Energy Institute

What’s the Future for Diesel?

Oliver Griffiths MEI

London and Home Counties Branch

www .energyinst.org

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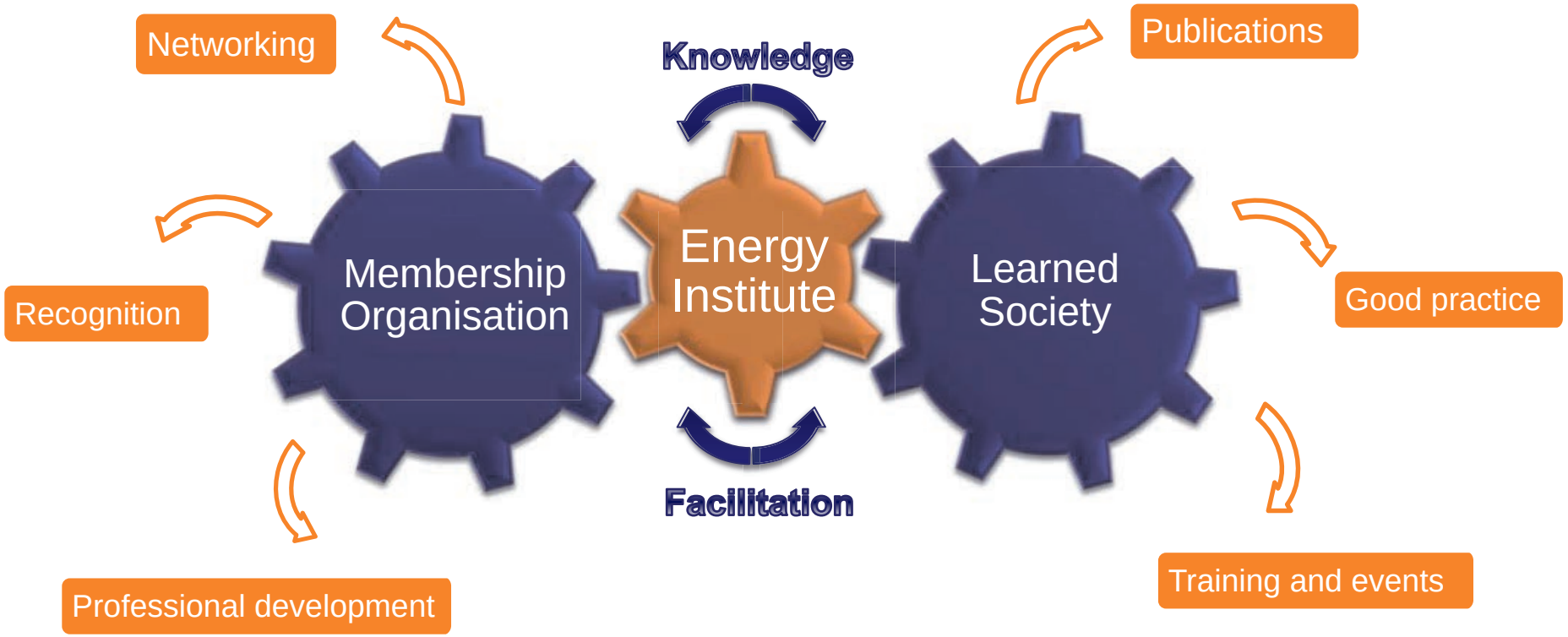
Who we are

The Energy Institute:

We are the professional body for the energy industry delivering good practice and professionalism across the depth and breadth of the sector.

- A registered charity, we are completely independent and receive no funding from government
- We develop and disseminate knowledge, skills and good practice towards a safe, secure and sustainable energy system
- We celebrated our centenary in 2014

Knowledge, skills and good practice



London and Home Counties Branch

- The largest of 13 local branch networks in the UK
- 7 Overseas branches: Ireland, Hong Kong, Nigeria, Middle East, Malaysia, Singapore, Caribbean (in development)
- Currently 6 Young Professionals Networks (YPN) including the London YPN

- A link between the local energy community and EI Head Office
- A range of enjoyable and informative events
- Networking opportunities and access to industry leaders and academics
- Professional Development opportunities for members

Get Involved

EI branches and YPN

- Attend events, join the committee, offer a venue.

Committees

- Join a professional committee or EI Council.

Magazines

- Editors are always on the look out for relative, informative, objective commentary on markets and topical issues.

EI Champion

- Tell others about us.

What’s the Future for Diesel?

Chris Hunt – UKPIA

Oliver Lord – Transport for London (TfL)

UKpia

Future of Diesel

bp ESSAR ExxonMobil petroineos REFINING AND TRADING PHILLIPS 66 TOTAL VALERO

First, the adverts! UK Petroleum Industry Association

- Trade Association for the UK oil refining industry and its marketing activities
- Cover legislation on: conventional fuels, biofuels, air quality, climate change, safety, other environmental issues
- Communications
- Emergency planning

- BP
- ExxonMobil
- Essar
- Petroineos
- Phillips 66
- Shell
- Total
- Valero

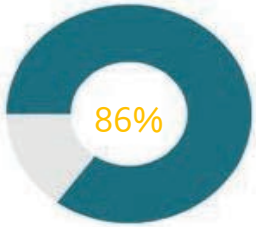
Marketing/Retail – No refining
Refining and Branded wholesale
Refining and Marketing
Refining and limited Marketing

ASSOCIATES: Certas Energy, Dragon LNG, Greenergy, National Grid and Puma Energy

UKpia

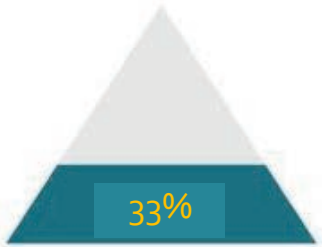
UKPIA

Our members source 86% of all UK inland fuel demand

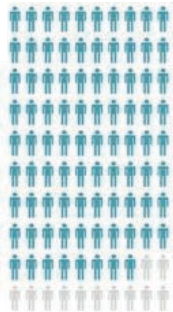


Operate all 6 UK refineries – 5th largest capacity in Europe

Supply over 33% of UK primary energy demand needs



88,100 jobs supported across the UK directly and indirectly



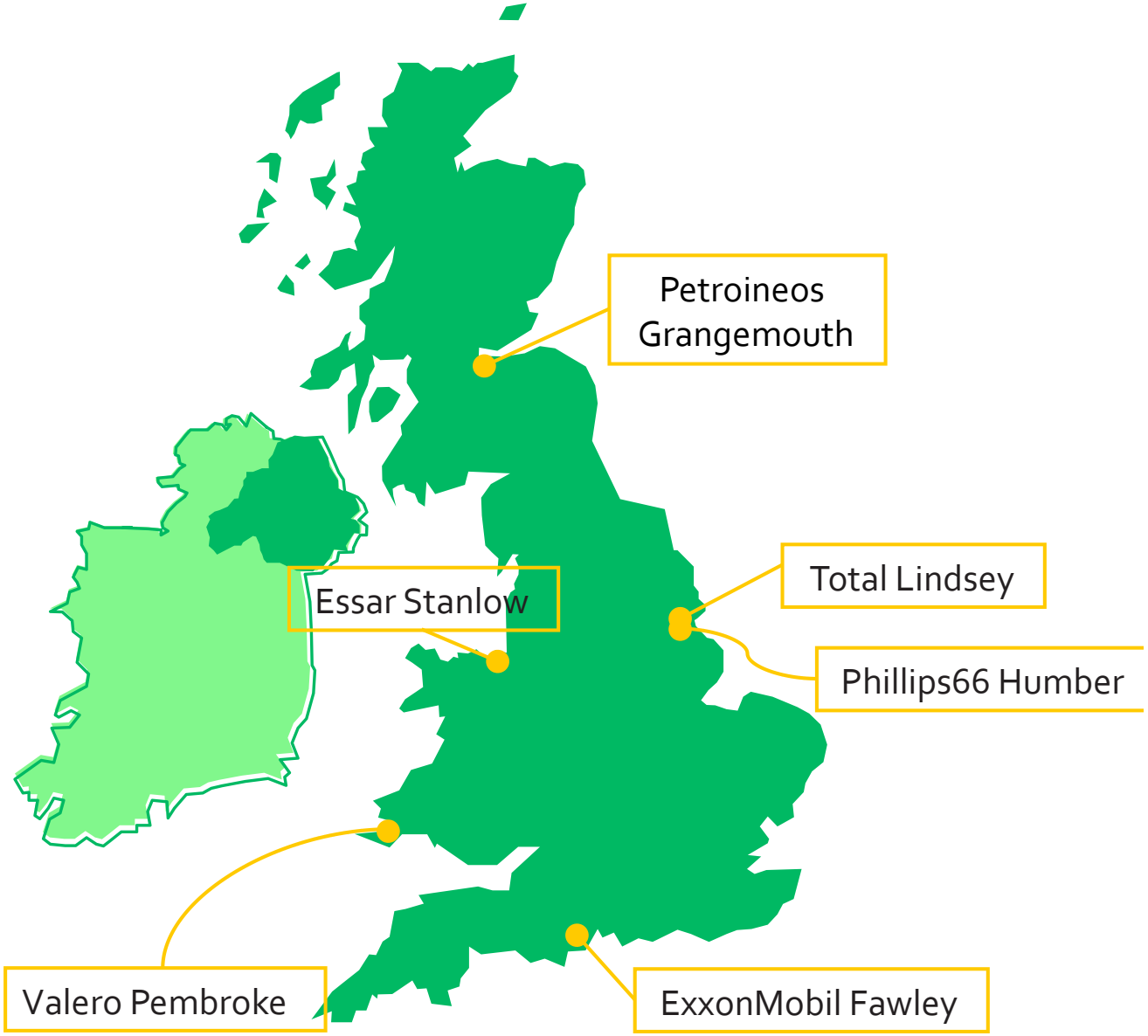
Our members own and brand 55% of filling stations in the UK

Operate 36 distribution terminals

UKpia

UK Refineries

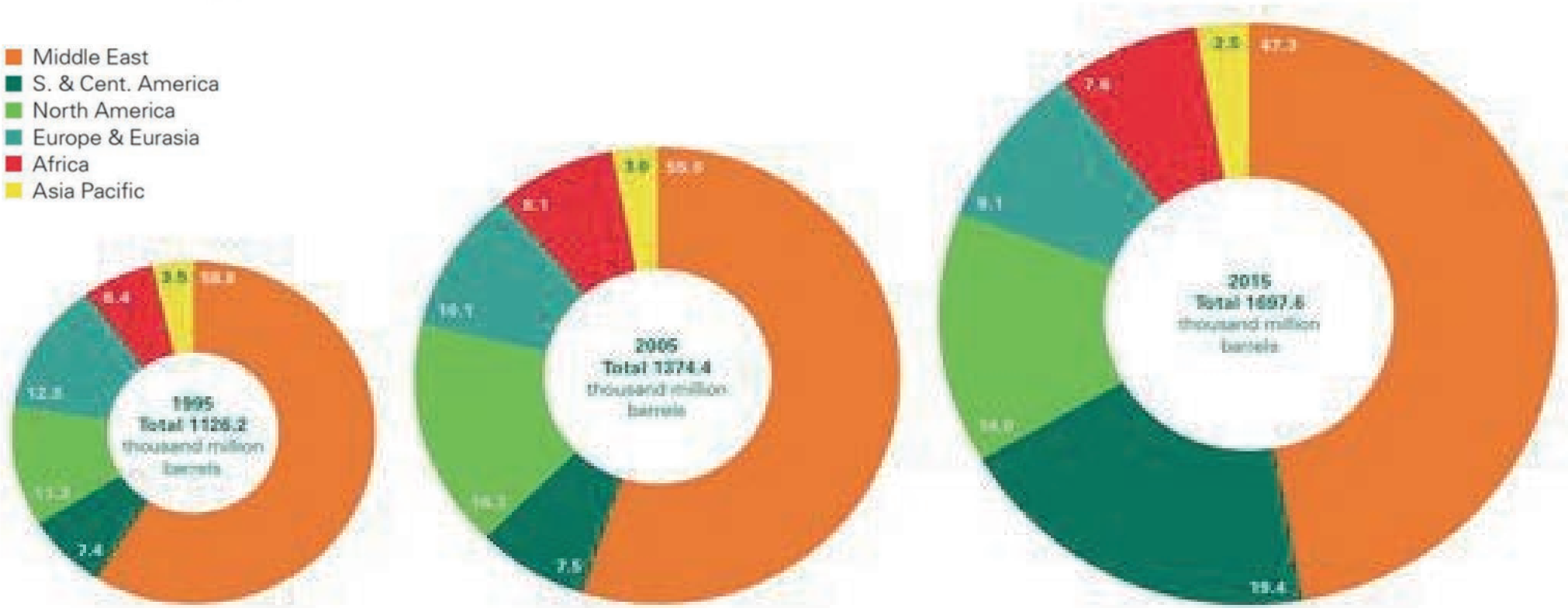
- Vital to UK's mobility, economy and growth. UK refineries rank upper quartile for innovation and skills against other industries
- Around £5.6 billion invested in fixed assets over the last 5 years, mostly to meet tighter fuel and environmental standards and to enhance process safety. Further £11 billion to 2030 on compliance alone
- Value of refining to UK economy estimated at over £2.3 billion annually.
- Each large refinery estimated to inject ~ £60+ million locally. In 2015/16, the downstream oil sector collected £36 billion in duty and VAT on fuels.
- Supply important feedstocks for other industrial sectors and processes - petrochemicals, lubricants and greases, heating fuels, solvents, carbon electrodes.



Key fact - oil is not running out!

Distribution of proved oil reserves in 1995, 2005 and 2015

Percentage

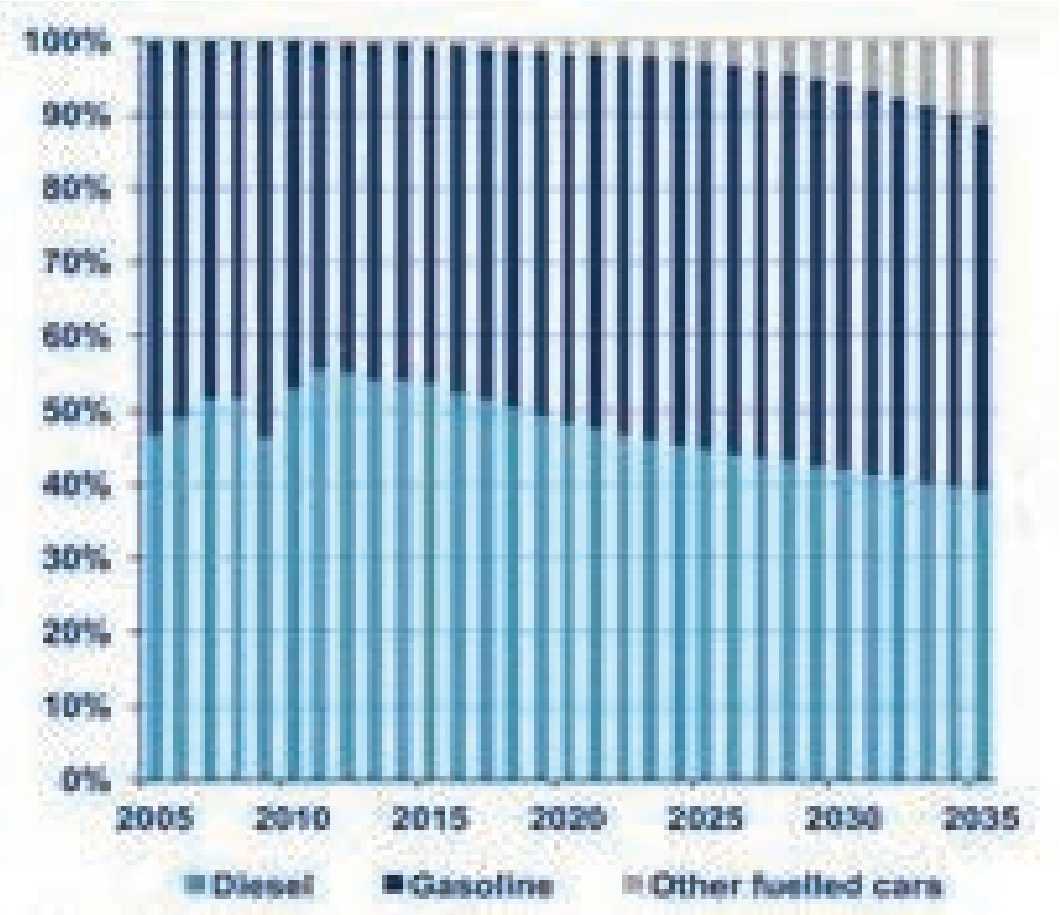


World proved oil reserves at the end of 2015 reached 1,697.6 billion barrels = 50.7 years of global production

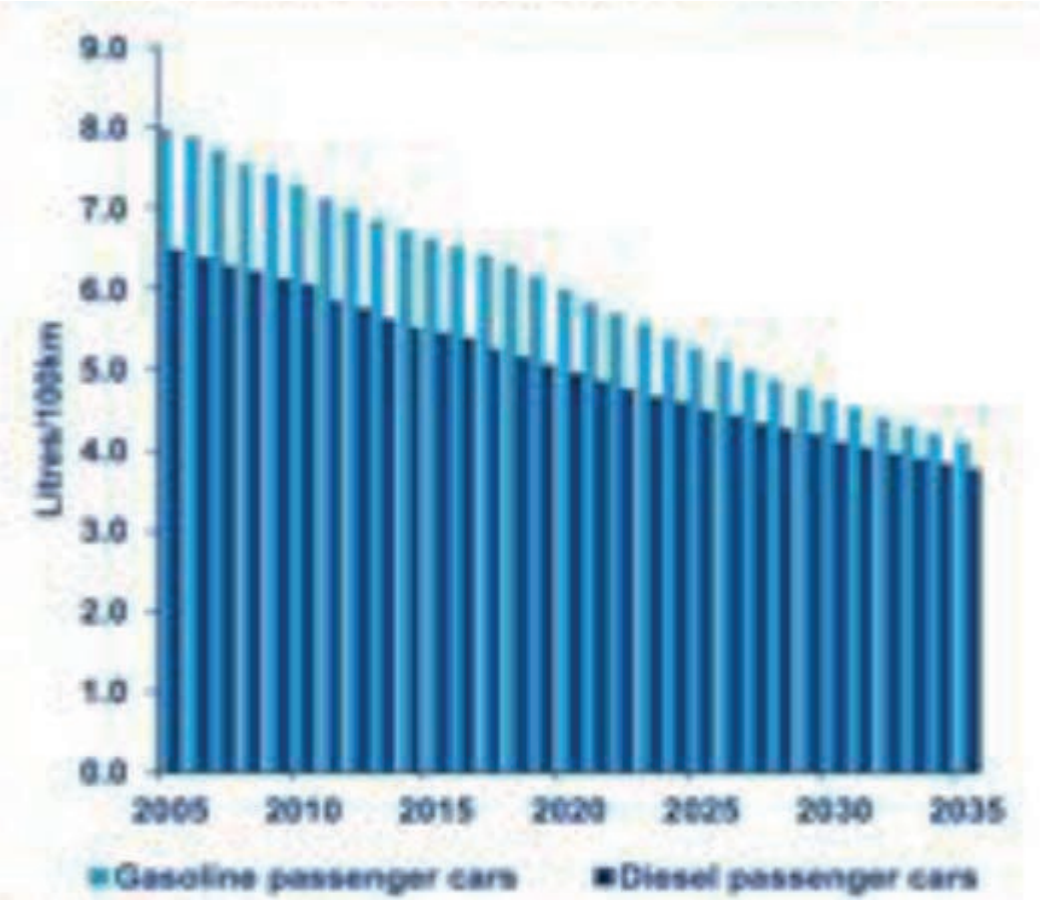
Source: BP, *Statistical Review of World Energy*, 2016

Dilemma *1: There are a lot of diesel vehicles out there!...

Europe new passenger car registrations



Europe passenger car stock fuel efficiency

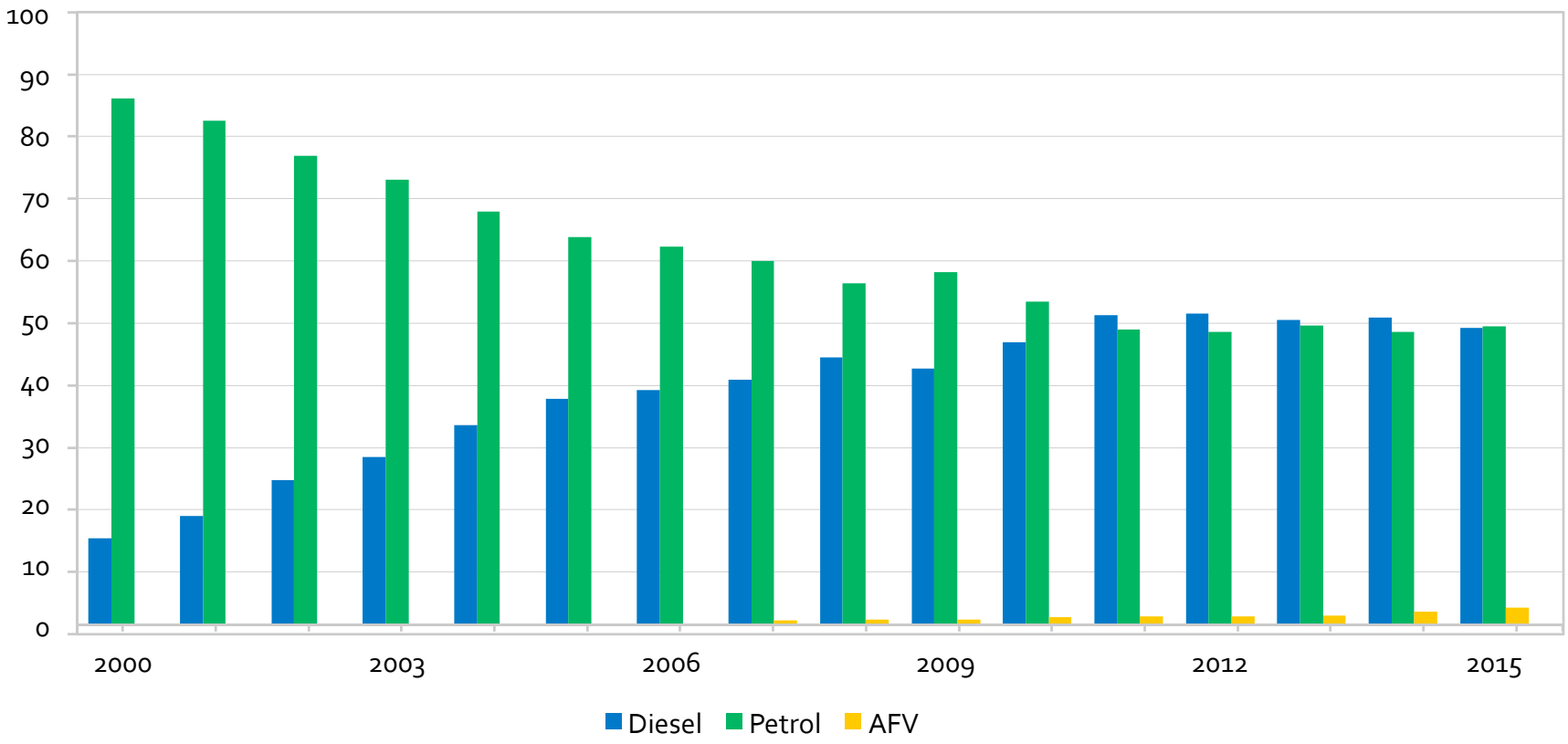


Source: Wood Mackenzie

….in the UK too: new registrations

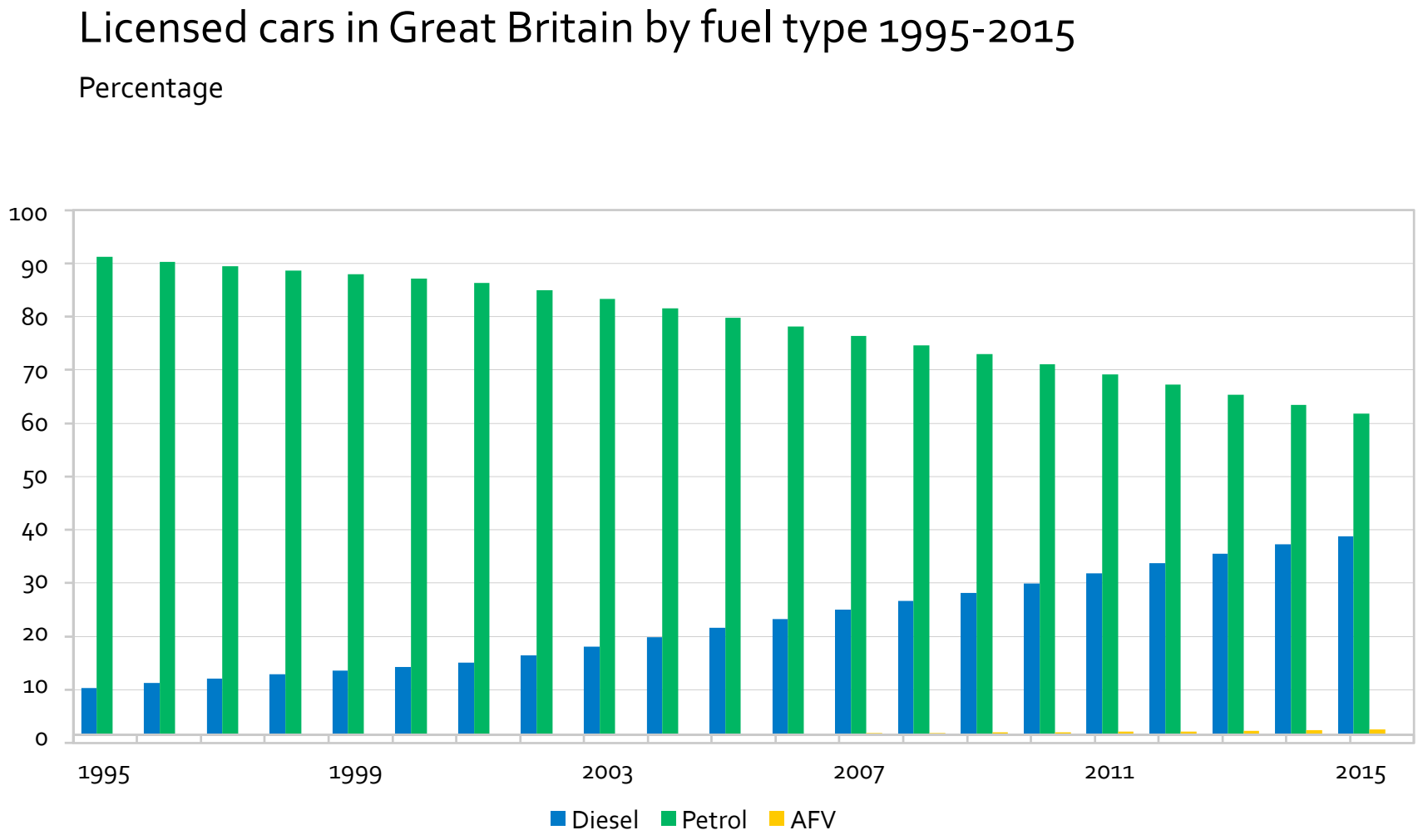
UK new car registrations by fuel type 2000-2015

Percentage



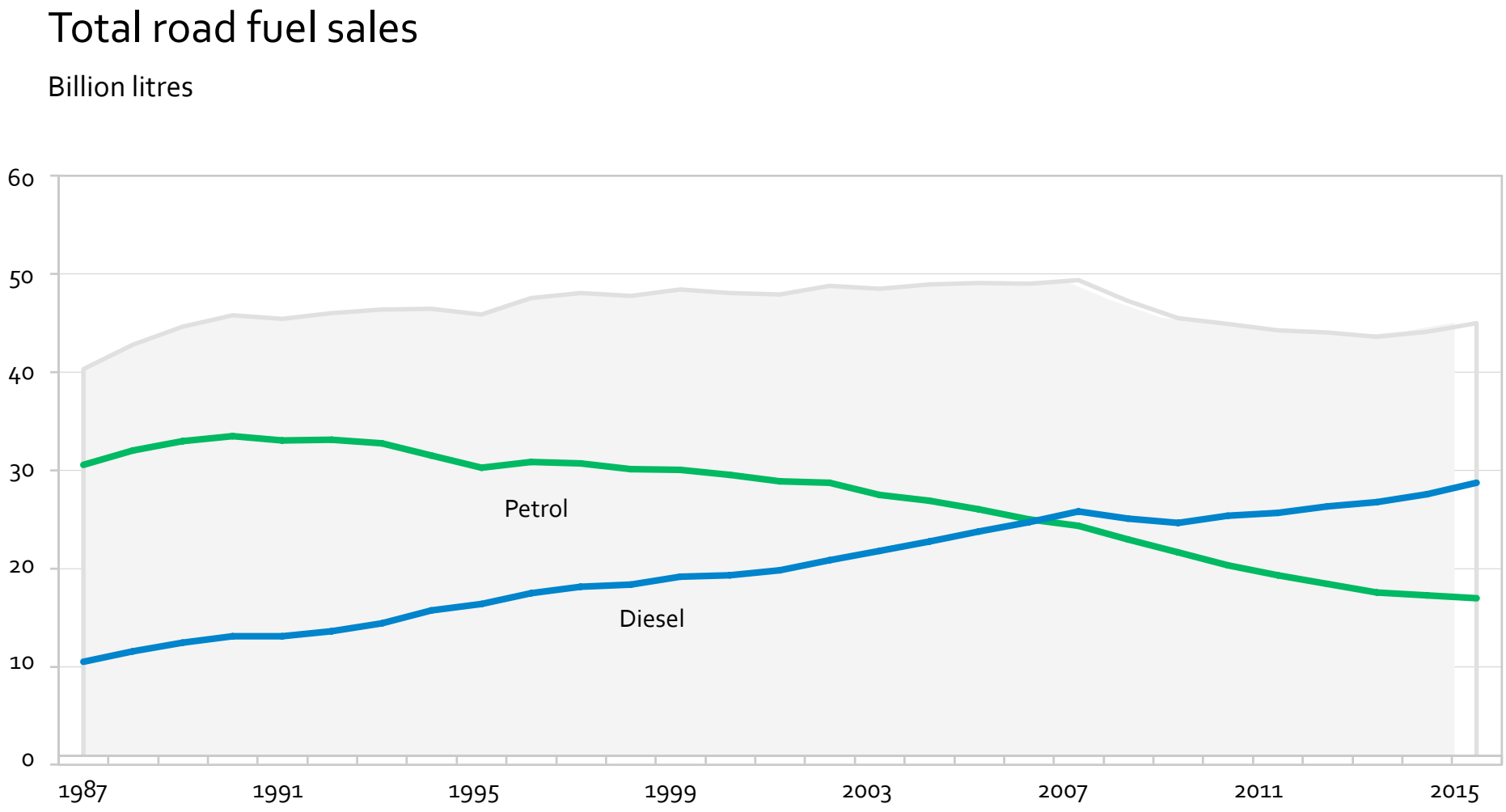
Source: SMMT, 2016

leading to dynamic change in the car parc…



Source: DfT, 2016

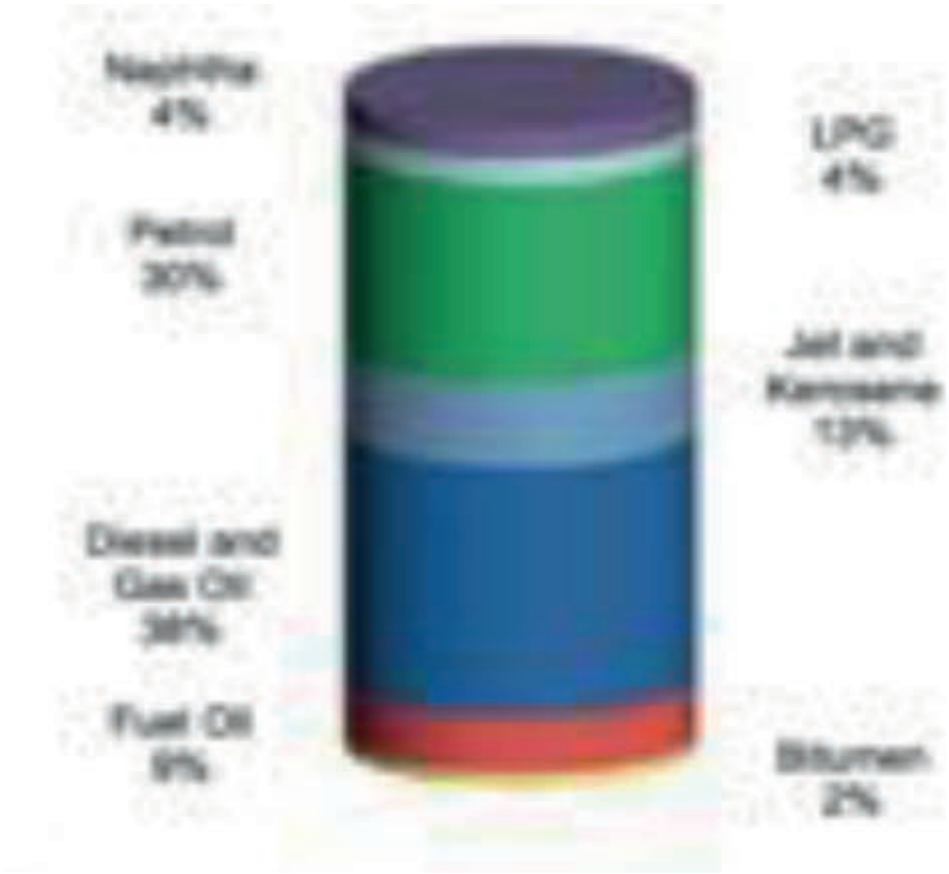
What's that done to demand?



Source: DECC, *DUKES*, 2016

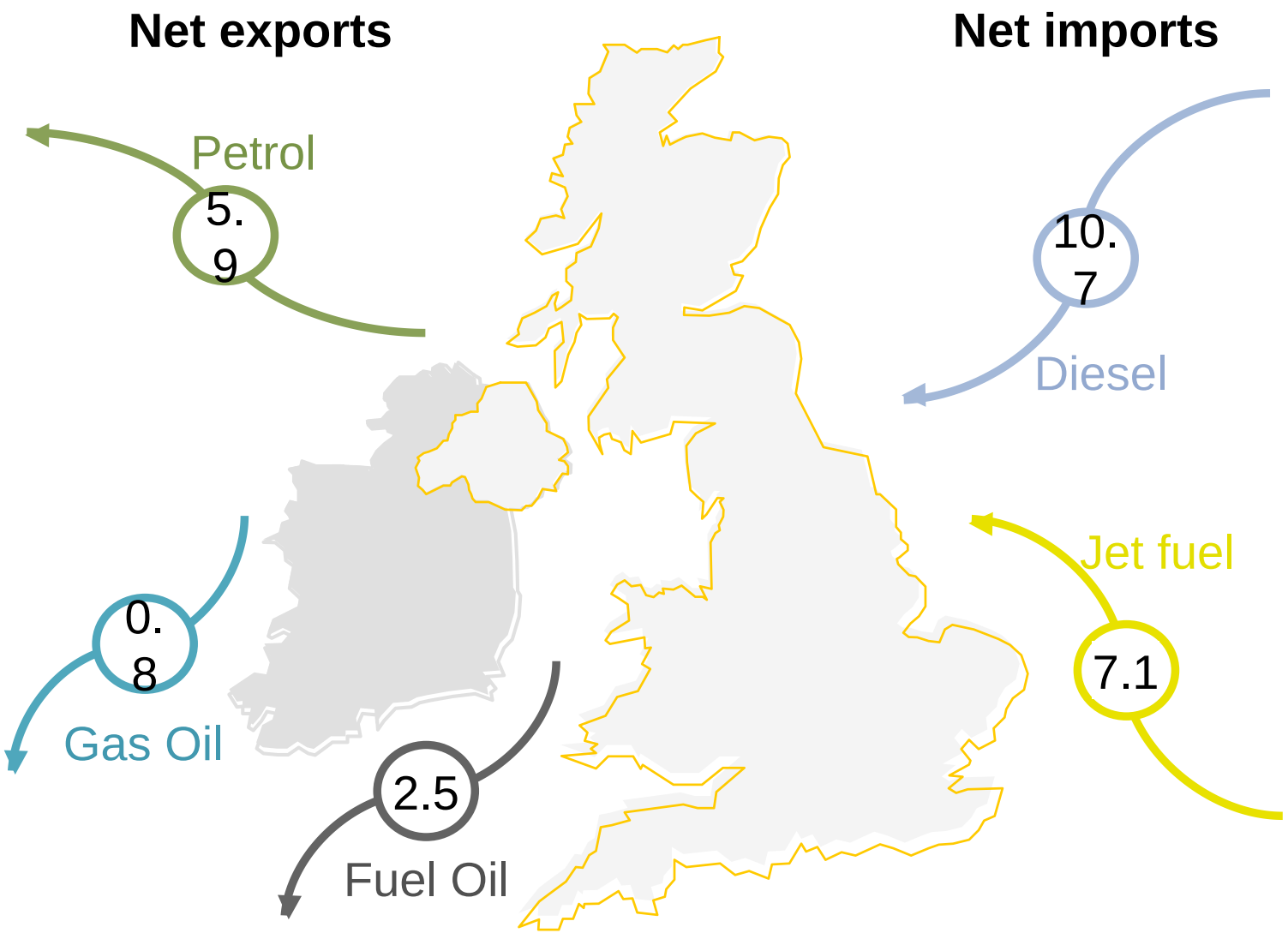
Dilemma *2: Refinery output is fairly fixed…

Refinery production 2015



Source: UKPIA *Statistical Review* 2016

So, too much petrol/not enough distillates!
UK net product flows



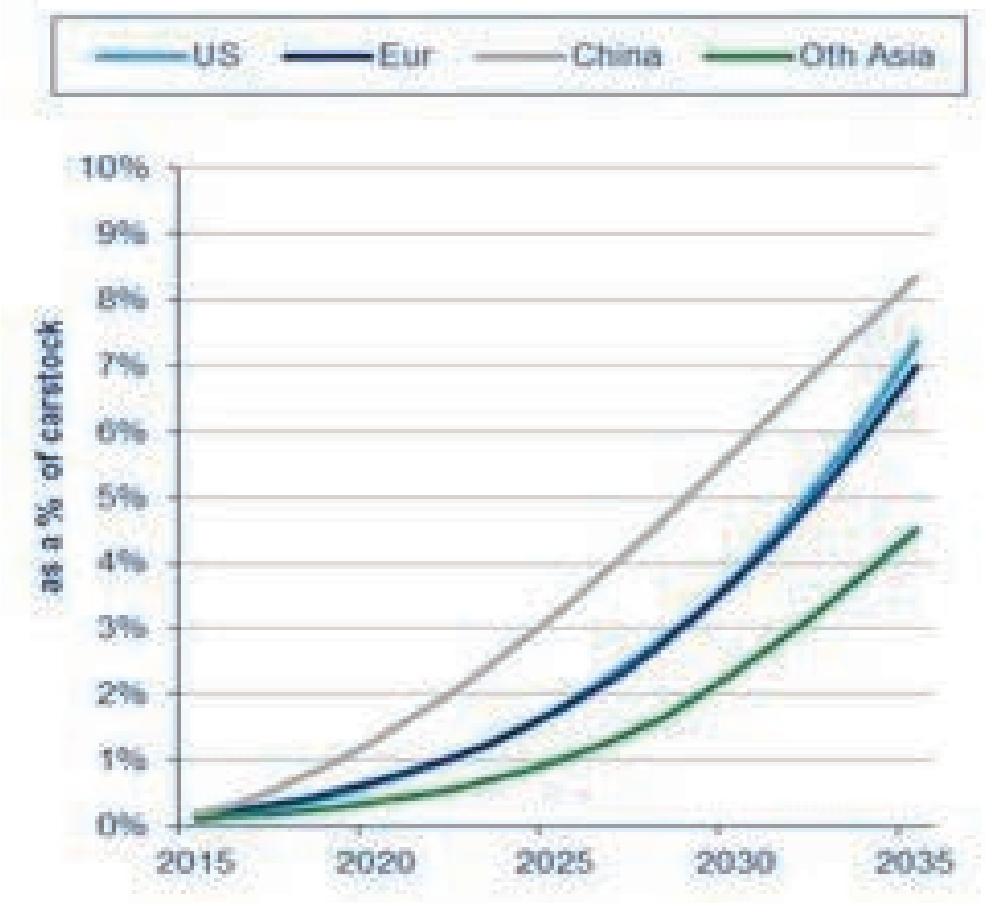
Units: Mte / year

Source: *DECC (DUKES)* 2015

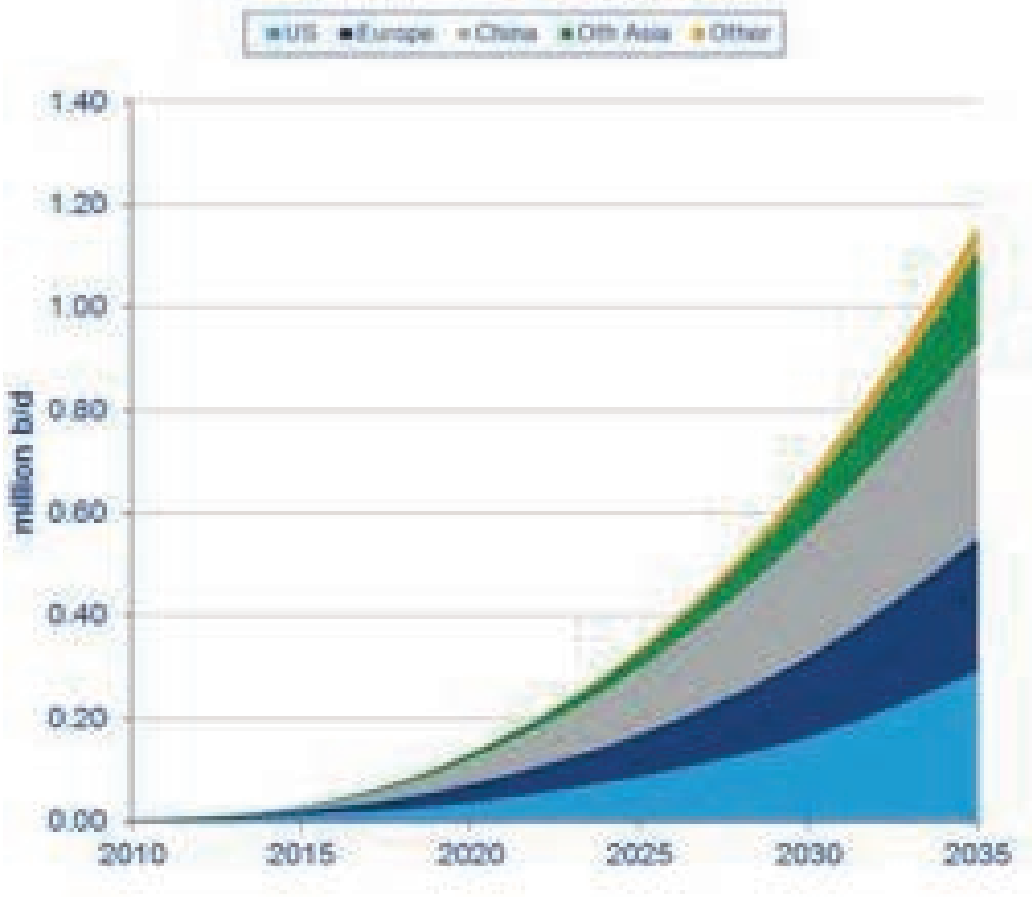
UKpia

Dilemma *3: Alternative fuelled vehicles need seismic shift to make impact!...

EV/PHEV share of car stock by key markets



Oil demand displaced by EVs/PHEVs



Source: Wood Mackenzie

Things are improving, but…

EU projects feed the OEM development process for innovations to improve exhaust emissions

30 new diesel cars in 2014 emit less PM* than…

1 new diesel car in 1994

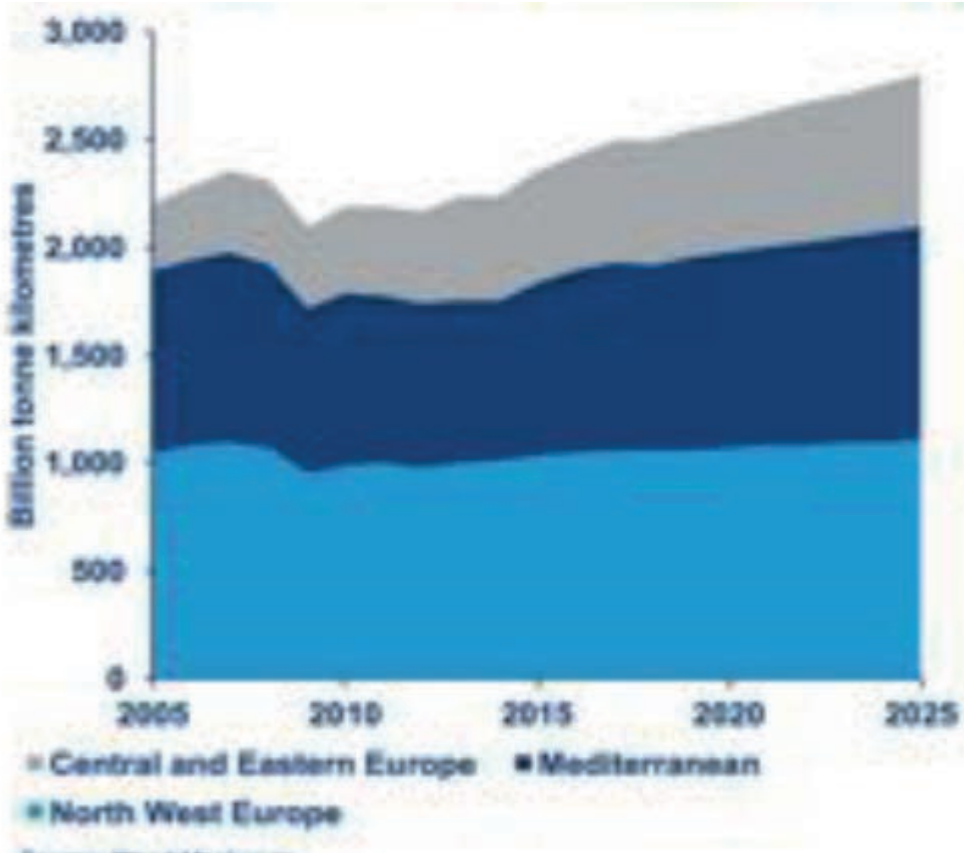
35 new heavy duty diesel engines in 2014 emit less PM* than…

1 new heavy duty diesel engine in 1994

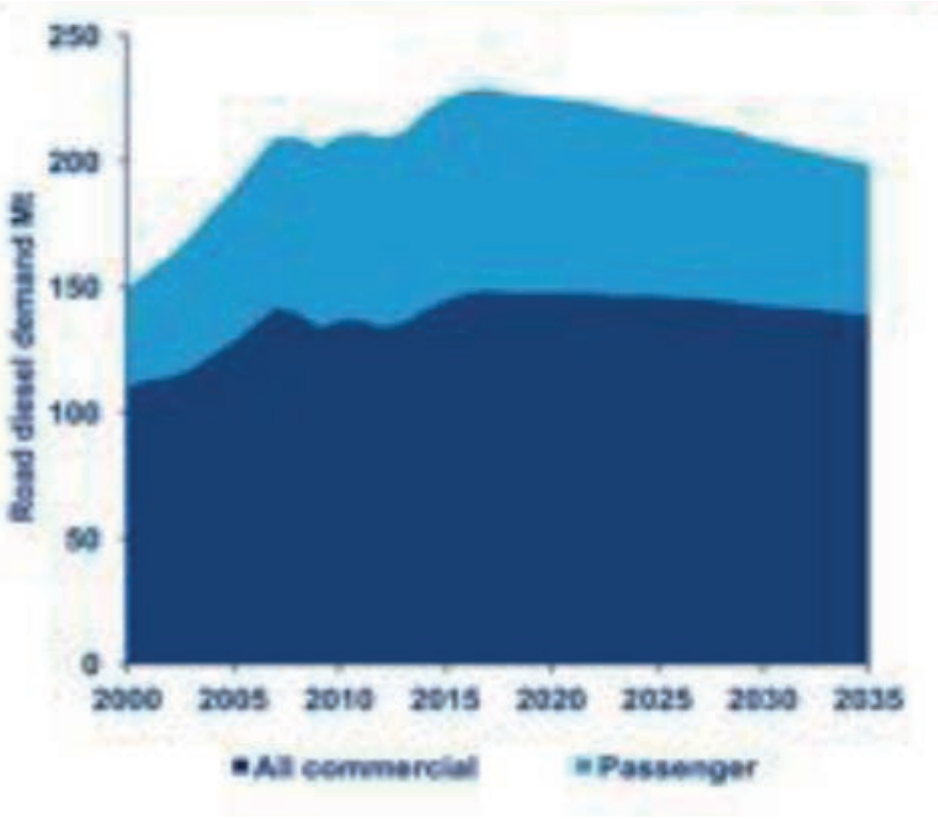
*Diesel particulate matter Euro 6 v Euro 1 standards
Source: Eucar

Retail fuel not just about cars – HGV has no viable alternative to diesel…

EU road freight tonne km



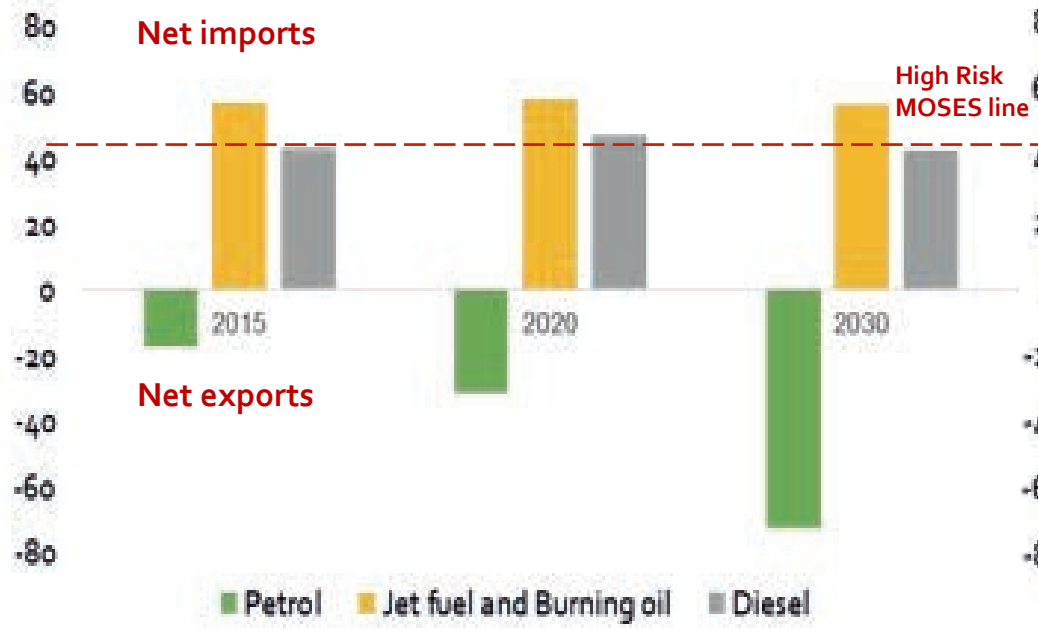
Europe road diesel consumption by vehicle type



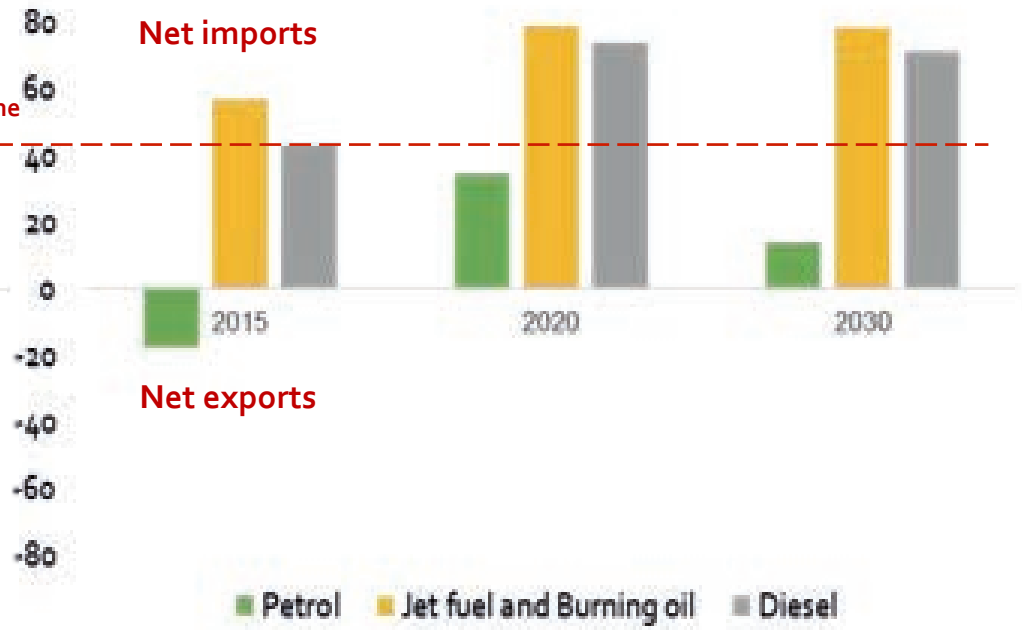
Source: Wood Mackenzie

Distillate shortfall - Energy security and resilience risk for the UK

% inland consumption required to be covered by imports
6 refineries



% inland consumption required to be covered by imports
3 refineries after 2016



Due to legislative and other pressures, severe rationalisation of UK refining has occurred since 2009.During this period, three refineries have closed and overall UK crude oil processing capacity has declined by nearly a third. A further capacity reduction of nearly 9% has been announced for 2016.

UKpia

Overcoming the dilemmas – some issues?...

- Important not to demonise diesel – it's done well in CO_2 reduction and fuel efficiency
  - a lot of consumers have invested in good faith

- Options to reduce demand?
  - alternatively fuelled vehicles may not be the answer and will cannibalise both petrol and diesel as well as have national budget implications?
  - Scrappage scheme? Expensive, but has merit?
  - Air quality low emission zone charges? Implications for 50% of the motoring public and will disproportionately impact lower earners

Consider a longer term adjustment of fuel duty to shift towards petrol, plus mixture of above?....

LONDON'S AIR QUALITY CHALLENGE

Oliver Lord
Deputy Air Quality Manager
Greater London Authority

AIR QUALITY IN LONDON

- London now meets legal limits for eight of the nine pollutants regulated by the European Commission.

- Even though we are reported compliant for Particulate Matter, it is commonly accepted there is no safe limit and further reductions are being sought to protect health.

- NO_2 remains a serious challenge. In some places London exceeds the limits by a factor of three. The Government has a plan to meet legal limits in London by 2025, which will require further action over the next ten years but this has been criticised for being too slow.

AIR QUALITY IN LONDON

EveningStandard.

News Football Going Out Lifestyle Showbiz Homes & Property Give to GOSH

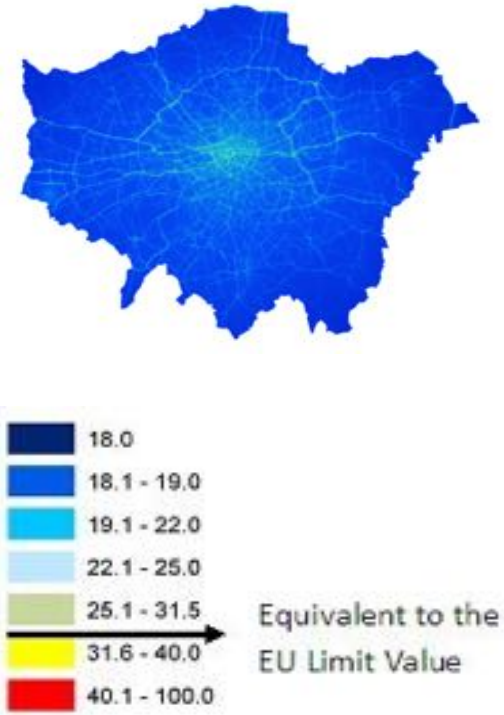
'Oxford Street pollution levels breached EU annual limit just four days into 2015'

AIR QUALITY IN LONDON

AIR QUALITY IN LONDON

PARTICULATE MATTER

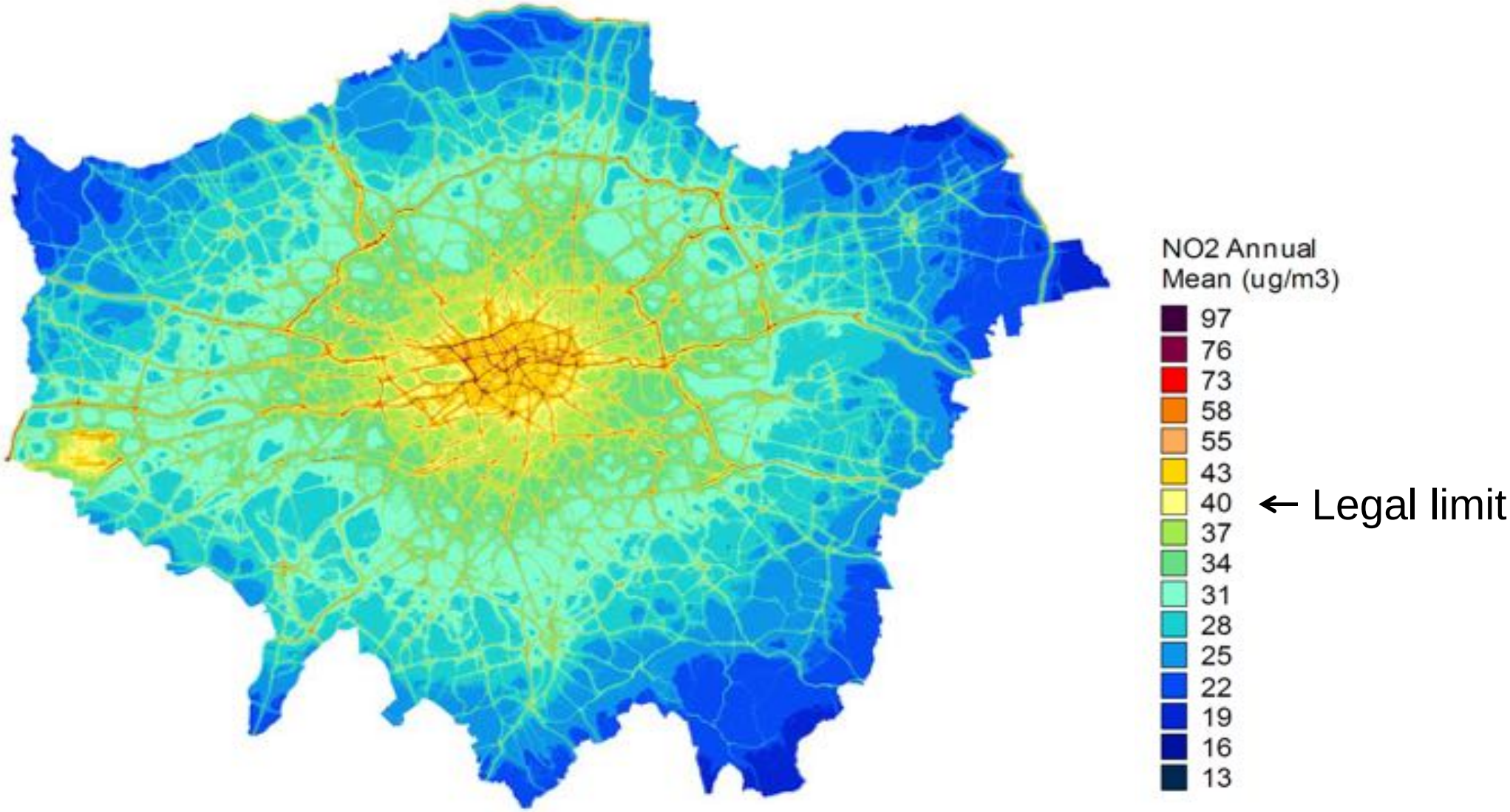
- London has met legal requirements for PM_{10} since 2011. However, it remains a localised issue requiring a targeted approach.



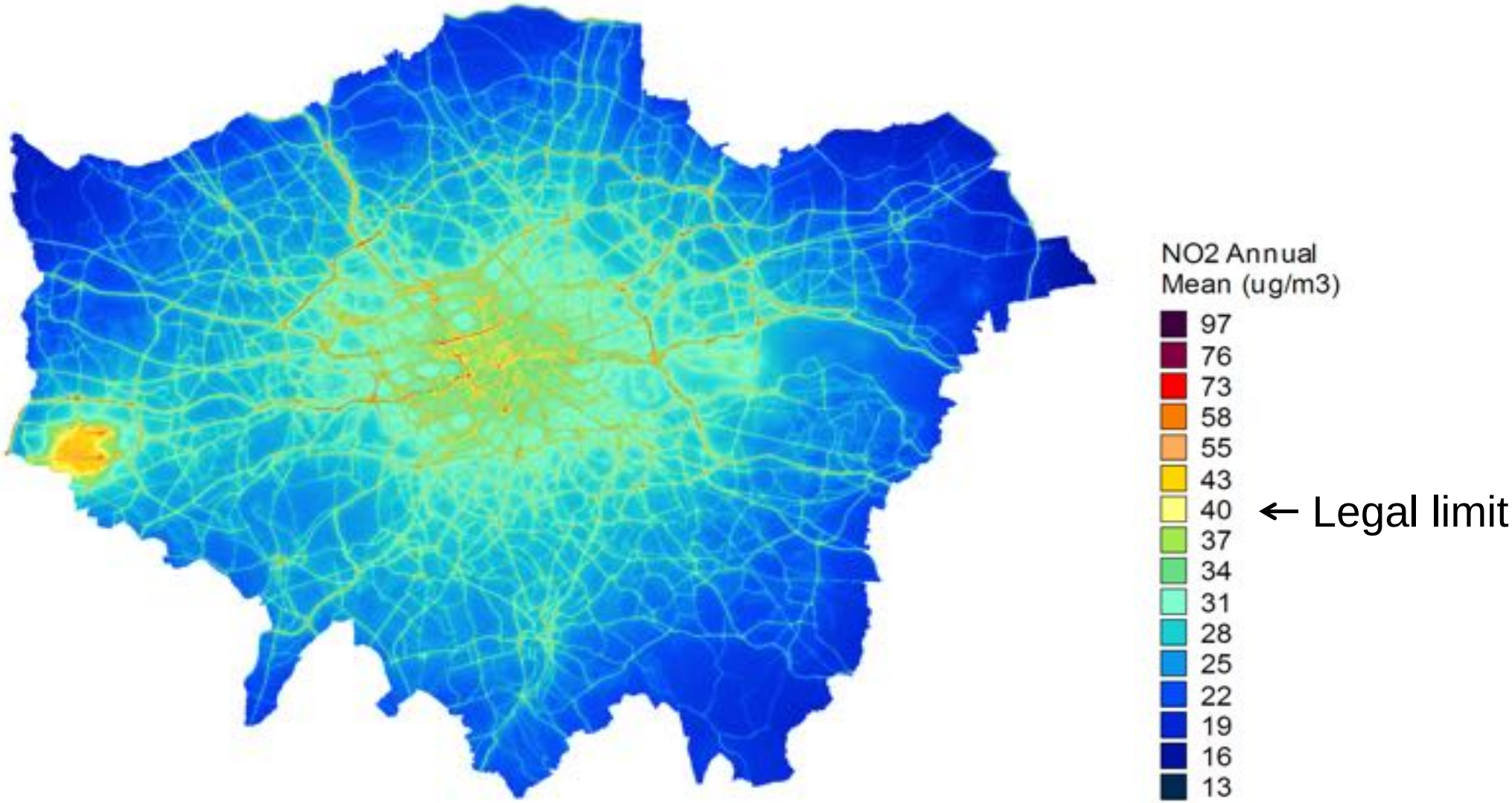
PARTICULATE MATTER

MARCH 2016

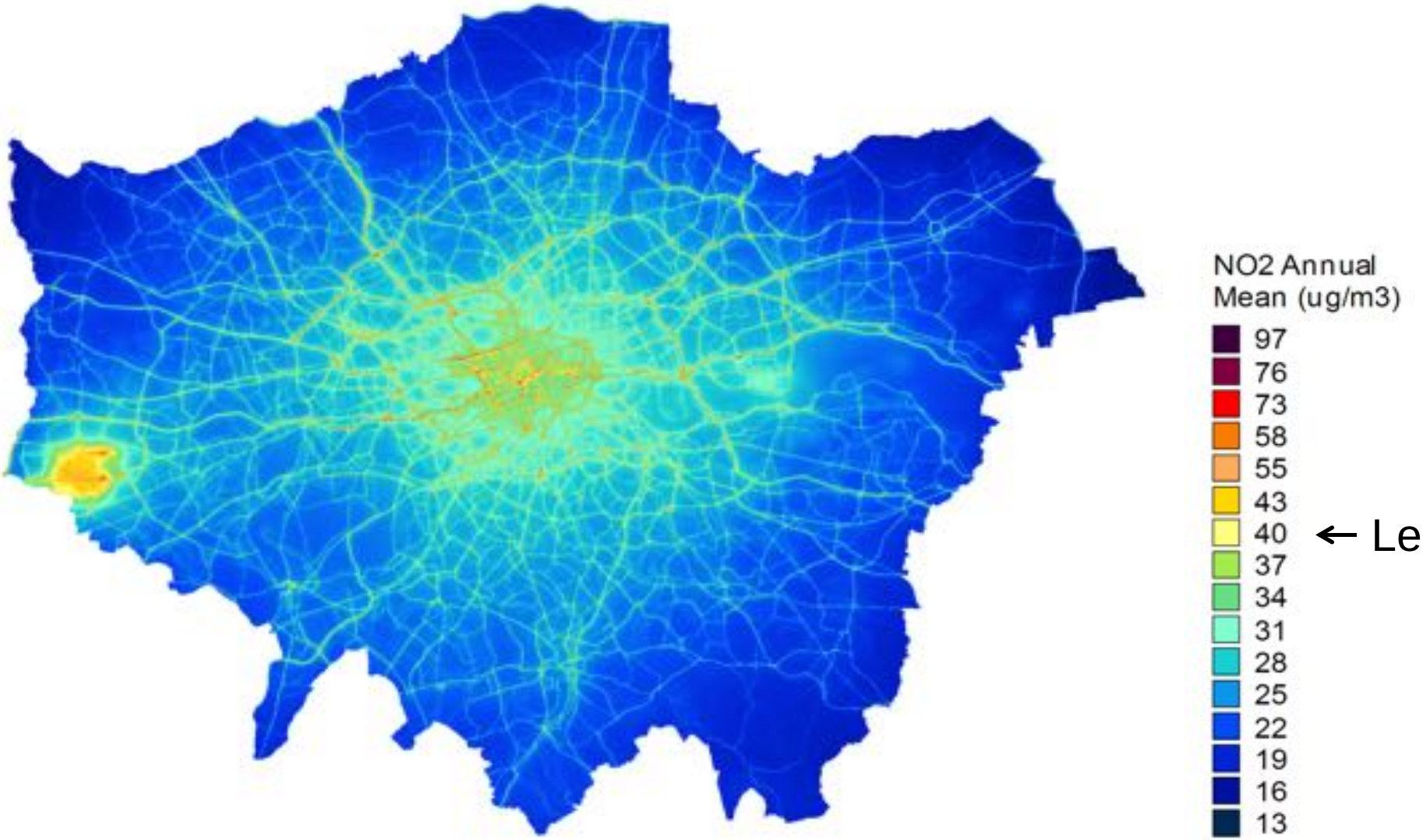
NO_2 CHALLENGE IN 2013



NO_2 CHALLENGE IN 2020



NO_2 CHALLENGE IN 2025



← Legal limit

NO_2 – LEGAL LIMITS

Pollutant	Concentration (µg/m³)	Averaging period	Permitted annual exceedences
Nitrogen dioxide (NO_2)	200	1 hour	18
	40	1 year	n/a

Location	Average (µg/m³) *(2016 to date)*	No. of hourly exceedences *(2016 to date)*
Putney High Street	129	886
Brixton Road	116	378
Oxford Street	90	163

NO_2 – A EUROPE WIDE CHALLENGE

HEALTH AND EQUALITIES

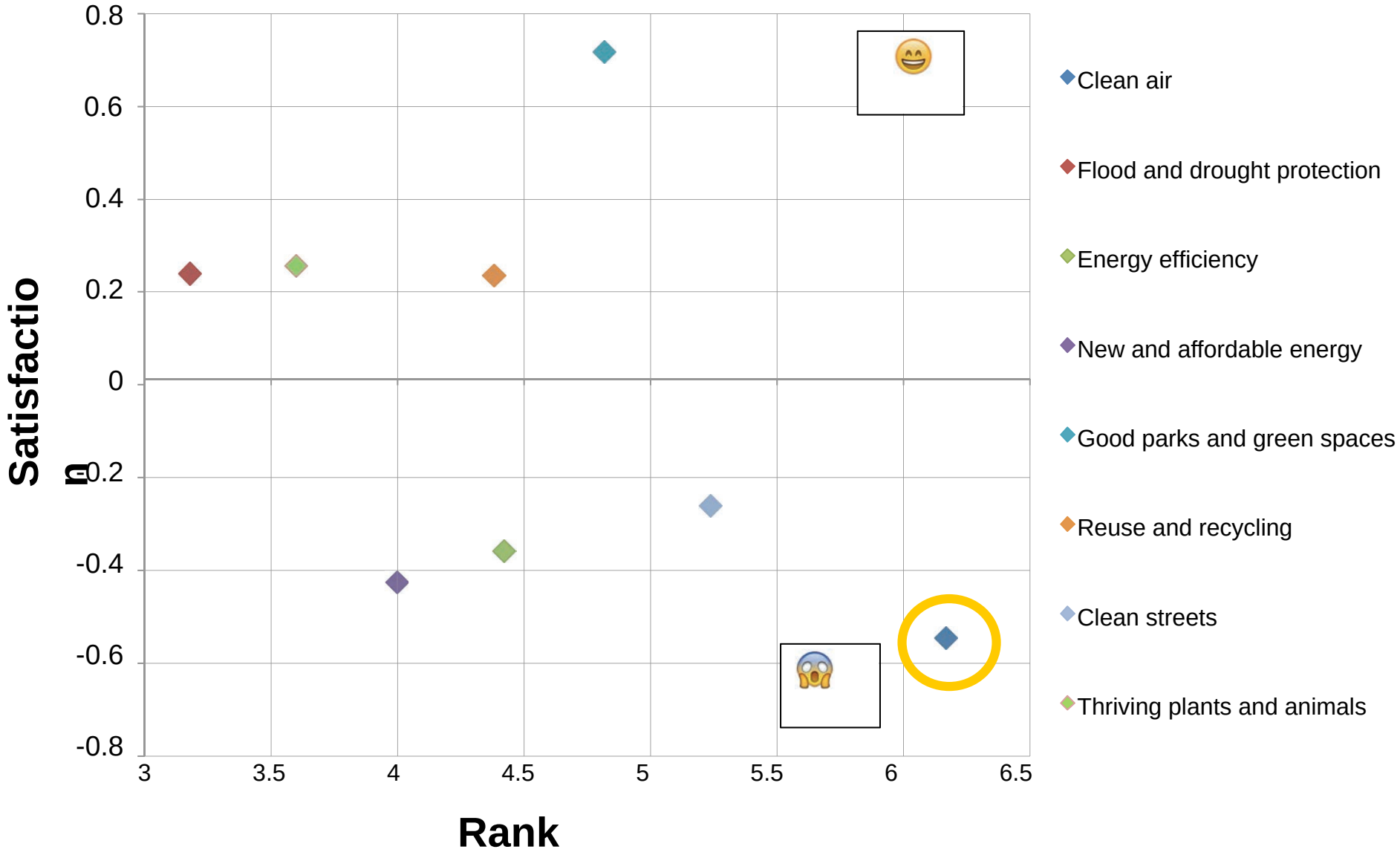
Health

- We estimate an equivalent of around 9,400 deaths were caused by long-term exposure to air pollution.
- A baby born in 2010 and exposed to that same level of air quality for its entire life would lose 2.2 years (if male) and 2 years (if female) of life expectancy.

Fairness

- The health impacts associated with air pollution fall disproportionally on our most vulnerable communities, affecting the poorest and those from minority ethnic groups more acutely.
- Tackling air pollution is about social justice and there is an urgent need to do more to tackle public health inequalities.

PUBLIC PERCEPTION



Department
for Environment
Food & Rural Affairs

Improving air quality in the UK

Tackling nitrogen dioxide in our towns and cities

UK overview document

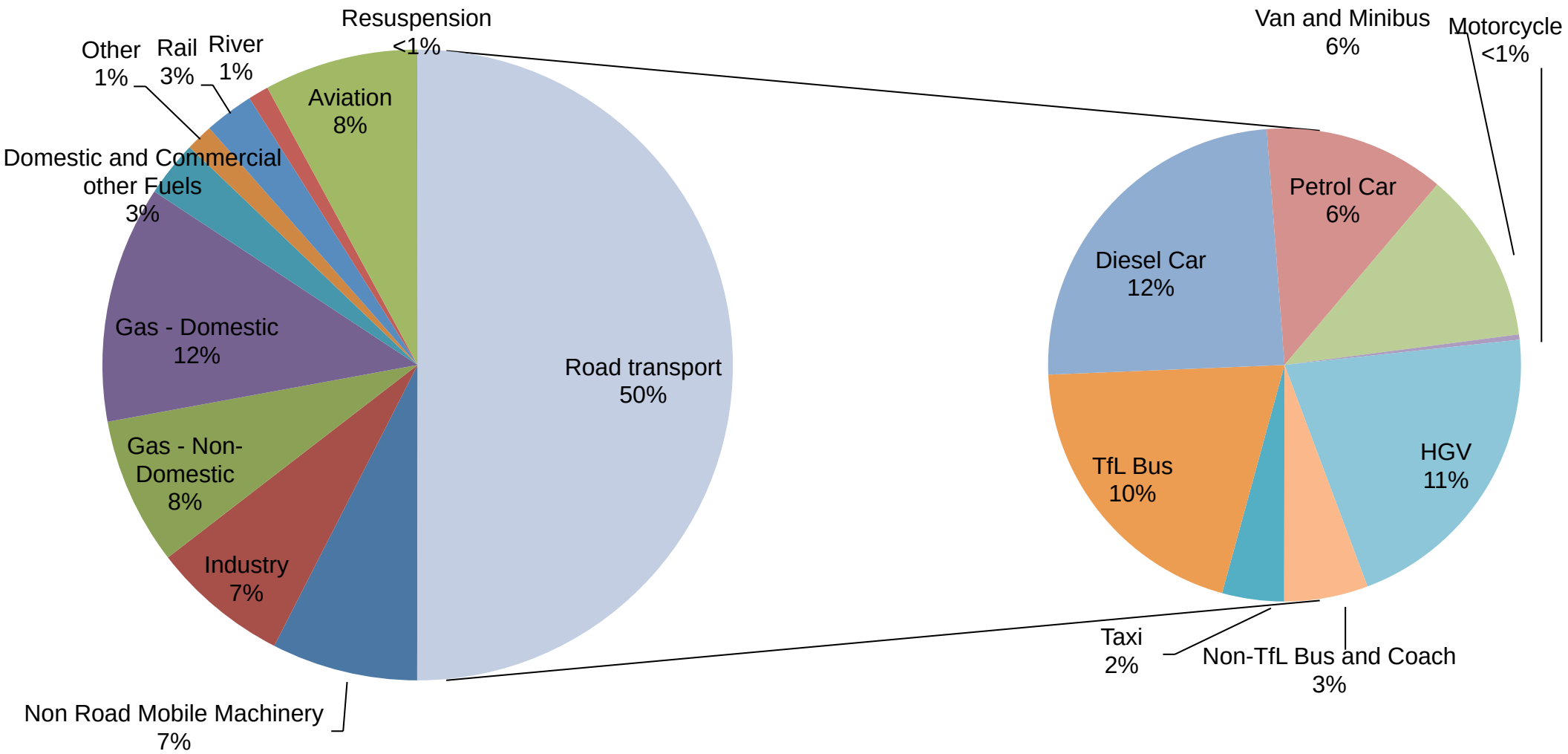
December 2015

Llywodraeth Cymru
Welsh Government

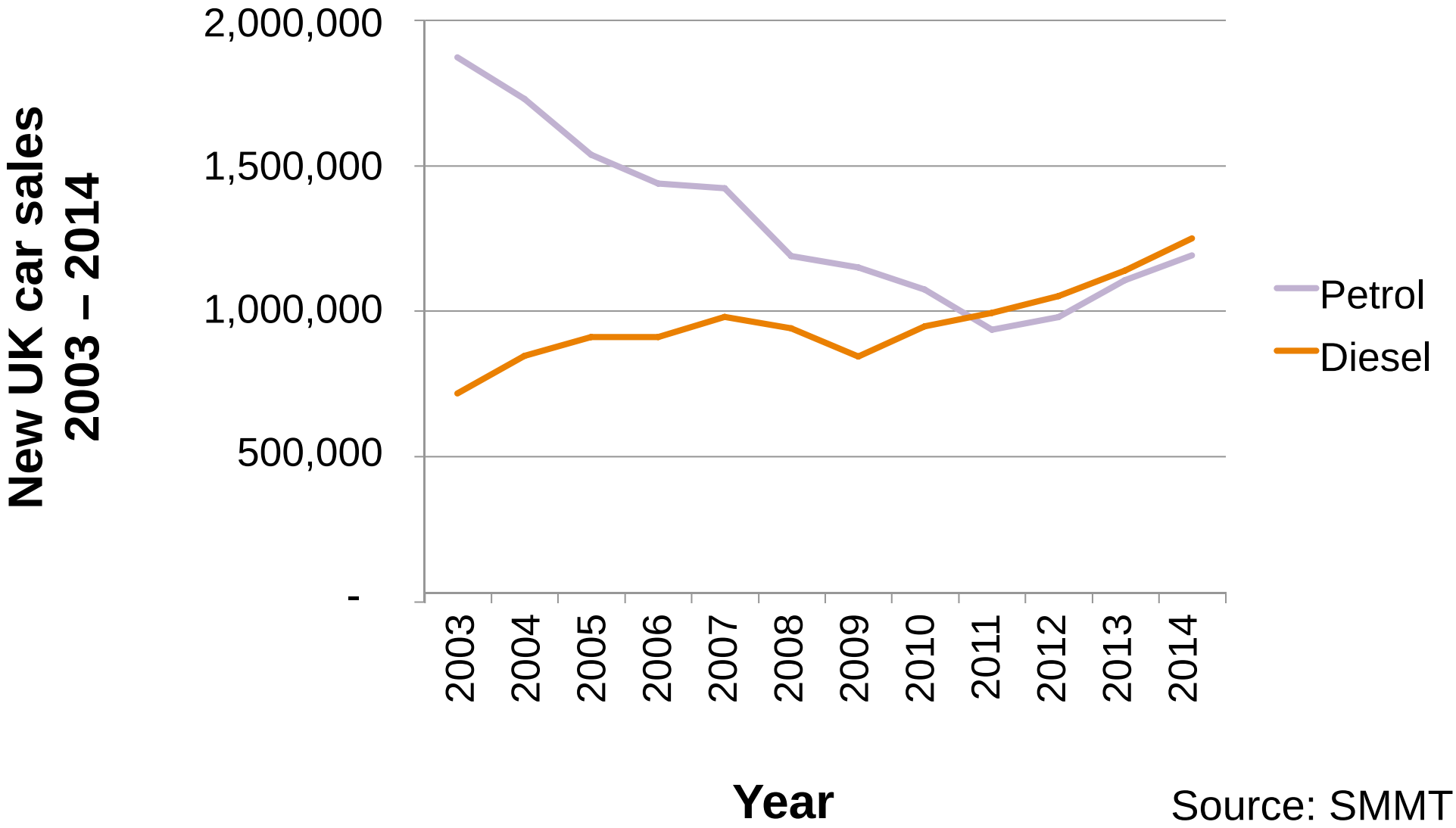
DOE

The Scottish Government

NO_X EMISSIONS IN 2013

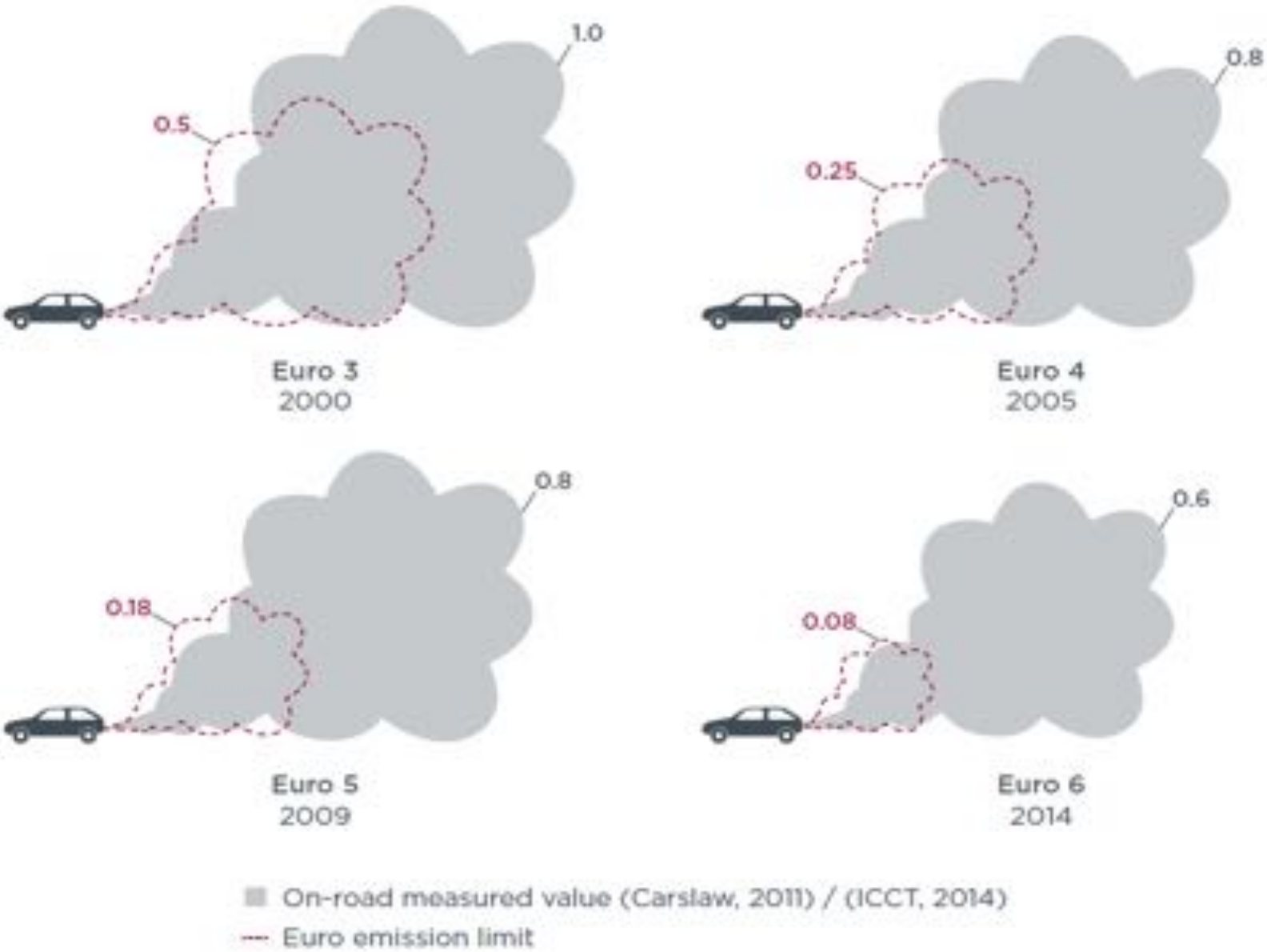


DIESELISATION



Source: SMMT

DIESEL PERFORMANCE



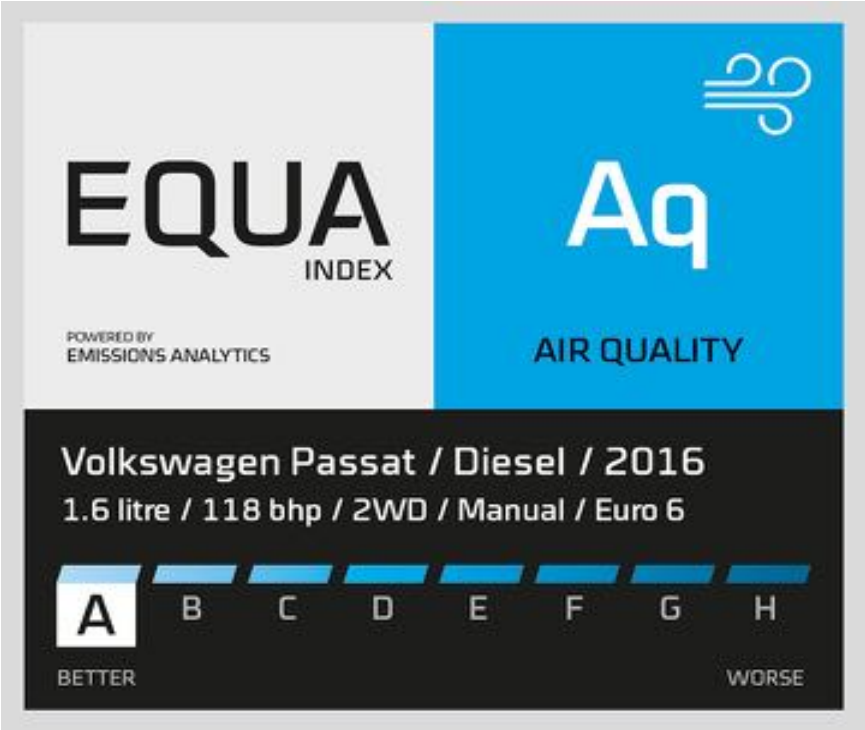
‘BENDING THE RULES’…

Source: Explaining road transport emissions, EEA

TRUSTING DIESEL

- Only 1 in 6 of all new diesel cars have been shown to meet the Euro 6 standard in ‘real world’

- We believe the new EQUA index created by Emissions Analytics can help consumers make an informed choice and strengthen our procurement practices.



PASSENGER CAR DRIVE CYCLE AVERAGE RESULTS

Mkt segment	Fuel	NOX		PM		CO2
		Type Approval limit	*Test average*	*Type Approval limit*	*Test average*	*Test average*
		g/km	*g/km*	*g/km*	*g/km*	*g/km*
Compact	*petrol*	0.06	0.018	0.005	0.001	149.9
Supermini	*diesel*	0.08	1.173	0.005	0.001	146.3
Small family 1	*diesel*	0.08	0.316	0.005	0.002	165.8
Small family 2	*diesel*	0.08	0.445	0.005	0.002	133.1
Small family 3	*diesel*	0.08	0.433	0.005	0.001	145.3
Family/MPV 1	*diesel*	0.08	0.422	0.005	0.003	148.2
Family/MPV 2	*diesel*	0.08	0.096	0.005	0.0003	150.6
Family/MPV 3	*diesel*	0.08	0.264	0.005	0.002	142.1
Prestige/sports 1	*petrol*	0.06	0.007	0.005	0.002	291.2
Prestige/sports 2	*diesel*	0.08	0.287	0.005	0.002	157.1
SUV/4x4	*diesel*	0.08	0.361	0.005	0.001	181.6
Hybrid HEV	*Petrol*	0.06	0.001	0.005	0	116.6
Hybrid REEV	*Petrol*	0.06	0.001	0.005	N/A	102.5

GOODS VEHICLE CYCLE AVERAGE RESULTS

Mkt segment	Fuel		NOX		PM		CO2	
		Gross Vehicle Weight	Test average 0% payload	Test average 100% payload	Test average 0% payload	Test average 100% payload	Test average 0% payload	Test average 100% payload
		kg	g/km	g/km	g/km	g/km	g/km	g/km
N1 class III LGV	diesel	3500	0.494	0.682	0.002	0.001	256	290
N2 rigid HGV	diesel	7500	0.71	0.357	0.003	0.003	315	470
N3 rigid HGV	diesel	18000	2.714	0.511	0.006	0.007	672	921
N3 Artic HGV	diesel	40000	1.407	1.188	0.007	0.007	872	1797

NEW MAYORAL PRIORITY

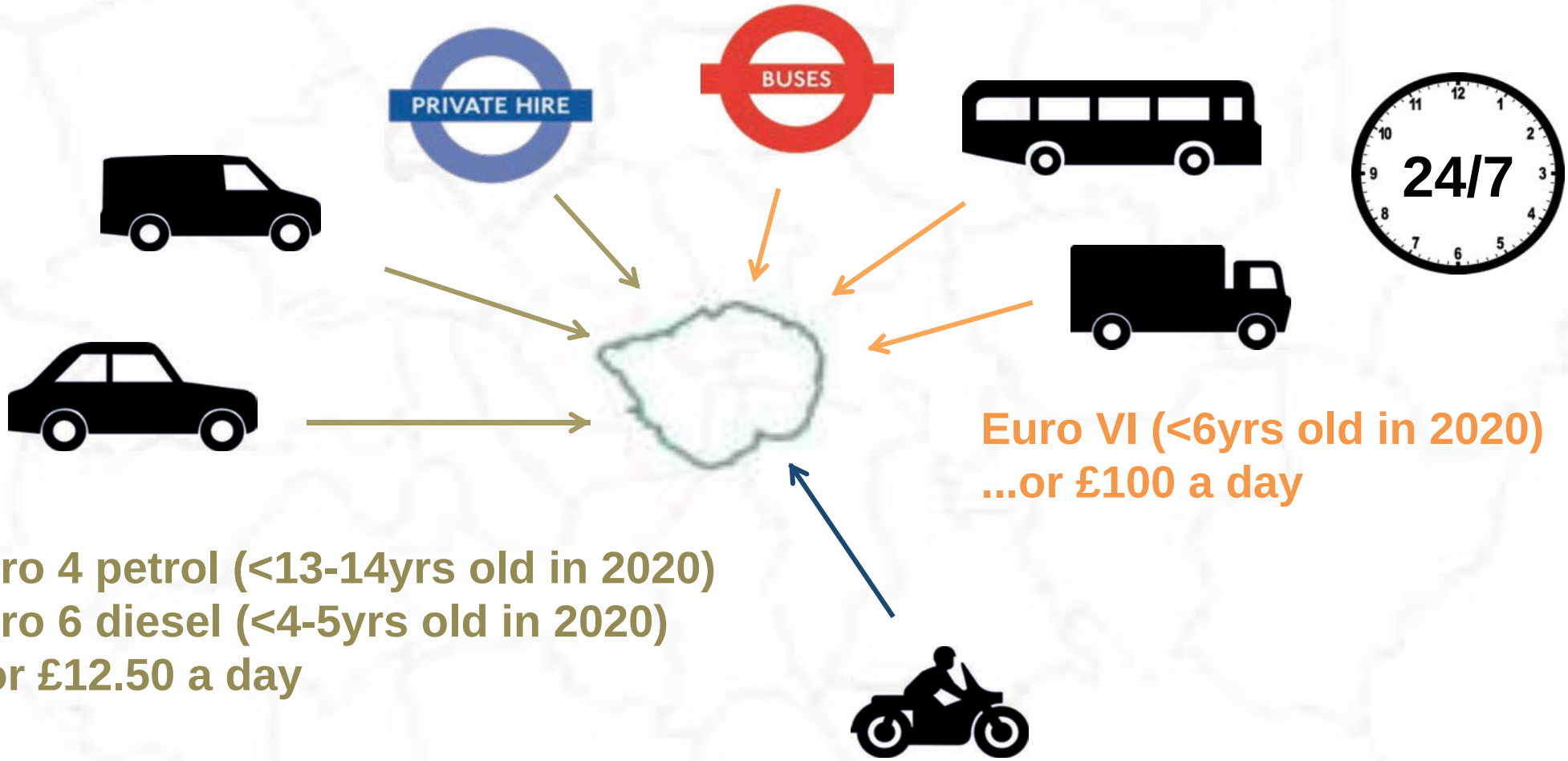
- The Mayor held a consultation on a number of measures within weeks of coming into office.
- Over 15,000 people responded and we will start a second stage in the autumn with more detailed information.

"...we need big, bold and sometimes difficult policies if London is to match the scale of the challenge."

NEW PROPOSALS

- The Mayor expects TfL to lead by example and has proposed a number of improvements to the bus fleet:
  - Only procuring hybrid or zero-emission double-decker buses from 2018
  - Euro VI compliance in central London by 2019
  - New low emission bus zones – tackling pollution hotspots by concentrating cleaner buses on the dirtiest routes
  - Expanding the ULEZ retrofit programme to 3,000 buses outside the central zone (over 5,000 buses in total)
- No longer licensing new diesel taxis from 2018.
- London boroughs are also starting to phase out diesel through their fleet procurement and parking tariffs.

ULTRA LOW EMISSION ZONE



Euro VI (<6yrs old in 2020)
...or £100 a day

Euro 4 petrol (<13-14yrs old in 2020)
Euro 6 diesel (<4-5yrs old in 2020)
...or £12.50 a day

Euro 3 (<13yrs old in 2020)
...or £12.50 a day

Exempt but new licensing requirements

NEW PROPOSALS

- Implementing an emissions surcharge (T-charge) on the most polluting vehicles entering central London from 2017

- Bringing forward the ULEZ in central London by 2019;

- Extending the ULEZ beyond central London in, or around, 2020:
  - -For motorcycles, cars and vans, to the North and South Circular roads
  - -For lorries, buses and coaches, London-wide

- Starting work on a diesel scrappage scheme as part of a wider national scheme to be delivered by Government and lobbying for a reformed Vehicle Excise Duty.

NON-TRANSPORT MEASURES

Air Quality Neutral

Retrofit programmes

RE:FIT

RE:NEW

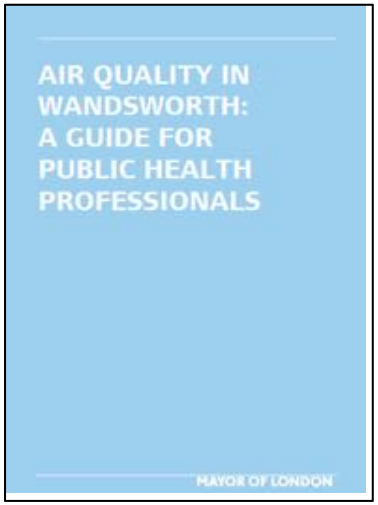
HOME ENERGY EFFICIENCY FOR TOMORROW

Construction

Local

Mayor's AQ Fund

Health



NON-ROAD MOBILE MACHINERY (NRMM) SPG

- We have supplementary guidance to support the policies in the London Plan:
  - the Air Quality Statement;
  - the identification of the potential scale of dust emissions for each stage of work;
  - the identification of the level of risk due to the scale of dust emissions
  - best practice methods for controlling dust on-site and to prevent trackout
  - recommendations for monitoring
  - emission standards for non-road mobile machinery

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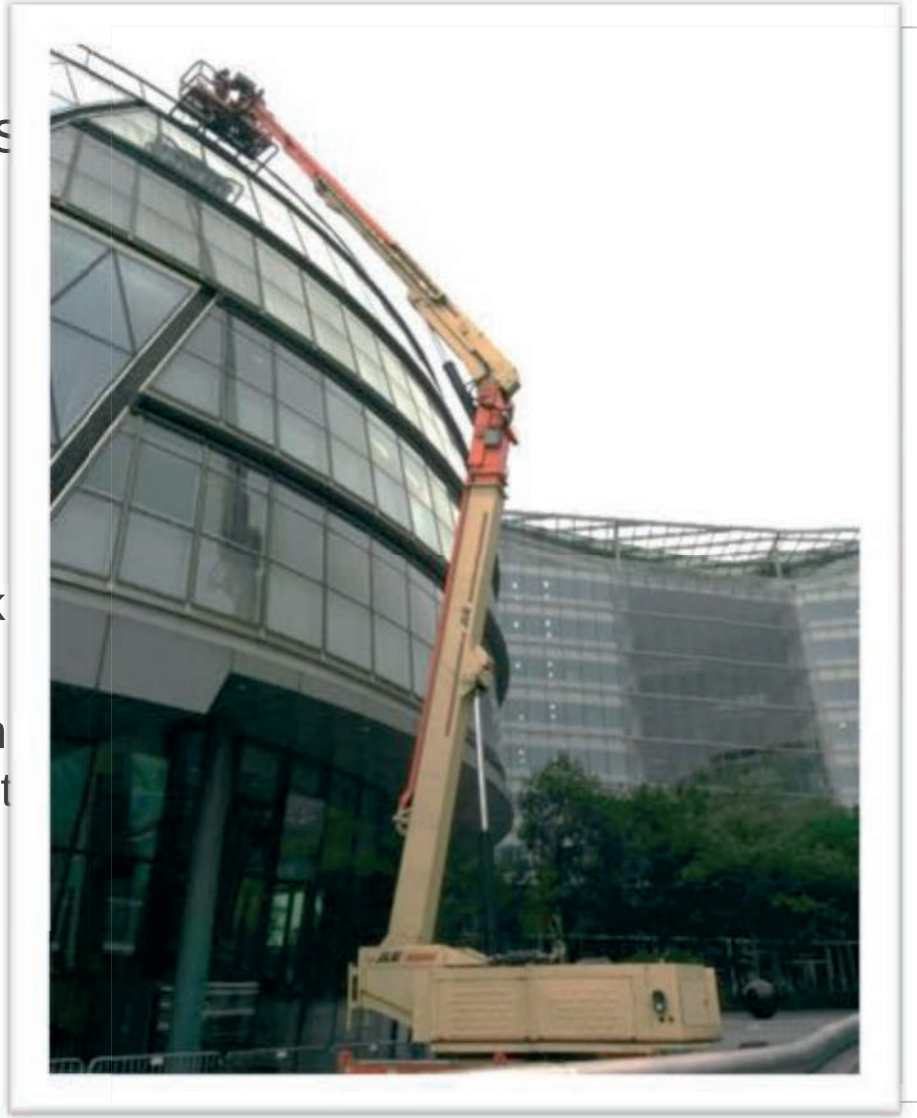
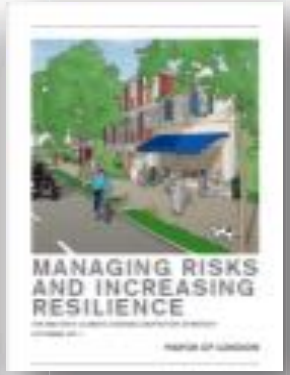


TOWARDS A NEW LONDON ENVIRONMENT STRATEGY

CCMES



CCAS

MAQS

MANS

MBS

MWMS

London Environment Strategy

Thank you

oliver.lord@london.gov.uk

http://www.eea.europa.eu/publications/explaining-road-transport-emissions

https://www.london.gov.uk/sites/default/files/hiainlondon_kingsreport_14072015_final.pdf

http://www.transportenvironment.org/sites/te/files/publications/Dont_Breathe_Here_exec_summary_FINAL.pdf

http://content.tfl.gov.uk/transport-emissions-roadmap.pdf

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