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After Two Decades, Why is Air Pollution from Transport not Declining?

Presentation by

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The problem…

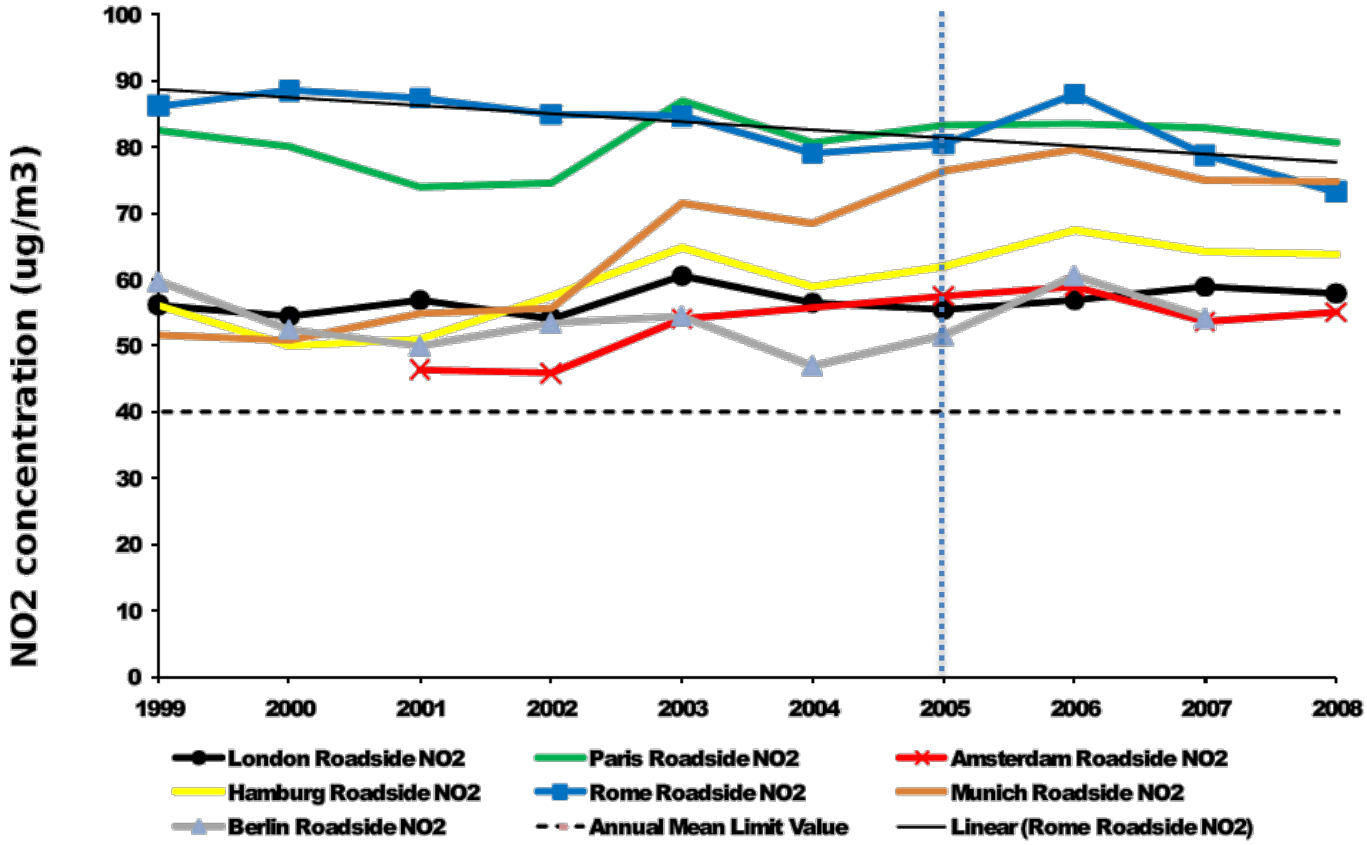
Two decades since the Environment Act 1995 and EU Framework Directive 96/62/EC

- Improvements in other mobility policy domain: safety
- Global/continental/national initiatives to reduce vehicle-specific emissions
- Lots of activity (especially at the local authority level)

But very little success in getting cleaner air!

Roadside NO2 concentrations are not falling

- Forecast transport emissions reductions were not upheld in real-world trials (Carslaw *et al.* 2011), so roadside NO_2 concentrations remained stable.



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 NOx and NO_2 emissions and ambient measurements in the UK. Version: July 2011.
http://uk-air.defra.gov.uk/reports/cat05/1108251149_110718_AQ0724_Final_report.pdf

Ignoring the warnings

1995 Environment Act and UK Air Quality Strategy set domestic annual mean AQ Objective for NO_2 of 40µg/m^3 **to be achieved by 2005**

It was evident by 2004 that this was unlikely to be achieved easily as concentrations were not coming down as initially predicted (2000-2002 low pollution years)

Despite evidence of widespread non-compliance the 2007 update of AQS only recommended three new measures:

- Incentivising the early uptake of new tighter European vehicle emissions standards (Euro-standards) (a revised Measure C)
- Increased uptake of low emission vehicles (Measure E)
- Reducing emissions from ships (Measure N)

No significant revisions to LAQM regime

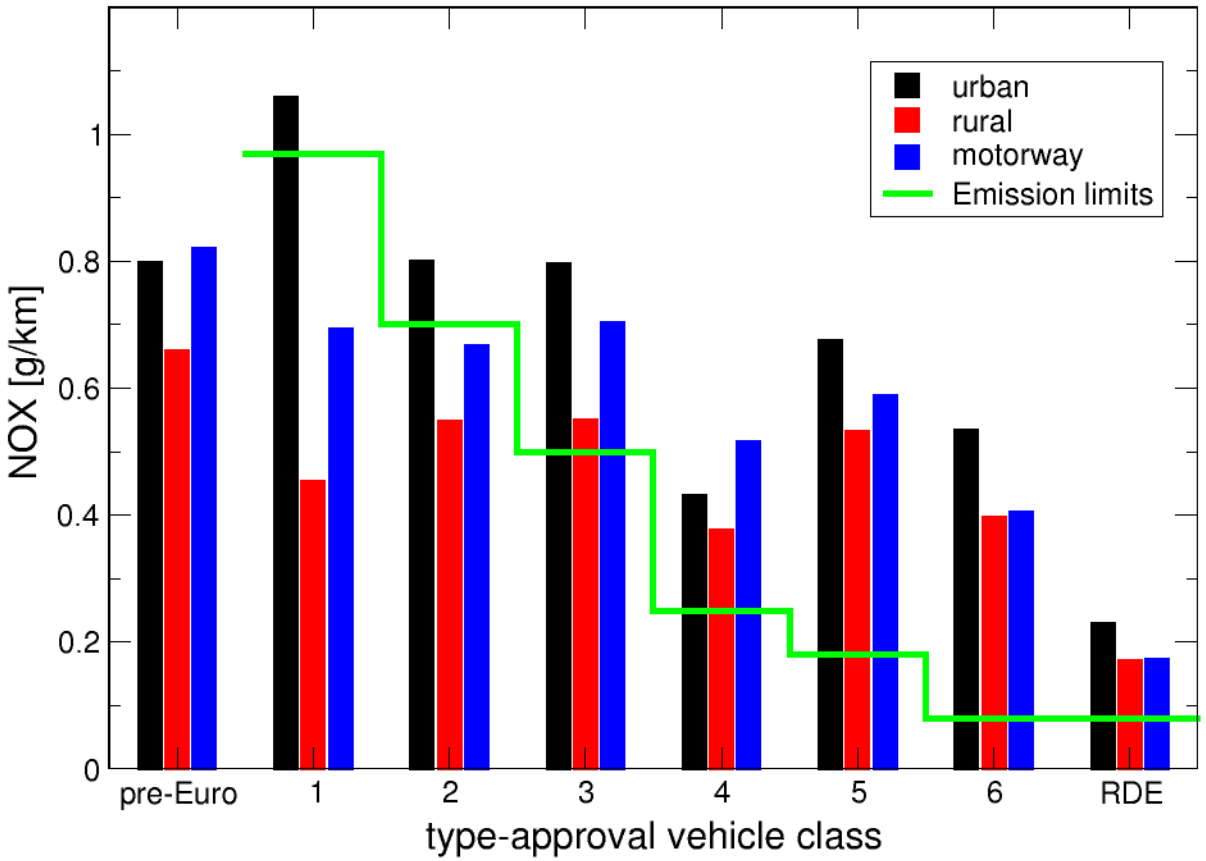
Inappropriate solutions:

- Current policy on engine technology
- A technical and not a social approach

Governance issues:

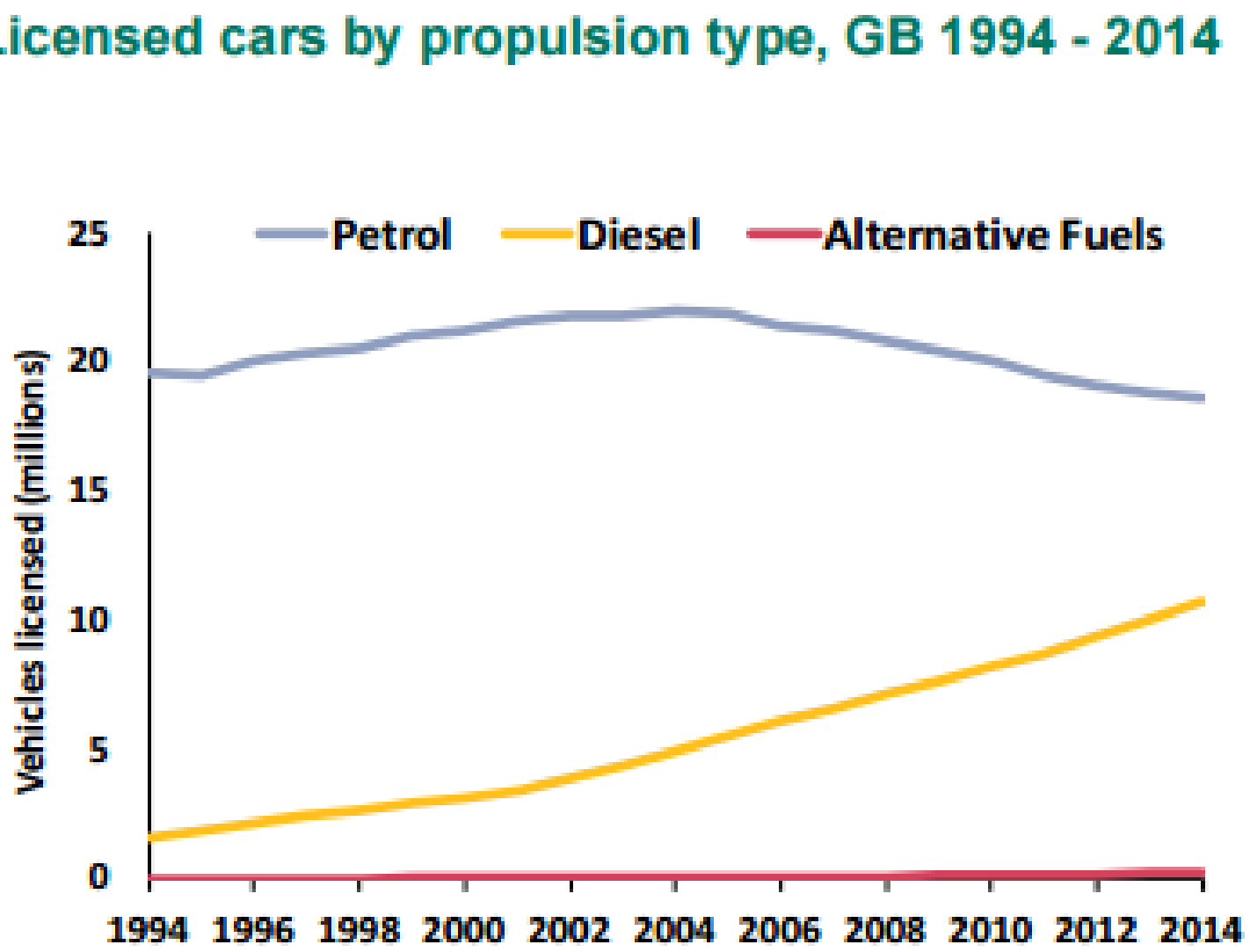
- National-Local Policy Mismatch
- Lack of ‘Joined-up Government’
- Financing and resources

Reliance on improvements from Euro Standards for vehicles



NOx emission factors of *diesel passenger cars* (TNO, 2016)

Dieselisation



DfT Vehicle Licensing Statistics Q4 2014

The solutions do not match the problem

The Local Air Quality Management (LAQM) process was designed in 1997 when it was expected that there would be "*a handful of AQMAs in large cities and metropolitan areas*"

By 2008: 225 LAs (52%) had AQMAs (≈500 AQMAs in total)

Now: 274 LAs (84%) with AQMAs (704 AQMAs)

These are not 'localised hotspots' they are local manifestations of a national problem

Non-Alignment of Domestic and EU work on AQM

Monitoring and modelling of air quality for reporting under the European Directives is not well connected to domestic (Local) Air Quality Management

No clear responsibility for LAs in EU process (but now punishment under 2011 Localism Act)

National PCM model not able to identify local hotspots

Majority of Air Quality Management Areas not registered as exceedences of the European Directive

Failure to ‘Join-up’ government

Poor history of cross-department working across Defra, DfT, DCLG and Health

DETR a momentary glimpse of hope!

Health outcomes not linked to emissions sources

LAQM pushed out to LAs: good information flow but lack of real support and framework of duties and responsibility for action

Massive cuts in staff and resourcing (post-2010) particularly at local level doesn’t help

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]

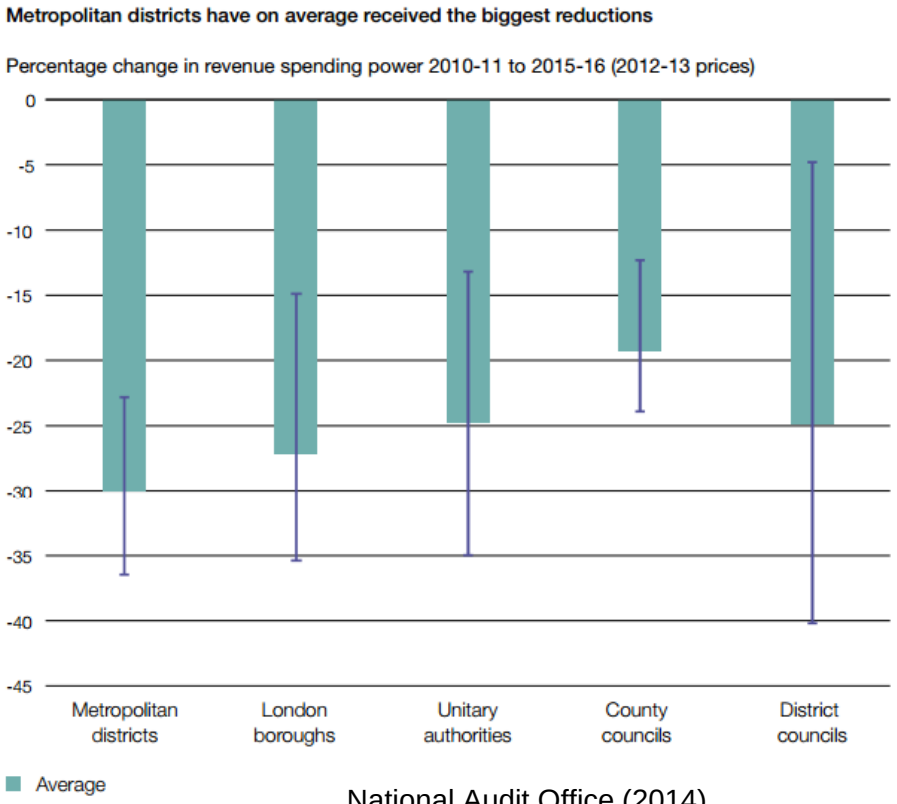
Shared priorities' importance based on time, resources and funding allocation

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

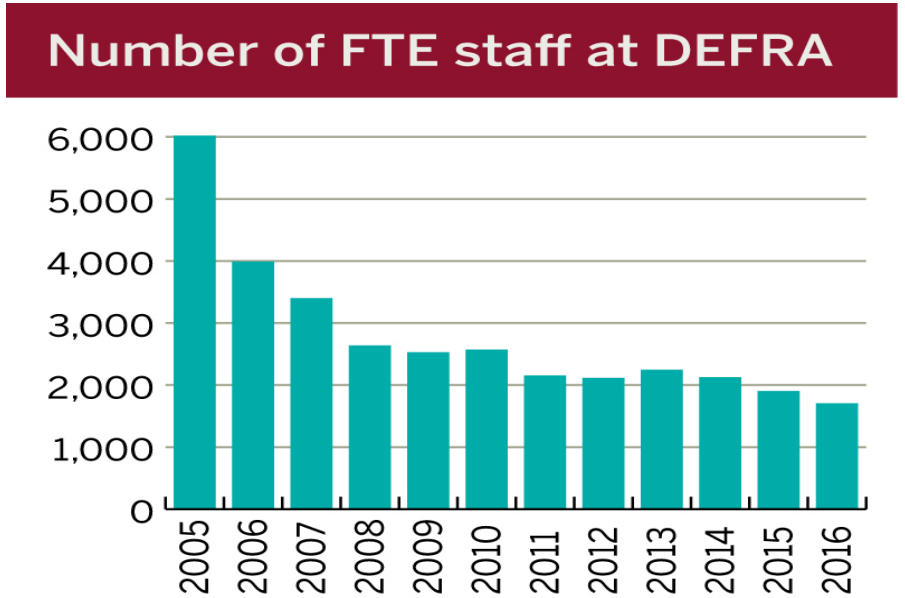
1= very high priority, 6= very low priority

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.

Changes in spending power by local authority type 2010-11 to 2015-16



National Audit Office (2014)
[The impact of funding reductions on local authorities]



Source: Defra/ENDS

Cuts affect not just number of staff, but type of staff and expertise!

Failure of local Air Quality Action Plans

Very hard to identify clear cases where AQAPs have been effective and improved air quality to the extent that and AQMA has been revoked

Little political weight within LAs

Even if taken seriously by LA, actions are within context of national policies backing increasing traffic flows

Not properly resourced

E.g. Bristol 2004 AQAP 'retrospective view'

- Promotion of modal shift
  - A number of voluntary behaviour change initiatives
- Traffic management to smooth flow
  - City centre and bypass motorway technology investments
- Speed reduction
  - 20 mph zones introduced in central suburbs
- Emissions enforcement
- Low Emission Zone
  - Ongoing discussions; funding needed
- Retrofitting/scrappage
  - Not achievable at local level

A failure to include people

Lack of public engagement on the topic of air pollution (not part of public health agenda)

Not a visible problem (compared to legendary 'pea-soupers')

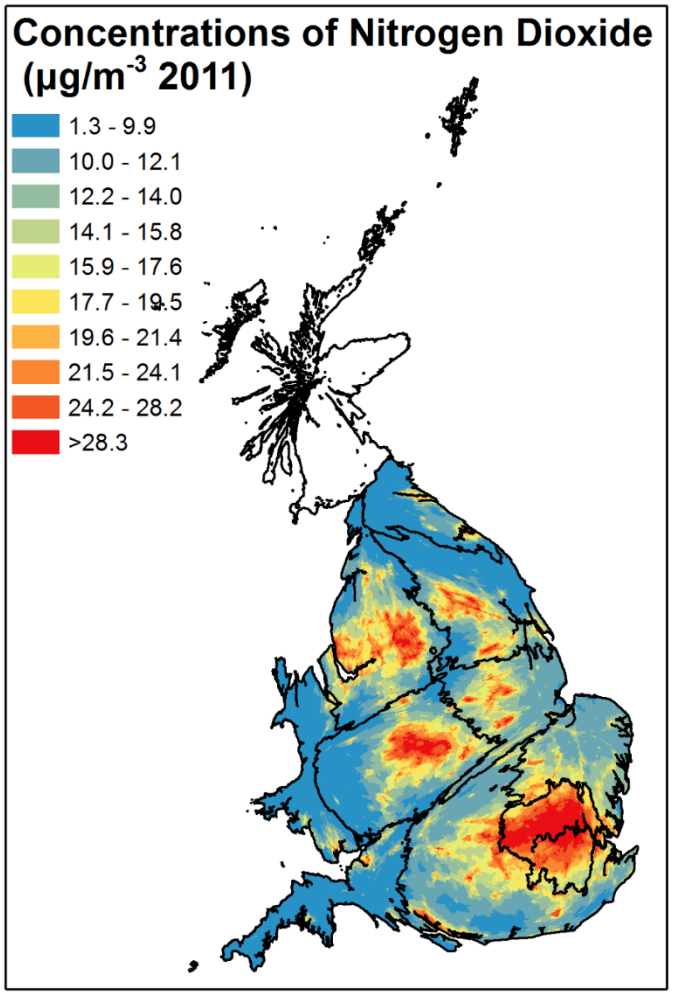
Age of councillors (2004 >72% alive during 1952 Great Smog, 2013 >60%)

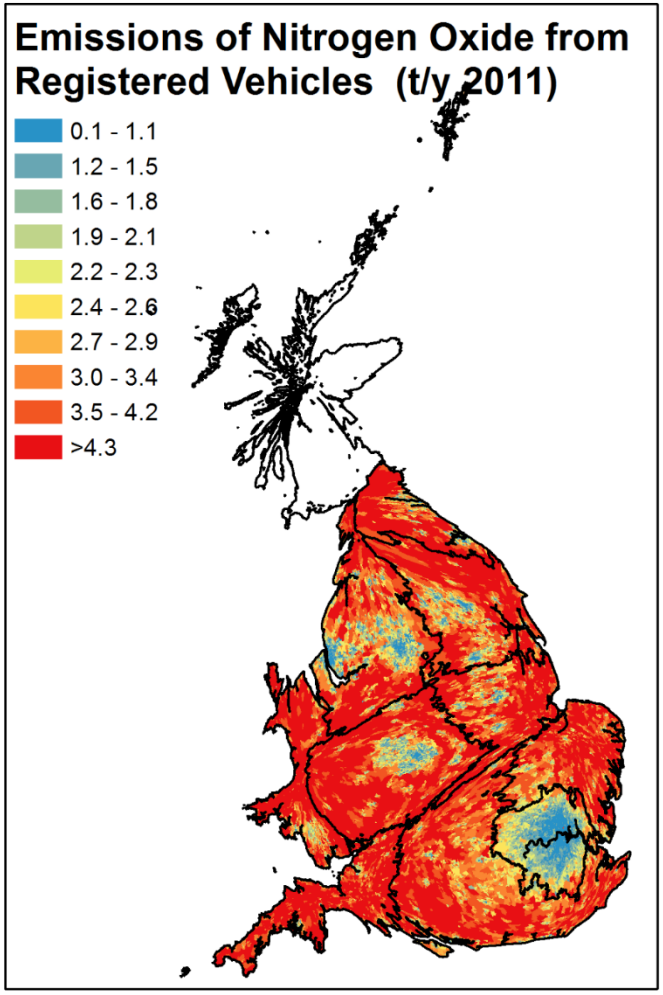
Failure to have a social dimension in either:

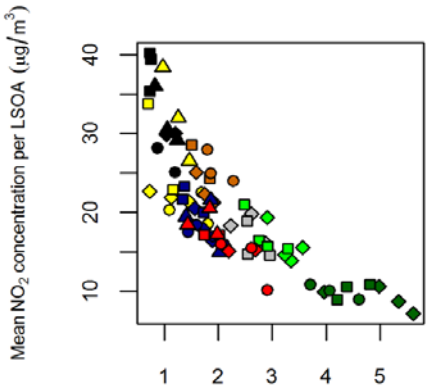
- Travel behaviours - which focusses on individuals
- Air pollution – which focusses on vehicles

'Who and Why' not just 'What and 'Where'

Who? Looking at emissions based on location of registered keeper





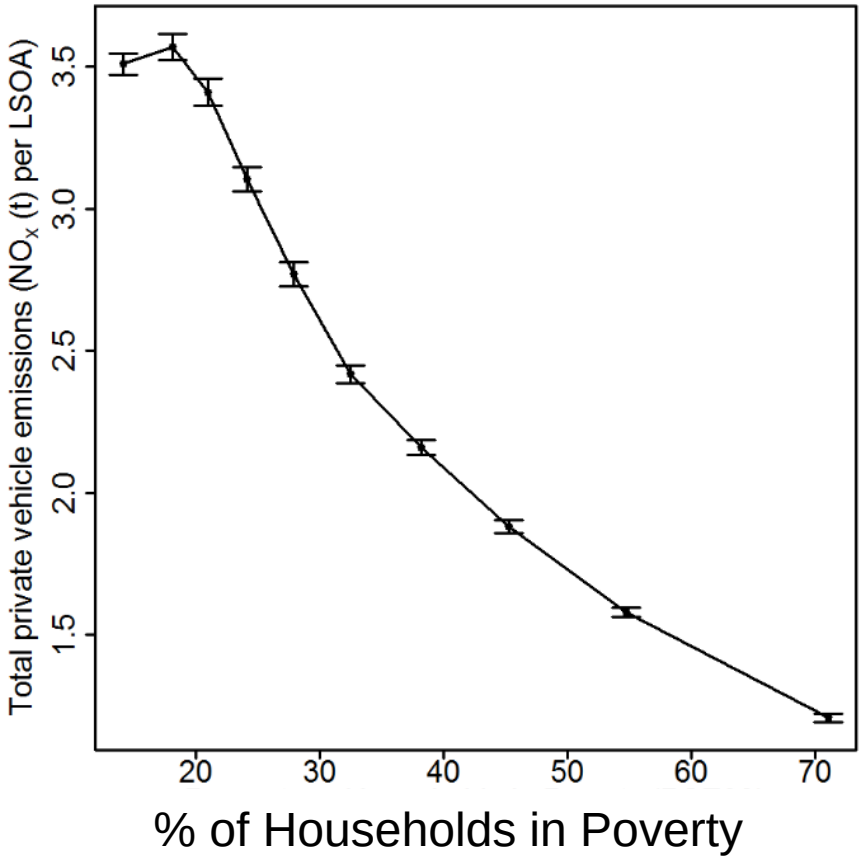


NOx Emissions from Private Registered Vehicles

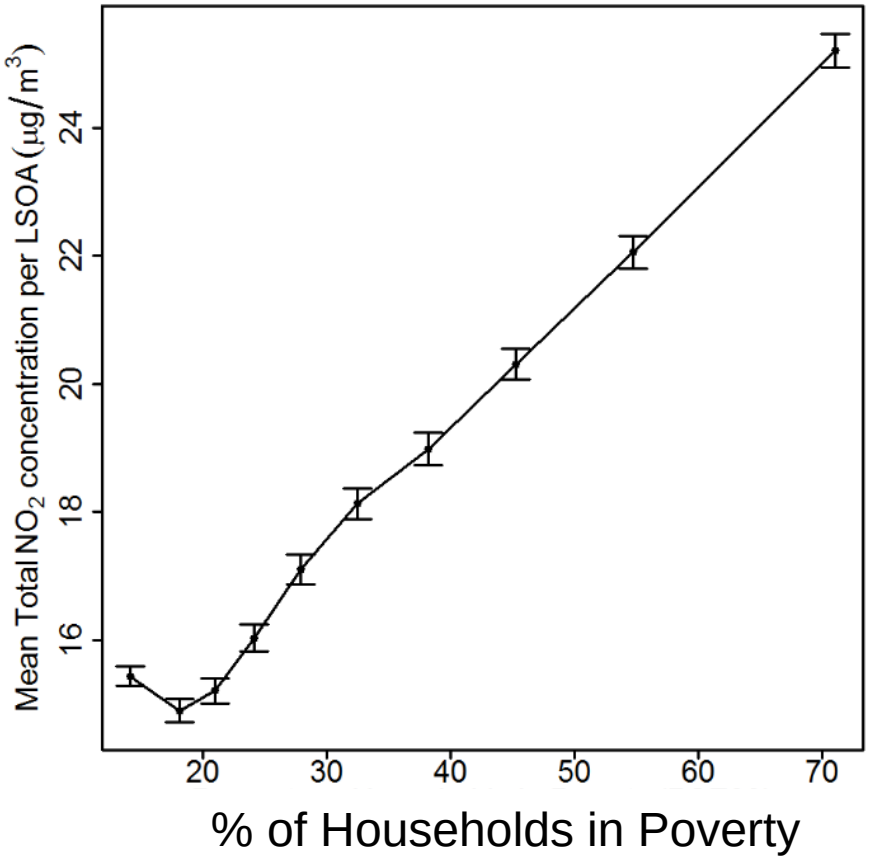
OAC Group
- Farming Communities (RR)
- Rural Tenants (RR)
- Ageing Rural Dwellers (RR)
- Students Around Campus (C)
- Inner-City Students (C)
- Comfortable Cosmopolitans (C)
- Aspiring and Affluent (C)
- Ethnic Family Life (EC)
- Endeavouring Ethnic Mix (EC)
- Ethnic Dynamics (EC)
- Aspirational Techies (EC)
- Rented Family Living (MM)
- Challenged Asian Terraces (MM)
- Asian Traits (MM)
- Urban Professionals and Families (U)
- Ageing Urban Living (U)
- Suburban Achievers (S)
- Semi-Detached Suburbia (S)
- Challenged Diversity (CCD)
- Constrained Flat Dwellers (CCD)
- White Communities (CCD)
- Ageing City Dwellers (CCD)
- Industrious Communities (HPL)
- Challenged Terraced Workers (HPL)
- Hard-Pressed Ageing Workers (HPL)
- Migration and Churn (HPL)

EPSRC Engineering and Physical Sciences Research Council
energy

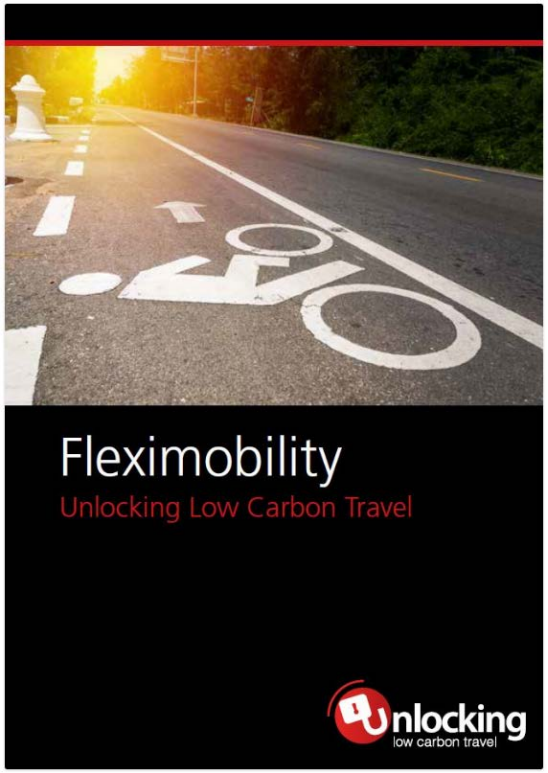
NOx Emissions from Local Vehicles

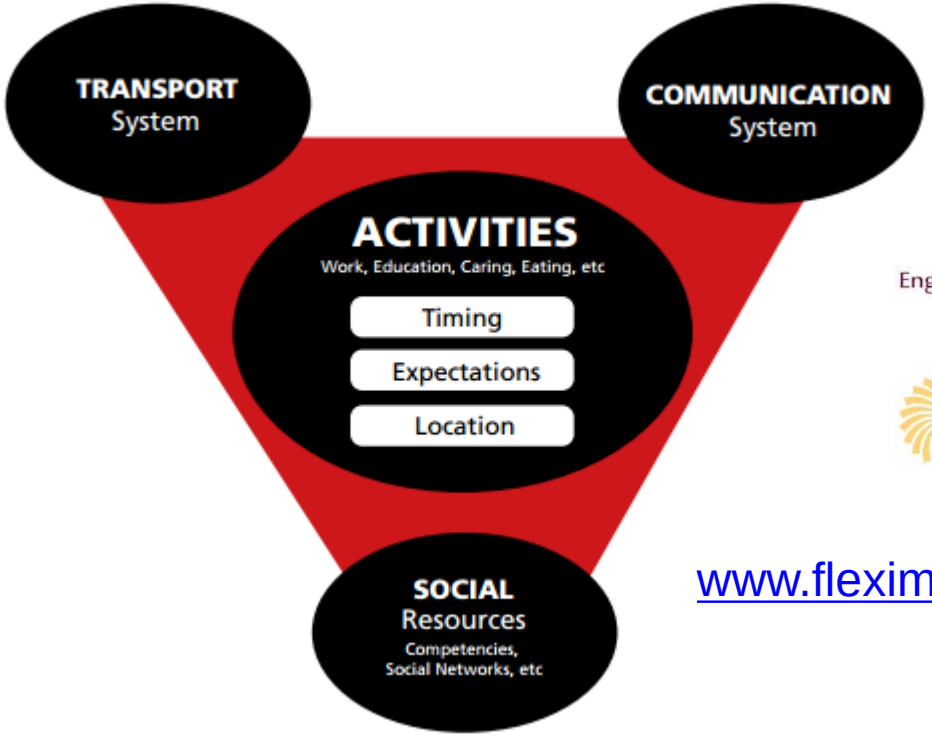


Exposure to NO_2 Concentrations



Why? Transport and emissions as part of social activities





EPSRC
Engineering and Physical Sciences Research Council

RESEARCH COUNCILS' energy PROGRAMME

www.fleximobility.solutions

CLAiR City
WE ARE TACKLING AIR POLLUTION

www.claircity.eu

European Commission

Conclusions & Recommendations

- Lack of understanding of the problem amongst the wider population, ⇨ Limited awareness health costs (far higher than road deaths) ⇨ Limited pressure to change the priorities in the road transport sector.

Need for promotion of poor air quality as a public health priority issue for a national dialogue/debate with citizens

- Misplaced belief that technological improvement would solve problem ⇨ Lack of effort into alternative strategies

More and consistent support for sustainable alternatives to car use

- AQ left with environment departments who identify and monitor problems but do not have power to affect sources (transport and land-use)

Ensure appropriate departments at national and local level have *clear and specific* AQ responsibilities

- Focus on individual behaviour change not on social and systemic drivers travel

Other models of 'behaviour' are available and problems need to be redefined

Thank You!

Comments or questions?

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For related publications please see:

Tim Chatterton: http://people.uwe.ac.uk/Pages/person.aspx?accountname=campus%5Ctj-chatterton

and

Graham Parkhurst: http://people.uwe.ac.uk/Pages/person.aspx?accountname=campus%5Cgp-parkhurst