

A map of London showing a dense network of transport routes in various colors (red, blue, green, orange, purple). Yellow shaded areas are overlaid on the map, indicating regions of concern for air quality. The River Thames is visible in light blue.

Mejorando la calidad del aire en Londres – reduciendo emisiones de transporte

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Estableciendo el contexto

Setting the context

El contexto de la calidad del aire en Londres

Setting the context for London's air quality

- Just under 8.2 million people live in London today
 - eight London boroughs have over 300,000 residents
- London's population is expected to approach ten million within the next twenty years
 - increasing by the equivalent of two buses full of people every day!
- There are around 25m transport trips in London every day
- Over 80% of all passenger journeys use the road network and 90% of goods are moved by road... all contribute to emissions
 - around 10m car trips (inc. passenger);
 - 4 million bus trips;
 - 6 million walking trips;
 - 0.5m cycling trips;
 - 0.3m taxi journeys;
 - nearly all freight movements



La situación política en Londres

London's political makeup

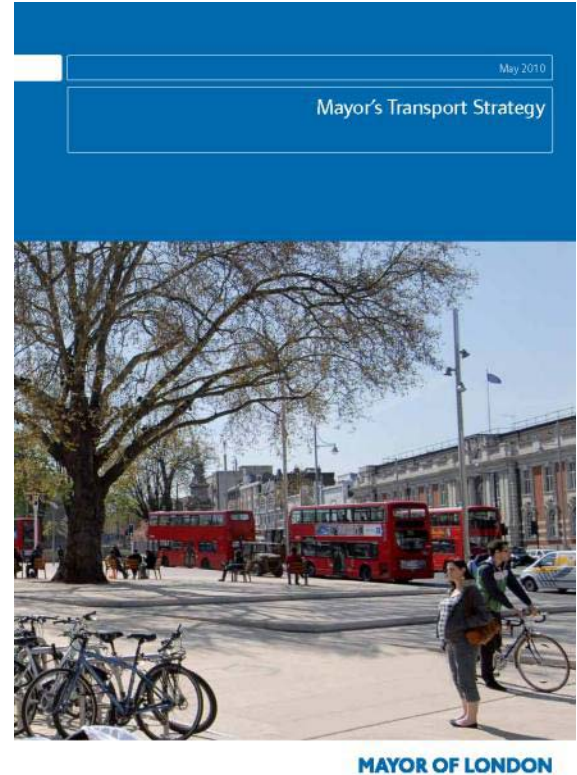
- The UK Government has overall legal responsibility to meet EU limit values and develops relevant legislation
- Government is responsible for fiscal policy – and regulating major sources of pollution such as overground rail and aviation.
- The Mayor has a legal responsibility to prepare an air quality strategy that includes measures to meet national objectives
- London is divided into 33 boroughs/local authorities. Each must prepare an action plan to work towards meeting limit values. These must be consistent with the Mayor's Strategy
- Boroughs control the local planning system and local traffic management, including parking, but the Government is responsible for air quality regulation at waste and industrial sites in London



La estrategia de transporte del alcalde

The Mayor's Transport Strategy

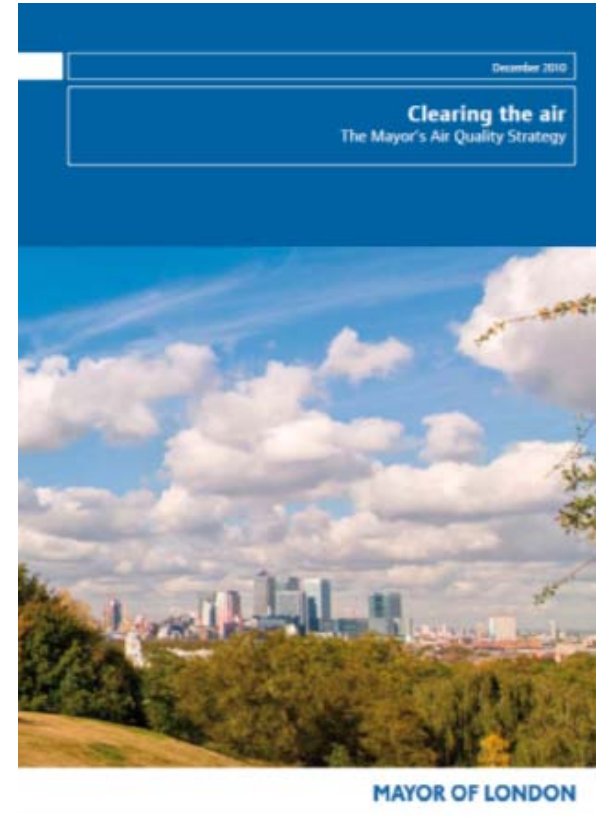
- Improved operational efficiency
- Less road congestion and improved journey time reliability
- Reduced air pollutant emissions from ground-based transport, contributing to EU air quality targets
- An increase in walking and cycling
- Reduced CO₂ emissions from ground-based transport, contributing to a London-wide 60 per cent reduction by 2025



La estrategia del alcalde para la calidad del aire

The Mayor's Air Quality Strategy

- Evidence base for air quality across London
- Transport is recognised as a major contributor to air pollutant emissions
- Two pollutants are of most concern in London: PM₁₀ and NO₂
- Contains ambitious proposals to reduce emissions from all modes of transport



El inventario de emisiones atmosféricas de Londres

The London Atmospheric Emissions Inventory (2010)

- A full inventory of emissions in London, by source and by location, for 2010. Future year emissions estimated for 2012, 2015 and 2020
 - Presented as excel spreadsheets, summary tables and maps
- Strategic emissions and concentration modelling to inform policy, plans and proposals
- Producing air quality maps and identifying hotspots
- Understanding the main sources of pollution and air quality across London to inform targeted action
 - Allocating retrofitted buses to the most polluted routes with the highest bus contribution



Particulate Matter en Londres

- Achieved compliance with annual $PM_{10\text{ EU}}$ limit values for 2010 and 2011
- PM_{10} exhaust emissions from road transport fell by 15.3% between 2008 and 2010
- On average, London experiences nine days a year where PM_{10} levels exceed EU limit values
- Need to focus on central London where risk of exceedance remains high
- No 'safe' level for this pollutant

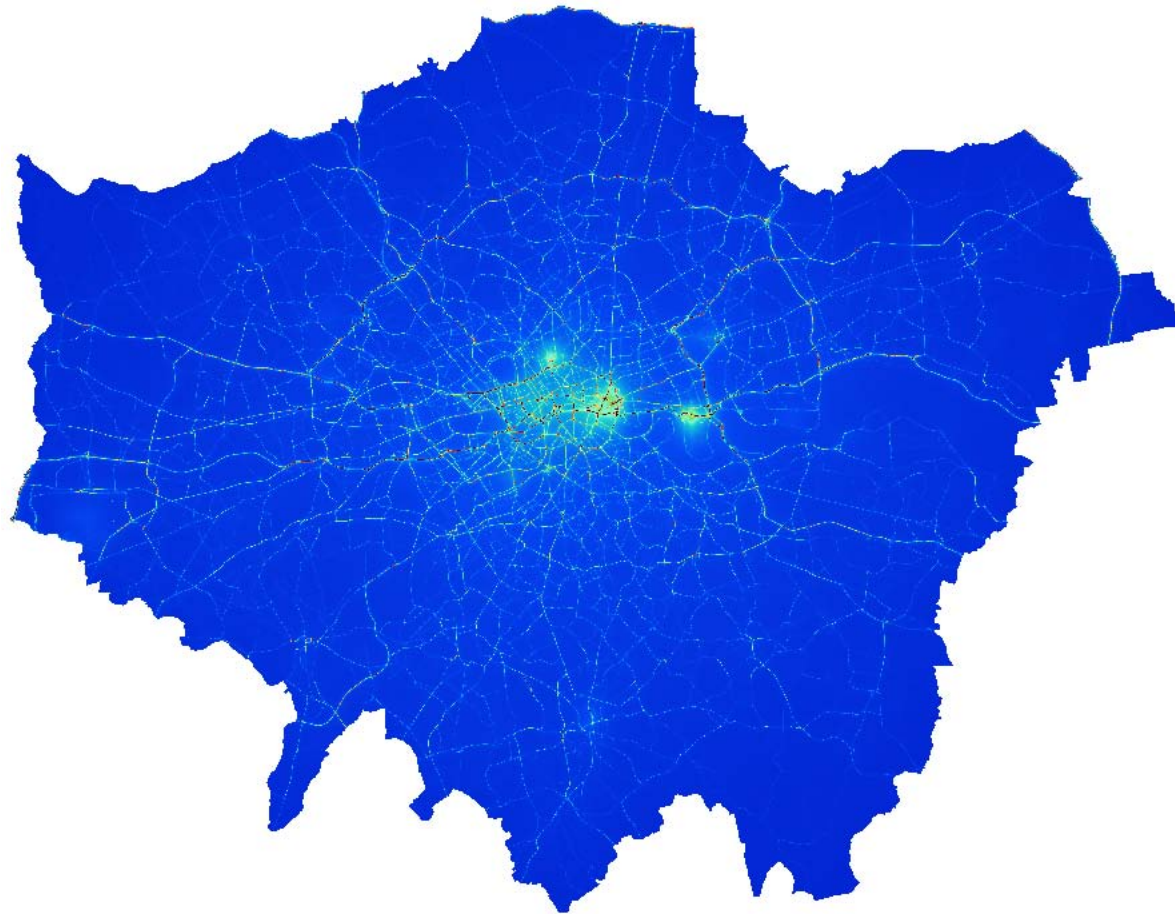
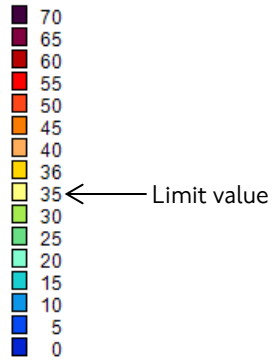


Días del 2010 con excedencia de PM_{10}

PM_{10} exceedence days - 2010

PM10 Exceedence Days

source: LAEI 2010

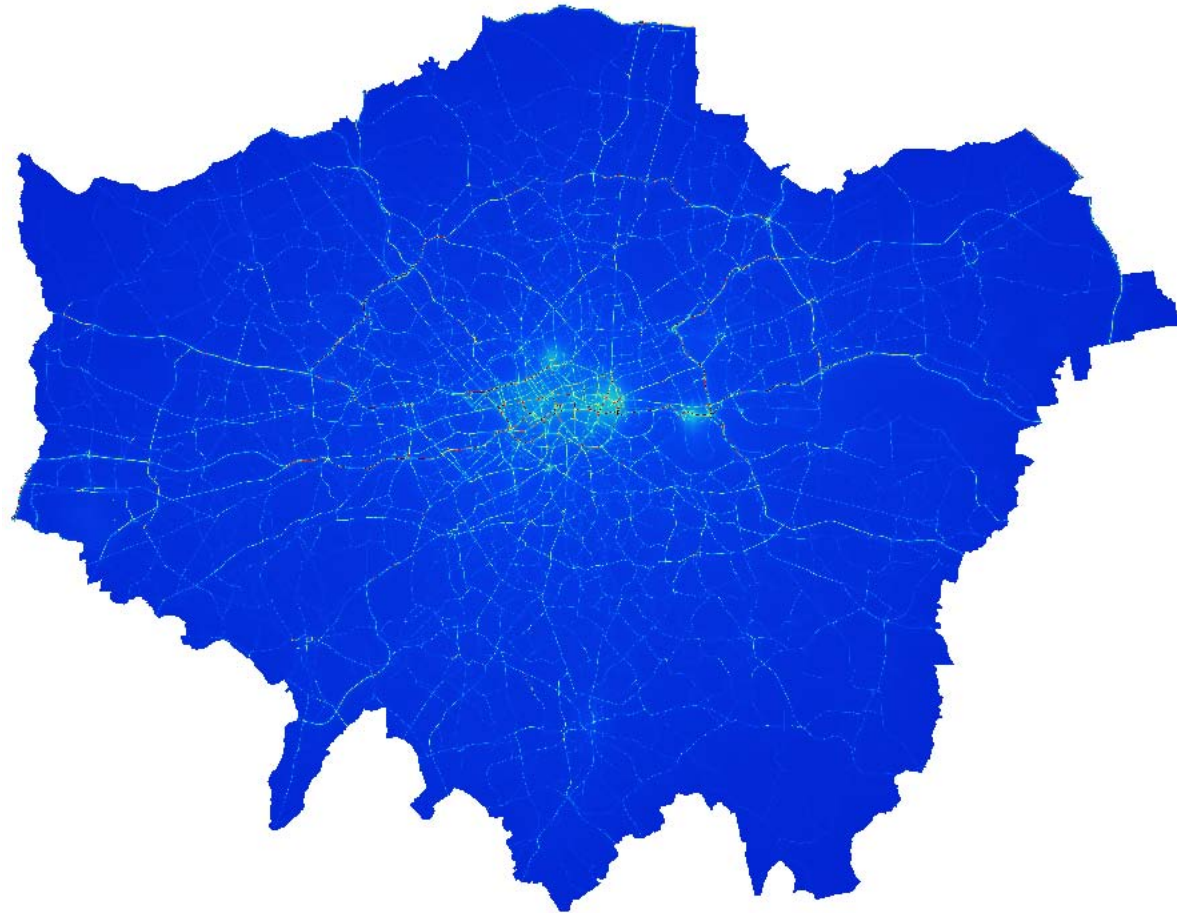
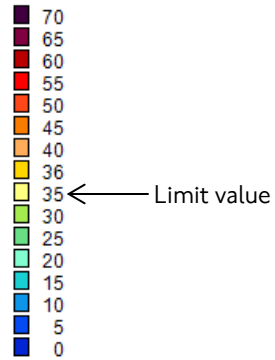


Días del 2015 con excedencia de PM_{10}

PM_{10} exceedence days - 2015

PM10 Exceedence Days

source: LAEI 2010

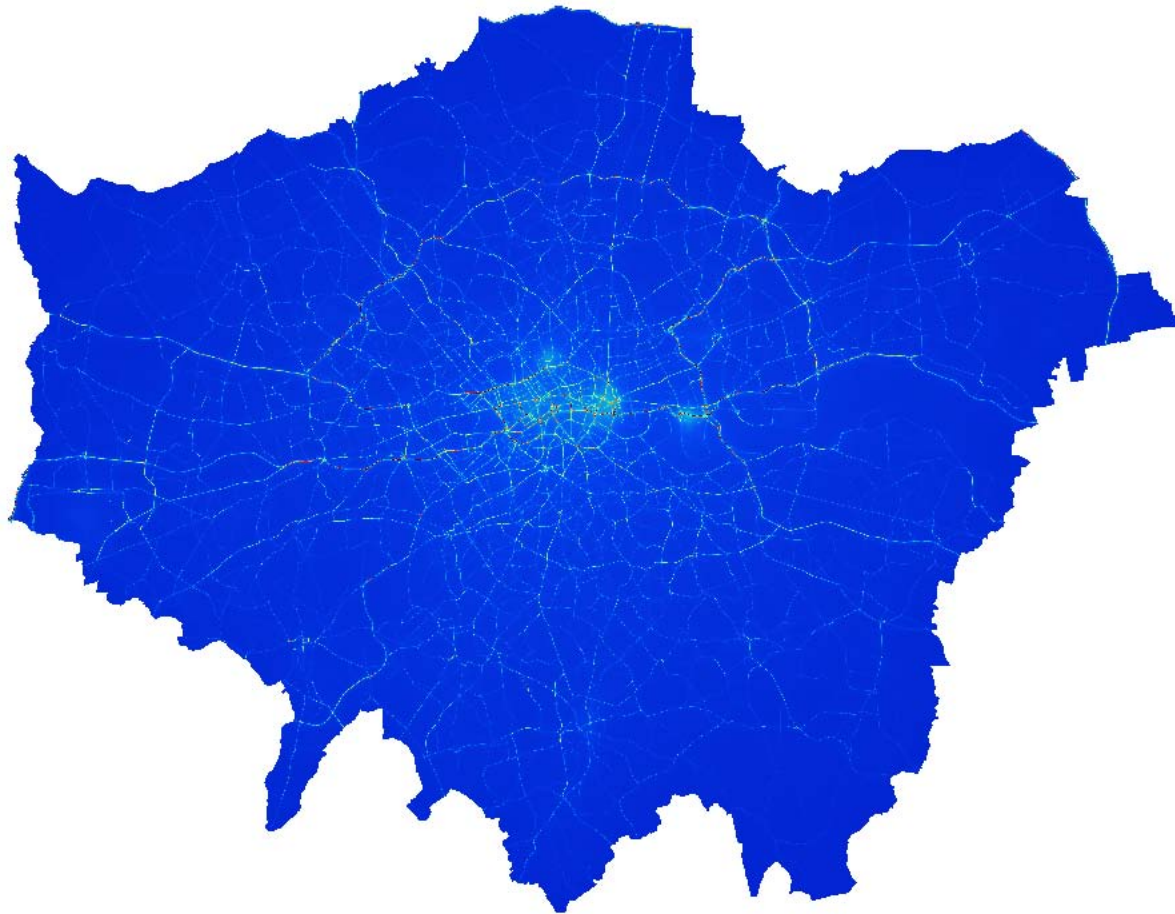
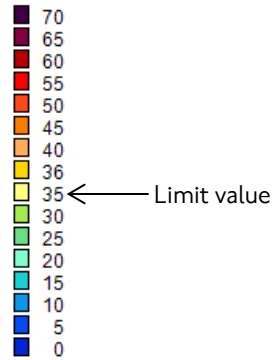


Días del 2020 con excedencia de PM_{10}

PM_{10} exceedence days - 2020

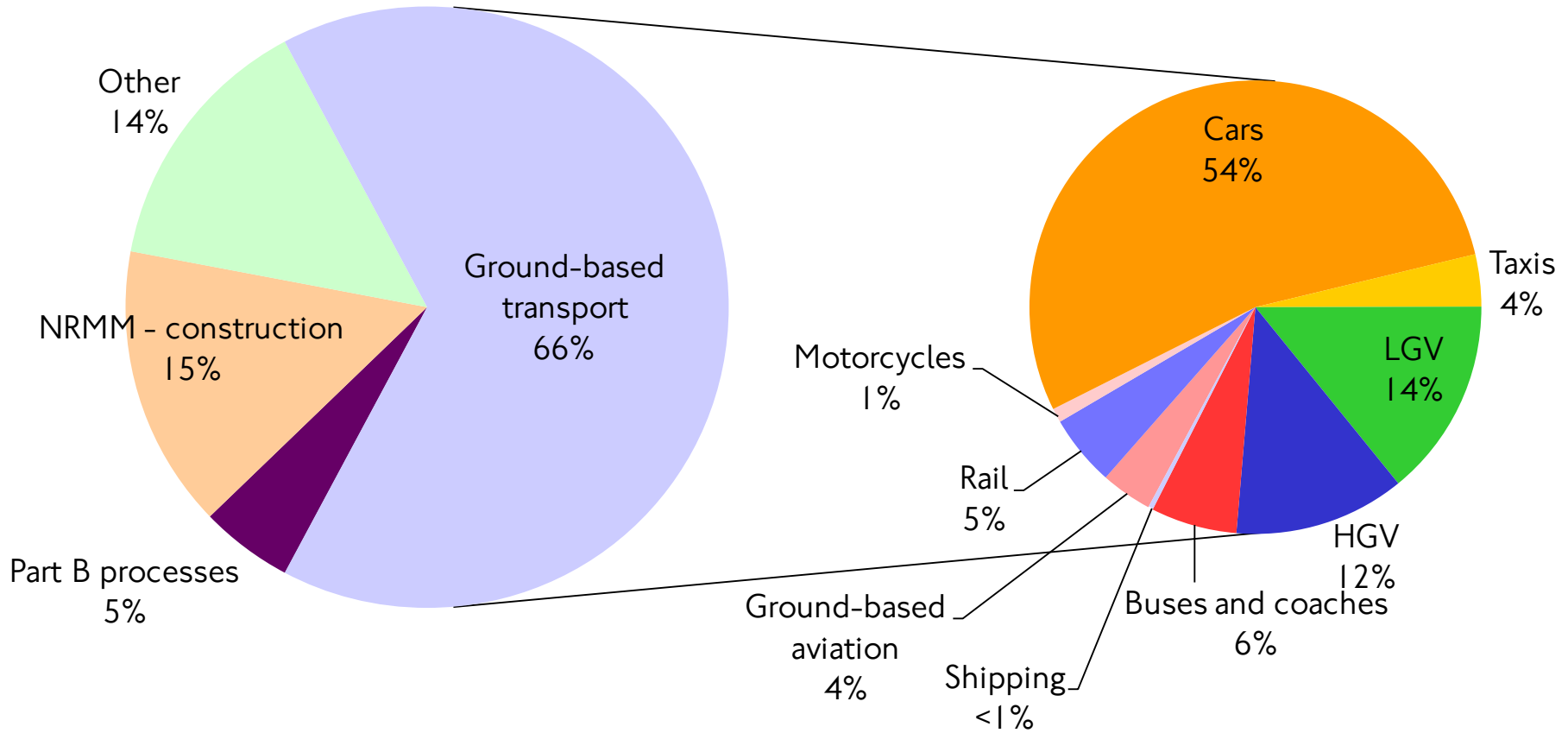
PM10 Exceedence Days

source: LAEI 2010



Fuentes de emisiones de PM₁₀

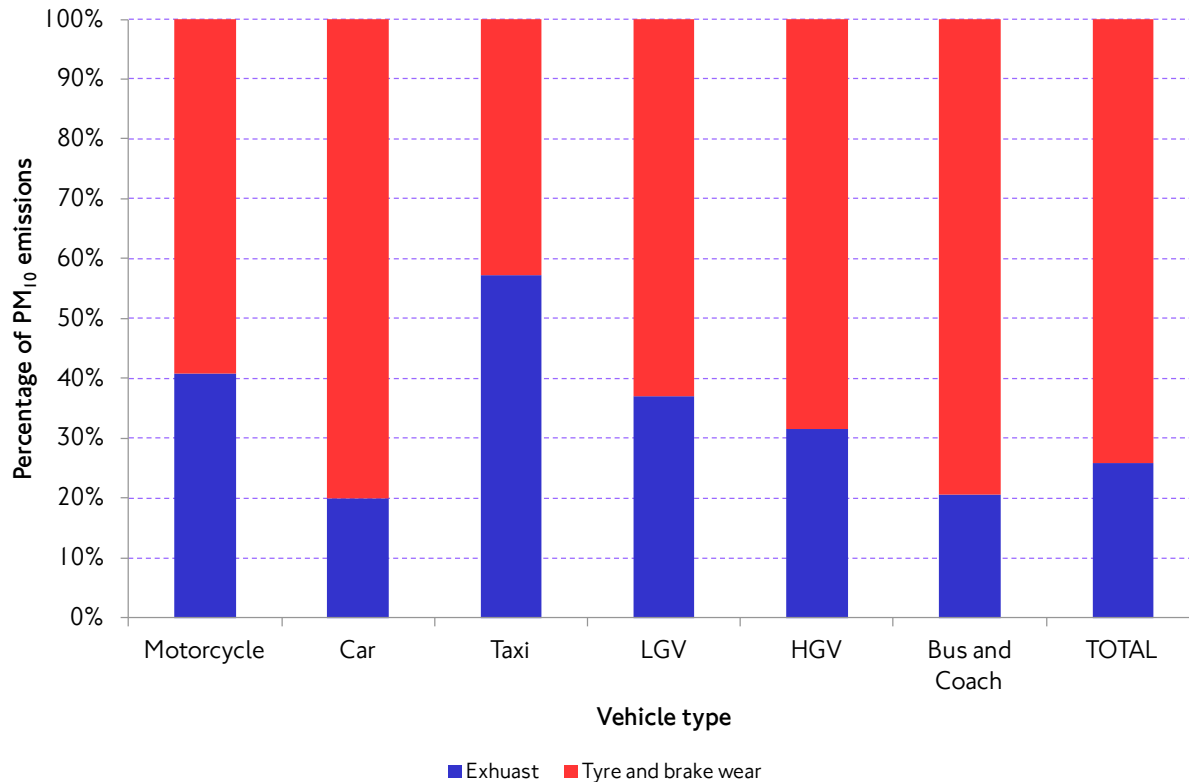
PM₁₀ emissions sources



Materia particulada - emisiones no exhaustas

Particulate matter – non exhaust emissions

- 80% of the car emissions is from tyre and brake wear.
- Regulation on vehicle exhaust emissions has over time lead to reductions. No such mechanism exists for tyre and brake wear



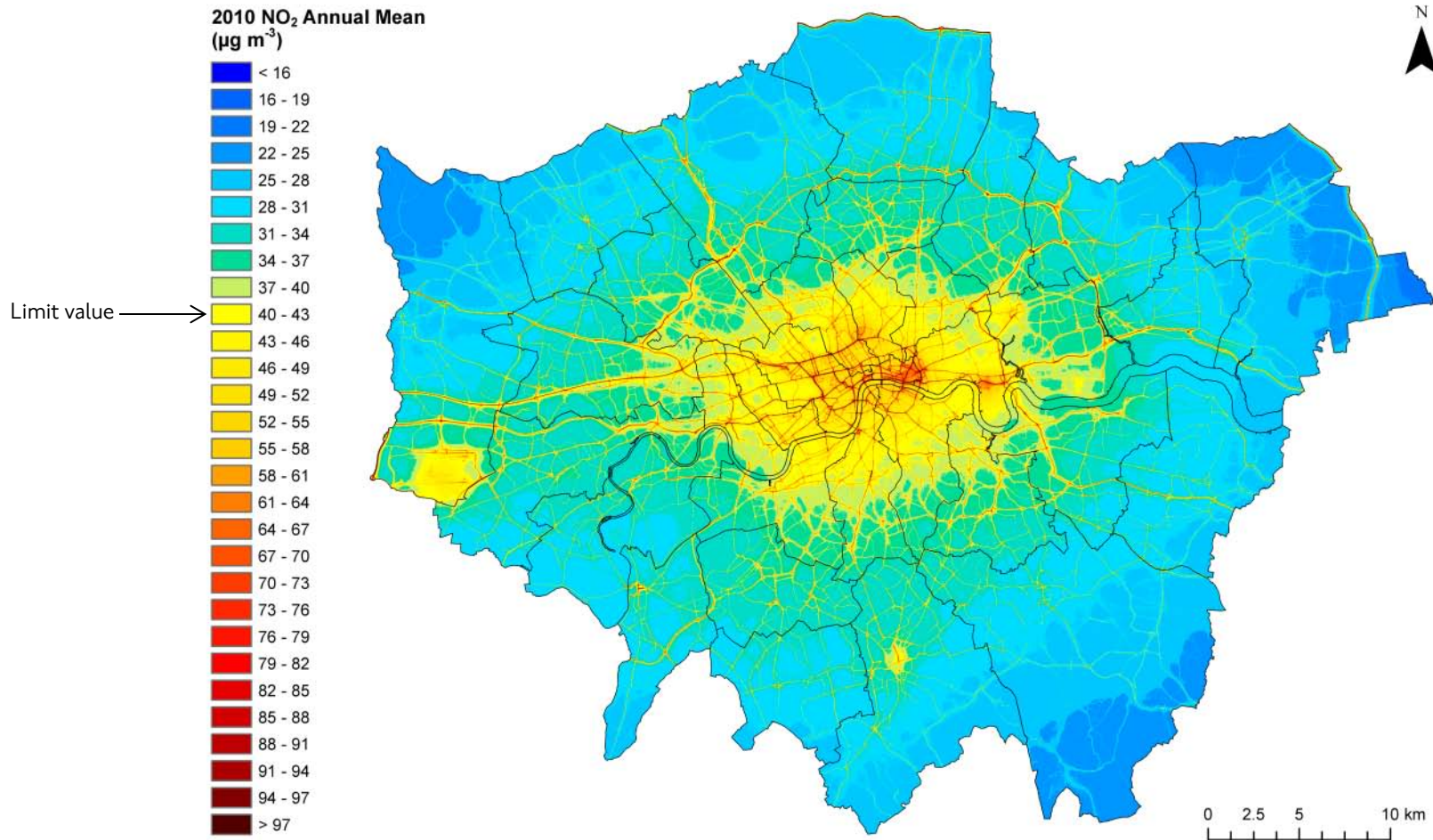
NO₂ en Londres

- London currently not expected to achieve compliance with EU limit values until beyond 2020.
- NO₂ can be affected by a number of factors, including the weather, geography and NO_x emissions sources from both inside and outside London.
- Complex! Should be a joint responsibility with others including the Government and European partners.
- Problem: 'Dieselisation' of vehicle fleet
- Problem: Euro standards forecast



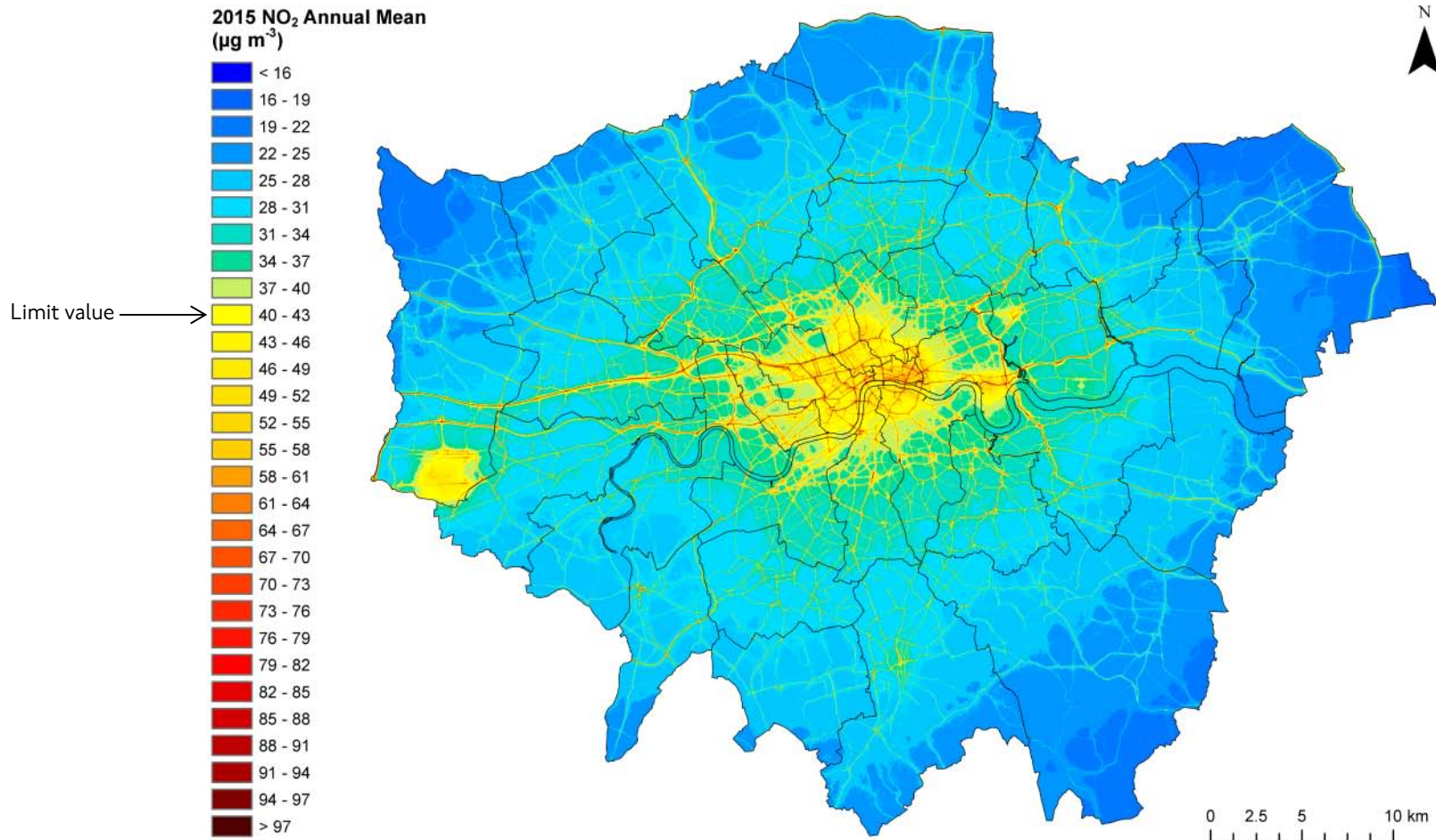
Media anual de NO₂ – 2010

NO₂ annual mean - 2010



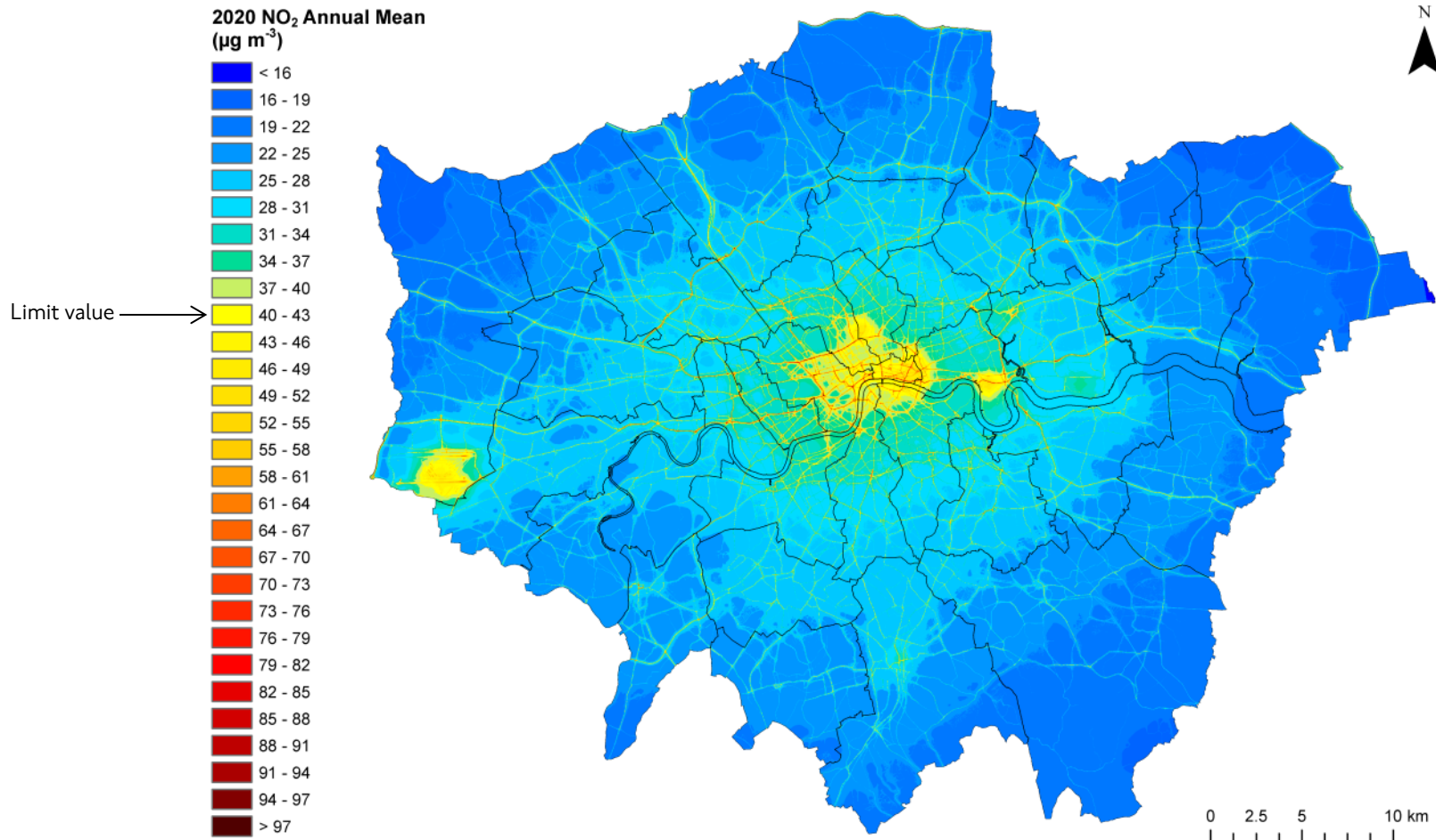
Media anual de NO₂ – 2015

NO₂ annual mean – 2015



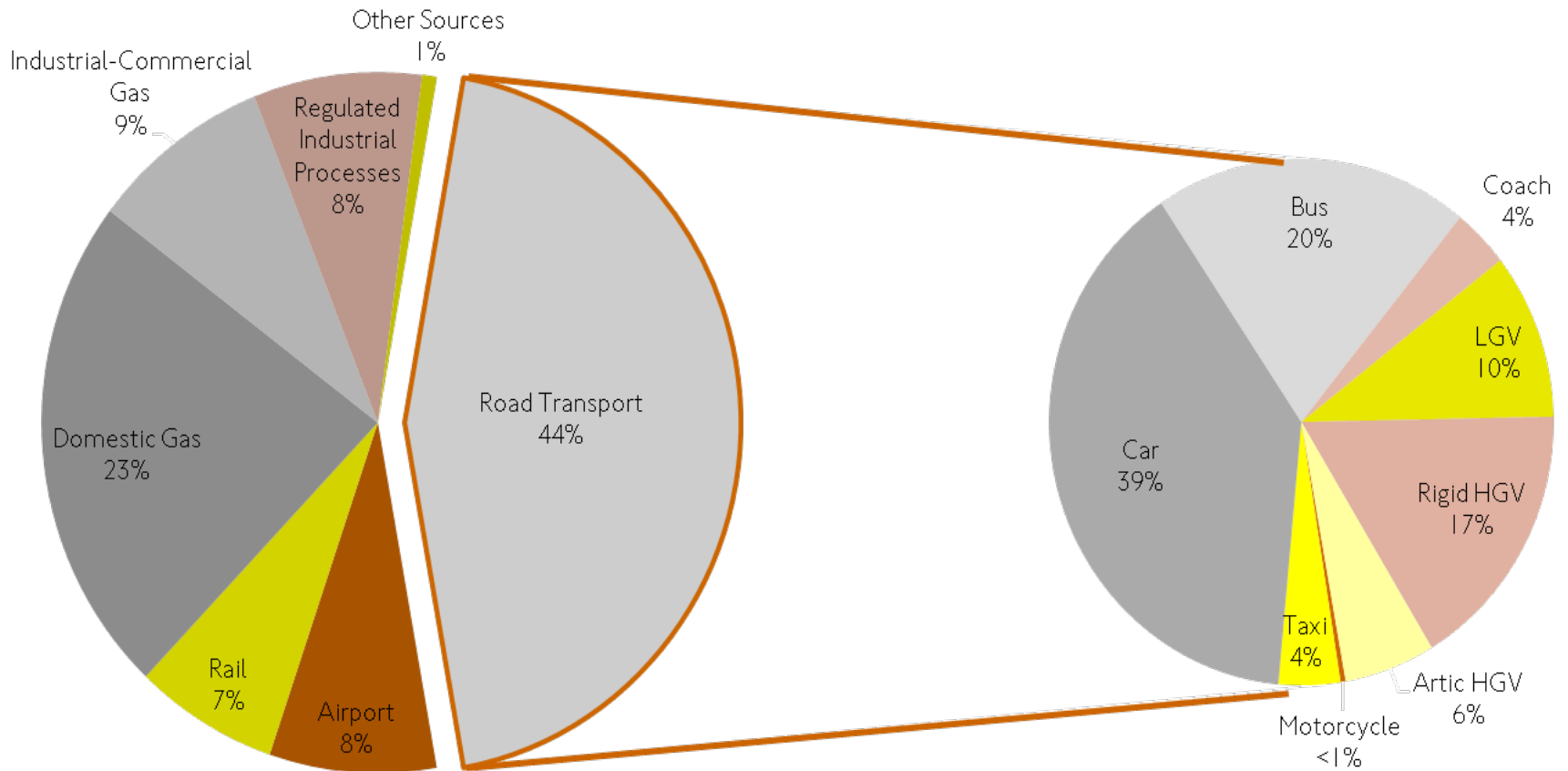
Media anual de NO₂ – 2010

NO₂ annual mean – 2020



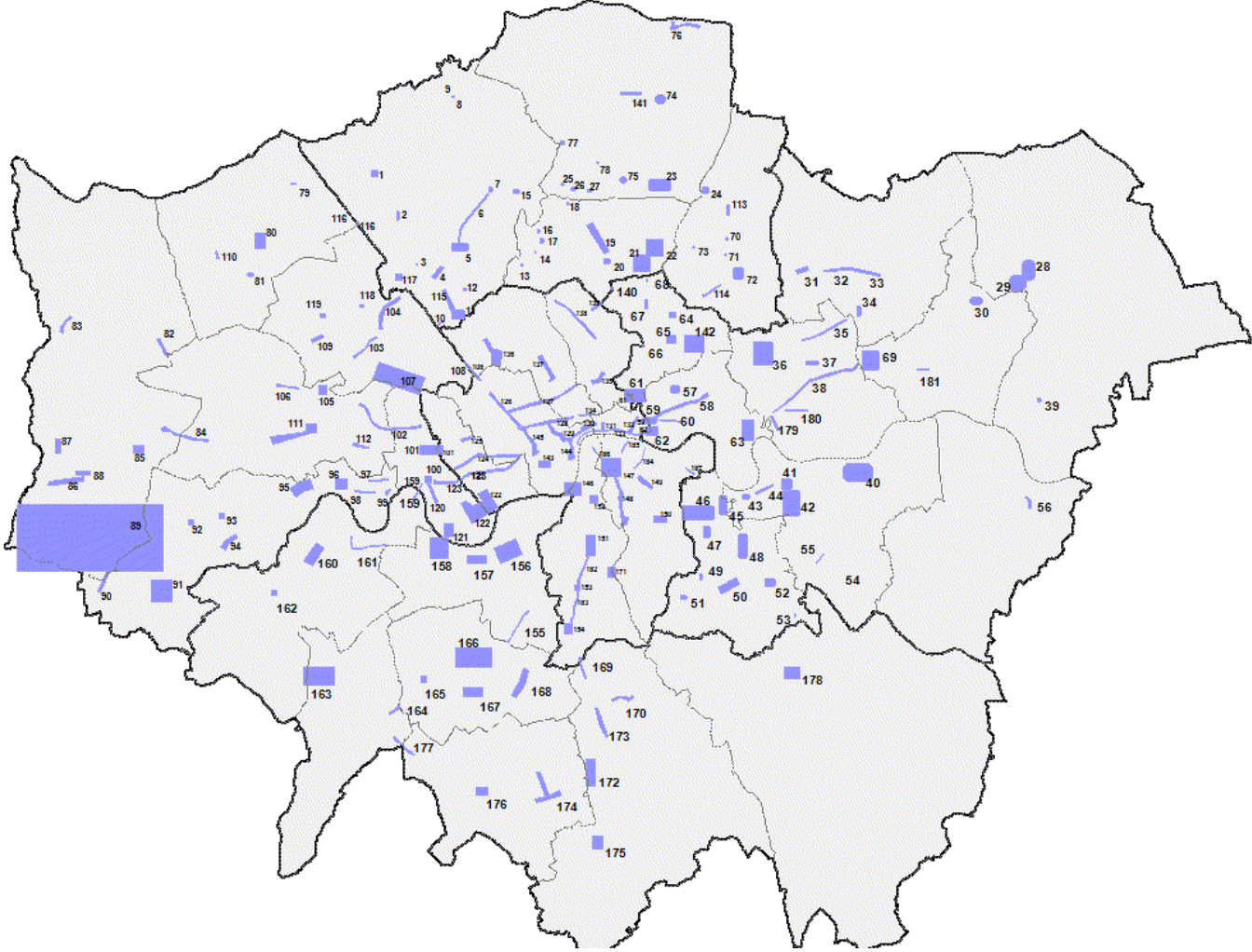
Emisiones de NO_x en Londres

NO_x emissions in London



Áreas de interés para la calidad del aire de Londres

London's air quality 'focus areas'



Fuentes de NO₂ no relacionadas con transporte

Non-transport sources of NO₂

- Non-transport sources account for around half of NO_x emissions in London
- Domestic boiler use alone responsible for around 25% of emissions.
- Finding effective mechanisms to address these emission sources (both in the short and long-term) has been a priority.
- New proposals include:
 - A Non-Road Mobile Machinery (NRMM) Low Emission Zone for London (by end of 2015). NRMM accounts for approximately 10% of NO_x emissions in London, roughly the same as the TfL bus fleet
 - Further RE:FIT work under a specific school boiler retrofit programme
 - Funding for 24,000 additional homes as part of the RE:NEW programme
 - A decentralised energy target of 25% by 2025, reducing NO_x emissions from domestic boiler use



Reduciendo emisiones de transporte

Reducing transport emissions

London Low Emission Zone (LEZ)

- Covers the whole of London (1,580 square kilometres) and operates 24/7, 365 days a year
- Introduced in 2008 to target oldest and most polluting HGVs, buses and coaches
- Cars and motorcycles not affected
- Daily penalty charge €600 - €1100
- Compliance with current standards high at 92 per cent for lorries, buses and coaches, and 98 per cent for vans and minibuses.



London Low Emission Zone (LEZ)

- By late 2015, compliance further improved with the expected fleet turnover
 - less than 1% of the van and minibus fleet
 - 8,000 out of 950,000 vehicles
- Current standard for HGVs, buses and coaches is Euro IV for PM
- In January 2012, new requirements included Euro III for light commercial vehicles
- New requirement from 2015. All TfL buses will meet a Euro IV NO_x requirement (8,500 vehicles)



Congestion Charging scheme

- Covers heart of UK Government, business, media and banking (approx 19 km² or 1.3% of London)
- Helped reduce emissions from vehicles travelling within the zone and encouraged people to use public transport, walk or cycle.
- €12 daily Congestion Charge to drive between 07:00 and 18:00, Monday to Friday



Congestion Charging scheme

- New discount in 2013 to ensure only greenest vehicles receive a 100 per cent discount
- **Existing:** Green Vehicle Discount
 - 100% for electric vehicles
 - cars 100g/km or less CO₂ and Euro 5 standard
- **New:** Ultra Low Emission Discount
 - any type of pure electric vehicle
 - cars with CO₂ emissions of 75g/km or less that meet Euro 5
 - vans with CO₂ emissions of 75g/km or less that meet Euro 5.
- No conventional diesel car currently meets this criterion!



Haciendo los buses de Londres más verdes

Greening London's buses



Haciendo los buses de Londres más verdes

Greening London's buses

- Most used public transport mode – **fifth of all daily journeys** in the Capital
- Estimated **49.5 million journeys in one week** – around half the number of all bus journeys in England
- More than **2.3 billion passengers a year** and approx 40 per cent growth in bus kilometres since 2000
- TfL bus fleet now contains 8,500 vehicles
- PM_{10} – reduced from 200 tonnes a year in 1997 to 17 tonnes today
- NO_x – 20% of all road transport in London but only 2% of all kilometres driven
 - central London disproportion is even higher



Haciendo los buses de Londres más verdes – acciones hasta ahora

Greening London's buses – action to date

- Created youngest bus fleet of any major European or world city (average bus age is 6 years);
- Delivered Europe's largest hybrid bus fleet with more than 420 hybrid buses on London's roads today;
- Installed filters on all buses made before 2005 to reduce PM
 - Results have shown a reduction of up to 77 per cent PM₁₀ exhaust emissions at source
- Trialled innovative new technologies like hydrogen;
- Developed, tested and commenced the installation of selective catalytic reduction (SCR) equipment to 900 buses to reduce NO_x emissions.



Haciendo los buses de Londres más verdes – inversiones futuras

Greening London's bus fleet – future investment

- Grow the hybrid fleet to 1600 vehicles by 2016
- Deliver the world's largest bus retrofit programme to reduce NO_x emissions from a further 1,000 older buses by up to 90%.
 - commenced late 2012 and completed by 2014
- Pilot programme using biodiesel in 10 bus depots.
 - fitting biodiesel tanks and operating the buses will take place from 2013
- Trial of pure electric buses from 2013 and range-extended diesel-electric hybrid buses from 2014.
- Ensure cleanest buses go through London's air pollution hotspots.
 - 187 air quality focus areas where high concentrations of NO₂ coincide with high levels of human exposure, e.g. along high streets, near schools and at hospitals.



The Mayor's new bus for London



Taxi and private hire vehicles



Taxi and private hire vehicles

- New age limits introduced from 2012 to retire some of oldest most polluting vehicles. Over 2000 vehicles removed from the fleet this year.
- Annual licensing requirements
 - Taxi 15 year age limit (over 6000 vehicles expected to be excluded in first 5 years)
 - Private hire vehicles 10 year age limit
- New licensing requirements
 - all new taxi and private hire vehicles must be Euro 5 standard
- Collaborating with taxi vehicle and alternative fuel system manufacturers to develop new technology
 - Vehicles with lower fuel consumption
 - Future trials of electric / hybrid technology
 - Five hydrogen taxis currently being trialled

Promoviendo opciones más inteligentes y transportación sustentable

Promoting smarter choices and sustainable travel



Promoviendo opciones más inteligentes y transportación sustentable

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Promoting smarter choices and sustainable travel



Promoviendo opciones más inteligentes y transportación sustentable

Promoting smarter choices and sustainable travel



Promoviendo opciones más inteligentes y transportación sustentable

Promoting smarter choices and sustainable travel

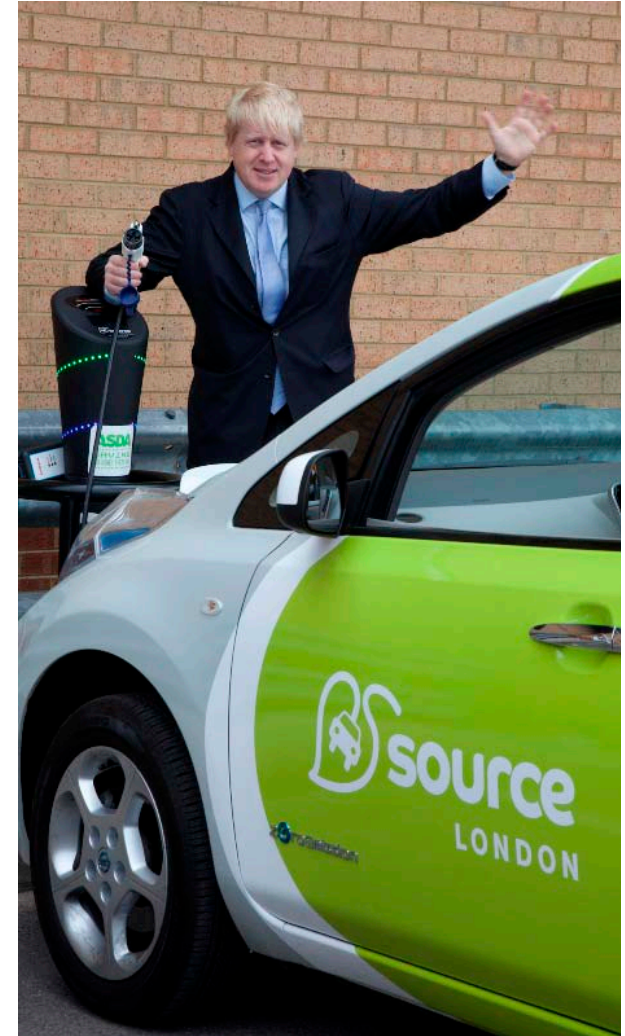


Promoviendo el uso de vehículos eléctricos

Encouraging electric vehicles

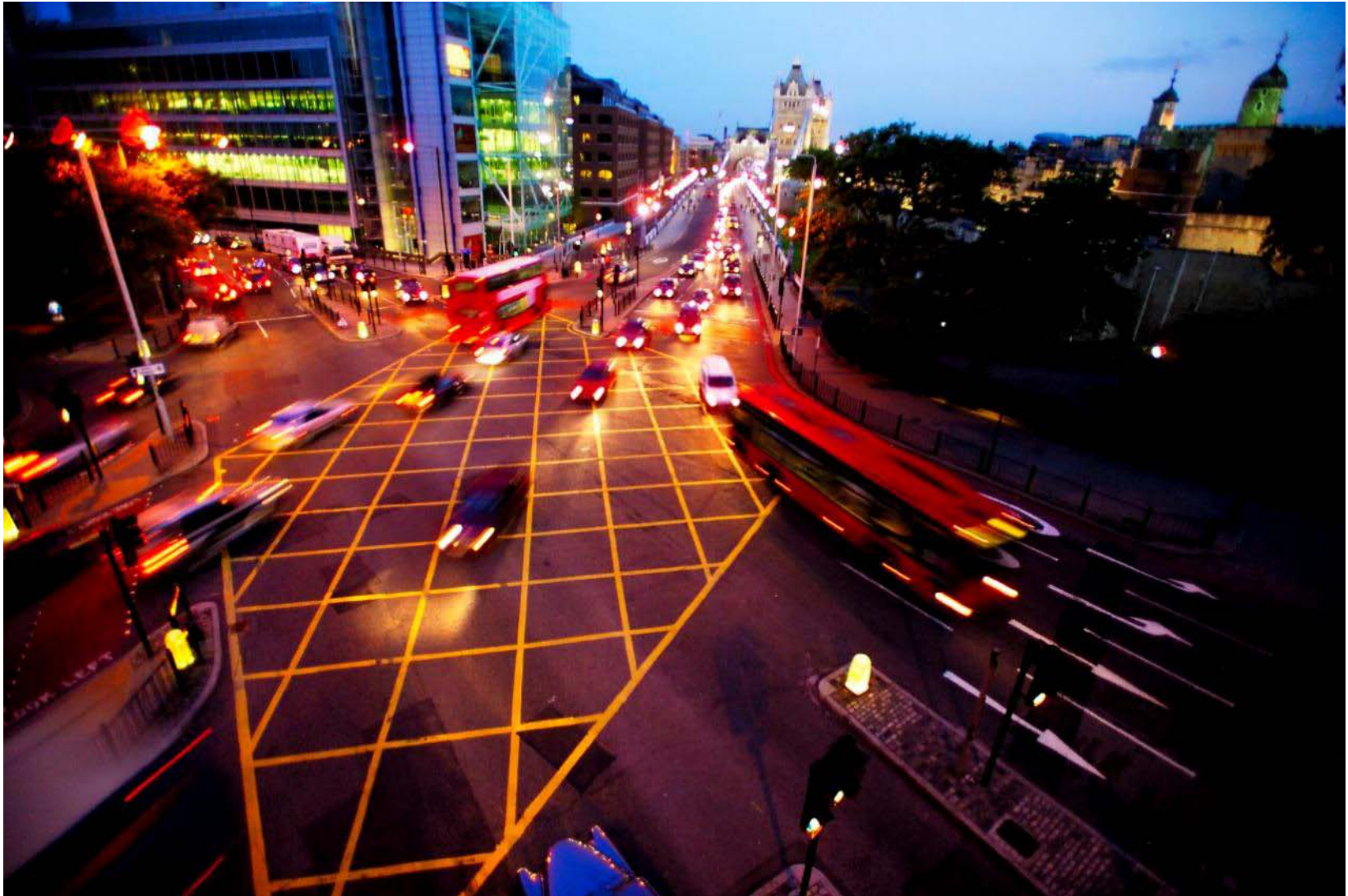
- Since its launch two years ago, 1,300 charging points have been installed at over 300 sites in the Capital
- Sites include supermarkets, shopping centres, council and private car parks, hospitals and on the street – Europe's largest urban charging network
- One-stop shop website providing information on electric vehicles, charging, membership, charge point locations

www.sourcelondon.net



Mejorando el flujo del tráfico

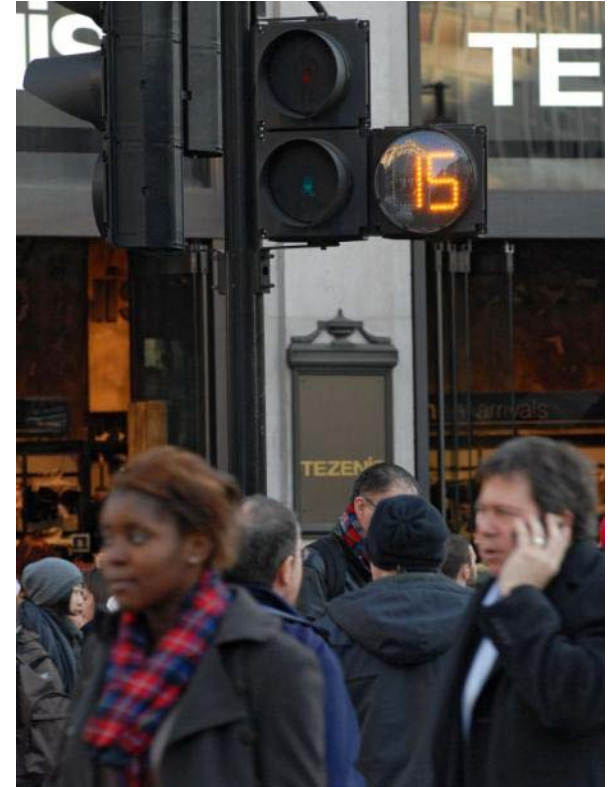
Improving traffic flow



Mejorando el flujo del tráfico

Improving traffic flow

- Dynamic traffic signal control (SCOOT) continually adjusts traffic signal timings; reducing delay and stop/start conditions hence reduction vehicle emissions
- Improving journey time reliability and predictability
- Maximise the efficient and reliable operation of the existing road network
- Minimise the impact of planned interventions on the road network
 - 6000 sets of traffic signals in London
 - Over 3000 sets with SCOOT by 2014



Medidas específicas para reducir el PM_{10}

Targeted measures to reduce PM_{10}

Taxi marshalling at mainline stations to discourage idling and facilitate pick-ups



Medidas específicas para reducir el PM_{10}

Targeted measures to reduce PM_{10}

Taxi marshalling at mainline stations to discourage idling and facilitate pick-ups



Calcium Magnesium Acetate applied to roads to reduce re-suspension of particulates



Medidas específicas para reducir el PM₁₀

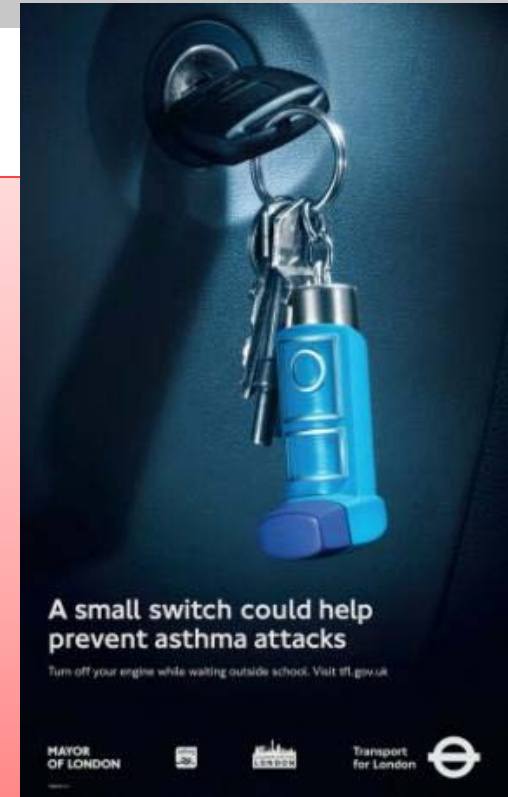
Targeted measures to reduce PM₁₀

Taxi marshalling at mainline stations to discourage idling and facilitate pick-ups



No idling marketing campaign – collaborative effort across London to provide a clear message on engine idling

Calcium Acetate applied to roads to reduce re-suspension of particulates



A small switch could help prevent asthma attacks

Turn off your engine while waiting outside school. Visit tfl.gov.uk

MAYOR OF LONDON



Transport for London



Medidas específicas para reducir el PM_{10}

Targeted measures to reduce PM_{10}

Taxi marshalling
mainline station
discourage idling

Green
infrastructure in
air quality focus
areas



to reduce re-suspension
of particulates



Construyendo con éxito - las Olimpiadas 2012

Building on success - the 2012 Games



Construyendo con éxito - las Olimpiadas 2012

Building on success - the 2012 Games

- In support of the Games, almost £6.5bn was invested in transport improvements around the Olympic Park and across the capital.
- Traffic flows in central and inner London were down by 16.3 per cent in the AM peak and 9.4 per cent in the PM peak on normal levels
- Approximately 20 per cent more cyclists and 22 per cent more people on foot, compared with the previous fortnight.
 - In Central London the figures showed 29 per cent more cyclists, and in East London 62 per cent more cyclists and 158 per cent more pedestrians
- Lots of work with the freight industry to change the when and how vehicles entered central London
 - Reduce
 - Reroute
 - Retime
 - Remode



Ultra Low Emission Zone (2020)

- The Mayor announced his intention to create the world's first Ultra Low Emission Zone in central London from 2020.
- “The vision is very simple, what we want to work towards in central London is that almost all vehicles running during working hours are to be zero or low emission.”
 - huge benefits in air quality
 - stimulate new clean, green technology
 - fair to buyers of vehicles of all kinds
 - fair and reasonable for the motor industry



Barriers to delivery

- Approx 40 per cent of PM_{10} concentrations in central London originate from outside London
- Approx 40 per cent of NO_2 concentrations in Greater London originate from outside London
- 35 per cent of PM_{10} emissions from road transport from tyre and brake wear – cannot be regulated
- Recent Euro standards not been as effective as expected
- The Mayor lacks policy levers over: wider vehicle fleet using London's roads; industrial and waste management operations; rail infrastructure; and airport operations

Questions?

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