

CLIMATE CHANGE VS CARMAKERS

Daniel Harrison

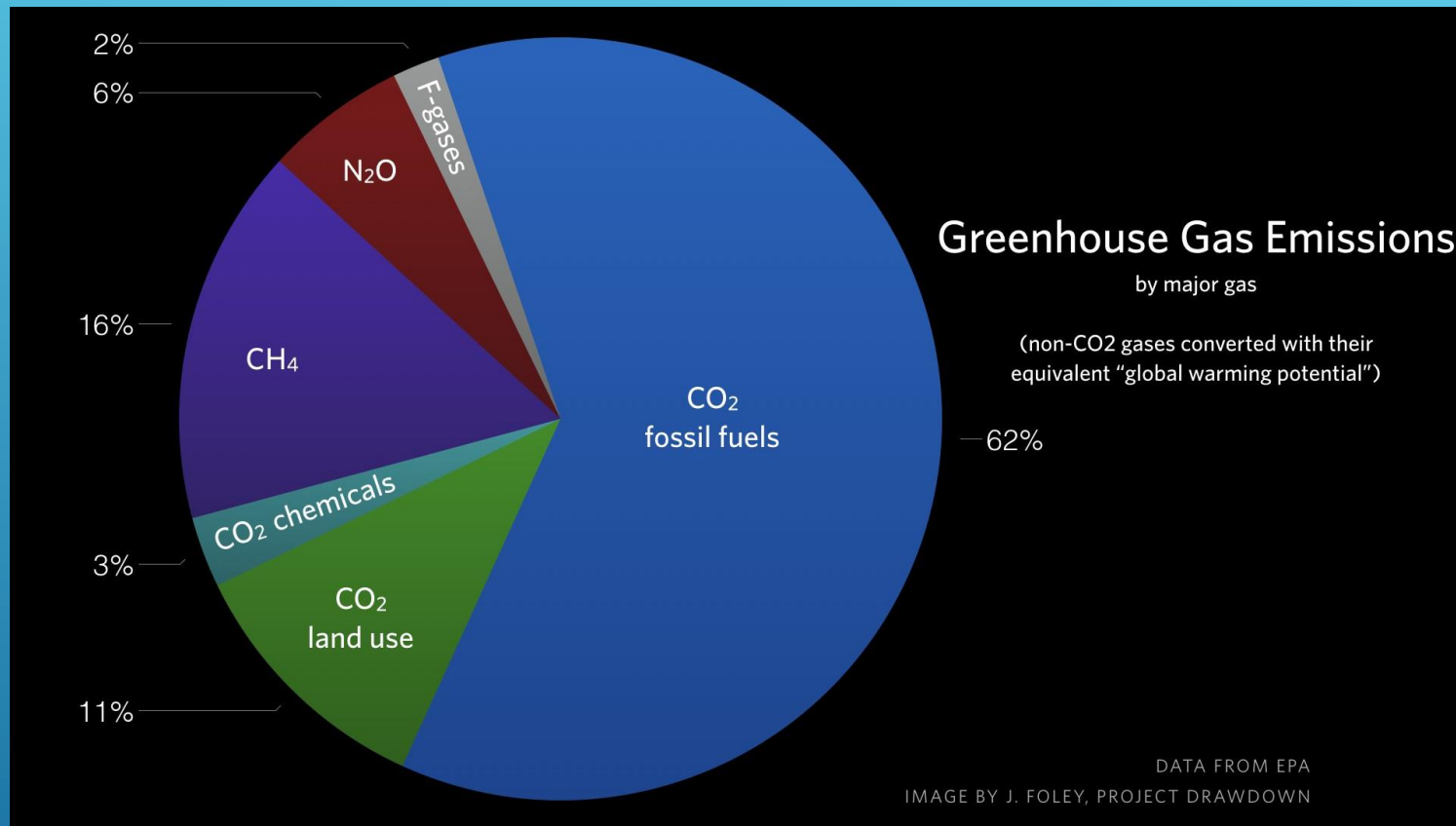
Automotive Analyst



AUTOMOTIVE
FROM ULTIMAMEDIA

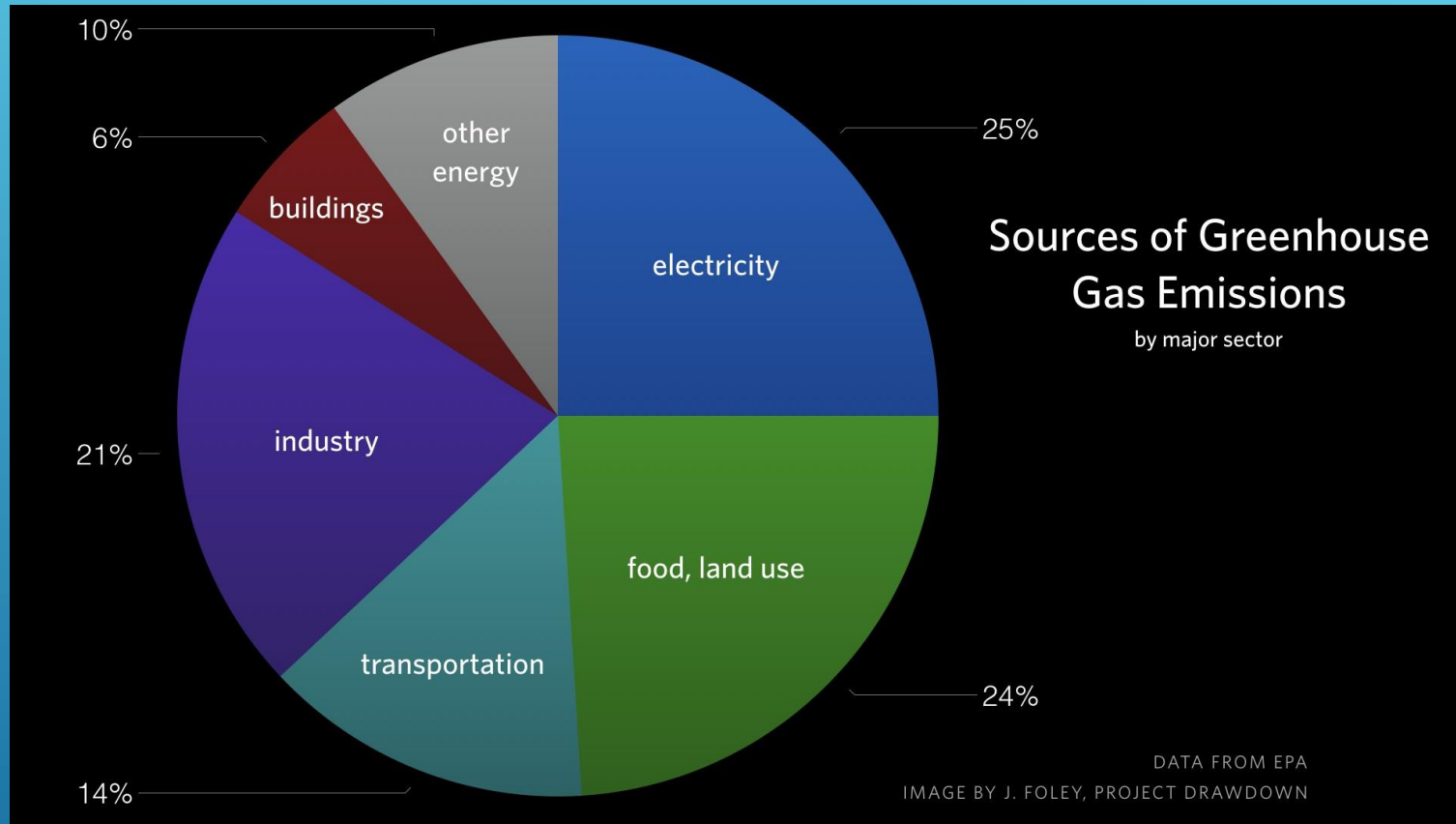
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CLIMATE CHANGE IS NOT JUST ABOUT CO2



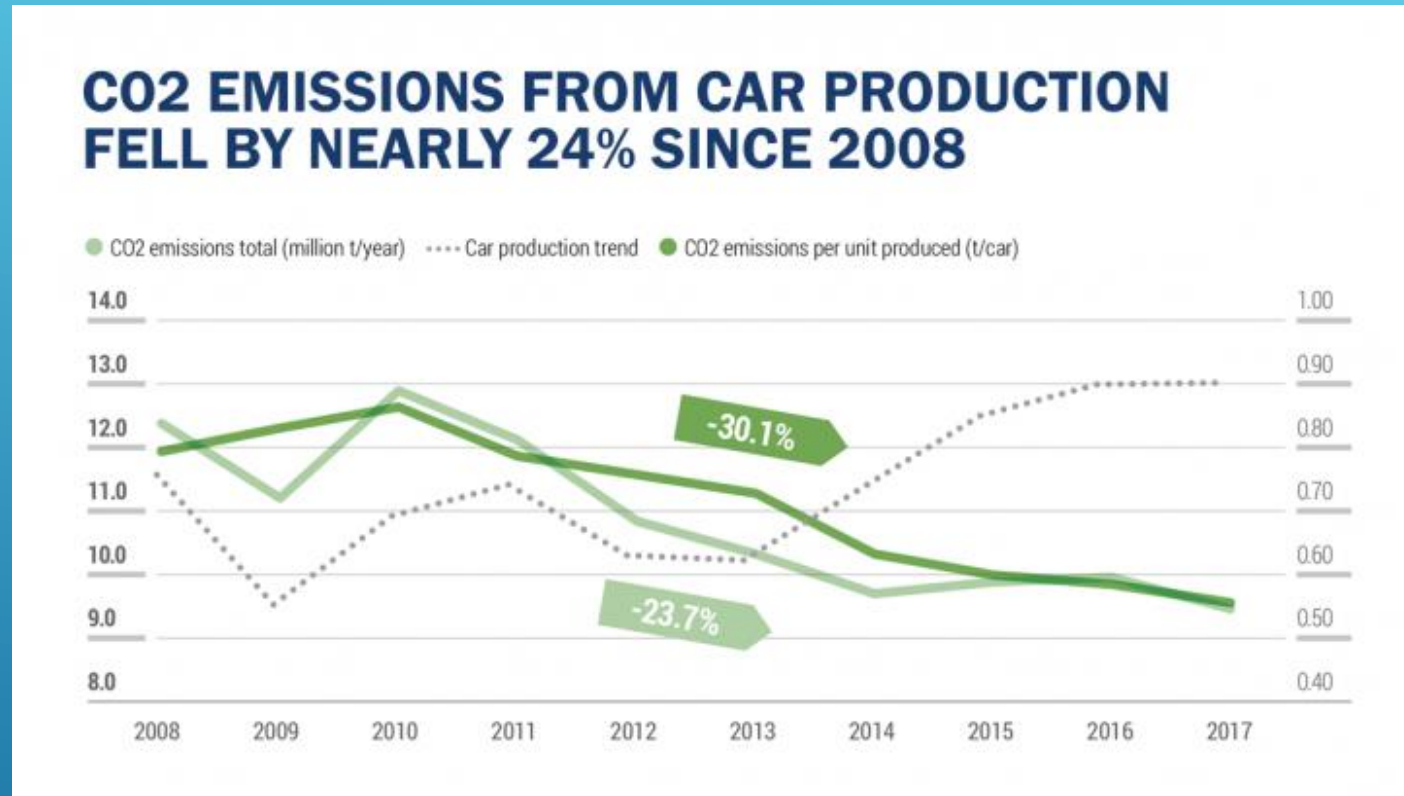
- ▶ Around 65% of climate change is caused by carbon dioxide (CO₂).
- ▶ However, Methane (CH₄) and Nitrous Oxide (N₂O) have a disproportionate effect.
- ▶ Interestingly, diesel vehicles (with lower CO₂) actually produce 10 times the amount of N₂O.

AUTOMOTIVE IS A LARGE CONTRIBUTOR TO GHG



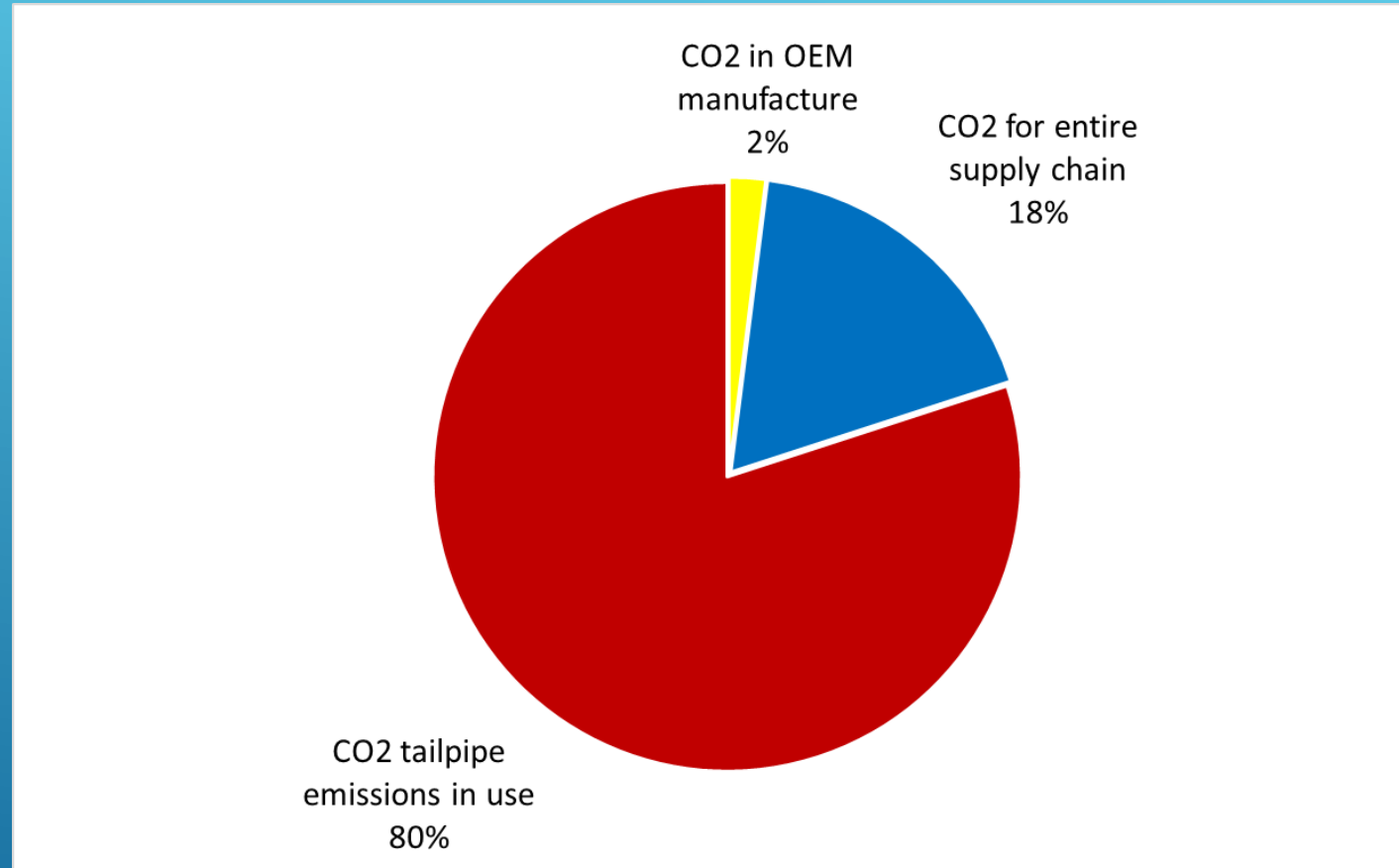
- ▶ 'Transportation' segment appears to contribute only 14% of GHG emissions.
- ▶ **However**, the production of vehicles is also a large part of the other segments e.g. buildings, industry, electricity generation etc. so likely to contribute 20-25% of GHG.

CO2 PRODUCED BY VEHICLE PRODUCTION IS LOW



- ▶ OEM manufacture of an average vehicle produces only **0.6 tons of CO2** (ACEA data).
- ▶ Entire supply chain e.g. raw materials, components, logistics : **6 tonnes** average per car.
- ▶ However, the average EU vehicle emits around **24 tons of CO2** during its lifetime.
(under real world conditions: 160g CO2 / km x 150,000 km)

VEHICLE EMISSIONS DOMINATE AUTOMOTIVE GHG

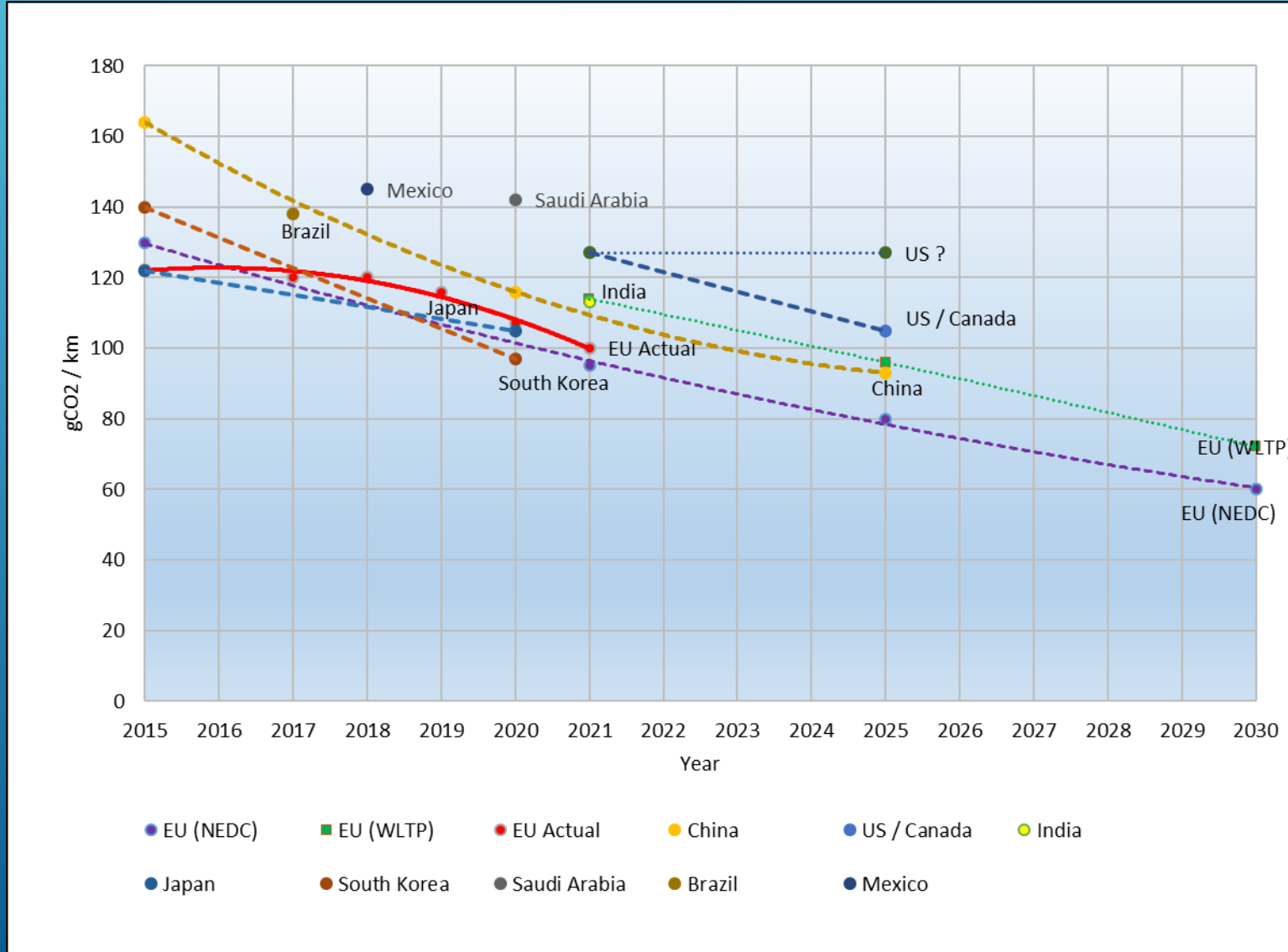


- ▶ Automotive manufacture accounts for just 2% of a vehicles CO2 over its lifecycle.
- ▶ The entire supply chain including raw materials, manufacture & logistics accounts for only 20%.
- ▶ Vehicle emissions account for 80% of a vehicles CO2 lifecycle emissions.

FOCUS OF REGULATORS IS ON VEHICLE EMISSIONS

- ▶ Therefore, rather than take a wider holistic view of automotive emissions from the production / supply chain, EU regulators are focussing on vehicle emissions as that's the major sources of CO2.
- ▶ Raw materials / mining
- ▶ Component manufacturing
- ▶ Outbound / Inbound logistics – “Sulphur 2020” shipping regulation
- ▶ OEM manufacturing / assembly
- ▶ Finished vehicle logistics – “Sulphur 2020” shipping regulation / Fret21 programme
- ▶ Crude oil extraction / Fuel refining & production
- ▶ Vehicle emissions in use - European Commission CO2 targets, US CAFE, Chinese CAFC
- ▶ Recycling / end of life disposal

REGIONAL VEHICLE CO2 EMISSIONS TARGETS



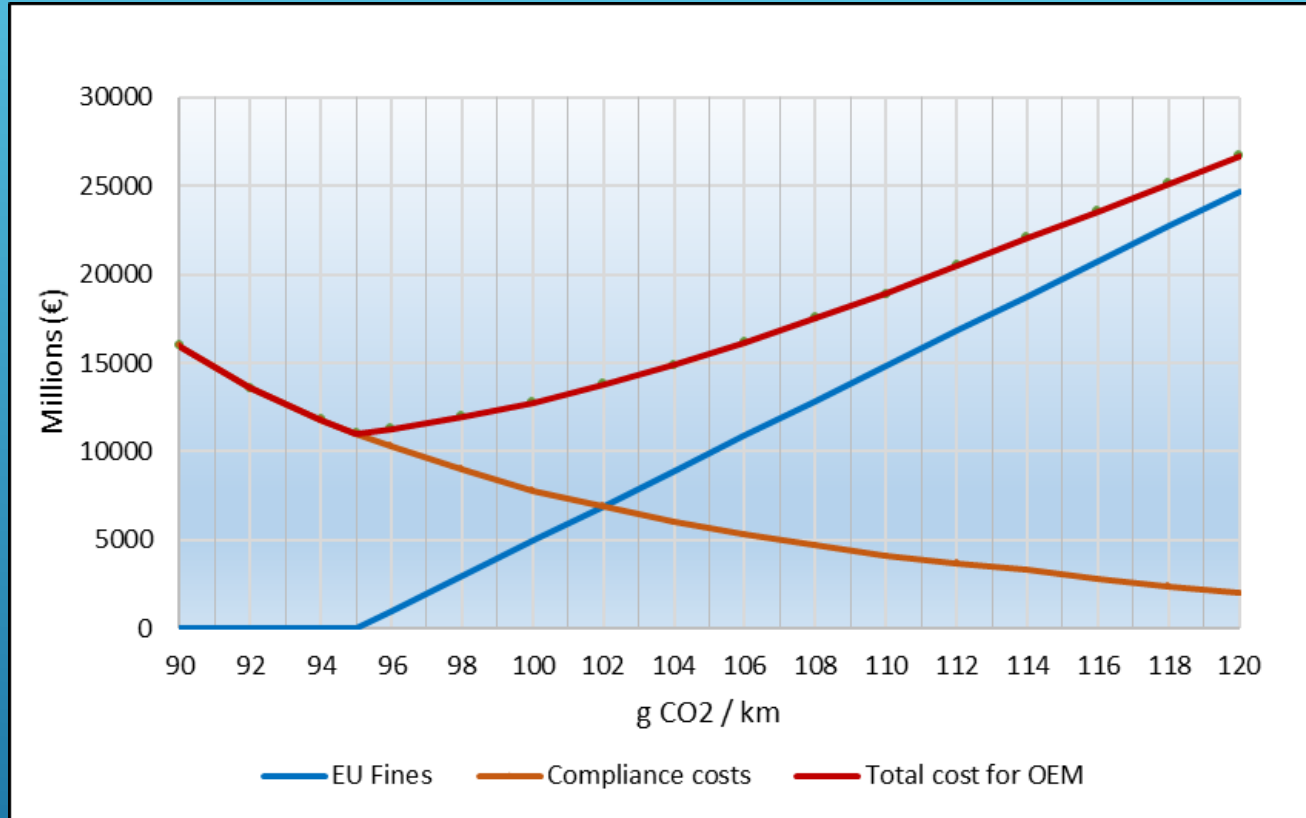
- ▶ European vehicle emissions target of 95 g CO₂ / km for 2020/2021 is the strictest in the world and will get even tougher.
- ▶ Each OEM has its own individual CO₂ target based upon the OEMs fleet average vehicle weight.
- ▶ We predict that many OEMs will fail to meet their individual emissions targets.
- ▶ This will result in severe fines for many OEMs.

FINANCIAL PAIN FOR MOST OEMS

<u>OEM Group</u>	<u>OEM EU Fleet CO2 Forecast</u>					<u>EU Fleet CO2 target*</u>		<u>EU Sales (million)</u>	<u>Fines</u>	
	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020**fines on 95%</u>	<u>2021</u>	<u>2020 *fines on 95%</u>	<u>2021</u>	<u>2018</u>	<u>2020 (€)</u>	<u>2021 (€)</u>
BMW	122	127	120	114	105	101	101	0.99	€143m	€376m
Daimler	127	132	125	116	106	102	102	0.94	€214m	€357m
FCA - Tesla	118	122	113	100 / 91*	96 / 91*	91	91	0.99	€900m*	€900m*
Ford	121	122	115	108	99	96	96	0.93	€108m	€265m
Honda	127	127	120	108	96	97	97	0.12 (Exempt)	OK	€0
Hyundai-Kia	122	123	113	105	96	93	93	0.92	€131m	€262m
JLR	151.4	155	147	140	130	130	130	0.23 (Exempt)	OK	€0
PSA	112	114	110	103	96	92	92	2.34	€155m	€889m
Renault – Nissan - Mitsubishi	112	113	106	100	92	93	93	2.02	OK	€0
Toyota - Mazda	110	110	105	98	92	94	94	0.85	OK	€0
Volvo	124	130	120	114	104	106	106	0.35	OK	€0
VW Group	122	123	116	108	102	96	96	3.30	€376m	€1,881m
Total	120	120.5	116	107	100	95	95	15.6	€2,027m	€4,930m

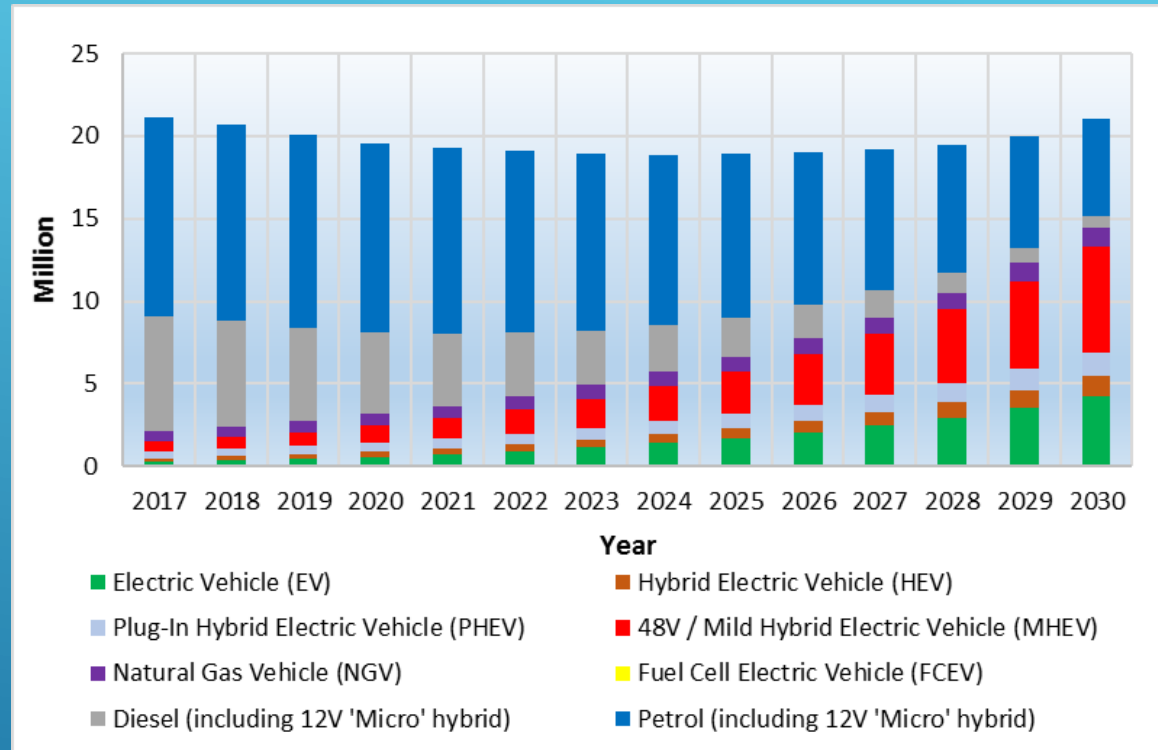
► We predict that collectively OEMs will face fines of **€2bn** in 2020 and **€5bn** in 2021.

TECHNOLOGY COMPLIANCE COSTS VS FINES



- ▶ However it is not just about meeting CO2 targets. OEMs must balance compliance costs vs. fines.
- ▶ We predict the EU fleet average will reach **100g CO2 / km** in 2021 missing the target by 5g CO2/ km.
- ▶ In 2021 automotive OEMs selling into the EU will have compliance costs of €7.8bn and fines of €4.9bn incurring a total **€12.7bn annual bill**, effectively halving their Eurozone profits of ~ **€25bn**

EVOLVING POWERTRAIN MIX



- ▶ Powertrain mix is more strongly driven by regulation & taxation policy in the EU than elsewhere.
- ▶ Regulation on CO2 emissions is forcing OEMs to rapidly shift to hybrid and full EV powertrains.
- ▶ Previous tax policy to encourage diesels led to high diesel penetration, but now that the policy has been reversed there will be a rapid decline in diesel penetration and phasing it out by 2035//2040.
- ▶ Fuel tax is amongst the highest in the world, making the lower running costs of EVs more attractive.

CONSEQUENCES

- ▶ Declining volumes and profits are putting pressure on costs & rates.
- ▶ Rapidly changing component supply chain logistics due to EVs especially with batteries and the regulation surrounding transportation of hazardous materials.
- ▶ Increasing % of finished vehicles will be HEV & EV.
- ▶ HEVs & EVs tend to be heavier due to the battery with implications for LSPs.
- ▶ Increasing pressure upon tier suppliers to provide affordable, low-emission technology.
- ▶ Shrinking margins at OEMs and tier suppliers likely to result in further cost pressures upon LSPs.
- ▶ Rising regulatory and compliance costs for logistics providers (i.e. low sulphur fuel).

OPPORTUNITIES

- ▶ Growth in HEV / EV sales and aggressive model launch cadence: opportunities for LSPs.
 - ▶ E.g. VW Group plans 70 new EV's with investment reaching >€30bn by 2023.
- ▶ Supply chain re-organisation: new giga-factories, battery & re-tooled assembly plants.
- ▶ New logistics services: e.g. module supply & delivery; high-value parts tracking; battery recycling
- ▶ New EV players & start-ups – lower capacity for in-house logistics, providing opportunities.
- ▶ New powertrain plants in Central & Eastern Europe (CEE).





Climate Change vs Carmakers

European Commission CO2 Targets,
US CAFE Standards & Chinese
CAFC Regulations



Download the free report:

<https://www.automotivelogistics.media/global-business-intelligence/report-climate-change-vs-carmakers/39169.article>

daniel.harrison@ultimamedia.com

christopher.ludwig@ultimamdia.com

THANK YOU