ICAI 2024

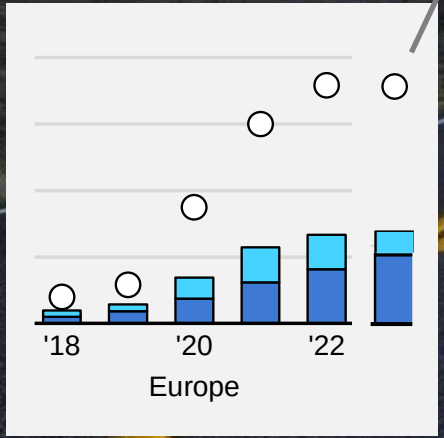
STORM AHEAD

Electrification, Affordability and the Chinese Challenge

Tommaso Pardi
Gerpisa - CNRS

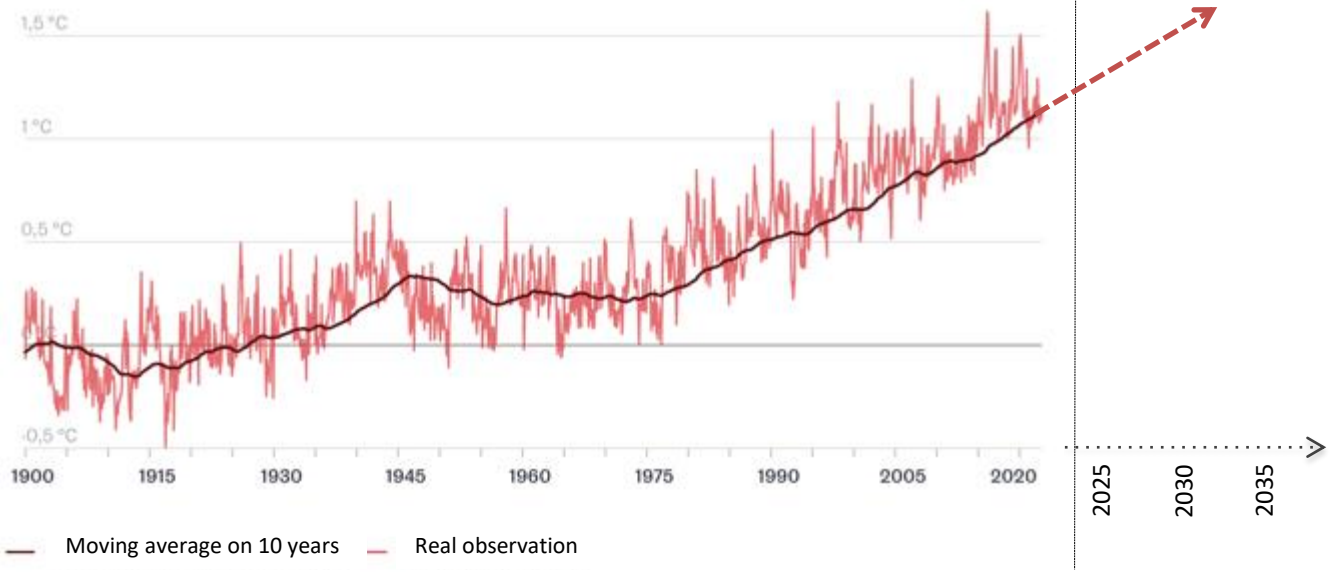
2035
100%

2023
17%



"I hope the ban will apply a little later, because I don't think we'll be able to do it without damaging the whole European automotive industry and value chain." (Luca de Meo, president of ACEA, 03/2024).

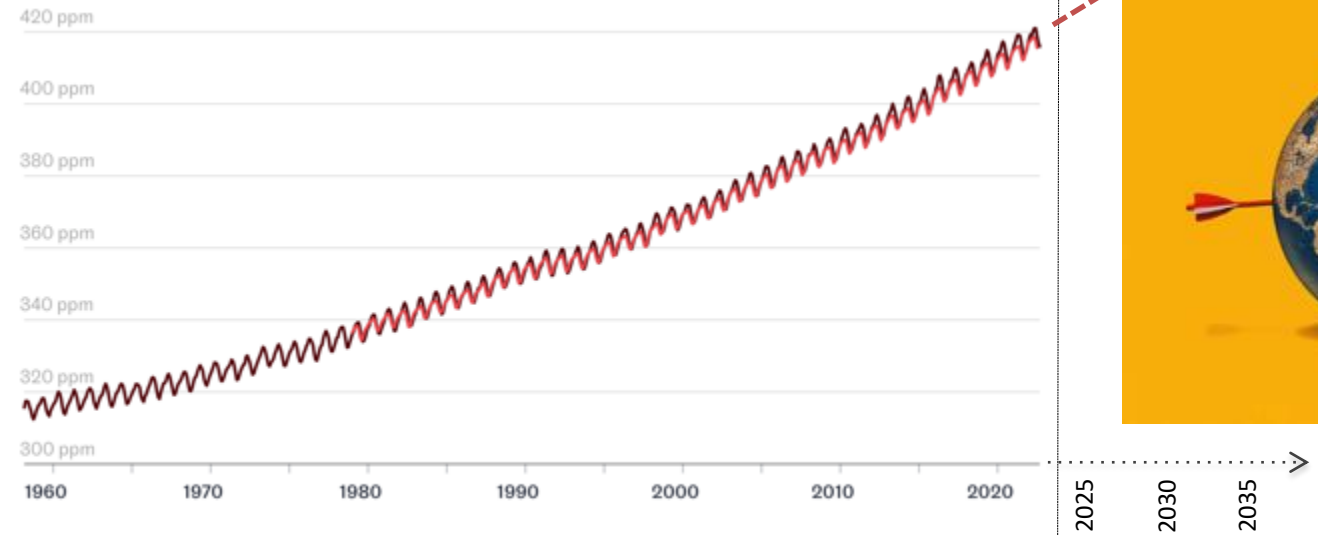
The last ten years have been **the warmest ever observed**



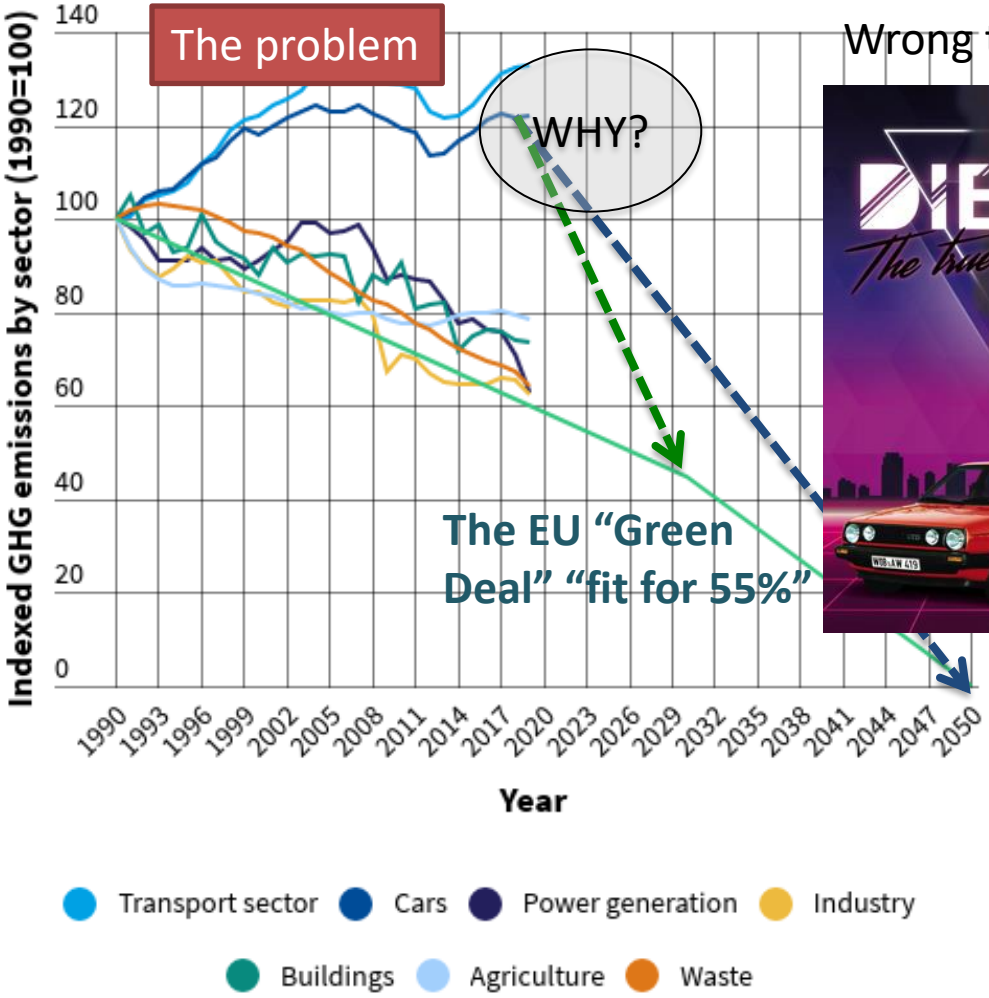
2024

- **Climate crisis**

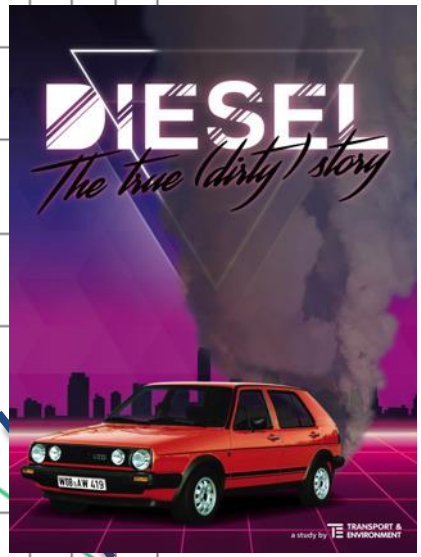
The level of concentration of CO_2 **has never been so high and keeps growing**



2024



Wrong technology + Cheating



The EU Green Transition - 100% target in 2050

The problem

WHY?

Right technology + No “cheating”

NEDC → WLTP + RDE
On Board Devices

The EU “Green Deal” “fit for 55%”

The EU Green Transition - 100% target in 2050

Indexed GHG emissions by sector (1990=100)

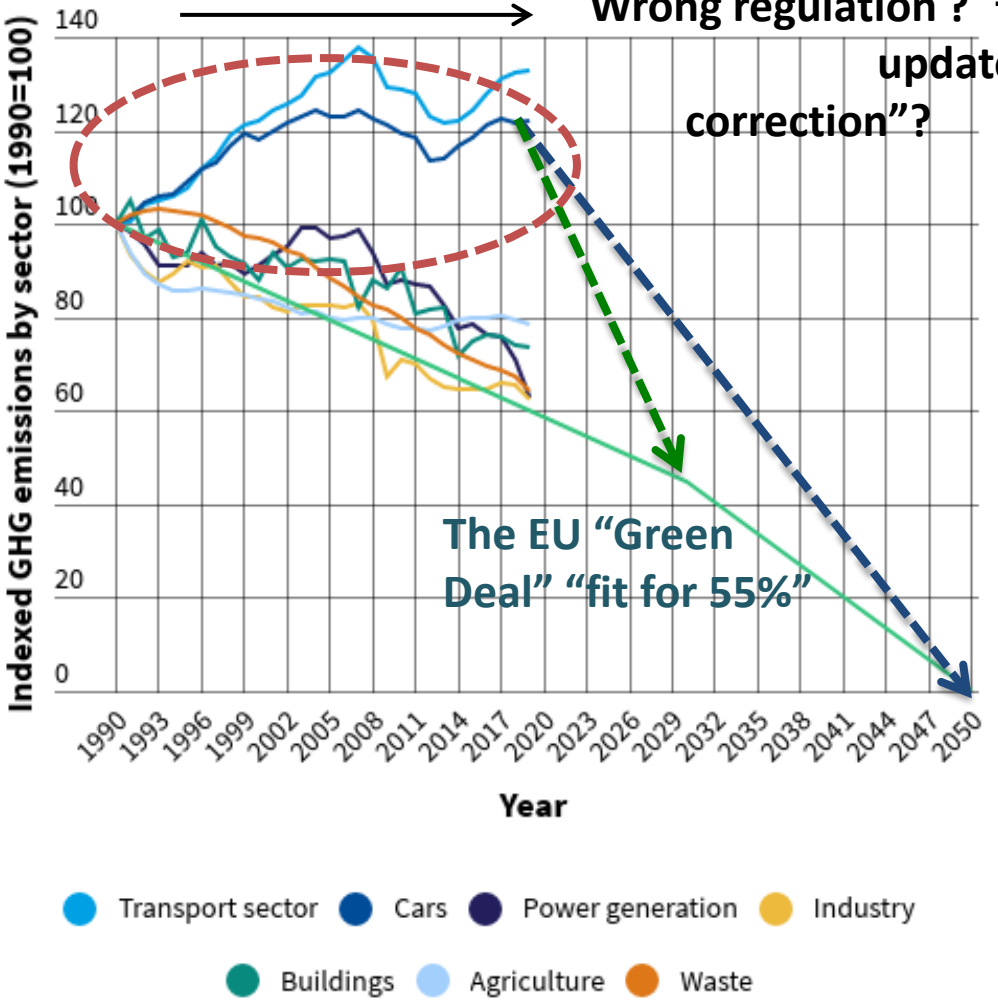
140
120
100
80
60
40
20
0

1990 1993 1996 1999 2002 2005 2008 2011 2014 2017 2020 2023 2026 2029 2032 2035 2038 2041 2044 2047 2050

Year

Transport sector
Cars
Power generation
Industry
Buildings
Agriculture
Waste

Wrong regulation ? → Is the "Fit for 55" update the "right correction"?

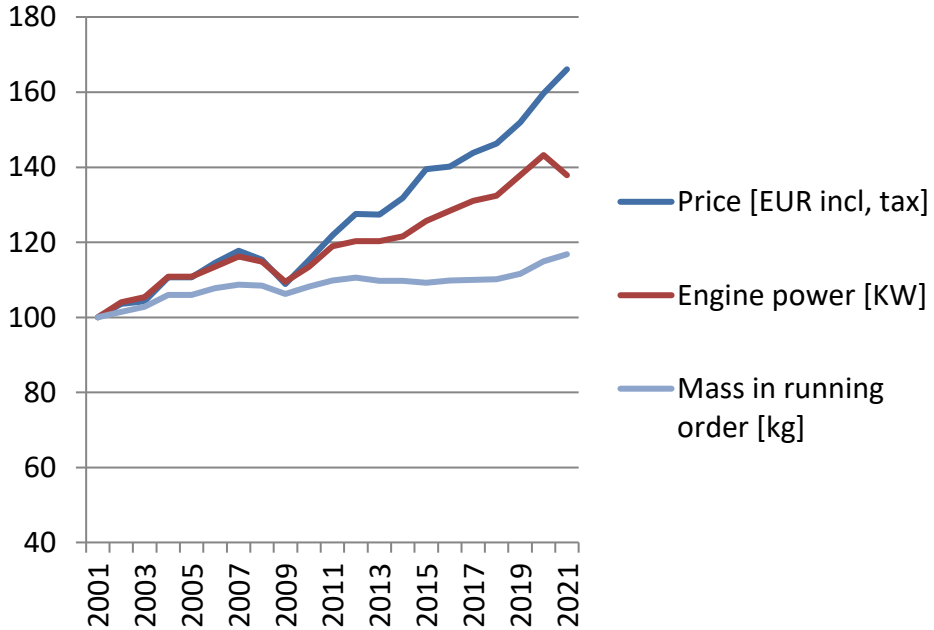


The EU Green Transition - 100% target in 2050

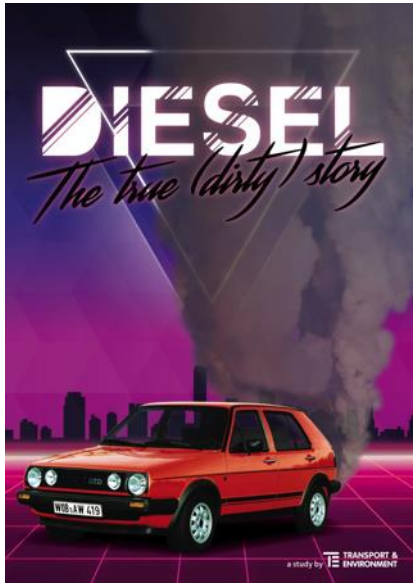
A “wrong” diagnosis →

…but also :

The upmarket drift of the average European new car



Not only…



Two key regulations

1) The 92/53 type-approval regulation

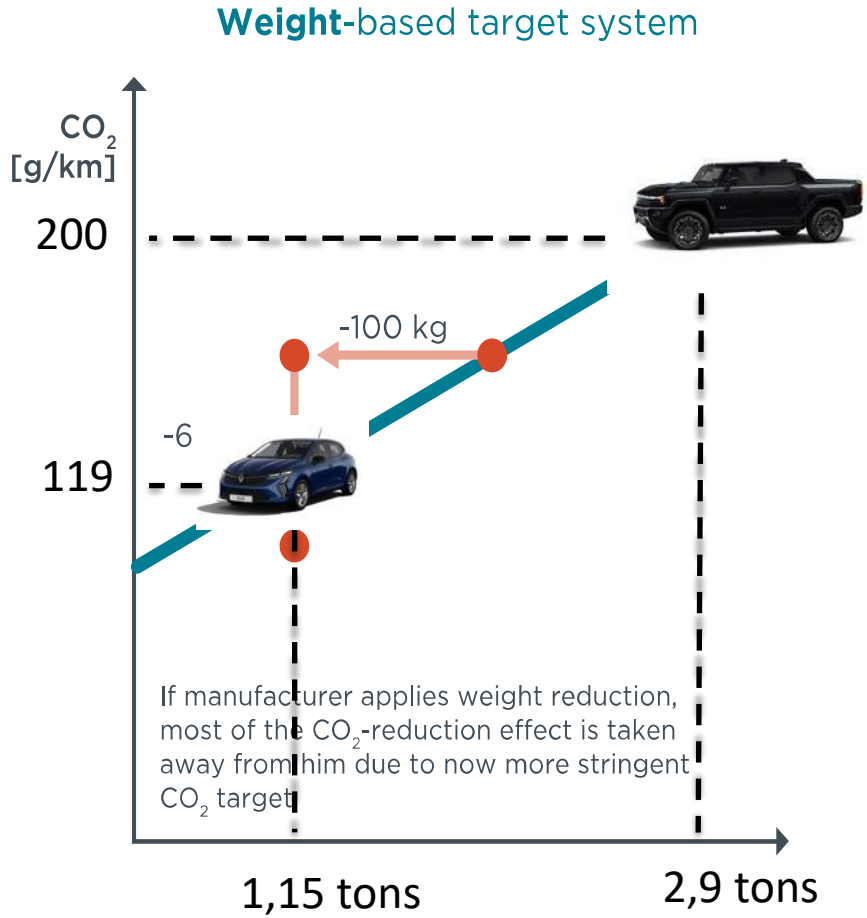
→ **200 new norms** (1992-2022) …more coming → (SARS 2)

→ Materials

→ Battery regulation

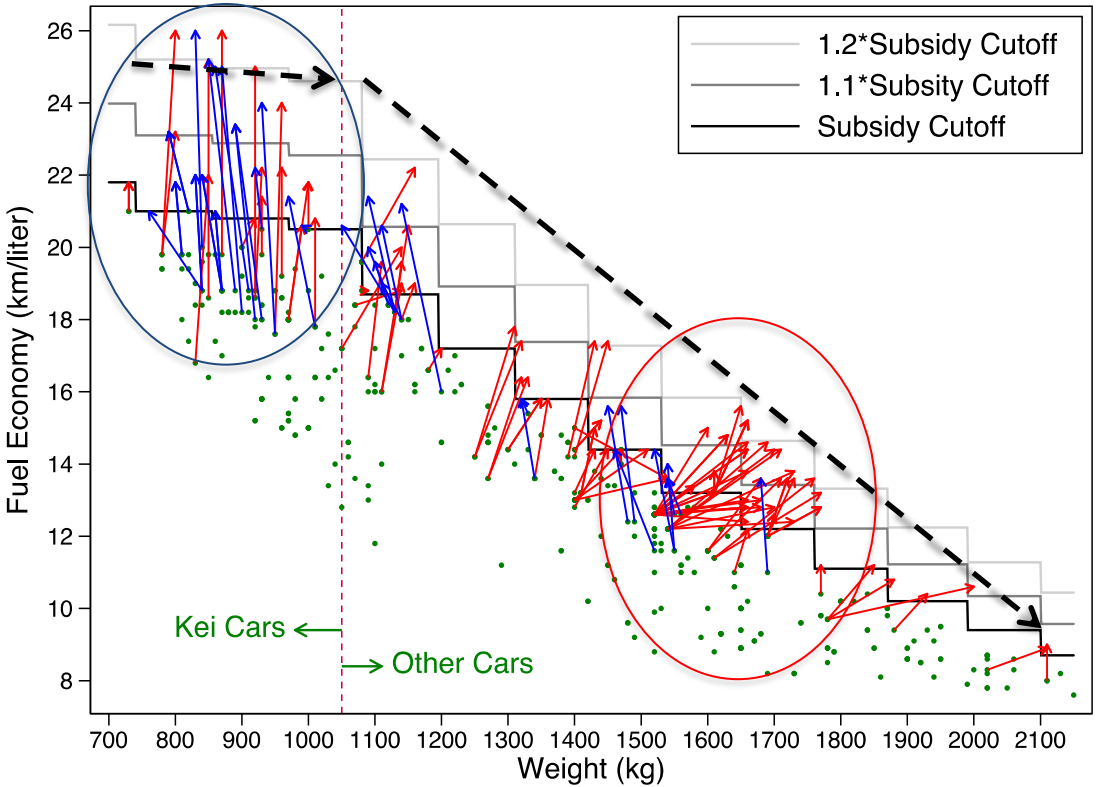
Two key regulations

2) The 443/2009 CO2 regulation



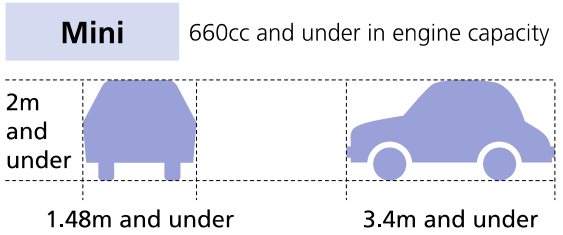
"**Weight-based CO_2 standards for cars are a very bad idea for the following reasons: they punish positive action**." (T&E 2007).

Figure 5: Fuel Economy and Weight before and after the Policy Change



Japan

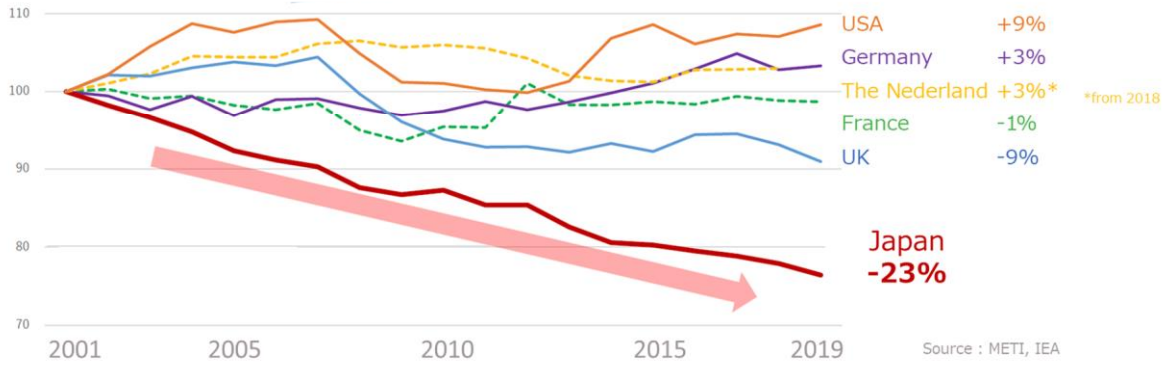
Kei cars



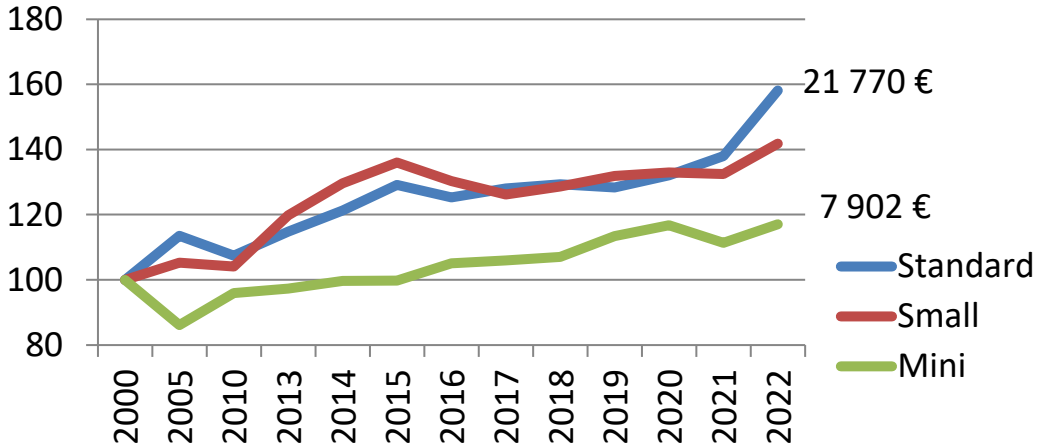
Note: A vehicle that exceeds any one of the requisites above is classified in the higher category; the Road Vehicles Act also establishes the categories of large and small special-purpose vehicles.

Source: JAMA

CO2 emissions from car transport (selected countries)



Average production value per car in Japan



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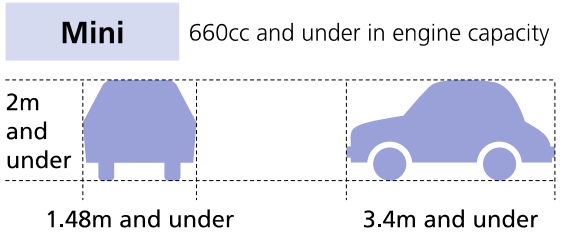

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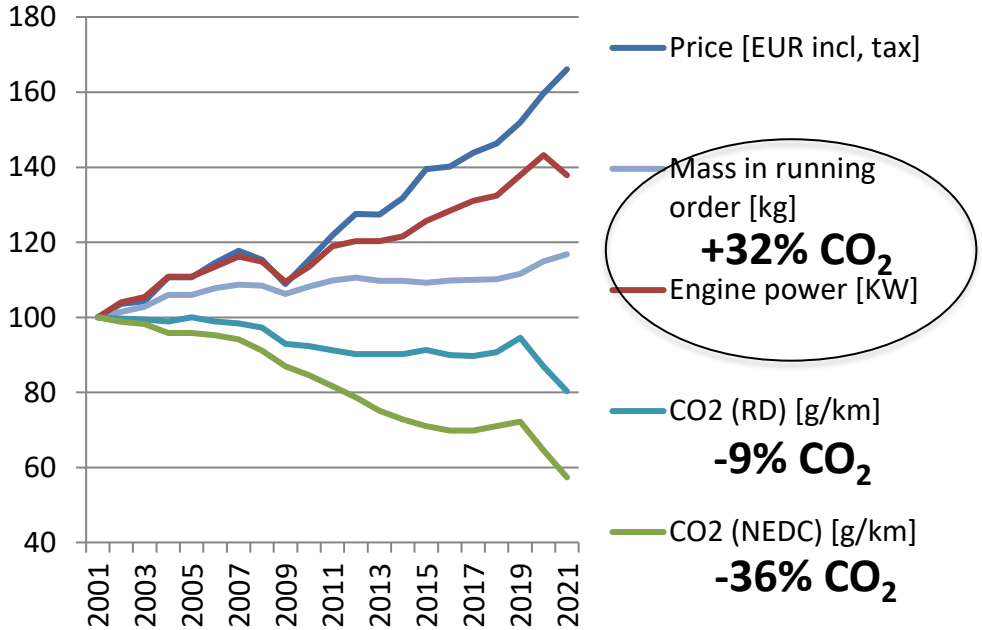
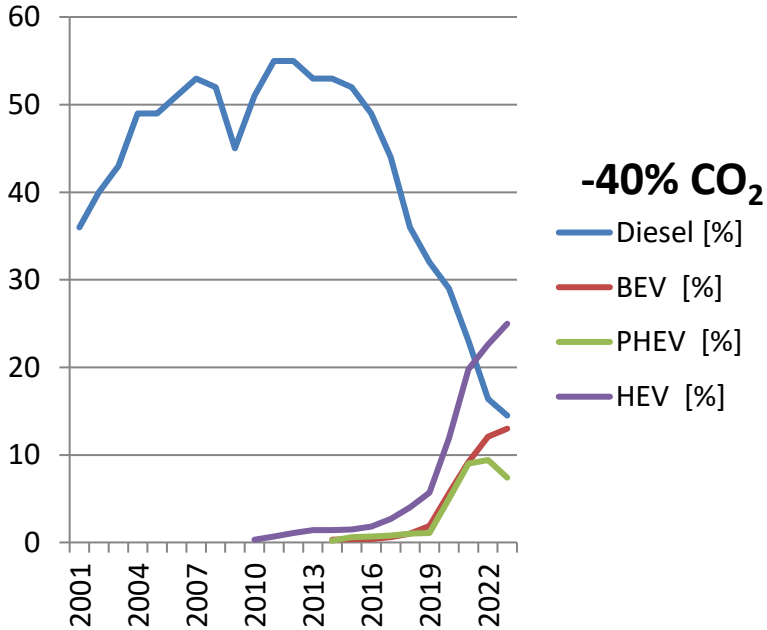
Source: JAMA

1) Almost no CO2 gains

The upmarket drift of the average European new car



In 2019 the net CO2 real reduction **was only 5%**, **when 48% was required** to meet the 2020/2021 CO2 TARGET

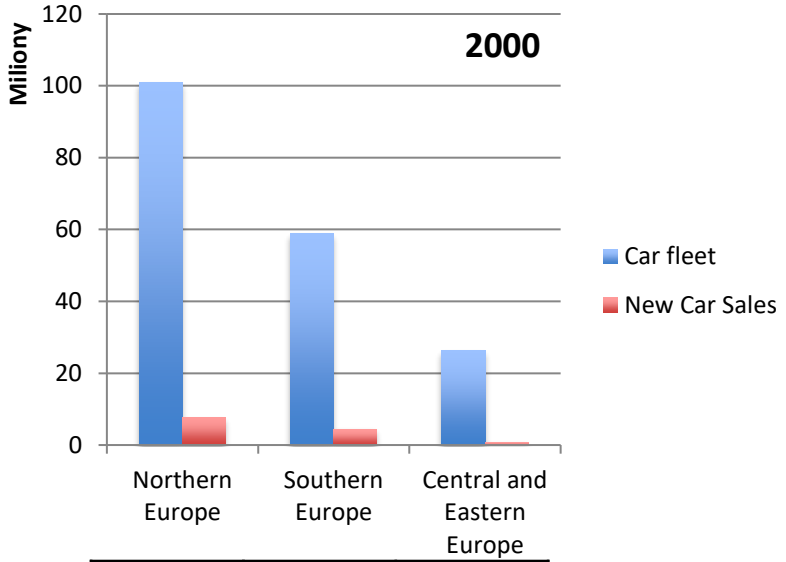


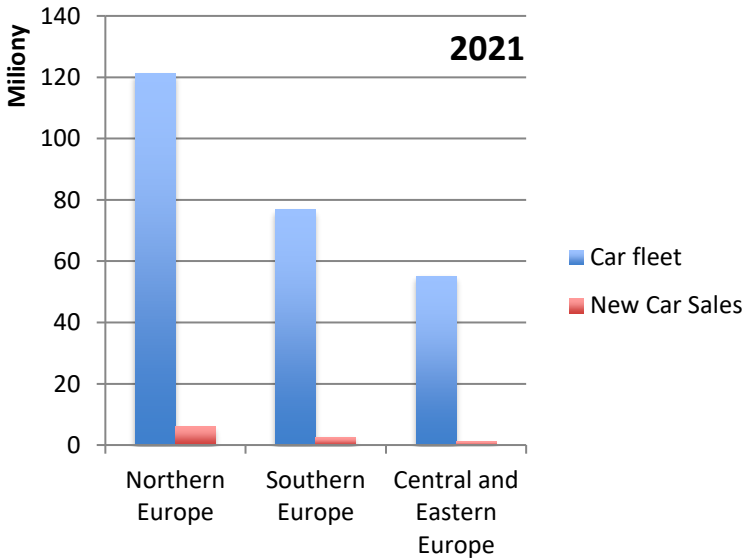
The problem is the car fleet:
186 millions in 2000
247 millions in 2019
253 millions in 2021

The (only) EU solution is new car sales:
13 millions in 2000
13 millions in 2019
10 millions in 2021

Fleet renewal:

6,9% in 2000: 15 years
5,4% in 2019: 19 years
3,8% in 2021: 26 years





NCS/CF	7,5%	7,6%	3,6%
Years to renew the CF	**13**	**13**	**31**

4,9%	3,4%	2,1%
20 (+7)	**29** (+16)	**48** (+17)

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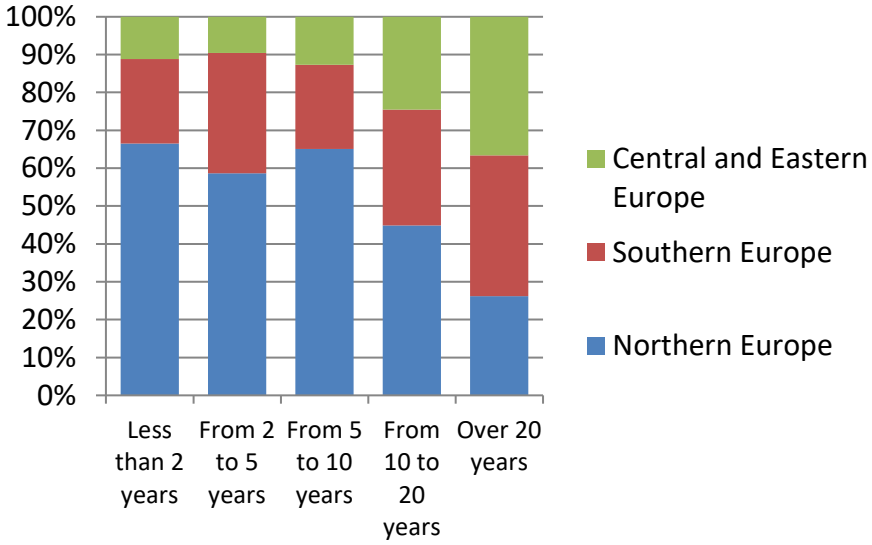
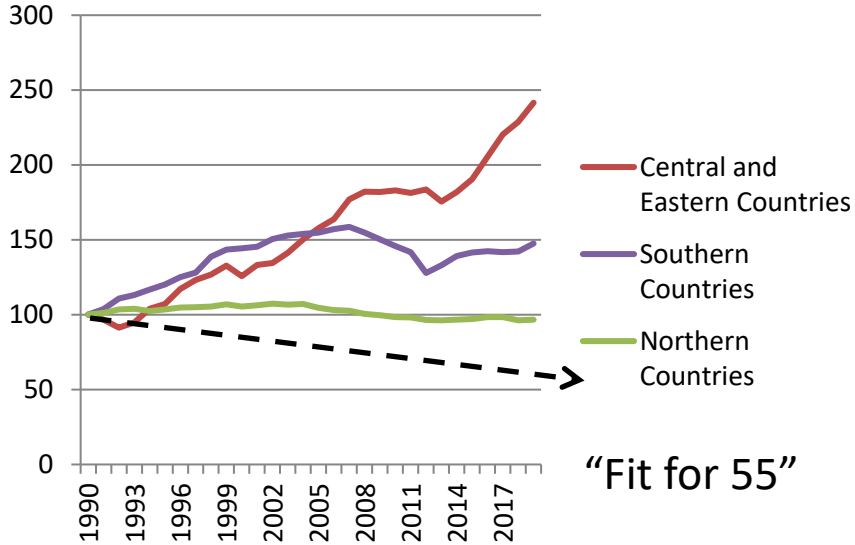
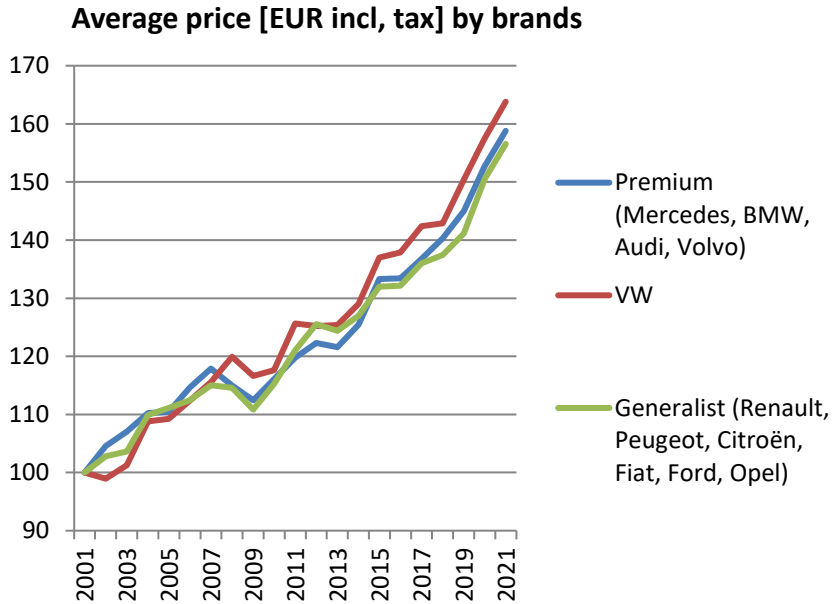
2021 EU 28 Car fleet composition:
A growing unequal polarized access to new cars

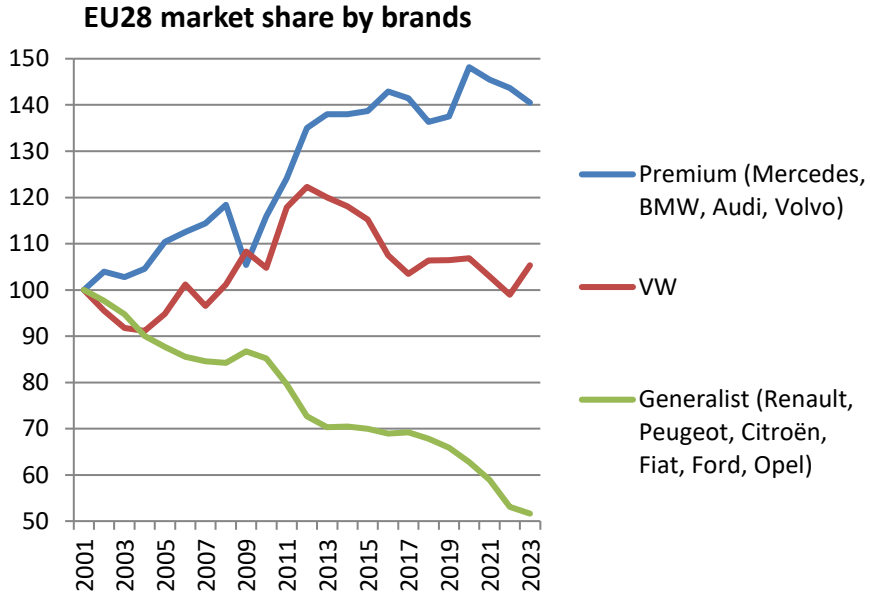


Greenhouse gases from fuel combustion in cars by EU28 country groups (1990=100 - 2018)



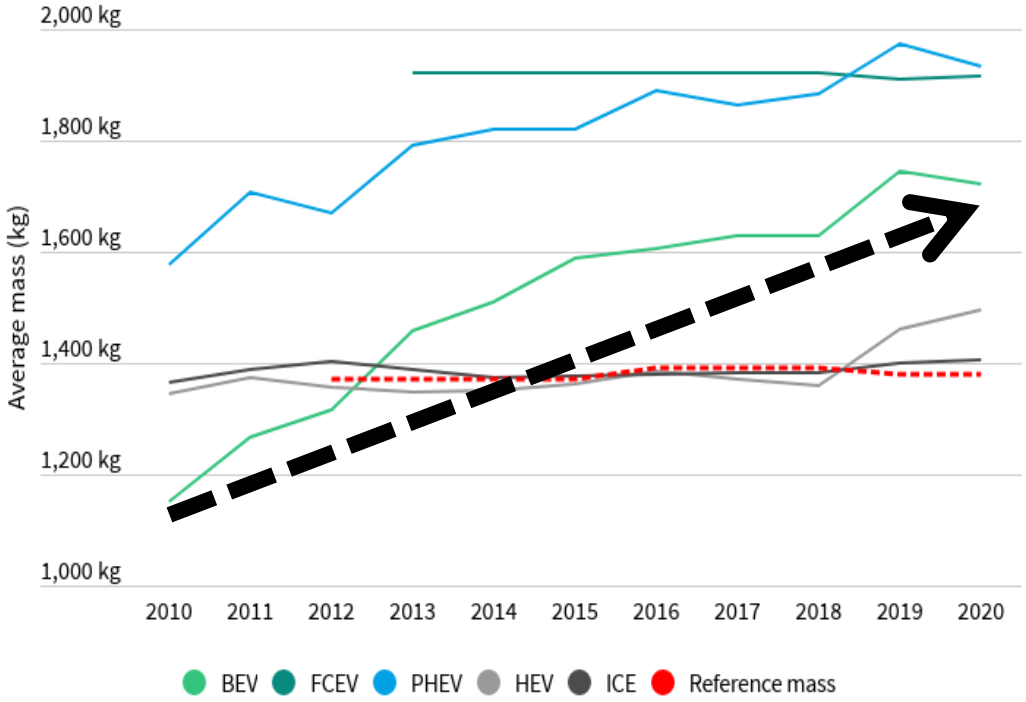
3) A competitive bias against the manufacturers of the lightest and more affordable cars





Source: European Environmental Agency, ICCT

When electrification meets the upmarket drift



2021

	Mass (kg)	WLTP grCO2/ km
LPG-NG	**1261**	119
Petrol	**1315**	136
Diesel	**1629**	144
BEV	**1722**	0
PHEV P	**1911**	39
PHEV D	**2297**	38

2021 Average EU price

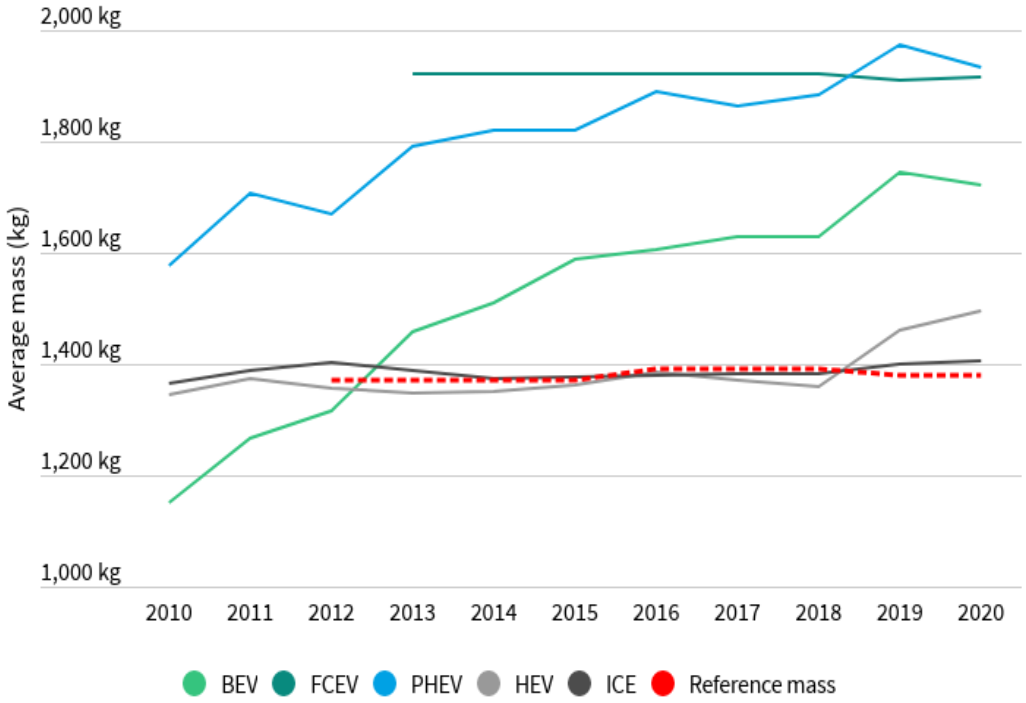
24,000 €

48,000 €

Source: IEA 2023

Source: T&E

When electrification meets the upmarket drift



2023

	Mass (kg)	WLTP grCO2/ km
LPG-NG	**1280**	123
Petrol	**1358**	133
Diesel	**1695**	144
BEV	**1991**	0
PHEV P	**1943**	35
PHEV D	**2398**	38

2023 Average EU price

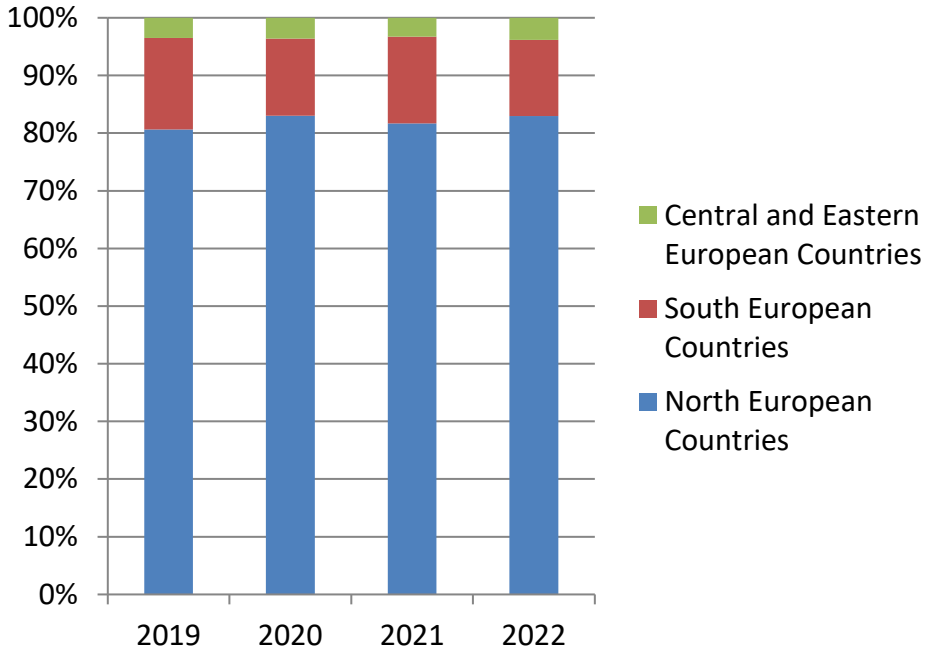
28,000 €

66,864 €
31,165 € (China)

Source:
JATO 2024

Source: T&E

Share of BEVs sales by groups of EU countries (2019-2021)



Greenhouse gases from fuel combustion in cars by EU28 country groups
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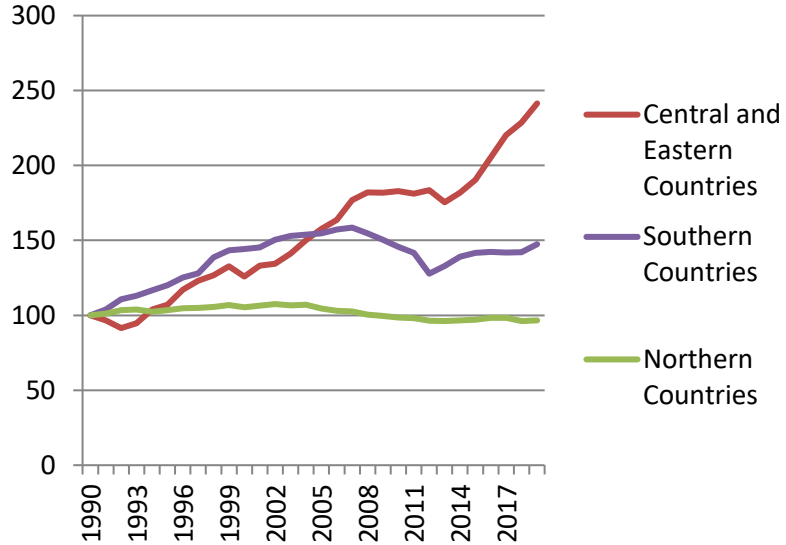
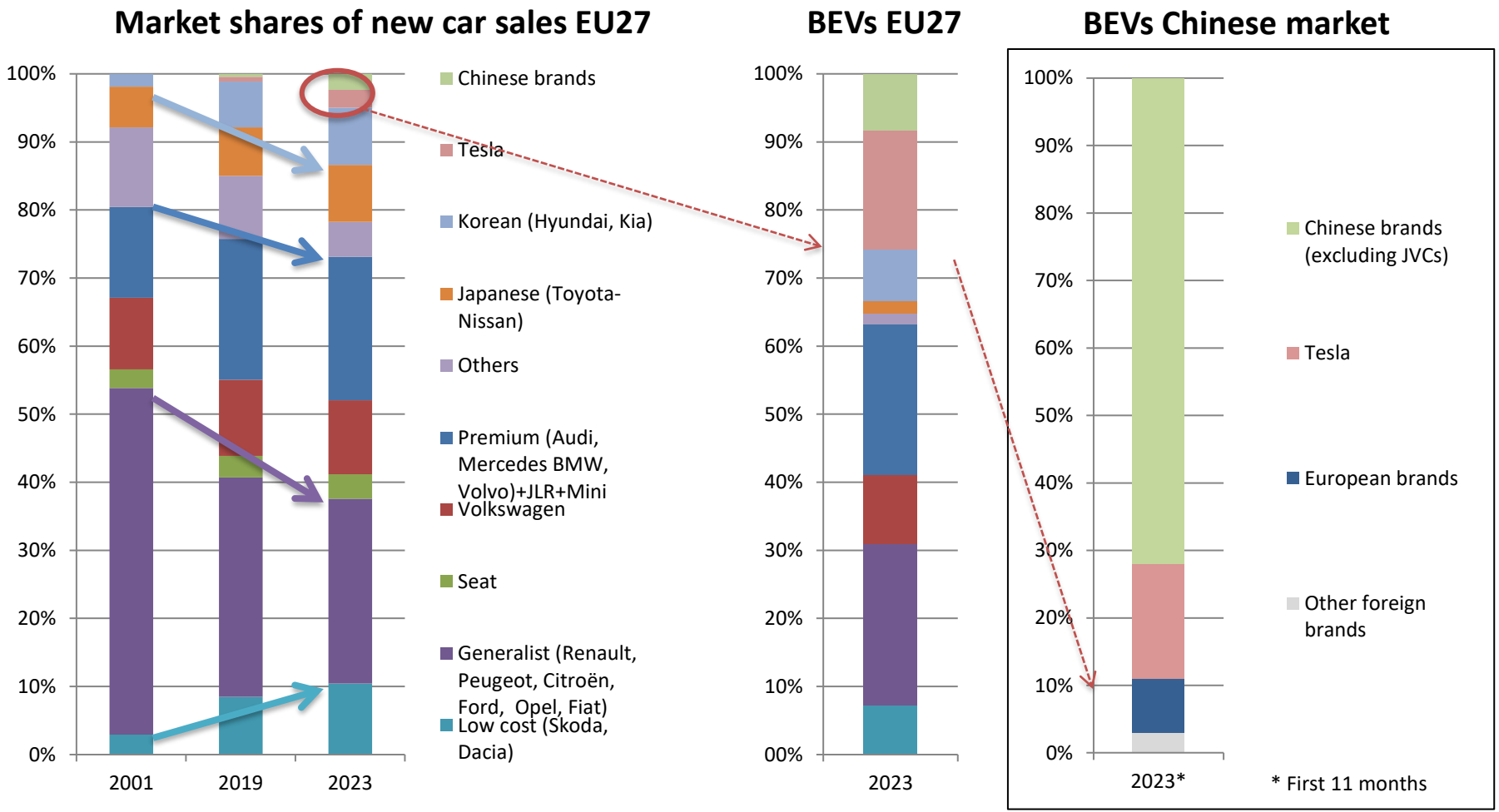
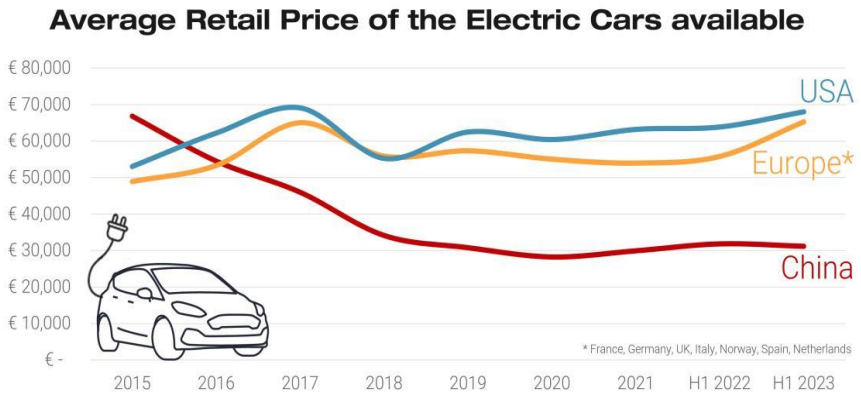
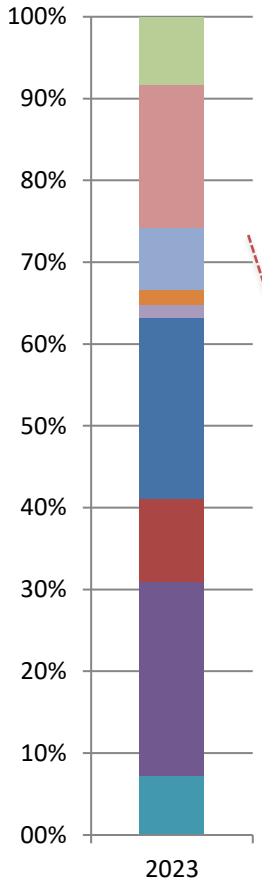



Market shares of new car sales EU27
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2001
2019
2023
Chinese brands
Tesla
Korean (Hyundai, Kia)
Japanese (Toyota-Nissan)
Others
Premium (Audi, Mercedes BMW, Volvo)+JLR+Mini
Volkswagen
Seat
Generalist (Renault, Peugeot, Citroën, Ford, Opel, Fiat)
Low cost (Skoda, Dacia)
BEVs EU27
00%
2023
BEVs Chinese market
2023*
Chinese brands (excluding JVCs)
Tesla
European brands
Other foreign brands
* First 11 months

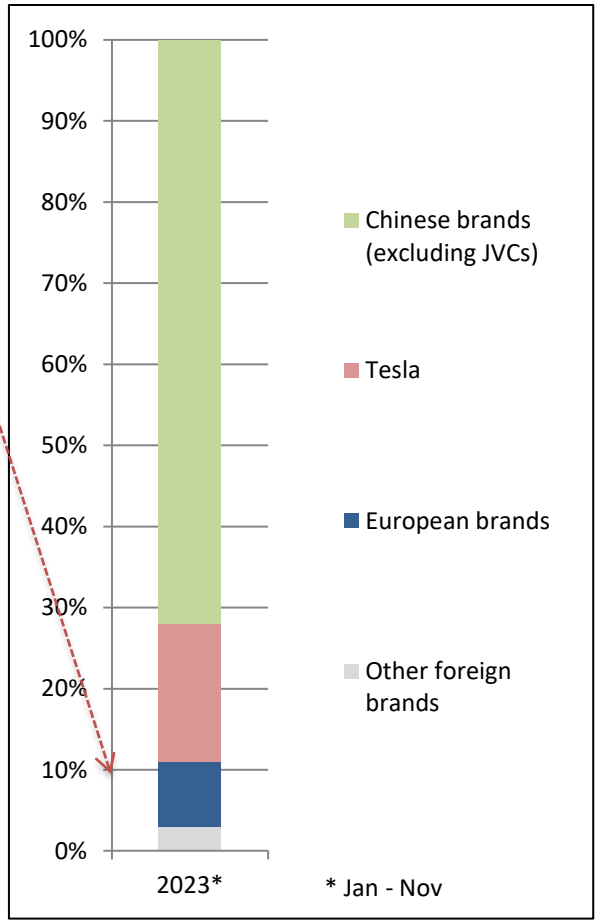
Chinese brands:
52 models imported (1st semester 2023)
18 new models
4 MG models represent 70% of the total sales



VEB UE 27



Marché chinois VEB



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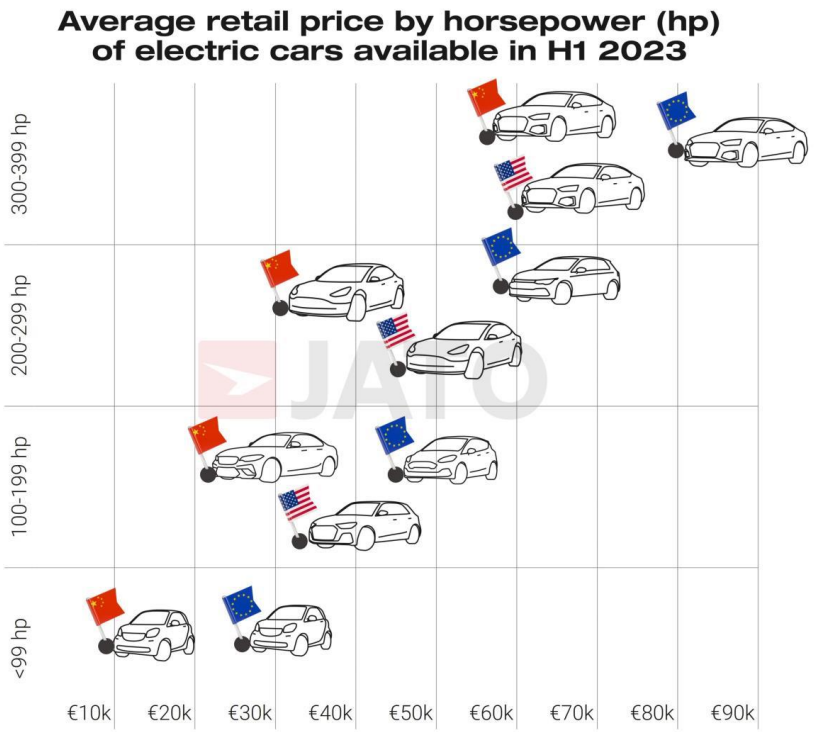

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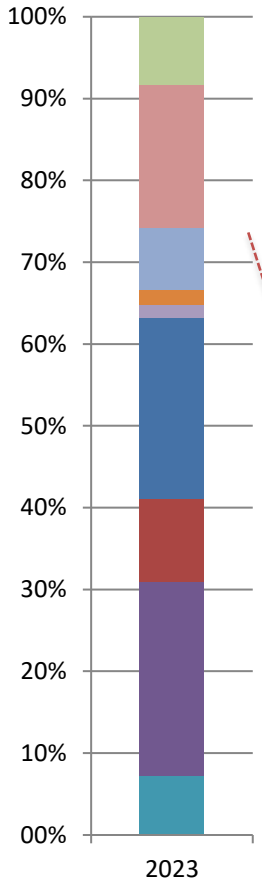

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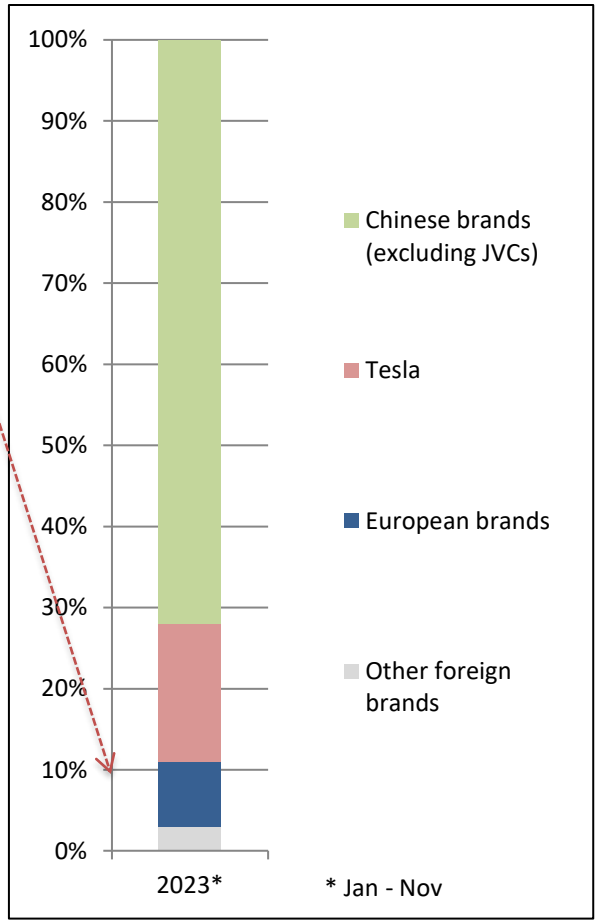

Conclusion

- Upmarket drift + electrification = the least efficient decarbonising trajectory

  → we need a regulatory framework for (affordable) BEVs and not for electrified ICEVs

- No just transition: growing unequal access to recent and green cars
- Makes the European automotive industry more vulnerable to foreign competition: increasing asymmetrical competition in a shrinking market