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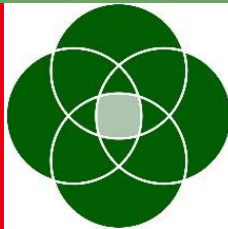
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# The (In)justice of Clean Air Zones

CTS Annual Conference  
UWE Bristol, 16 May 2019

**UWE  
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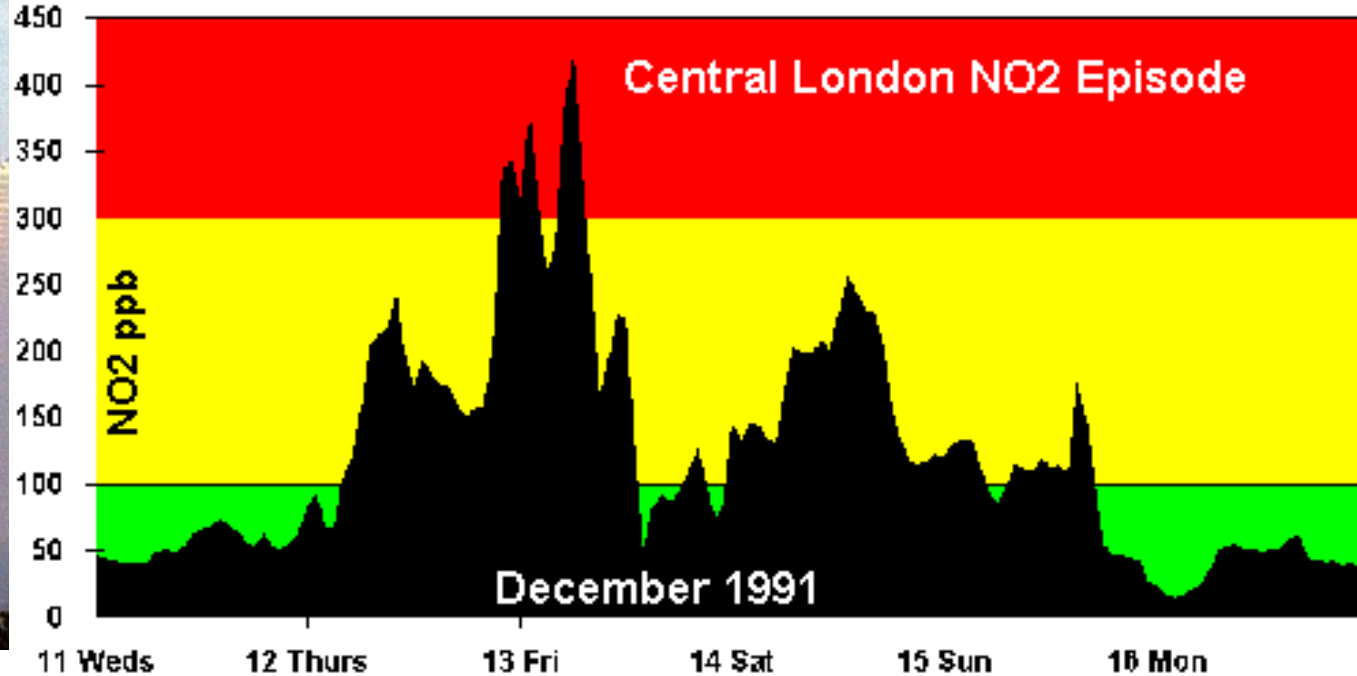


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Transport &  
Society

# Overview

- Historic Context: Political Failure to Respond to Scientific Evidence
- Questions about Clean Air Zone Effectiveness and Fairness
- Conclusion: CAZs may now be a legal requirement but they treat the symptoms of the condition, not the cause, and with side-effects!

# Dec 1991 London Pollution Episode

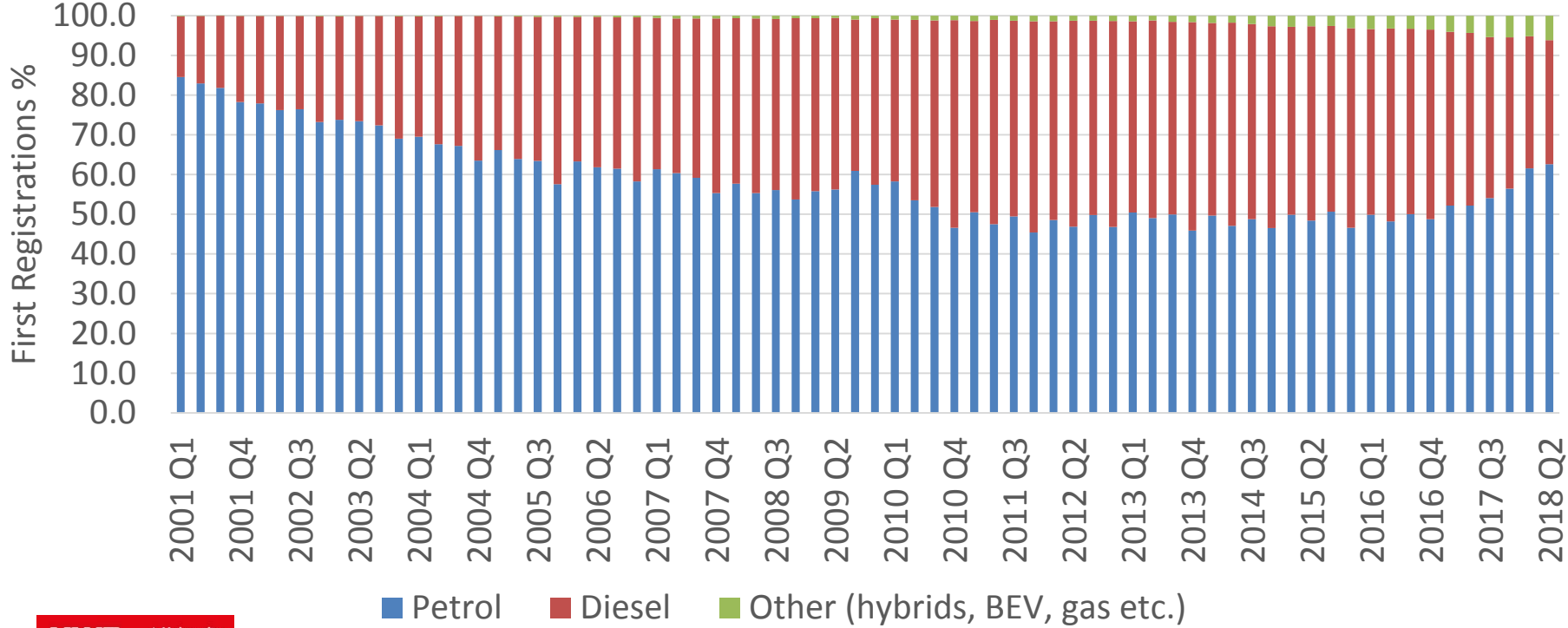


# The diesel problem was already clear in 1993

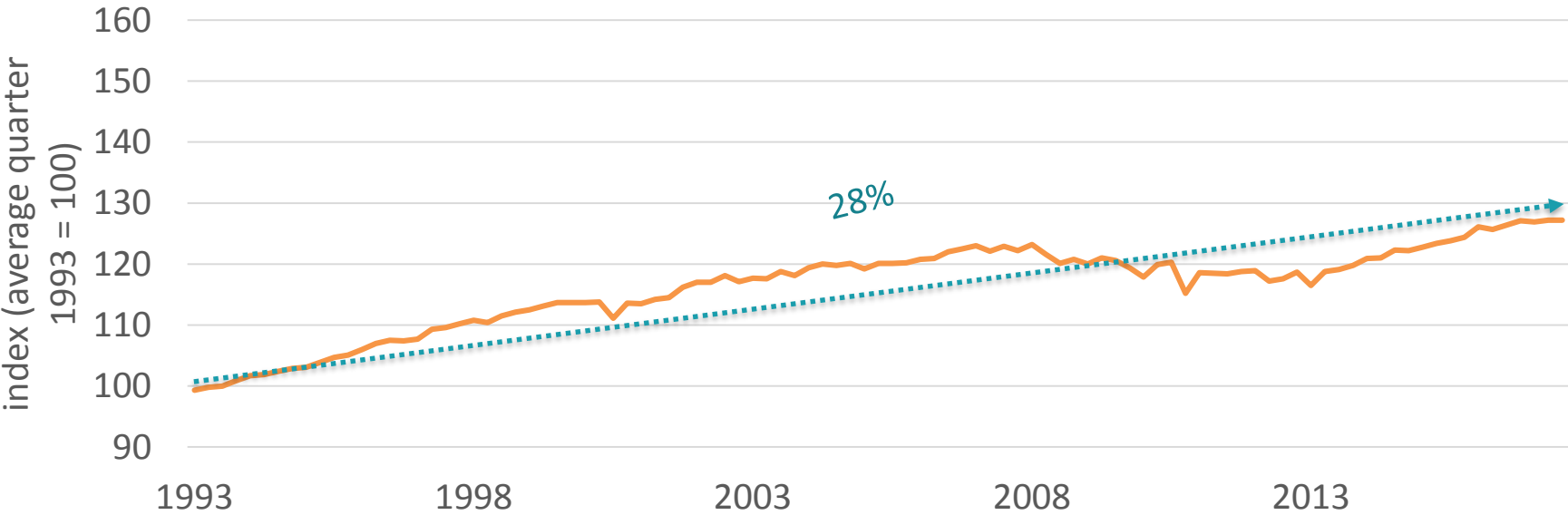
*“On balance... ..unless some improvements in the emissions from diesel vehicles can be achieved, there must be considerable concern over any increase in the proportion of diesel vehicles on our urban streets as their impact on urban air quality is undoubtedly quite serious”*

(Quality of Urban Air Reform Group, 1993: 69).

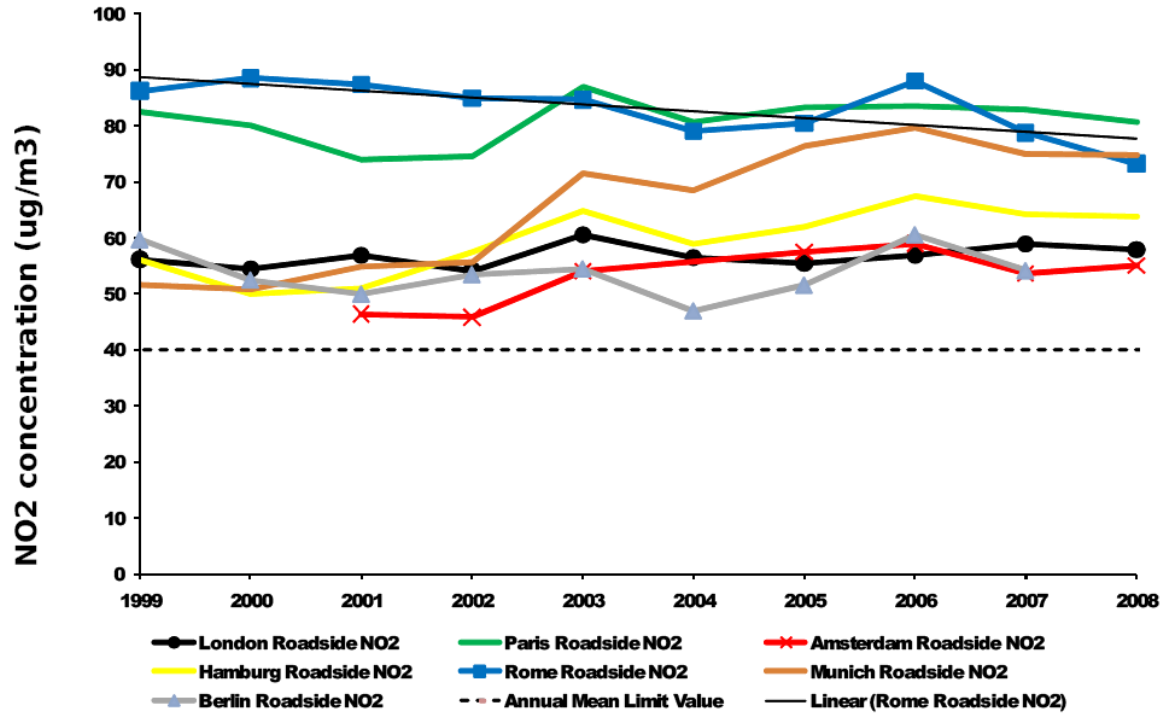
# Stimulation of Diesel Car Sales by VED and BIK Tax Regimes from 2001-2002



# Outcome of Transport Policy 1993-2017: 28% traffic growth

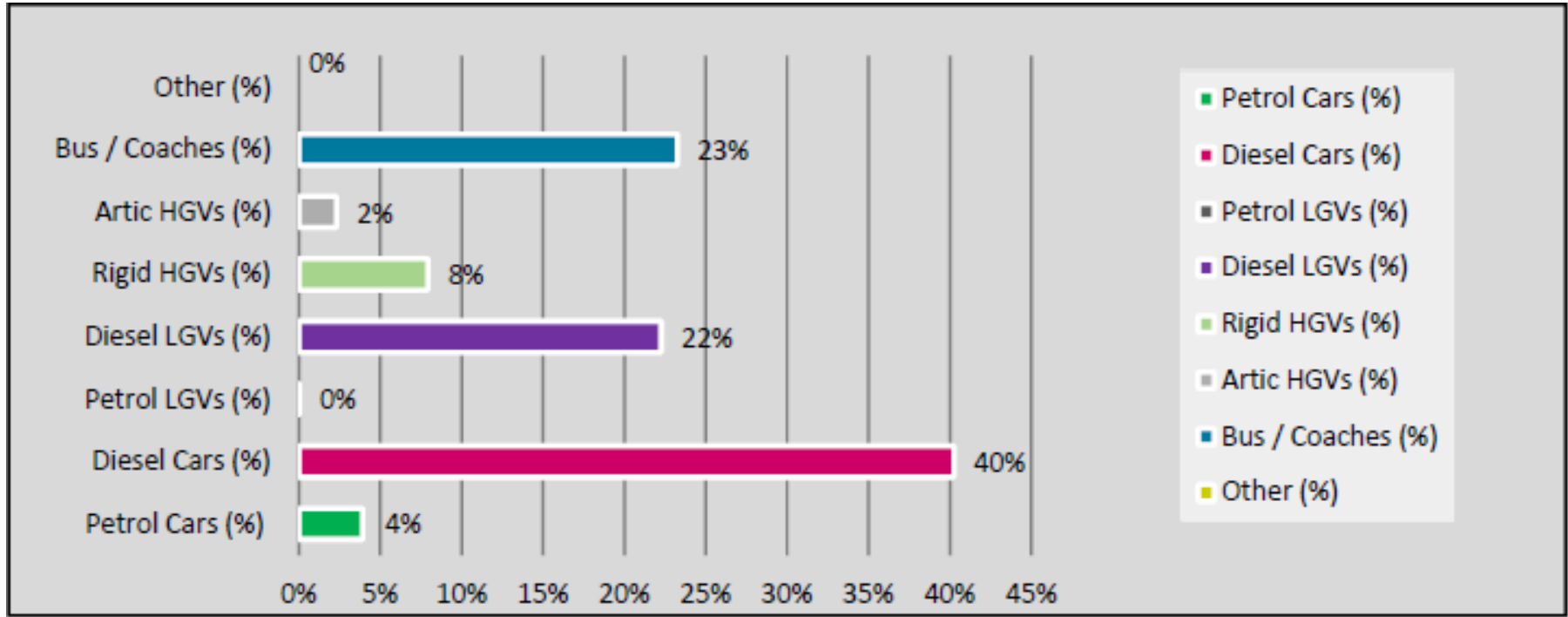


# Evidence of Roadside NO<sub>2</sub> Concentrations Persisting has been established for many years



Carslaw, D.C., Beevers, S.D. Westmoreland, E. Williams, M.L. Tate, J.E., Murrells, T. Stedman, J. Li, Y., Grice, S., Kent, A. and I. Tsagatakis (2011). Trends in NO<sub>x</sub> and NO<sub>2</sub> emissions and ambient measurements in the UK. Version: July 2011.  
[http://uk-air.defra.gov.uk/reports/cat05/1108251149\\_110718\\_AQ0724\\_Final\\_report.pdf](http://uk-air.defra.gov.uk/reports/cat05/1108251149_110718_AQ0724_Final_report.pdf)

# NOx source apportionment by vehicle category across Bristol city centre





# Relative Importance Given to Air Quality by Transport Planning

- Shared not 'equal' priorities

*“Improving air quality risks conflicting with improving accessibility in some cases. And we consider accessibility as vital to the economy.”*

[Transport planner]

- Political intangibility.

*“From an officer point of view, I can understand the health impact of air quality but this is difficult to translate in reality to the public compared to the way traffic congestion and road safety issues can be communicated.”*

[County transport planner during case study interview]

Shared priorities' importance based on time, resources and funding allocation

Priorities	n	Mean (1-6)
Safety	41	1.46
Congestion	41	2.02
Accessibility	41	2.05
Other Local Priorities	39	2.33
Air Quality	41	2.98

1= very high priority, 6= very low priority

Olowoporoku et al. (2010) A longitudinal study of the links between Local Air Quality Management and Local Transport Planning policy processes in England. Journal of Environmental Planning and Management, 53: 3, 385-403

Olowoporoku et al., (2012). The rhetoric and realities of integrating air quality into local transport planning process in English local authorities. Journal of Environmental Management, 101, 23-32.

# Emergence of CAZs

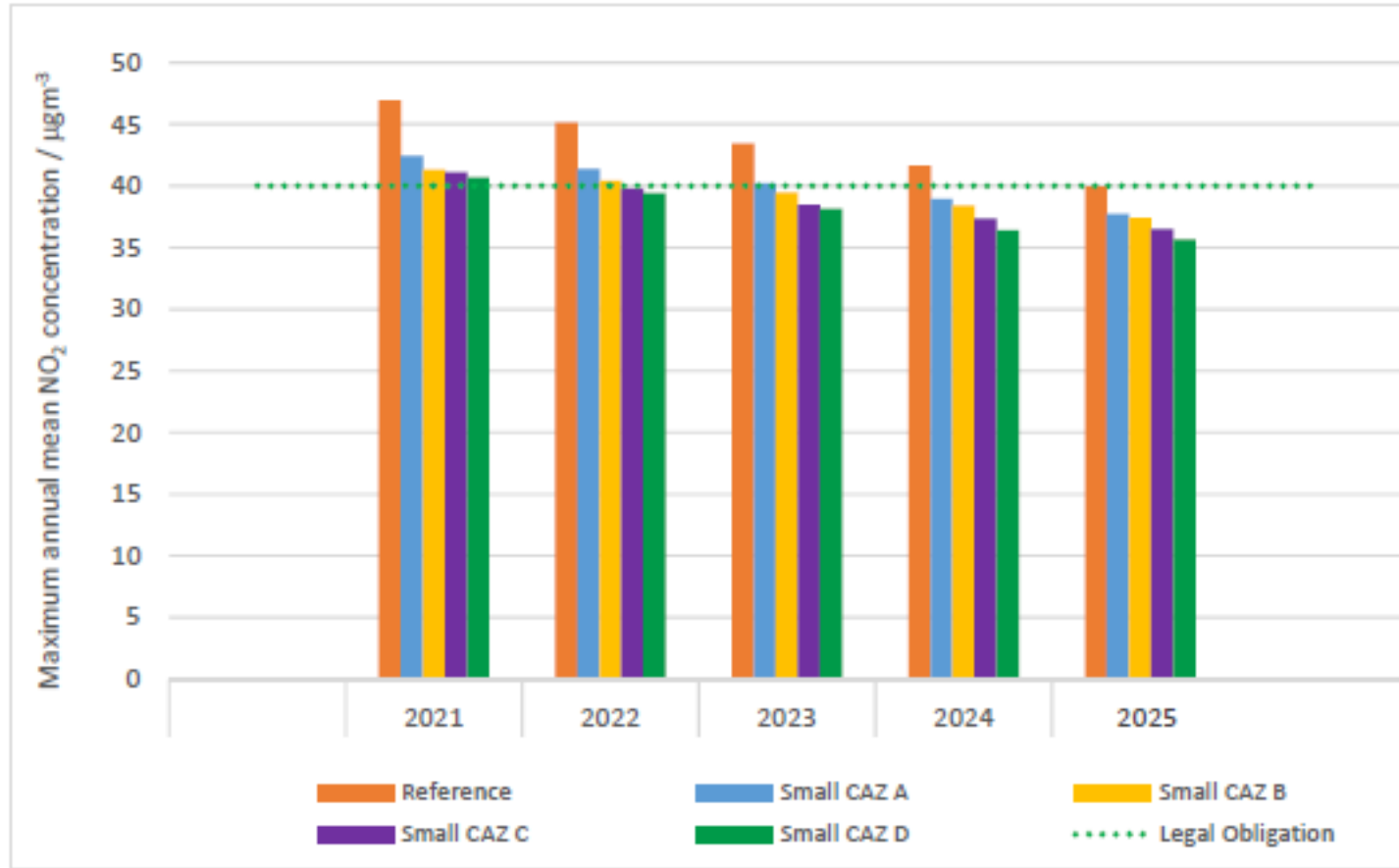
- 2015-2018 Government loses series of court cases brought by ClientEarth
- Mandated existing 2017 guidance
- 36 local authorities to bring forward plans for compliance with NO<sub>2</sub> limits by 2020
- CAZs to be pursued if other measures were predicted to be insufficient

# Three Interlinked Questions about CAZs

- Will they work?
- Are they politically deliverable?
- Are they a just solution?

# How significant is having a CAZ?

Bristol  
Small Zone  
NO<sub>2</sub>  
Projections  
2021-25



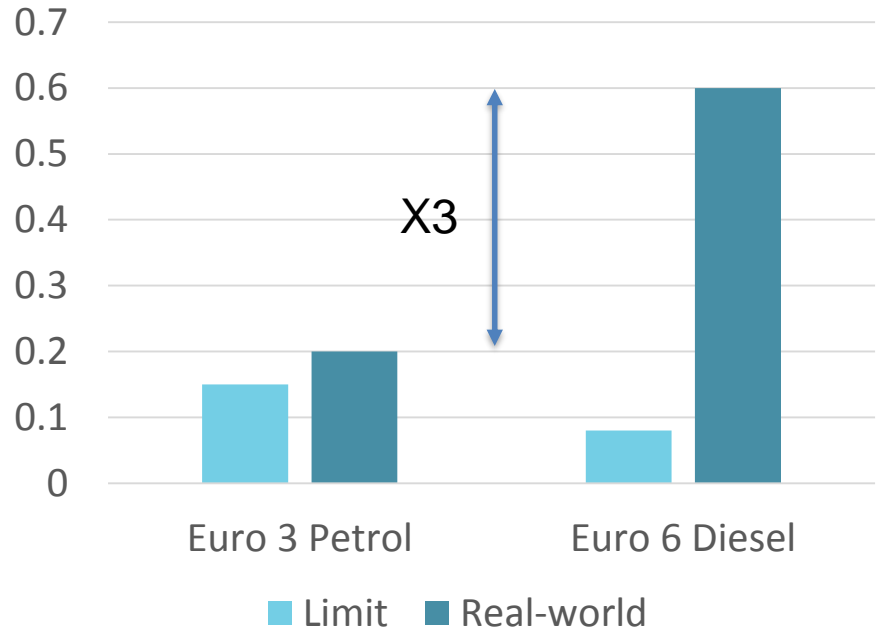
# How Relevant is the ‘Legal Obligation’?

“Neither the concentration limits set by government, nor the World Health Organization’s air quality guidelines, define levels of exposure that are entirely safe for the whole population.” (p.xii)

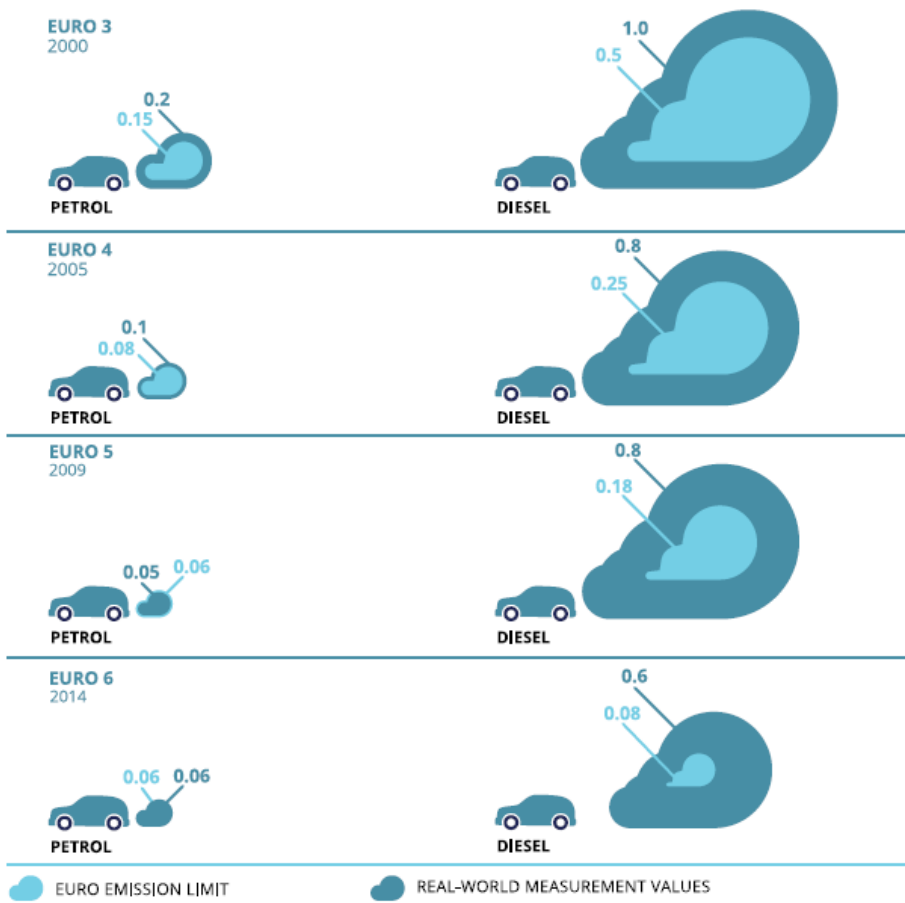
“With...a lack of evidence of a threshold where no effects exist for many pollutants, further control policies should seek to decrease pollution exposure, even where limits are met.” (p.12, emphasis added)

“The Committee on the Medical Effects of Air Pollutants estimates 29,000 ‘equivalent’ deaths annually from exposure to PM2.5 in the UK, with only a small fraction of that figure relating to exposures to concentrations in excess of legal limits”. (p.18, emphasis added)

# Growing Real-world Emissions Gap



## Comparison of NO<sub>x</sub> emissions and standards for different Euro classes



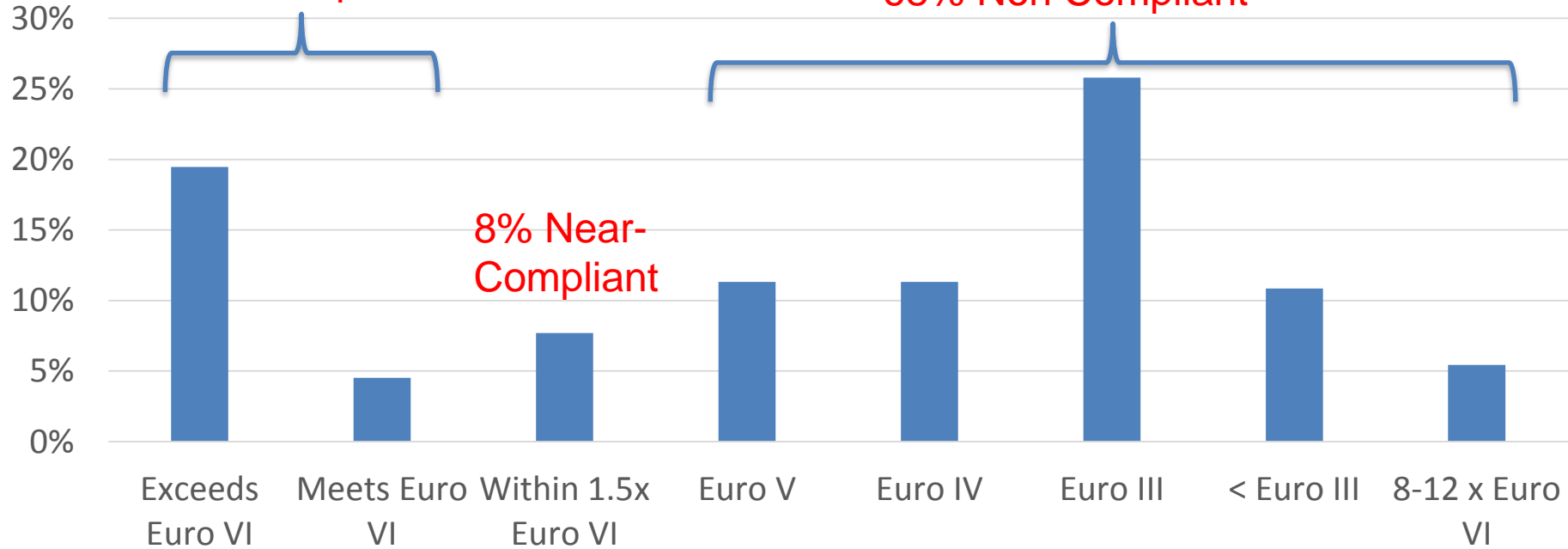
Source: EEA (2016) Explaining Road Transport Emissions, p28  
 Adapted from: ICCT, 2014a; Emisia, 2015.

Nitrogen oxide (NO<sub>x</sub>) emissions (In g/km)

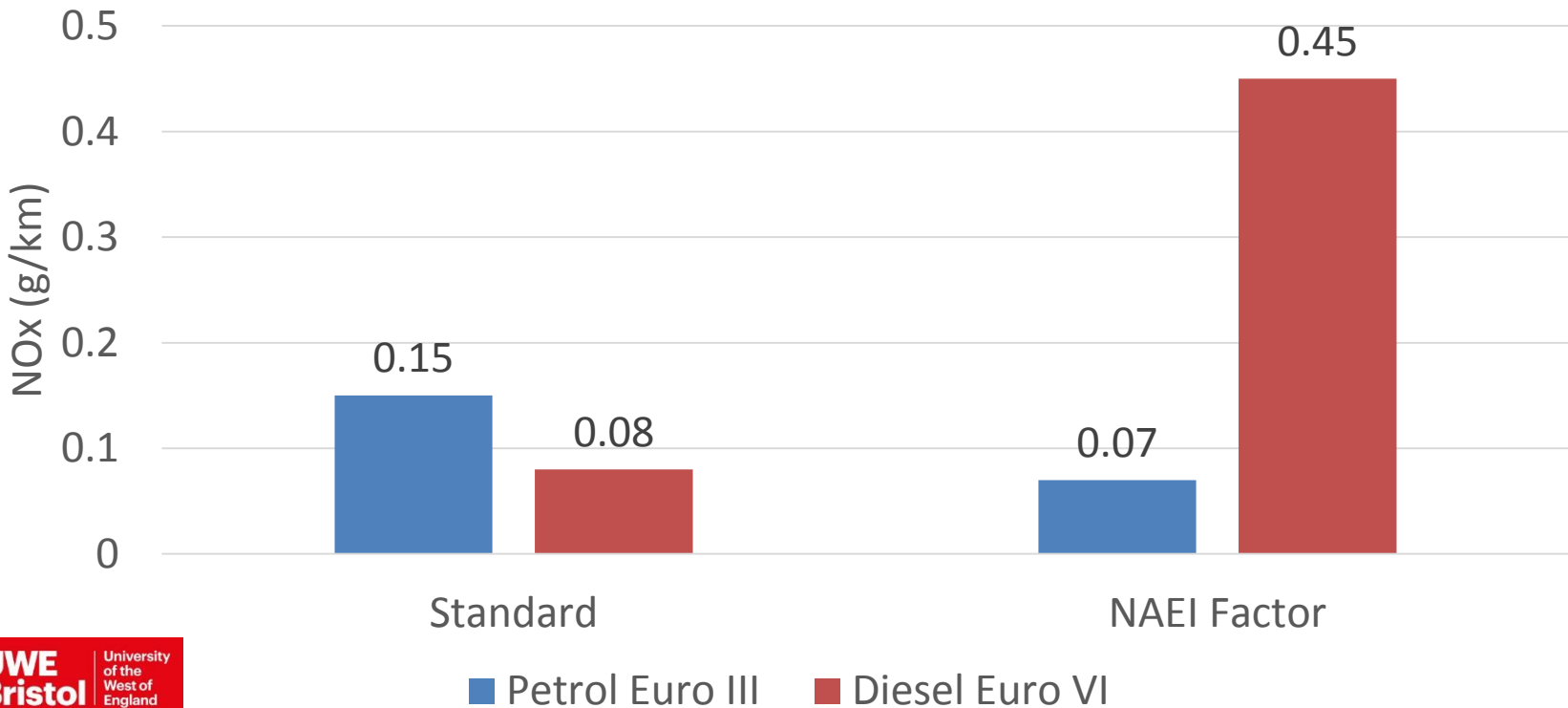
# Emissions Analytics Real-World Data on 221 Euro VI Diesel Models

24% Compliant

68% Non Compliant



# 'Real World' Emissions Factors for CAZ Modelling vs Euro Standards





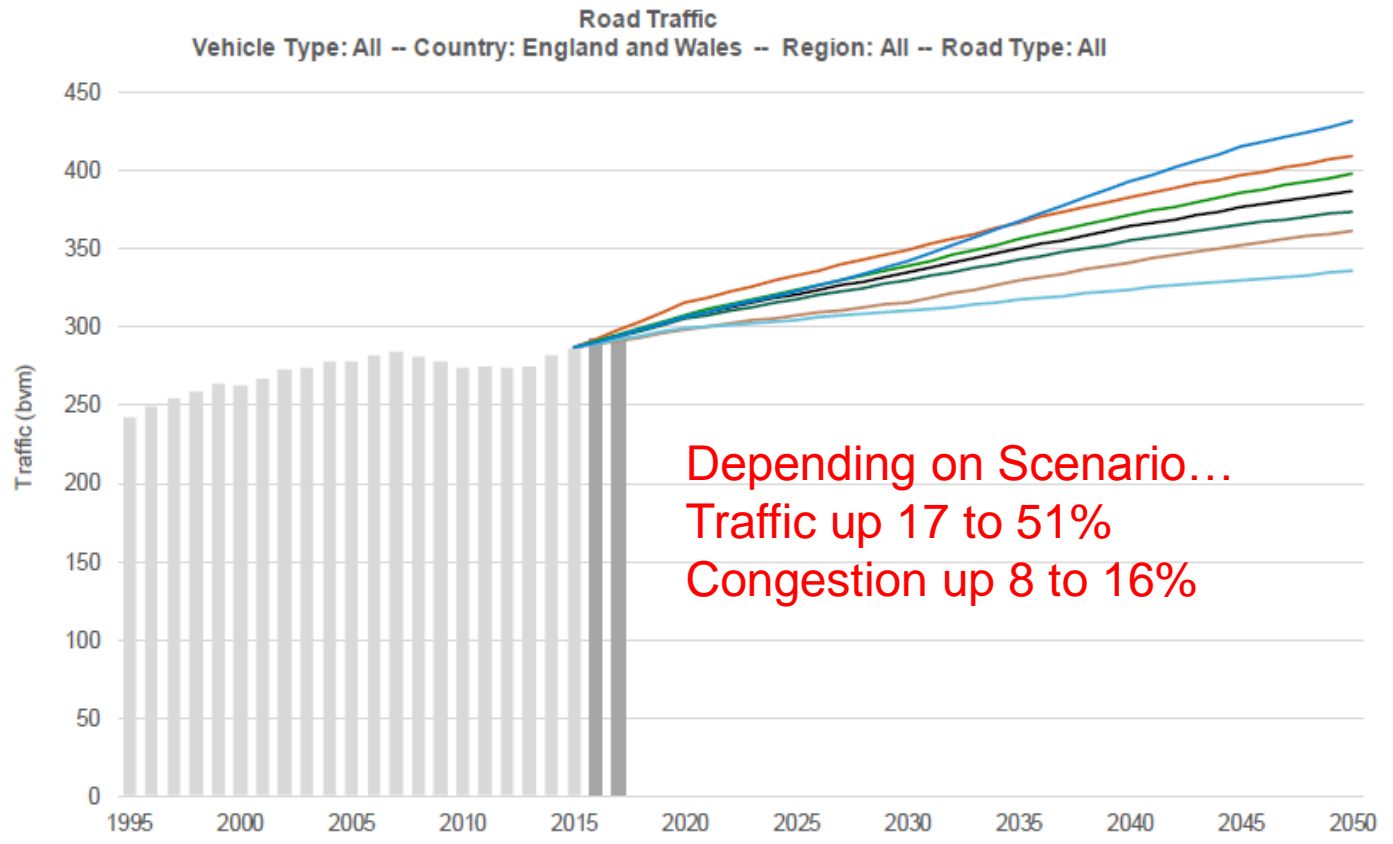
# So are they a 'just' solution?

- **Accelerate** legal compliance with a **specific** exposure threshold within a **particular** zone
- **Environmental Risk** of increasing emissions on diversion routes
- **Political risk** as identification of 'clean' and 'dirty' vehicles for charging purposes is crude
- **Political-environmental Risk** of signalling (to Euro VI diesel users in particular) that their vehicles are 'environmentally friendly'
- **Weak (and declining?) revenue stream** for redistribution

# Possible CAZ Enhancements

- More sophisticated identification of vehicle-specific emissions with individual certification
- Identify a forward programme of tighter emissions restrictions

# Better to Treat the Wider Cause?



DfT (2018) Figure 25

# New Taxation Regime Potentially Fairer

4.7% = £28 billion p.a.

Every 1% shift to BEVs will cost the Treasury of the order of £300 million p.a.

