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## Consumers, Vehicles and Energy Integration

Matthew Joss

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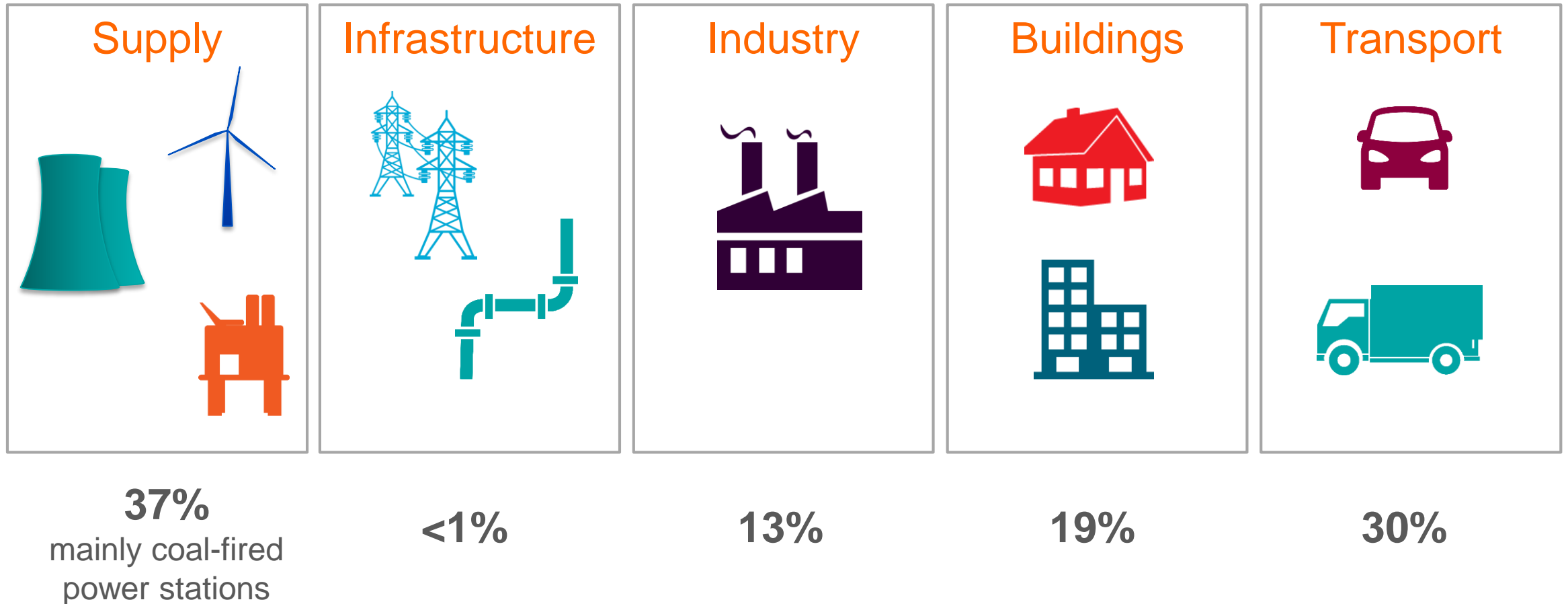
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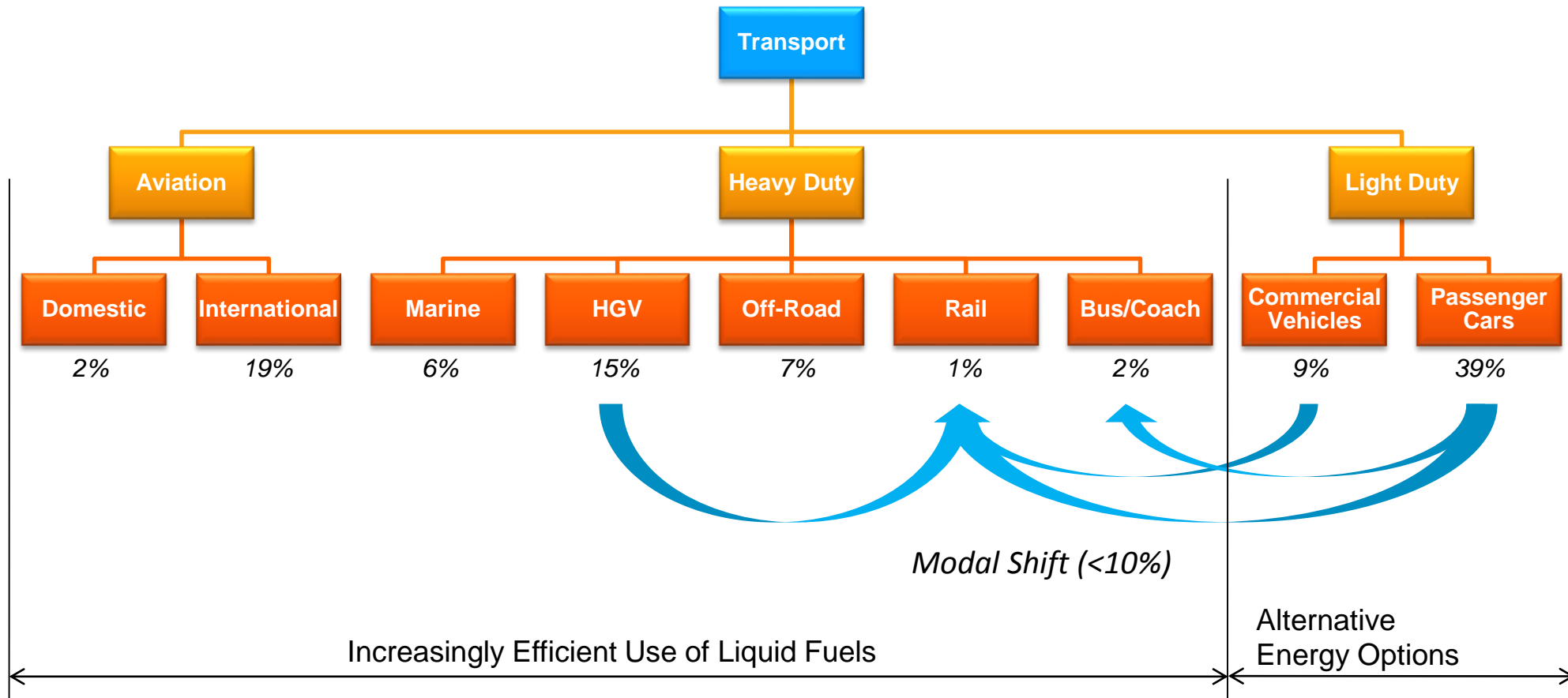
# Greenhouse Gas Emissions from the UK energy system

The ETI undertakes analysis of the overall energy system





# Transport Sector Modality Shift



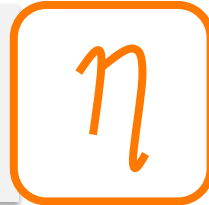
Figures are share of UK Transport CO<sub>2</sub> Emissions



# Energy density requirements and duty cycles are key for HDVs



The ETI is seeking to demonstrate 30% improvement in fuel efficiency before aerodynamic and light-weighting advances



Natural gas and bio-fuels could supplement liquid fuel given compatible vehicles and subject to lifecycle emissions analysis

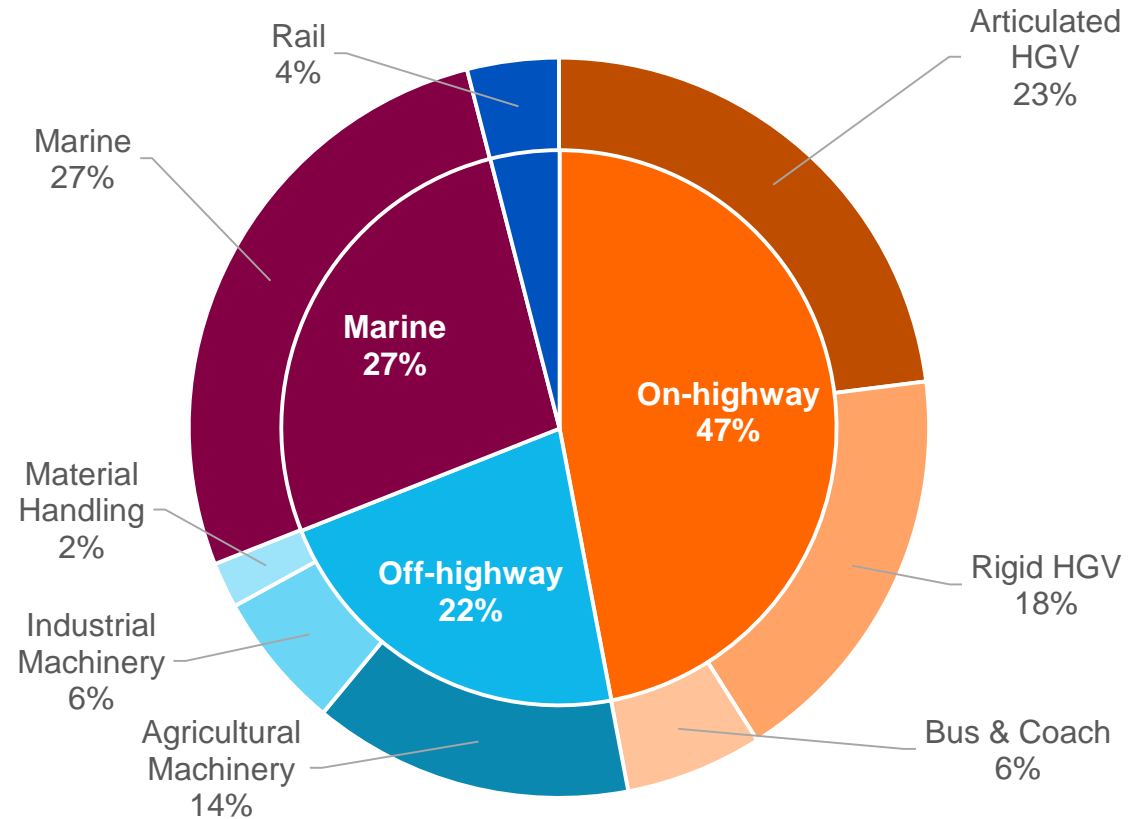


On board storage requirements are challenging as is the ability to support on and off-highway requirements

Hydrogen storage density coupled with fuel cell robustness are major challenges for HDVs as they are in LDV's



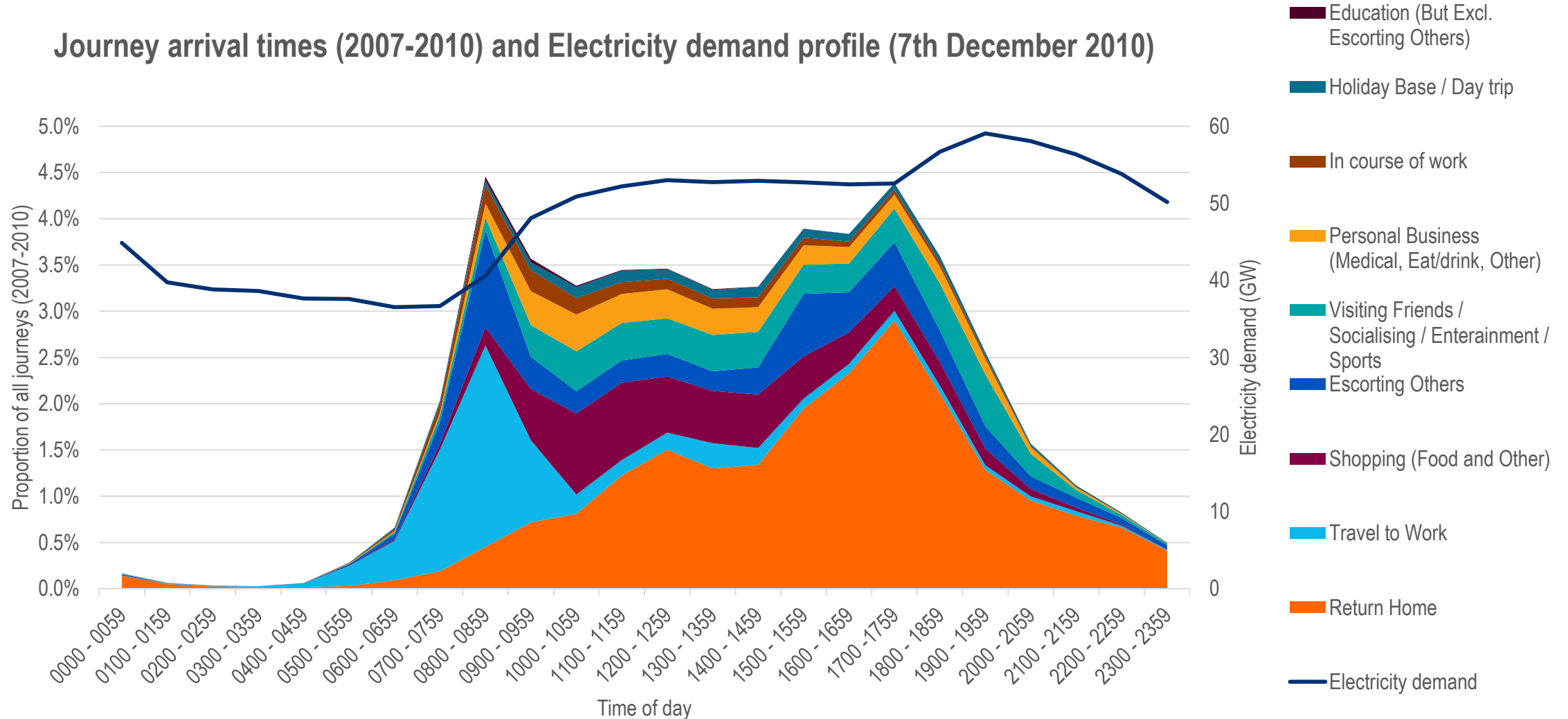
UK Heavy Duty CO<sub>2</sub> Emissions (kT) by source (2008)





# Meeting light vehicle charging requirements

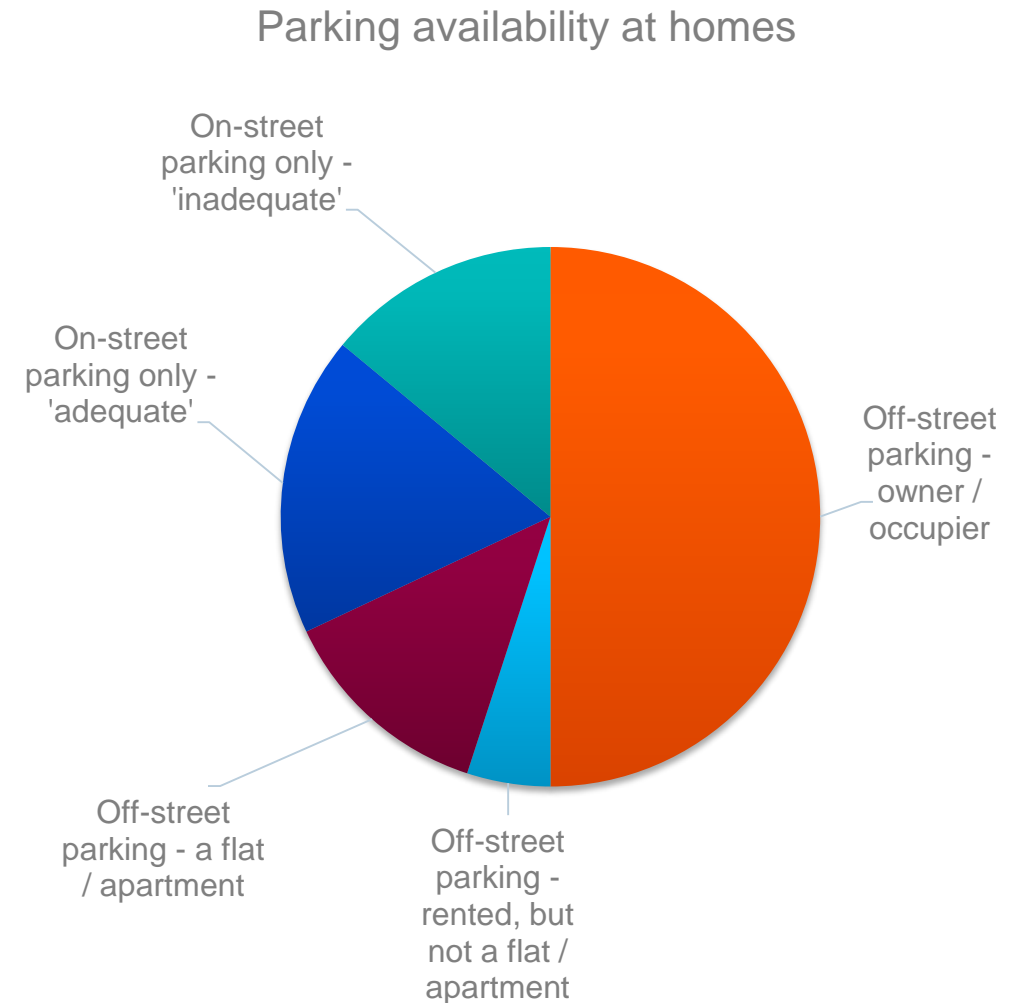
## Journey arrival times (2007-2010) and Electricity demand profile (7th December 2010)



Compiled using NTS and UKERC data



# Where to support charging

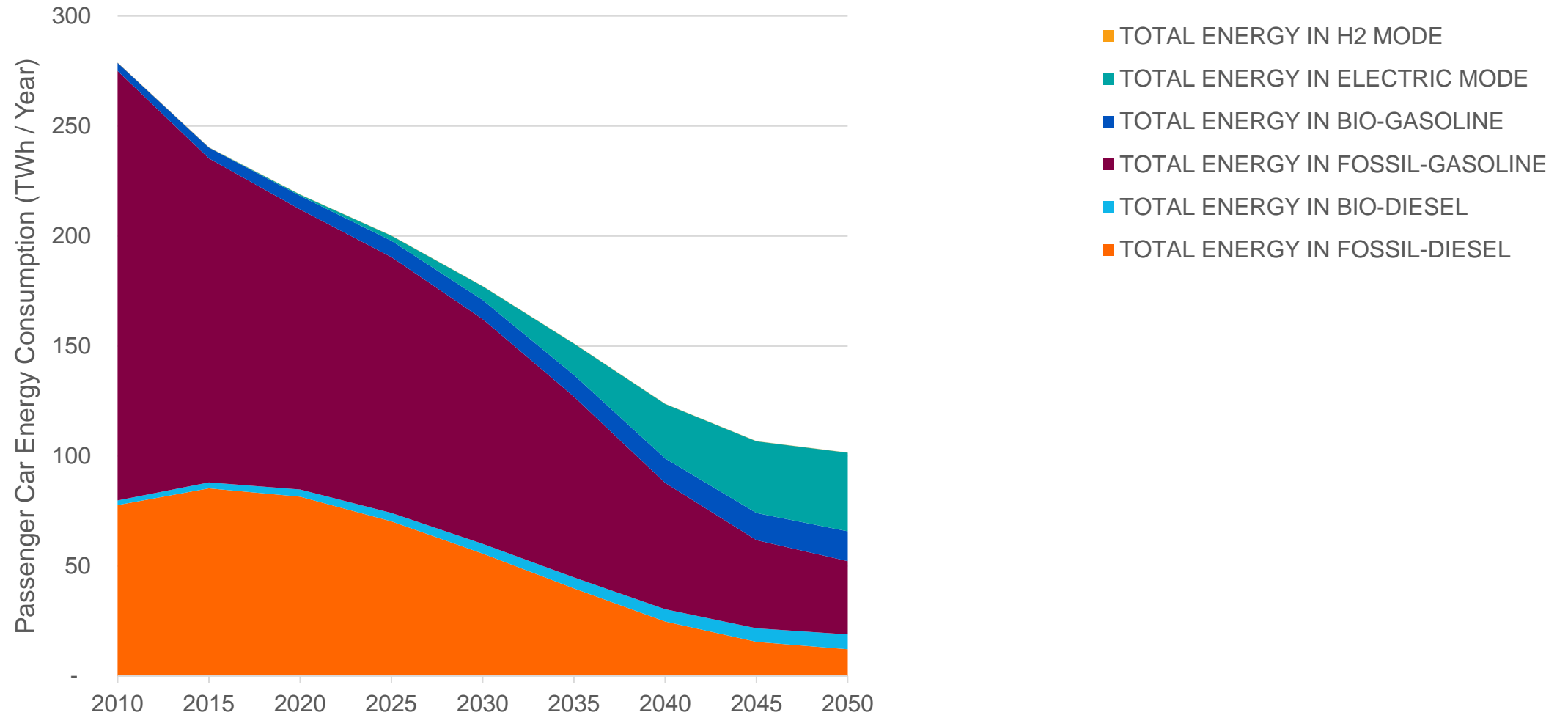


Compiled using NTS data

Based on DCLG data



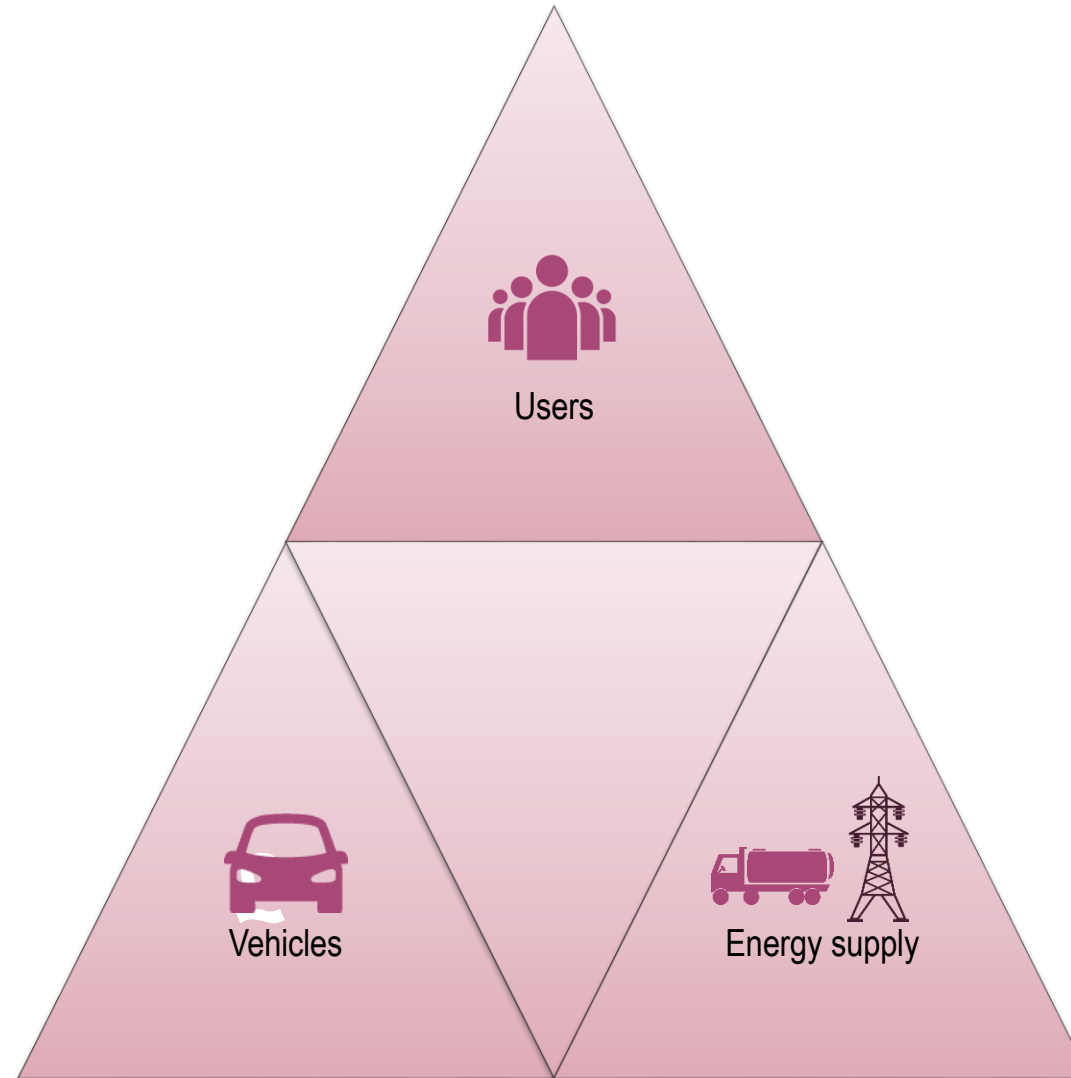
# A transition away from liquid fuels for passenger cars



Source: ETI analysis (input data from various sources, including ETI projects)



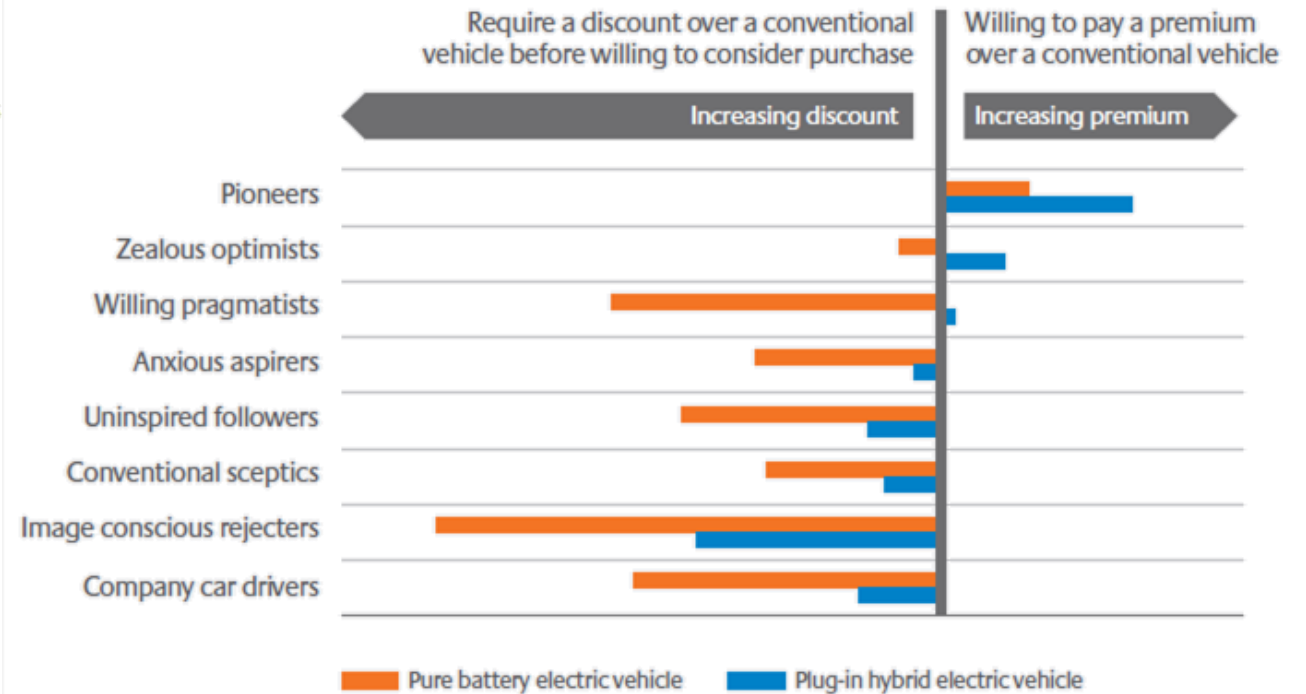
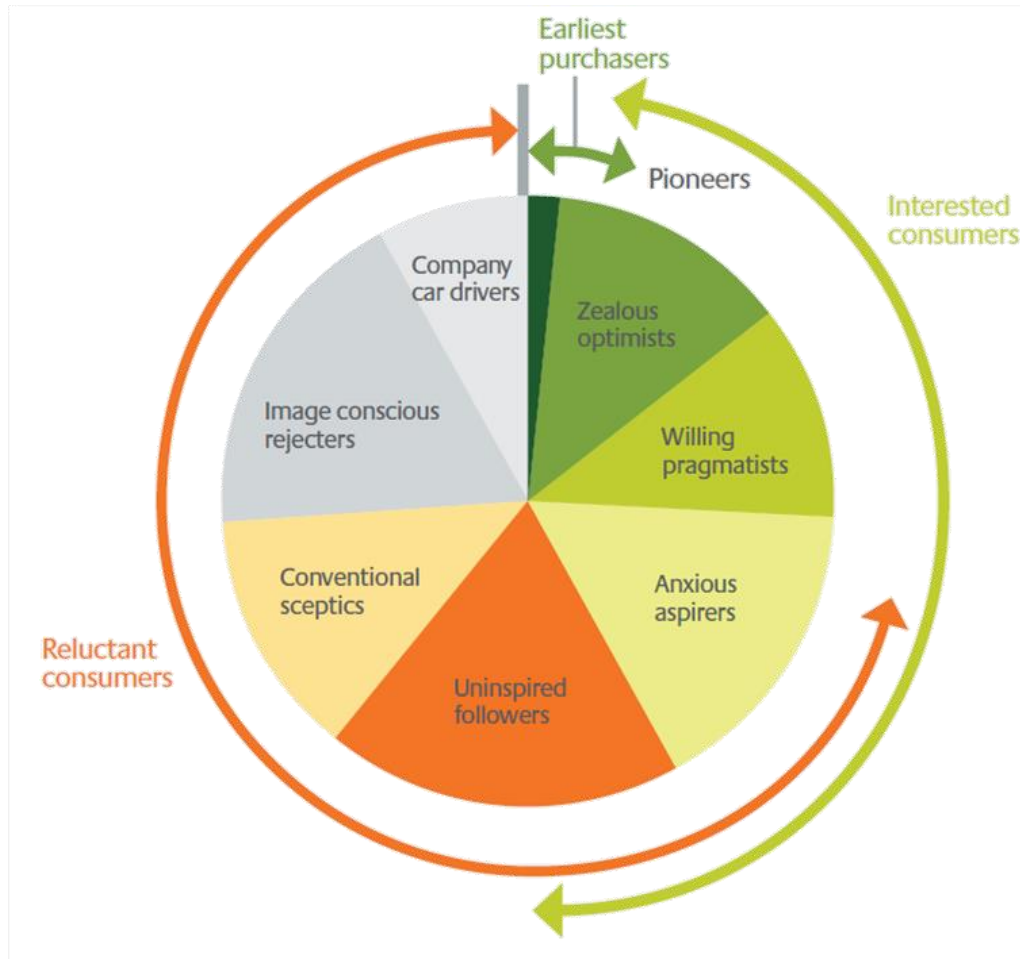
# Consumers Vehicles and Energy Integration (CVEI) project







# Consumers





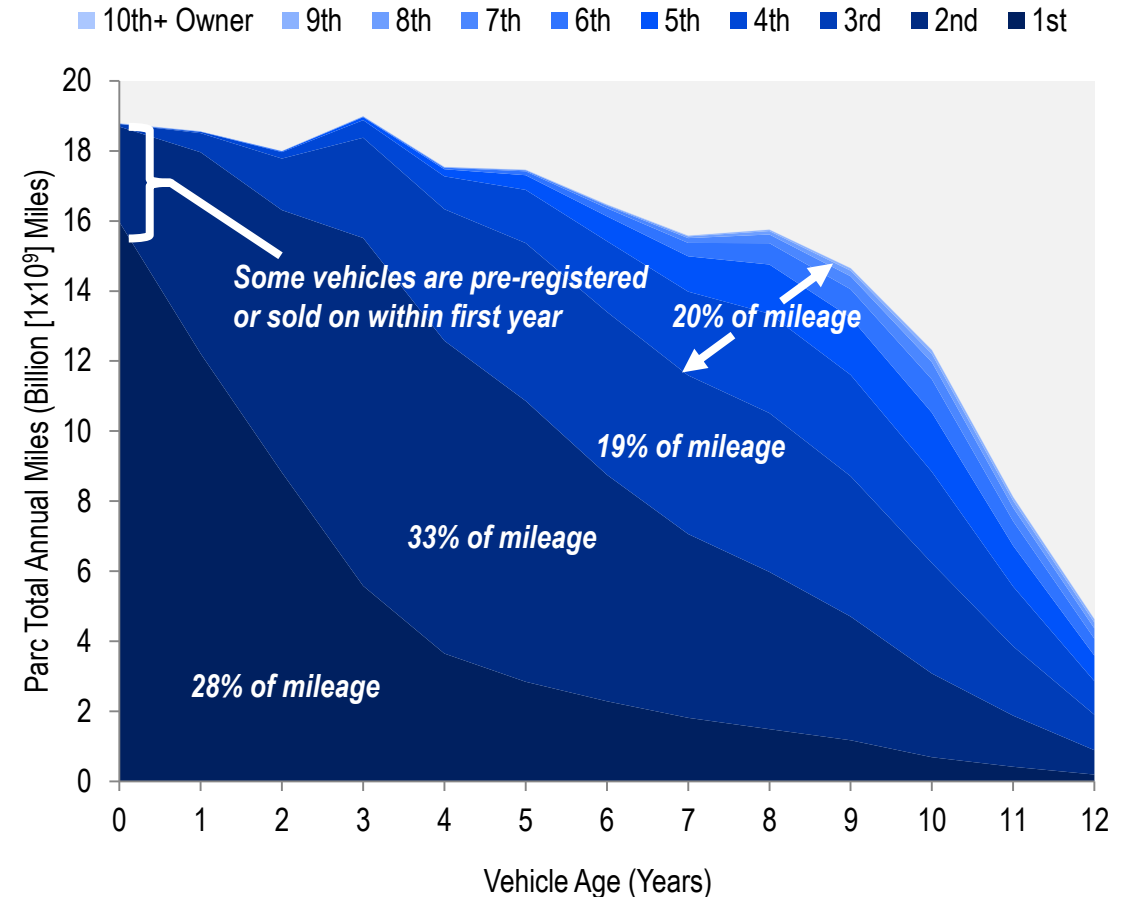
# Fleet buyers are seen by many as the route to market for new vehicle technologies, but.....

....although they buy around half the new cars, they sell them quickly and only own ~8% of vehicle in the UK.....

....so an attractive proposition must be created for private car buyers, to avoid prohibitive depreciation.....

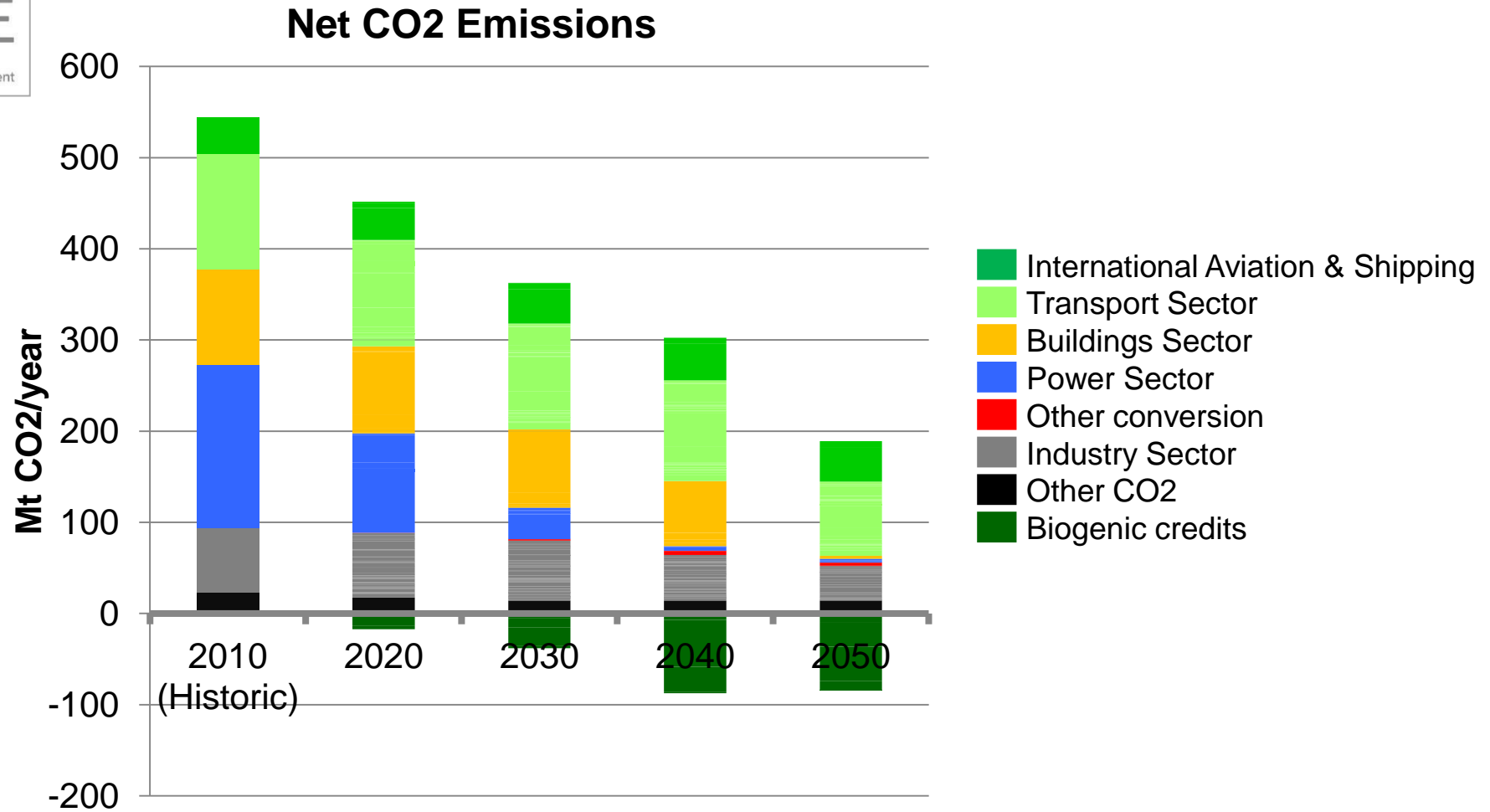
....hence, the system design needs to be optimised for the whole lifecycle.....

....and this needs to take account of the ratio of GHG emissions in use vs manufacture.





# Transport emissions in a whole system context



ESME v4.1 Database 100sim



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# ETI Light Duty Vehicle Work

<http://www.eti.co.uk/programme/transport-ldv/>