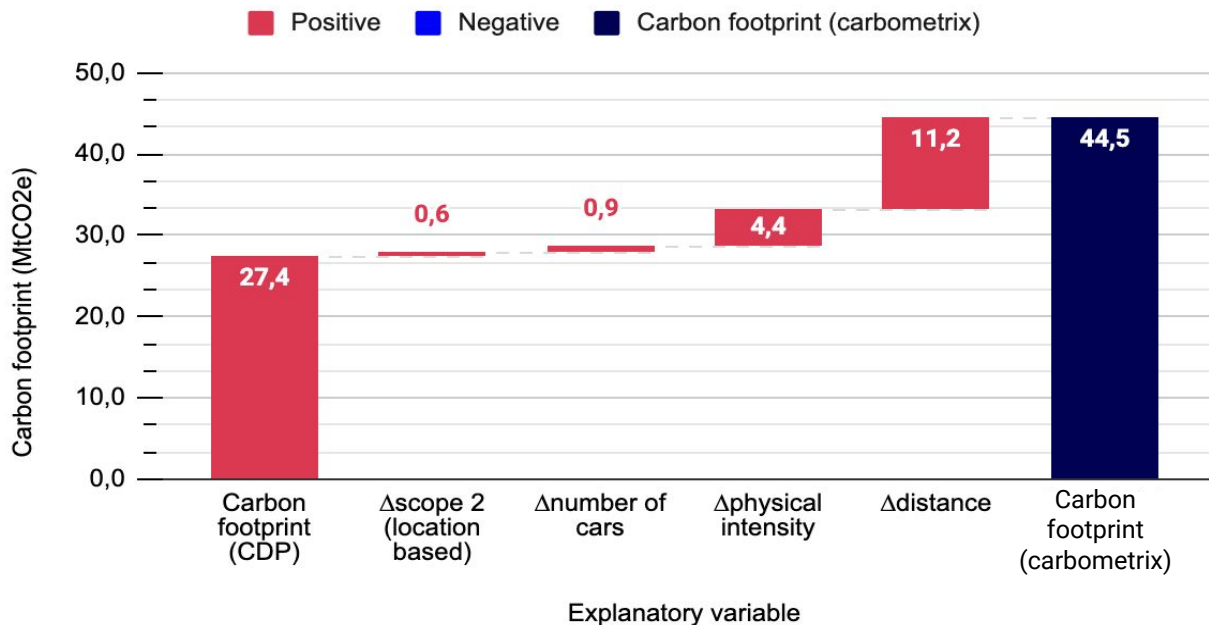


TOYOTA

divergence in greenhouse gas emission reporting in the automotive industry



Subaru



our research on auto-manufacturers GHG emissions



objective

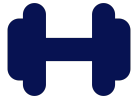
- assess auto-manufacturers total absolute GHG emissions and emission intensity
- use an homogeneous method to be able to independently compare their performance



perimeter

- 48 automakers representing 99% of worldwide sales
- 4Gt CO₂e i.e. 8% of worldwide GHG emissions

our research on auto-manufacturers GHG emissions



method

- asset based
- from sales data and WLTP
- independent of company self reported data
- a lot of data crunching



key data used

- worldwide sales, model per model, country per country (marklines)
- carbon performance per model (EEA, Xiaoxiongyouhao, ICCT)
- company annual and sustainability reports, CDP publication and macroeconomic indicators

there are international standards to count what matters at a company level*

Scope 1



Companies vehicles



Fuel consumption



Fugitive and process emissions

Scope 2



Electric consumption



Cooling & heating networks

Scope 3



Purchase of good and services



Capital goods



Business travel, employee commuting



Used of sold products



End of life

*ISO 10064, GHG protocol, Bilan Carbone

automakers' emissions by scope

Breakdown of automakers' emissions by scopes

Share of total emissions (in %)



tank-to-wheel and well-to-tank

GHG emissions of the automotive industry: understanding the different approaches

thermal engines



fuel/electricity production



energy distribution



energy consumption



electric engines



Well-to-Tank
(from energy extraction to car tank)

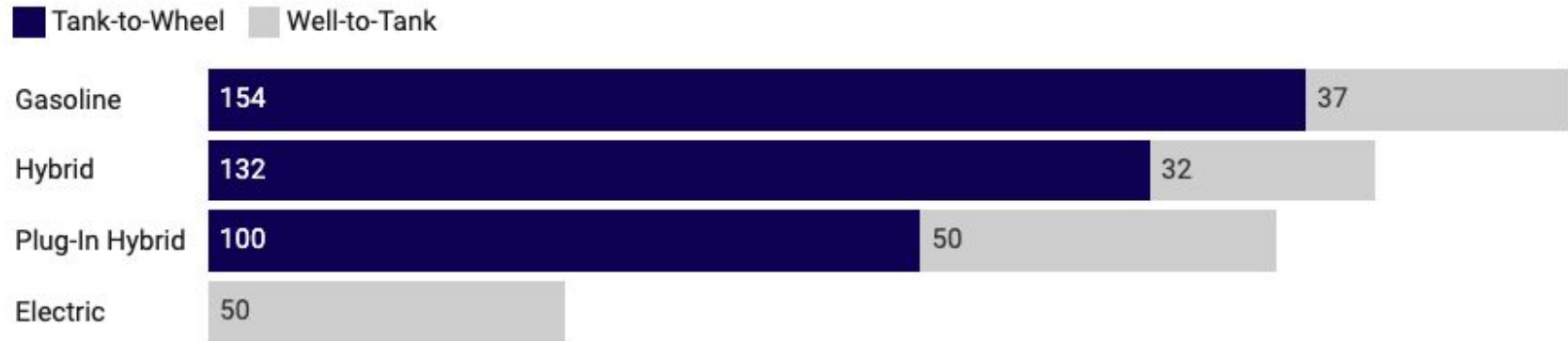
Tank-to-Wheel
(from car tank to energy consumption)

Well-to-Wheel
(from extraction to consumption)

car engine performance

Car engine performance in gCO₂e/km

Computations for a medium car model in the EU.



limits of our method

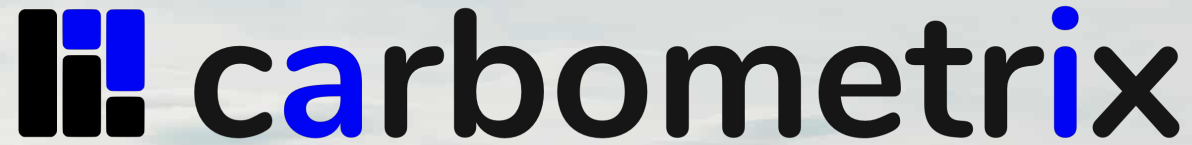
- **reliance on WLTP norm**
 - underestimation of emission from hybrid models
 - well to tank emissions not taken into account
- **matching of models and brands to auto-manufacturers**
 - not perfect
- **no differentiation of electric, hybrid and plug-in hybrid for certain brands**
 - ex Kia-Hyundai

carbon intensity ranking

Rank	Group	WTW (g CO2e/km)	Rank change (vs 2019)
1	TESLA	60	0
2	TOYOTA	170	0
3	SUZUKI	178	0
4	RENAULT	185	1
5	HYUNDAI	188	2
6	BYD	189	-2
7	HONDA	193	-1
8	Mazda	195	0
9	SAIC	196	1
10	VOLKSWAGEN	196	-1

data sources

- European Environment Agency <http://co2cars.apps.eea.europa.eu/> European registration database with model specifications (including fuel type and WLTP measures of gCO₂/km)
- Xiaoxiongyouhao http://www.xiaoxiongyouhao.com/page_rank.php Chinese user-reported fuel consumption database, useful to get information about Chinese manufacturers. Fuel consumption for each model are from the Ministry of Industry and Information Technology (MIIT)
- Marklines https://www.marklines.com/porta_top_en.html, worldwide sales of auto model per model
- CDP <https://www.cdp.net/en>: declarative information of emissions by scope.
- Company annual and sustainability reports: used for cross-checking sales and revenue of each companies
- Electricity power plants worldwide: Enerdata <https://www.enerdata.fr/>
- ADEME <https://www.ademe.fr/>
- ICCT <https://theicct.org/>
- IPCC <https://www.ipcc.ch/>
- LEI database <https://search.gleif.org/#/search/>
- Automobile Club Luxembourg:
<https://www.acl.lu/getmedia/a5db9a90-bca3-4f4c-98f5-e2ba26935425/Liste-vehicules-electrifies.pdf>



Carbon footprint of any company

Measure what counts to actively contribute to climate change mitigation

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