EU 2030 Road Transport Decarbonisation Scenario Analysis

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19th November 2014

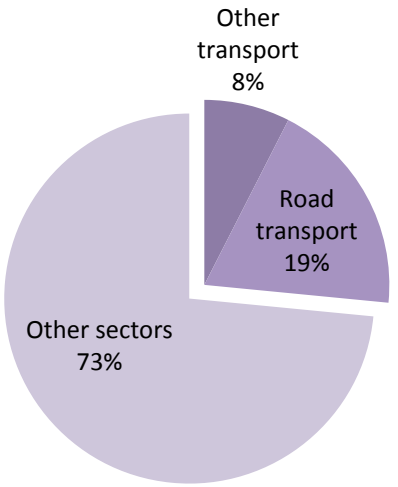
Study aims to inform debate over long term EU road transport sector decarbonisation policy

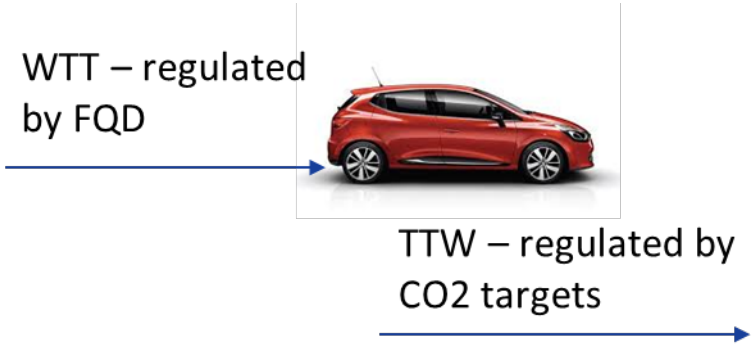
Context	EU 2030 Energy and Climate Package released last month: 40% reduction in EU GHG emissions but no transport sector target
Implication	Governments, vehicle and fuel industries uncertain over actions needed to decarbonise road transport
Study objective	Understand road transport decarbonisation under different scenarios to inform policy development

Beyond 2020 currently expected policies focus on vehicles, though liquid fuels will dominate so biofuels also relevant

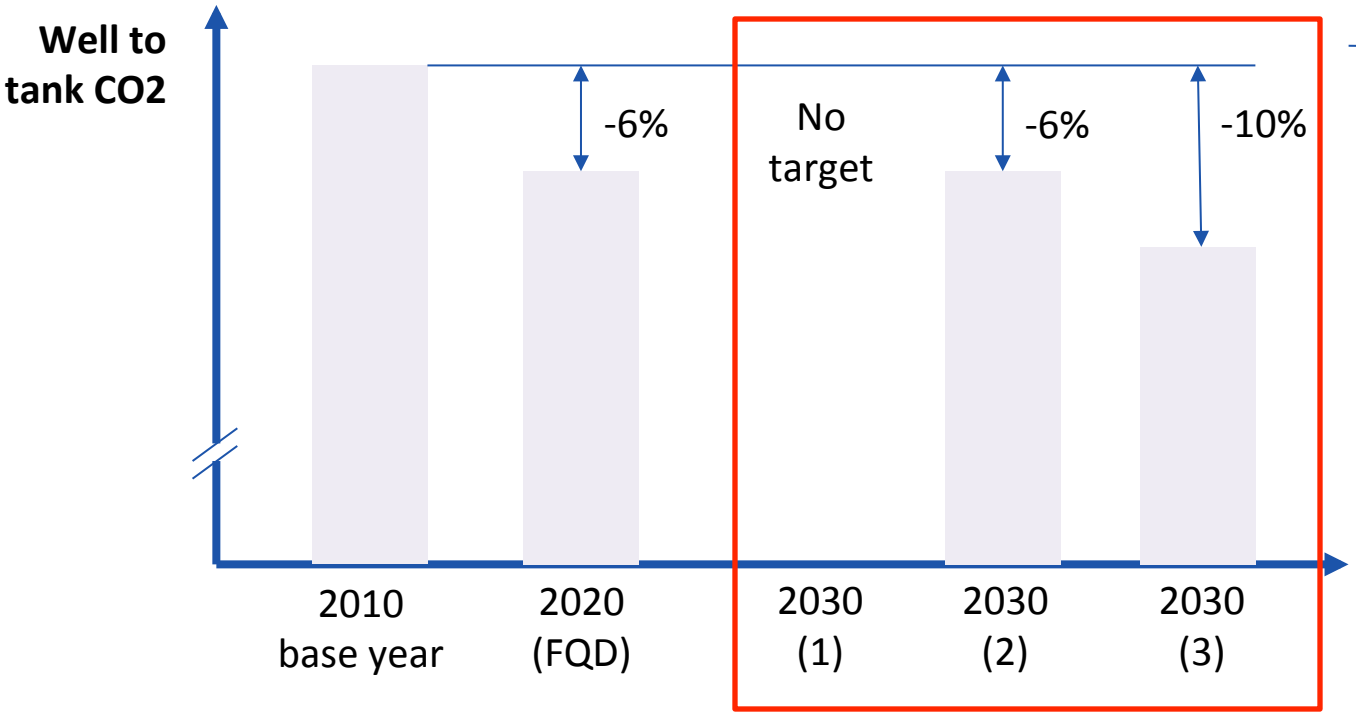
- Emissions from road transport represent around 19% of total EU emissions (TTW)
- Fuel Quality Directive (FQD), Renewable Energy Directive (RED) and vehicle CO2 targets are main drivers of EU road transport sector decarbonisation to 2020
- Beyond 2020 only currently expected policy is vehicle CO2 targets (tank to wheels)
- In 2030, liquid fuels expected to represent 93% of road transport energy (236 Mtoe), despite vehicle CO2 targets
- Well to tank options such as biofuels could play a role in decarbonising liquid fuels, but role depends on policy

EU CO2 emissions by sector (2010)





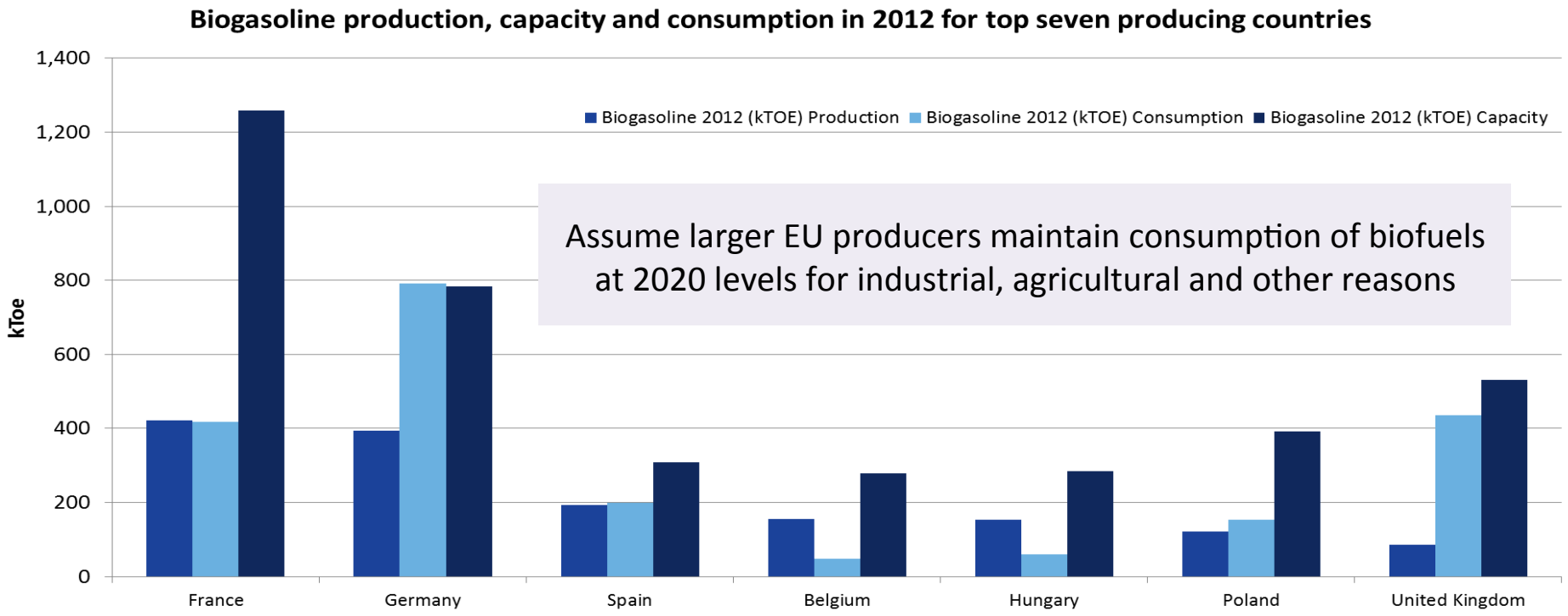
Three variations of an 'FQD' modelled post 2020 to understand implications of different policy scenarios



- **Overall CO2 reduction in 2030**
- **Relative role of reduction options in 2030**
- **Implications beyond 2030**
- **Implications for policy**

Options considered		
	• Biofuels	Well to tank
	• Other alternative fuels including electricity	
	• Reduced upstream flaring/venting	
	• Fuel efficiency	Tank to wheels

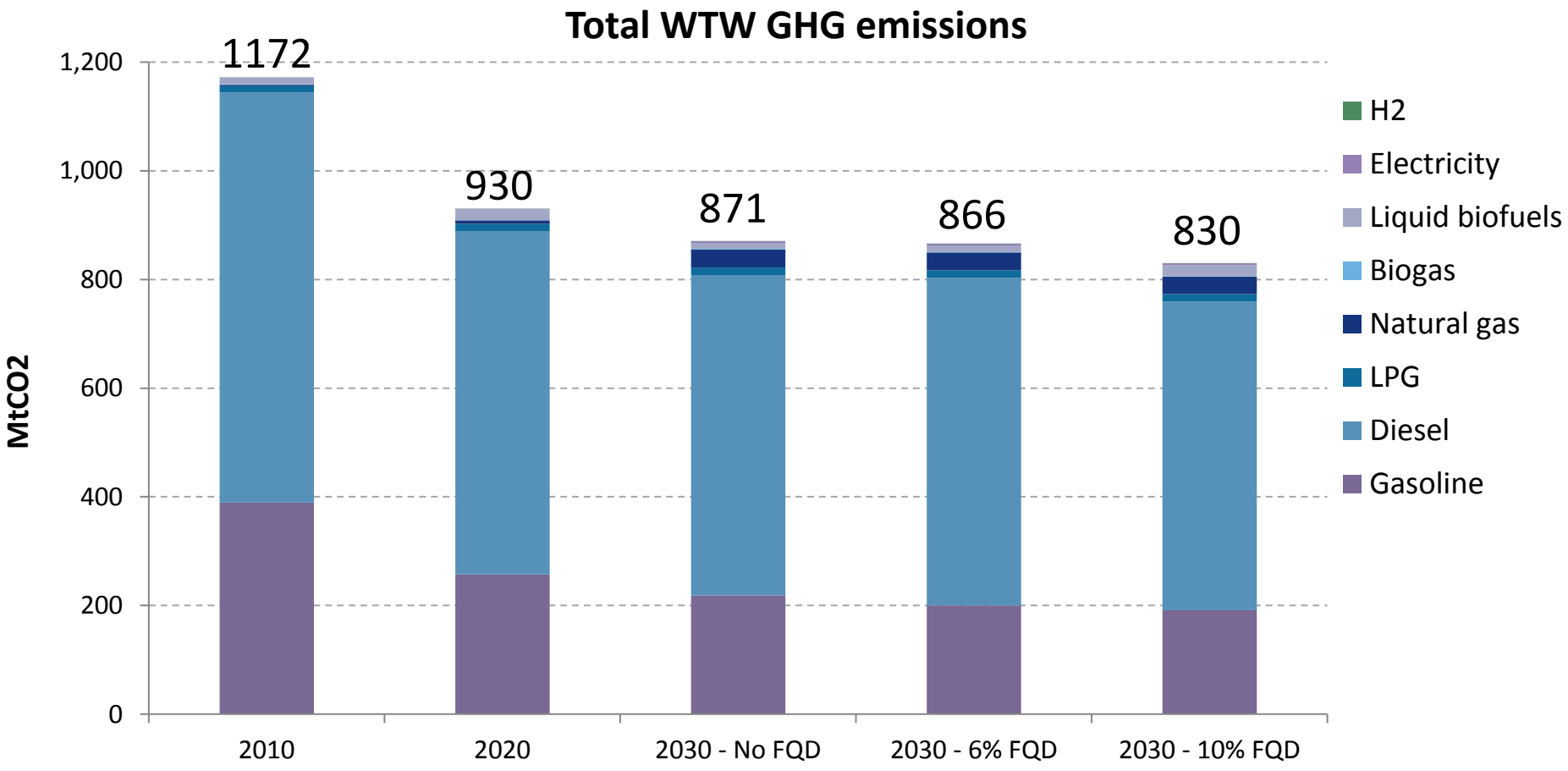
Scenario 1: No target post 2020
Some MS maintain biofuel consumption at 2020 levels



Assume larger EU producers maintain consumption of biofuels at 2020 levels for industrial, agricultural and other reasons

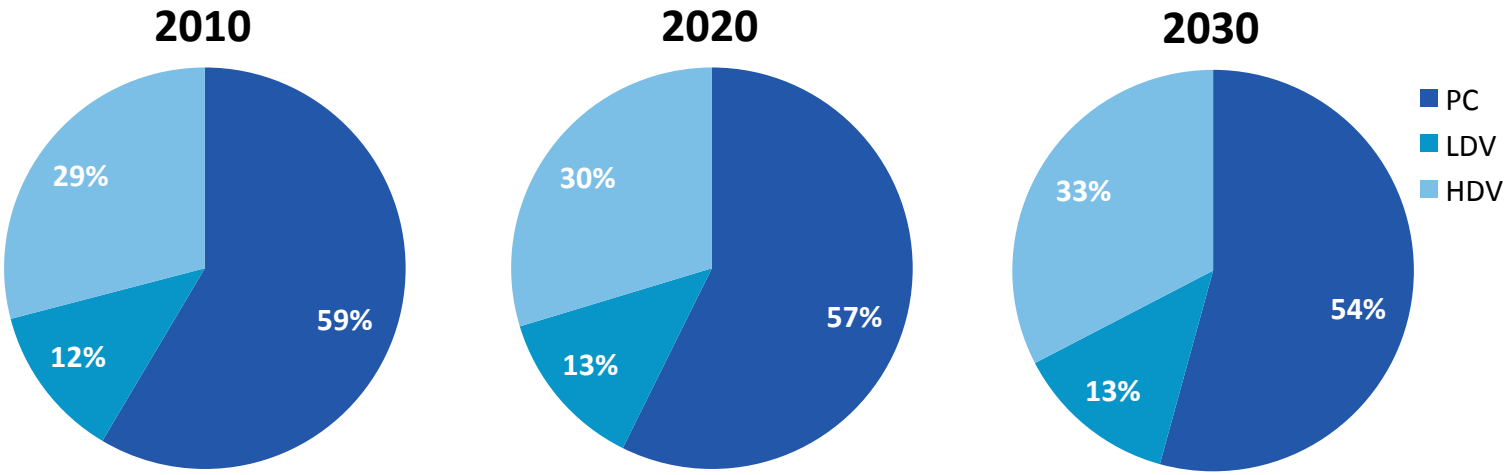
- Seven largest **bioethanol** producers assumed to maintain constant consumption at forecast 2020 levels i.e. **2.7Mtoe**.
- Applying a similar logic for **biodiesel**: France, Germany, Poland, Netherlands, Finland, Spain and Italy would maintain consumption at a level of **8.3 Mtoe**.

Liquid fuels will continue to dominate emissions despite efficiency savings, though many alternatives used by 2030



Electrification makes growing contribution, but role for energy dense liquid fuels likely to remain in long term

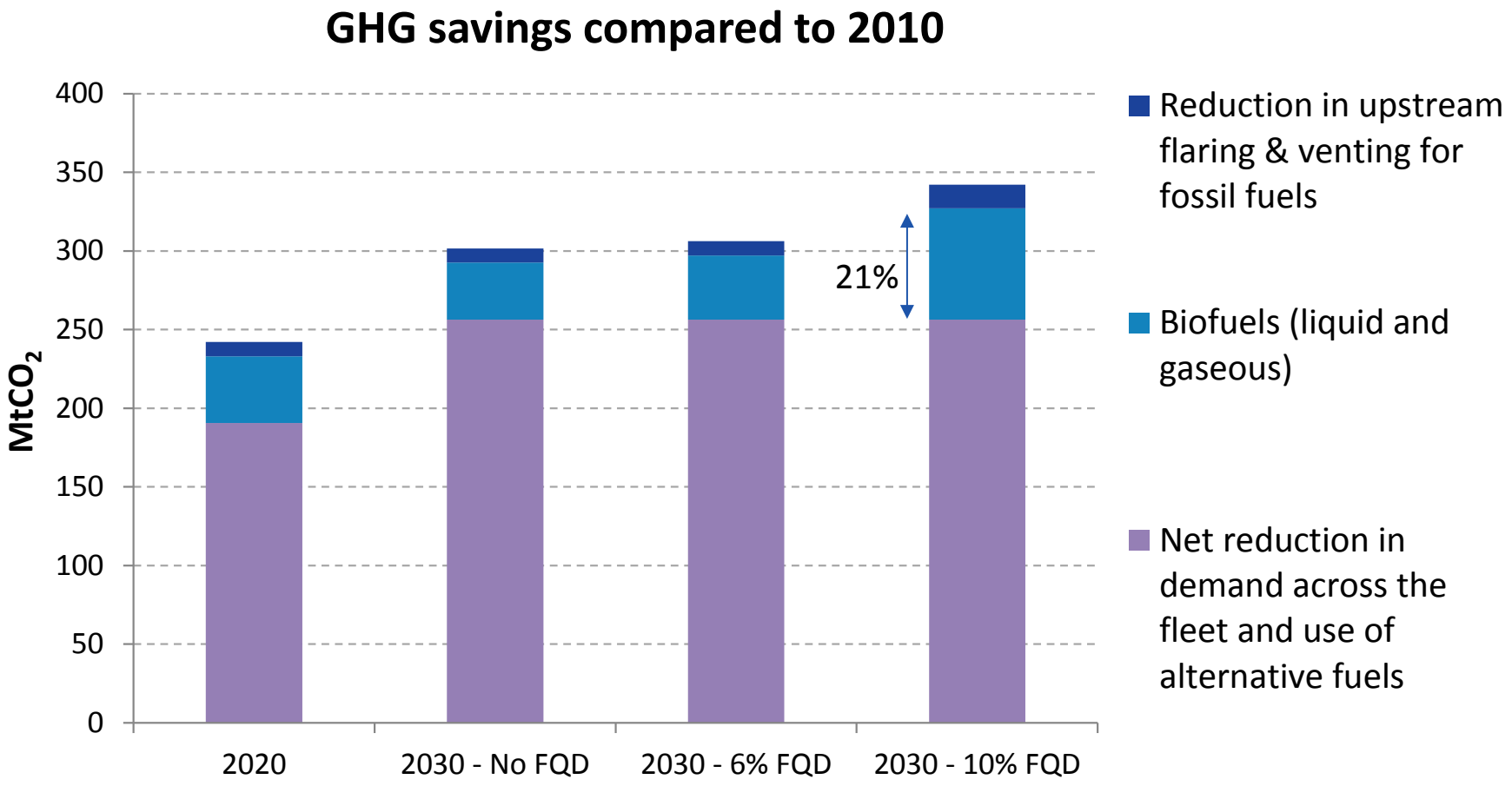
Energy demand by vehicle category



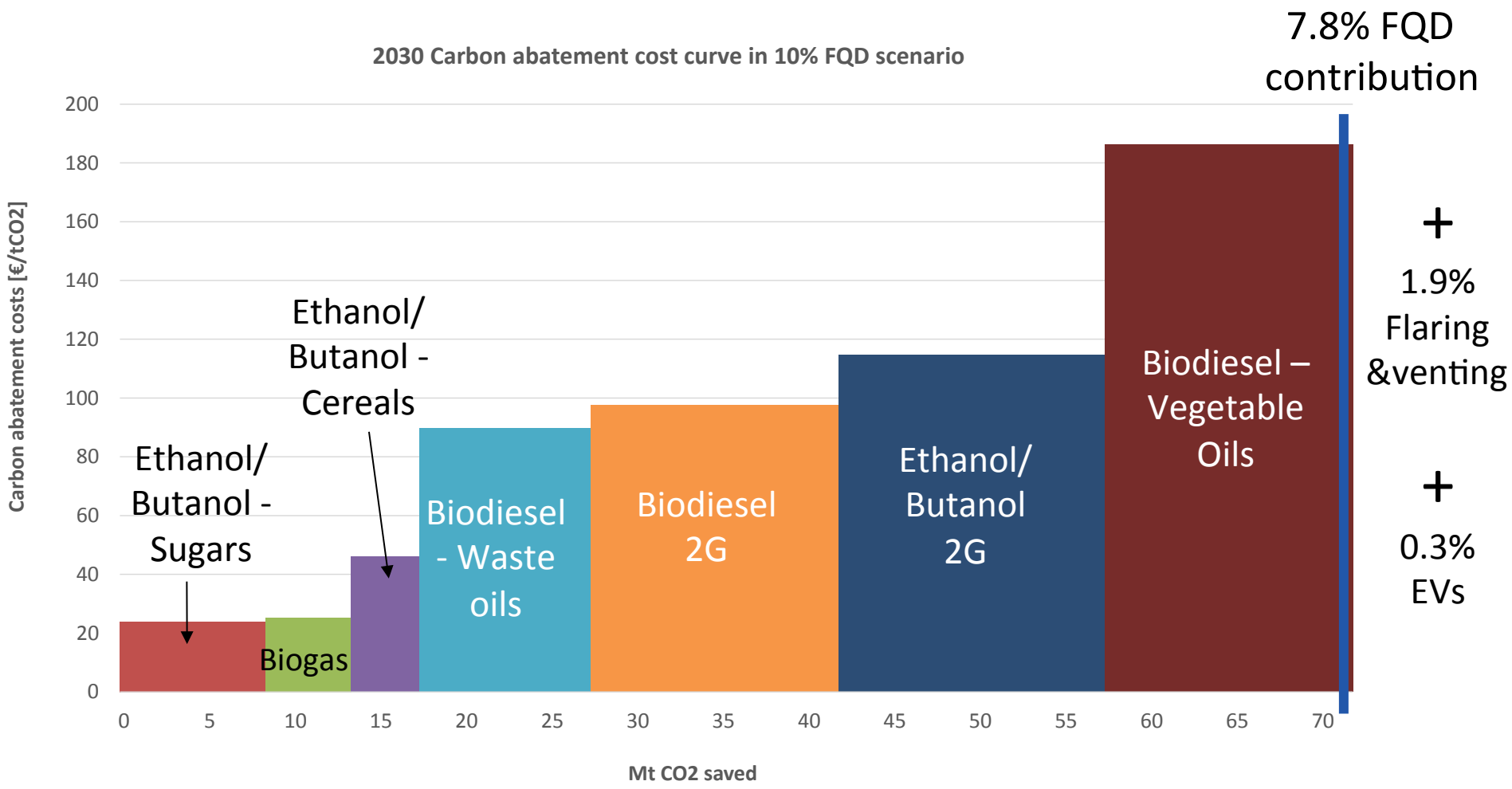
Impact of electric and H2 vehicles in PC and LDV vehicle categories

Share in:	2010	2020	2030
Final energy consumption	0.002%	0.057%	0.904%
WTW CO2 Emissions	0.005%	0.103%	1.096%
Total vehicle km	0.010%	0.238%	3.776%

Overall savings led by efficiency in all scenarios, but biofuels could contribute around 21% of savings



A wide range of sustainable 1G and 2G biofuels are utilised by 2030 in a '10% FQD' scenario



A higher ‘FQD’ contributes significantly to GHG savings and maintains biofuels as an option for deep decarbonisation

- Under a ‘no FQD’ or ‘6% FQD’ scenario to 2030, biofuels could continue to contribute 12-13% of total road transport emission savings in 2030.
- Under a ‘10% FQD’ scenario biofuels could contribute 21% savings, resulting in an additional 30MtCO2 emissions savings compared to a ‘6% FQD’.
- A higher FQD target could be achieved by a shift to lower GHG and more sustainable biofuels, with 2G biofuels representing 36% of biofuels in 2030.
- Liquid fuels are likely to provide a significant share of road transport energy beyond 2030 because of HDVs and possible limits to full electrification of LDV/PCs.
- Therefore, biofuels could remain an essential component of achieving deep emissions savings in road transport in the longer term, and be used in other transport sectors.
- A continued ‘FQD’ policy could provide the signal necessary to encourage further road transport emissions reductions beyond efficiency gains.