

Lessons and experiences to address air quality issues from London, Berlin & Paris

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Things have improved....

Smog picture 1950

Picture London 2005

But many cities around Europe will not meet the EU Limit Values without a lot of further measures

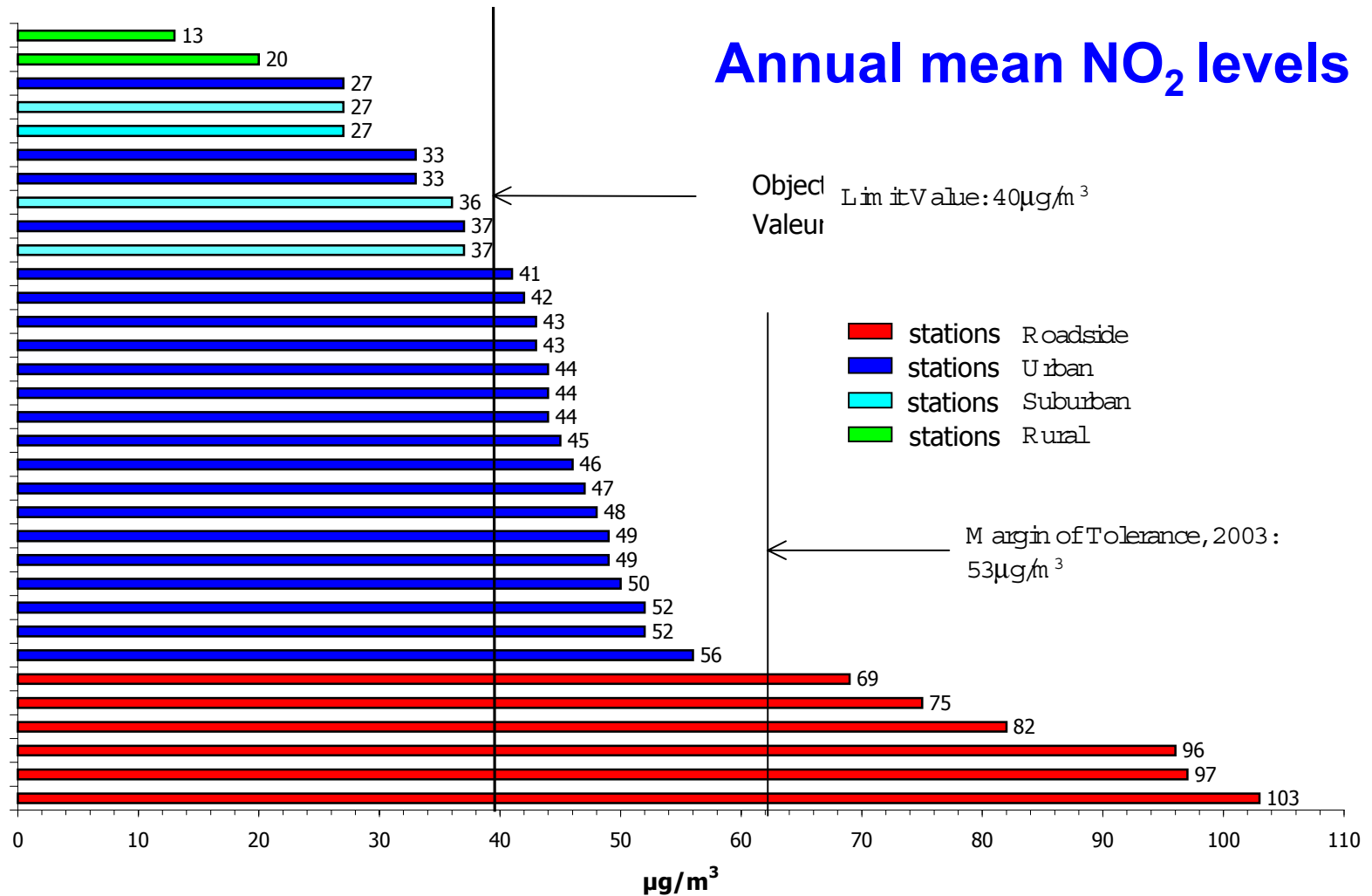
Legislative roles within Europe

- **EU - sets Directives**
 - eg Euro Standards, cleaner fuels, emissions ceilings
- **National Governments - puts Directive into national law**
 - Fuel duties, grants, regulation
- **(Regional Governments)**
 - regional guidance, measures
- **Local Authorities / Cities**
 - Borough action plans

Paris situation 2003

The 34 Paris monitoring sites

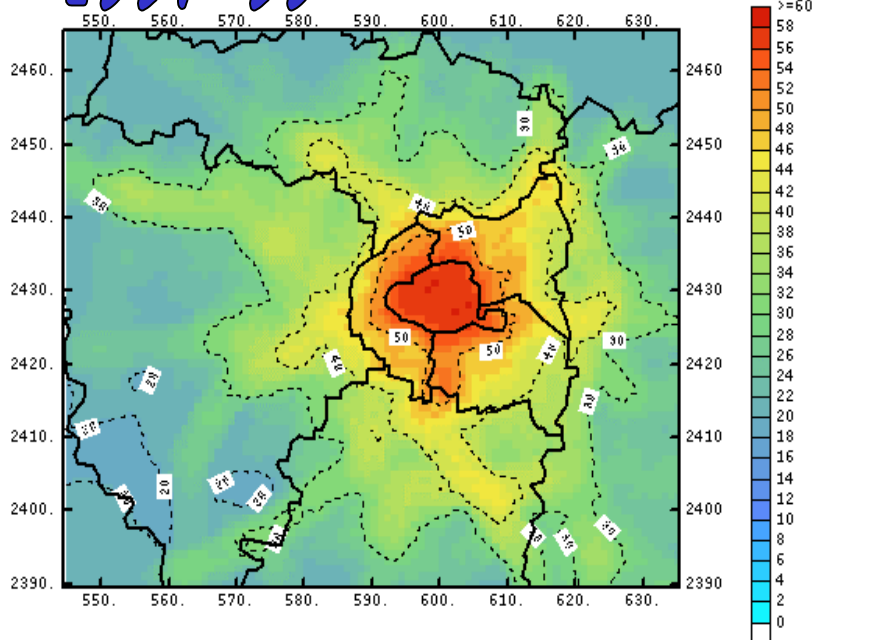
Annual mean NO₂ levels



But we still have a long way to go....

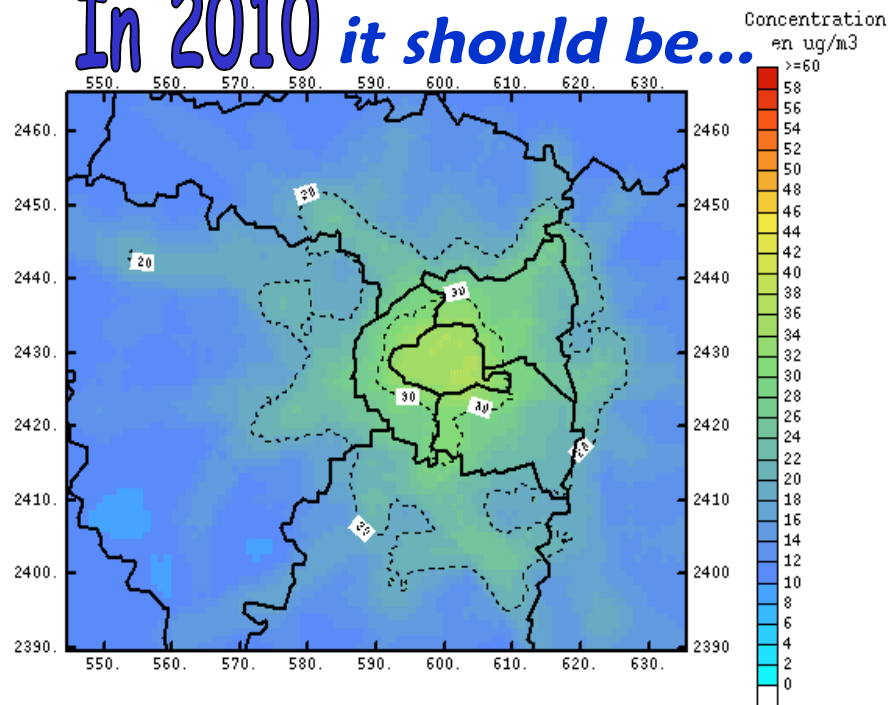
For Paris to meet the NO₂ LVs

1997-99



Annual average
~ 55 µg/m³

In 2010 *it should be...*



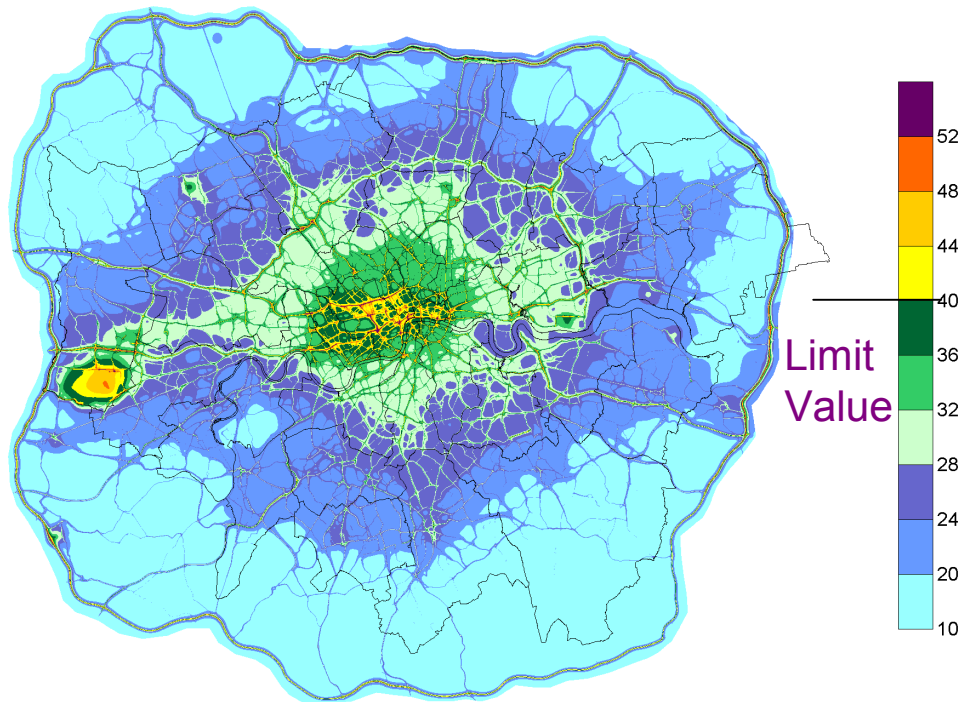
Annual average
< 40 µg/m³



Need 50% reduction in NO_x emissions

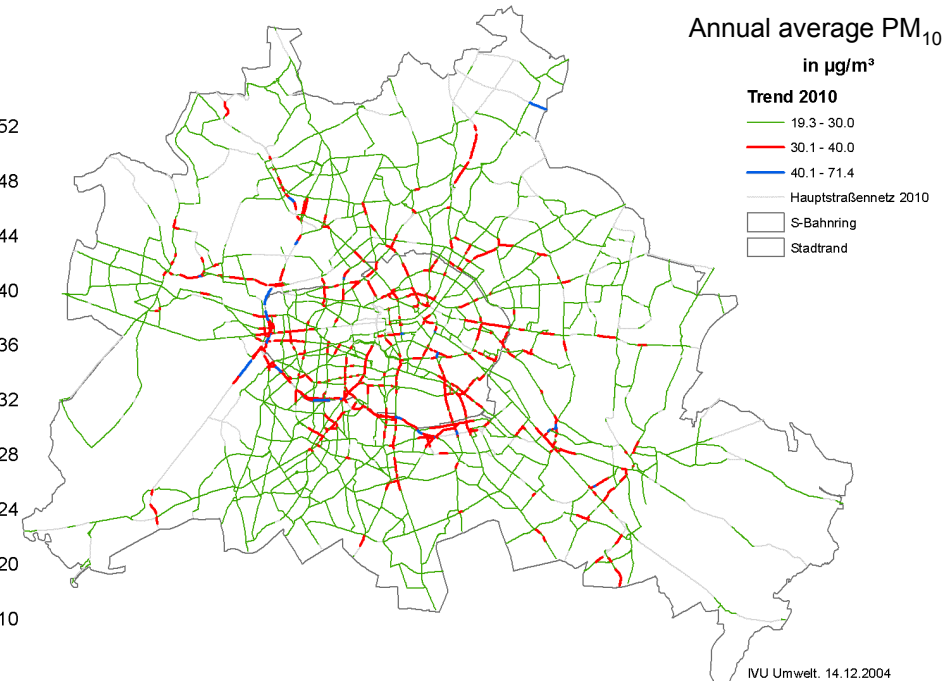
Likely situation in 2010 - Business as Usual

London NO₂



40 km² > Limit Value
out of 2466km²

Berlin an. ave PM₁₀

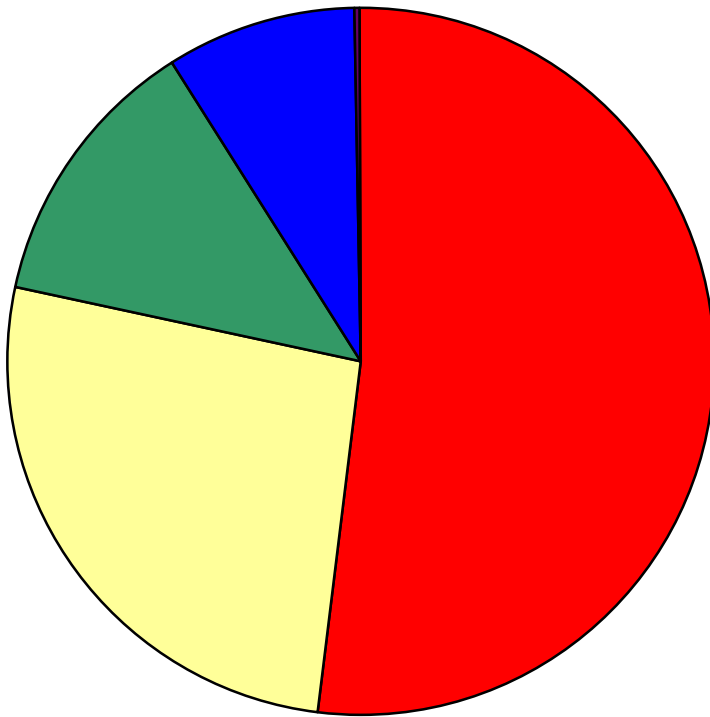


200 km of road sections >Limit Value
out of 5342km

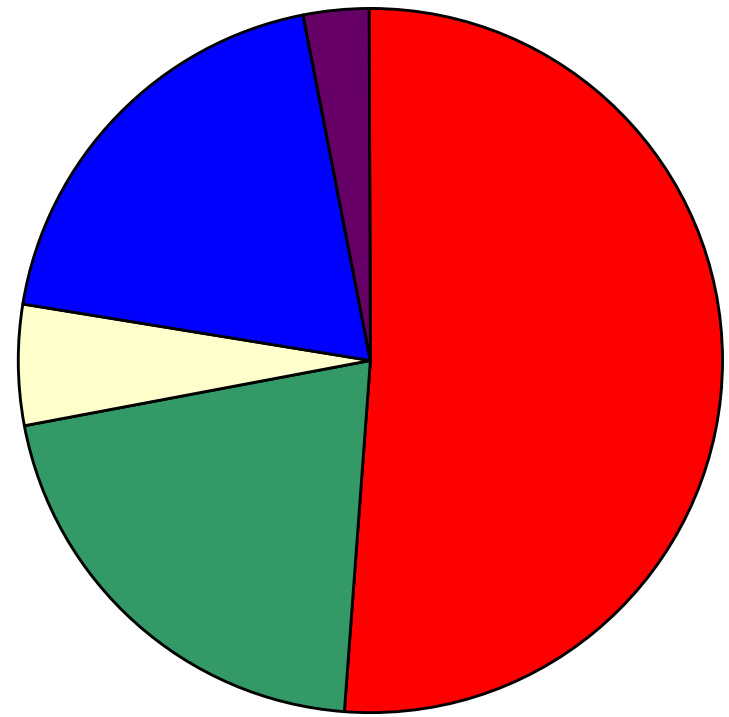
IVU Umwelt. 14.12.2004

Emissions within London 2002






NO_x (NO_2)



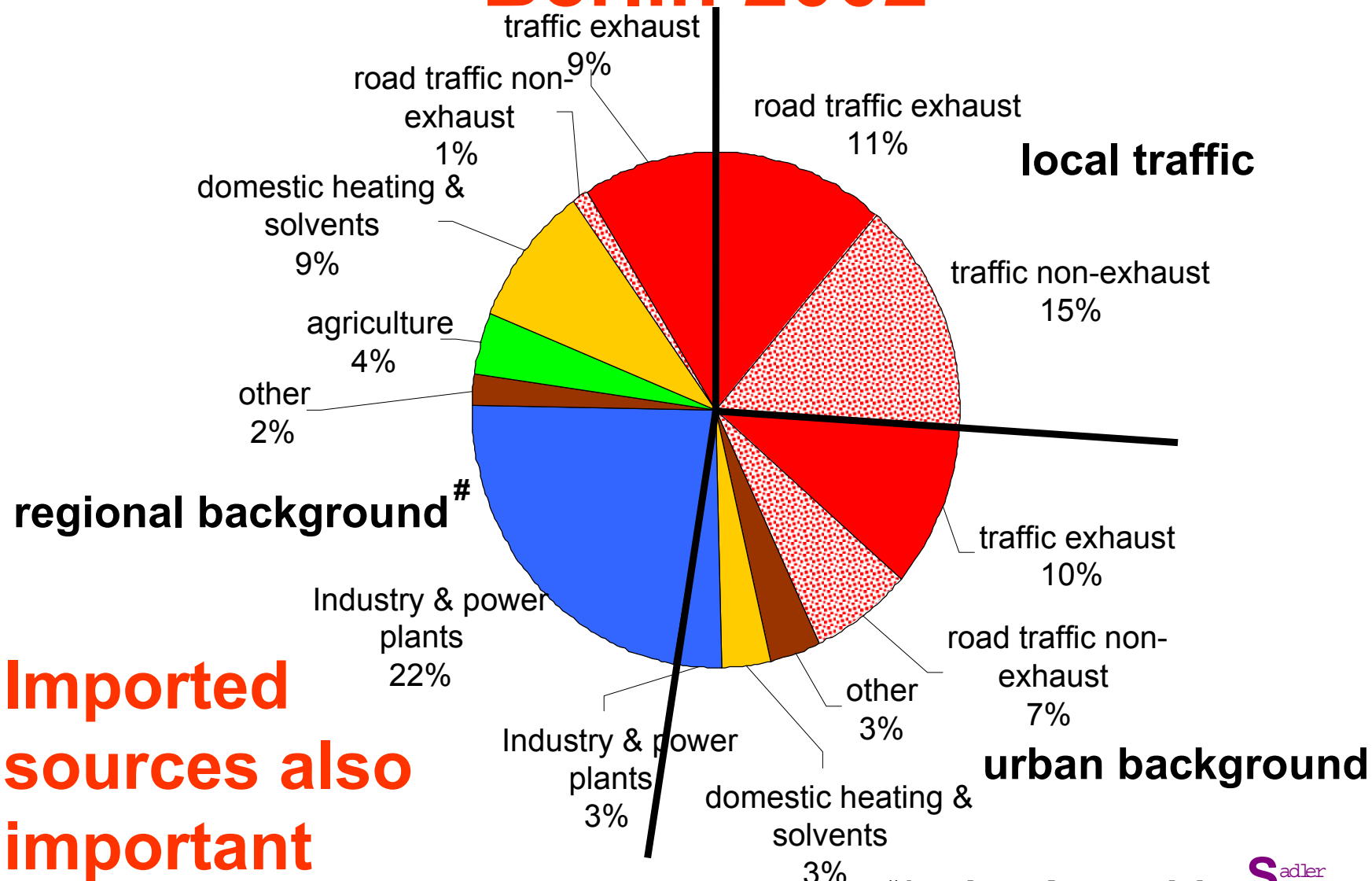
PM_{10}



Main local source: Road Transport

	Road transport
	Industry & power plants
	Gas use
	Other transport
	Other

Sources influencing Roadside PM₁₀ Berlin 2002



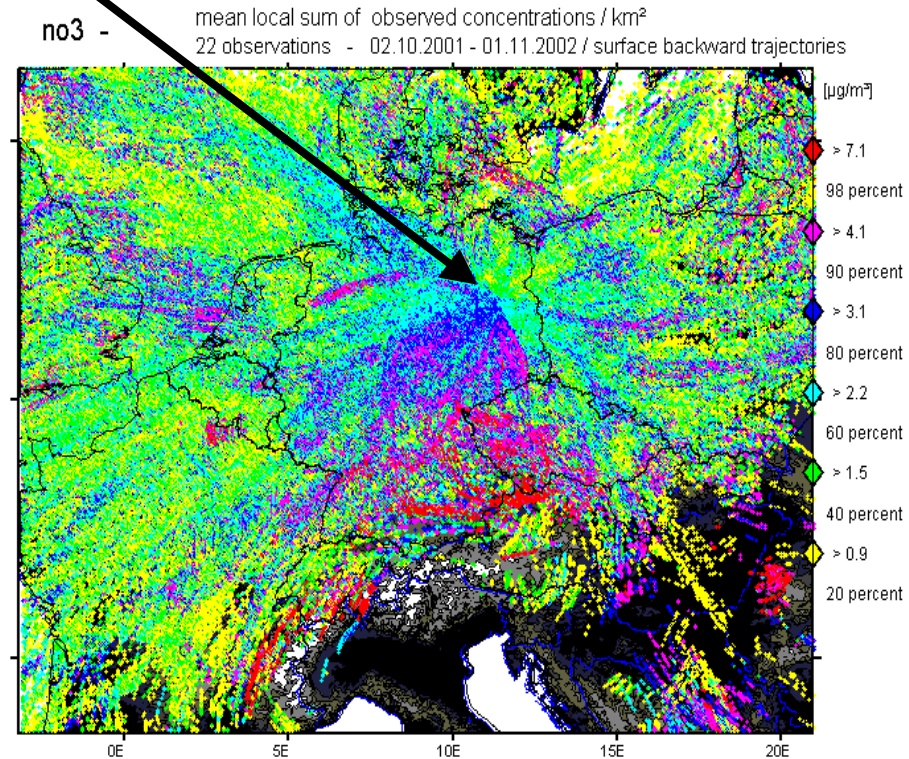
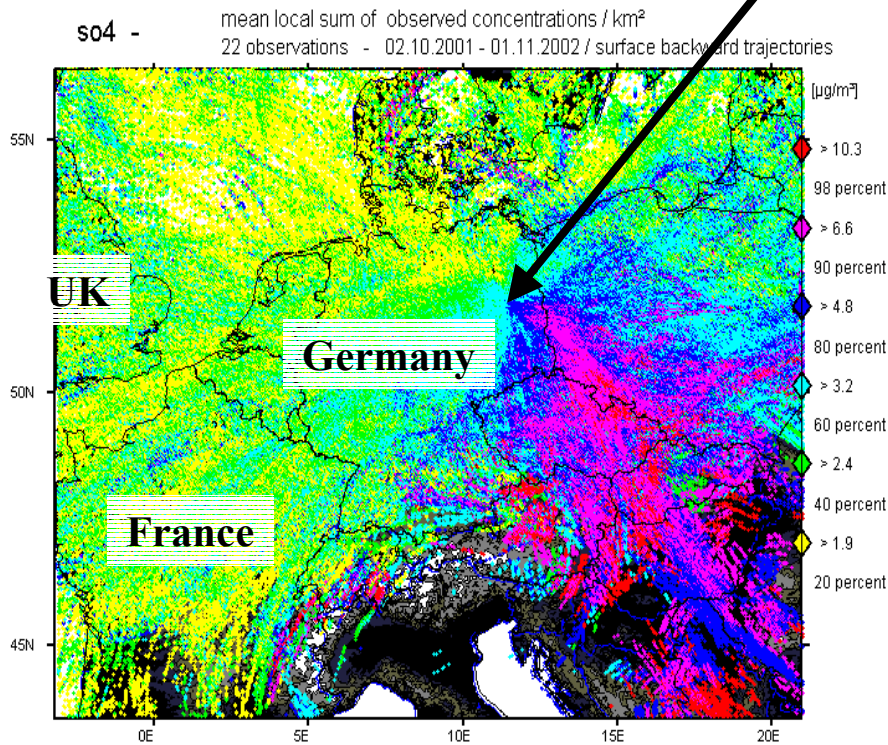
based on values recorded on a radio tower 324m high

Some things cities cannot change

sulphate

Berlin

nitrate



large-scale pollution transport

e.g. of Secondary PM₁₀ across Europe to Berlin

Local solutions

- Differ depending on what is possible and effective, due to different
 - main sources
 - size of problem
 - legal situation
 - weather, topography.....
 - political realities, in cities and in countries
- All are dependent on EU & National frameworks
- Political leadership can be very useful

London's Air Quality Strategy

Leading by Example

- **Buses** (~7,000), Tendered
 - All at least Euro II + particulate trap by end 2005
- **Taxis** (~20,000), Regulated through licences
 - All at least Euro III equivalent by mid-2008
- **Road Maintenance Vehicles**
 - **Under contract**, all at least Euro III
- **Buildings and Tube**
 - Using Renewable Electricity
- **Contracts / Purchasing**
 - Requires Environmental Policy as a purchasing consideration

This Strategy can be found on:

www.london.gov.uk/approot/mayor/environment/air_quality/index.jsp

Traffic Reduction Measures

- Improved Public Transport - esp. buses
- Improving walking & cycling, including maps, highway alterations
- Travel Plans
- Parking Control
- Co-ordination of road maintenance
- Congestion Charging in Central London
- Guidance for appropriately located developments
- Refusing inappropriate developments

⇒ These implemented through
Transport & Planning Strategies

Congestion Charge

- Zone $\sim 22\text{km}^2 \Rightarrow 15\%$ traffic reduction in zone
- Limited impact on Air Quality, more on emissions
 - purpose is Congestion reduction
 - only in operation 07:00-18:30, Mon-Fri
 - only 1% of London area
 - traffic reduction mainly on cars, not heavy duty
 - NO_2 impact limited due to ozone and NO issue
- 100% reduction for cleanest alternatively fuelled vehicles

NOTE: the impact of Congestion Charging could be quite different in other cities

see: www.tfl.gov.uk/tfl/cclondon/cc_publications-library.shtml

Persuasion

- 'One-stop-shop' factsheets
- Newspaper/Journal articles
- Through Trade Organisations
- Promoting Best Practice - Mayor useful
- Roadside Vehicle Emissions Testing
- Give guidance to the 33 Local Authorities within London

Through other Strategies

- Energy efficiency and use of on-site renewable electricity (15%)
- Required emissions standards for refuse vehicles
- Planning agreements - Low Emission Schemes

London LEZ would:

- Cover all Greater London (2,466km²)
- Cover lorries (HGV), buses & coaches
- Euro 3 emissions standard for PM₁₀ in mid-2008
- Tighten in 2010 to Euro 4 for PM₁₀
 - If Government supports certification for NO_x retrofit, include Euro 4 for NO_x in 2010
 - Potentially extend to vans (LGVs) in 2010, with 10 year age limit
- Be enforced by cameras, & charging system

Impact 50% of UK coaches, 14-36% of UK lorries,
14-18% of UK vans

Estimated LEZ Air Quality Impact

Pollutant	Reduction in Emissions (relative to baseline)			Reduction in Area Exceeding Targets (relative to baseline)			Euro 4 A)
	2007	2010 A)	2010 B)	2007	2010 A)	2010 B)	
NO _x (NO ₂)	1.5%	2.7%	3.8%	4.7%	12%	18.9%	52.1%
PM ₁₀	9.0%	19%	23%	0%	32.6% an.ave.	42.9% an.ave	33.1%

- Assumes E2+p.t. for 2007, E3+p.t. for 2010, A)= no vans, B)= with vans

With Euro 4 NO_x & PM₁₀ standards in 2010, London can approach meeting EU Limit Values !

Berlin - measures (1)

- Particle filters for all public buses
- Refuelling network for gas (CNG) vehicles
- Grants for CNG vehicles
- Major investment in public transport & cycling infrastructure
- Transport development plan to reduce city centre traffic
- Charges for car parking
- Replacing coal heating with gas, oil and district-heating
- Industry to apply best available technology, e.g. de-NOx equipment on larger industrial installations

Berlin - measures (2)

- **An LEZ for diesel vehicles has been agreed**
 - Euro 2 in 2008 (poss. E2+p.t.), Euro 3 + particulate trap in 2010 together with Euro 2 for petrol cars in 2010
- **Emissions standards for public buses & municipal vehicles**
 - 1000 buses with particulate traps
 - from spring 2006 testing natural gas buses
- **A tax discount for diesel vehicles with a particle trap**
- **16 main streets soon to have a 30 km/h speed limit**
- **Additional traffic management schemes will be investigated**
 - eg speed limits, adjustment of traffic lights, minimising traffic congestion by telematics & re-routing of traffic

Paris

- In France, air quality plans are run by the national government & their local administrators
- 40 to 50% NO_x reduction needed to meet EU Limit Values
- Expect 33% reduction from measures already in place
- Paris Pollution Plan (PPA) estimated to give another 10% reduction in NO_x

Measures in place in Paris

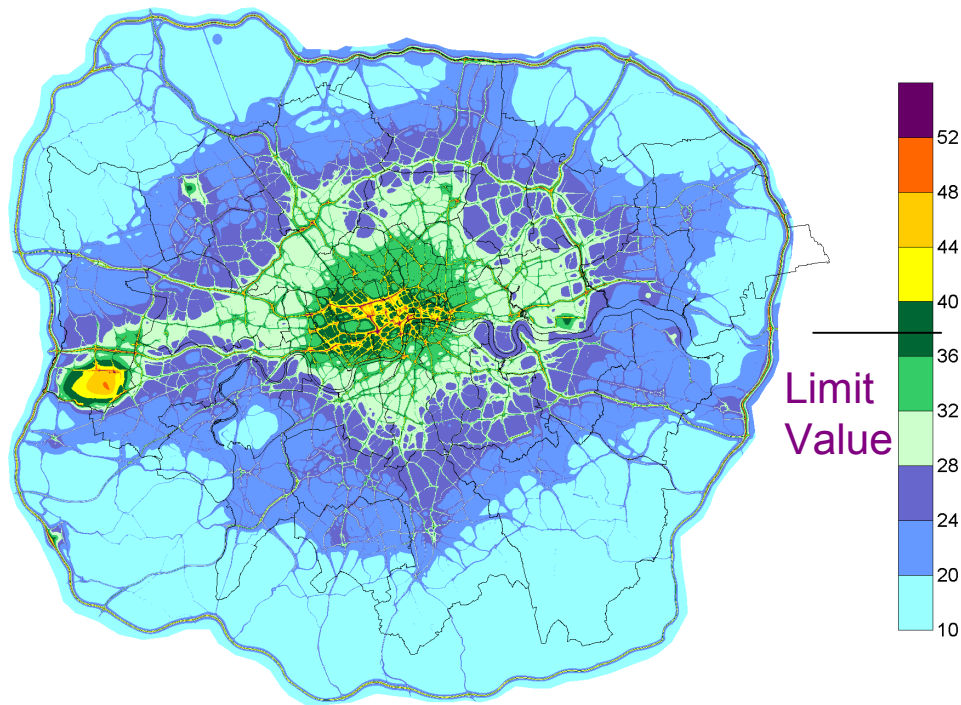
- Limits on aircraft traffic
- New engines in 30 diesel trains
- National grant scheme to promote clean vehicle
 - subsidised programs for business & public fleets; 1500 € tax incentive for individuals
- Dedicated bicycle-paths & bus corridors to encourage public transportation
 - resulting in traffic reduction in Paris over the last few years
- 50 %-subsidy on public transport monthly ticket by the employer
 - national law that applies only in Ile-de-France, due to pollution levels
- Increasing numbers of the city's buses with particle traps
 - 3000 equipped by autumn 2005

Future (PPA) measures in Paris

- Travel Plans compulsory for the 150 biggest organisations
- 80 mg/m³ NO_x emissions limit for waste incinerators
- High performance compulsory for wood burning heaters
- Low-NO_x boilers compulsory on new boilers over 70kW
- All petrol stations over 2000m³/year to have vapour recovery on the pumps
 - then over 1000 m³ after review of first step
- Auxiliary Power Units (APUs) forbidden at airports
- Reduce traffic through urban planning

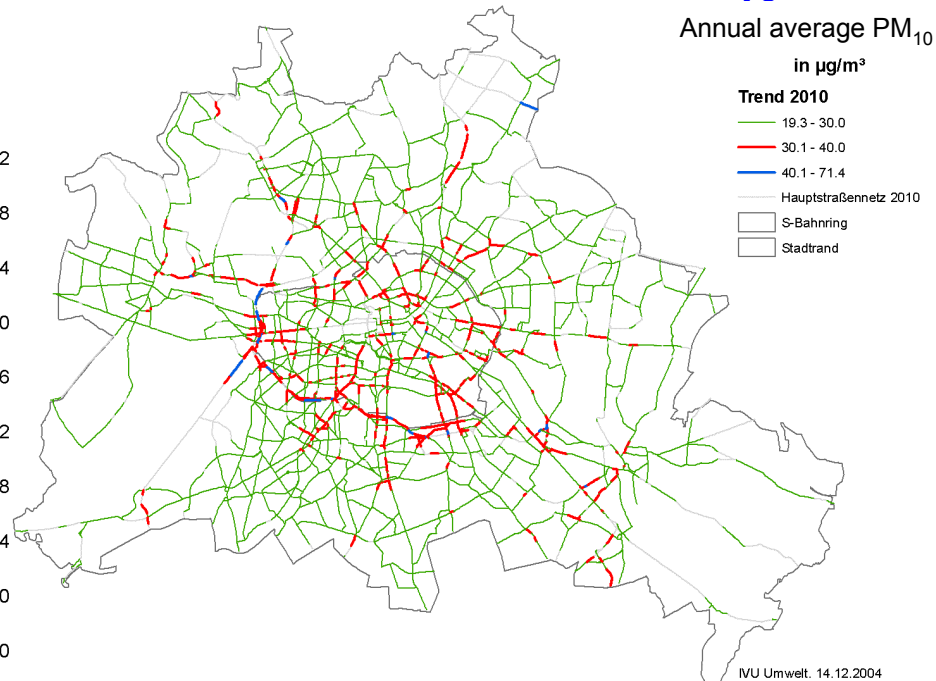
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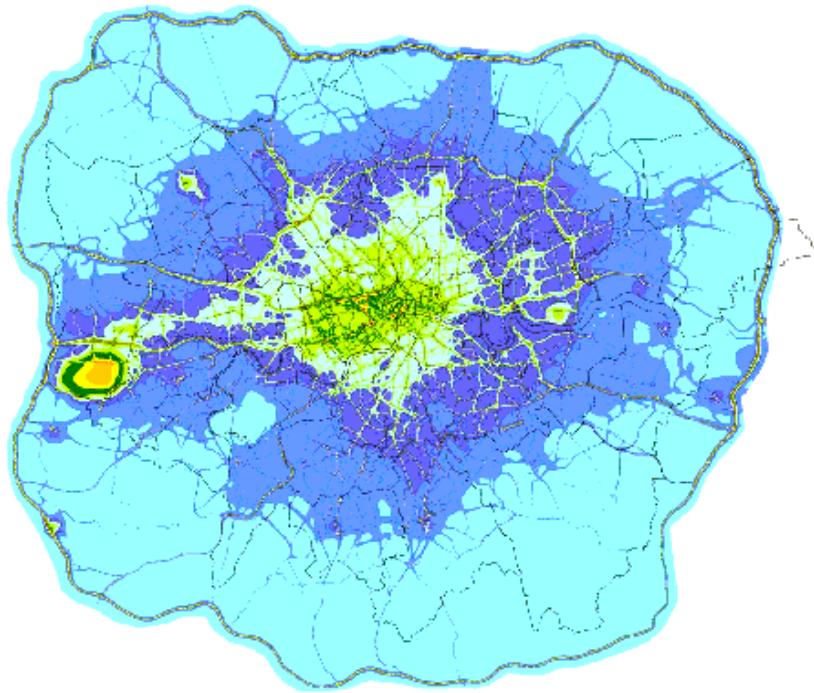
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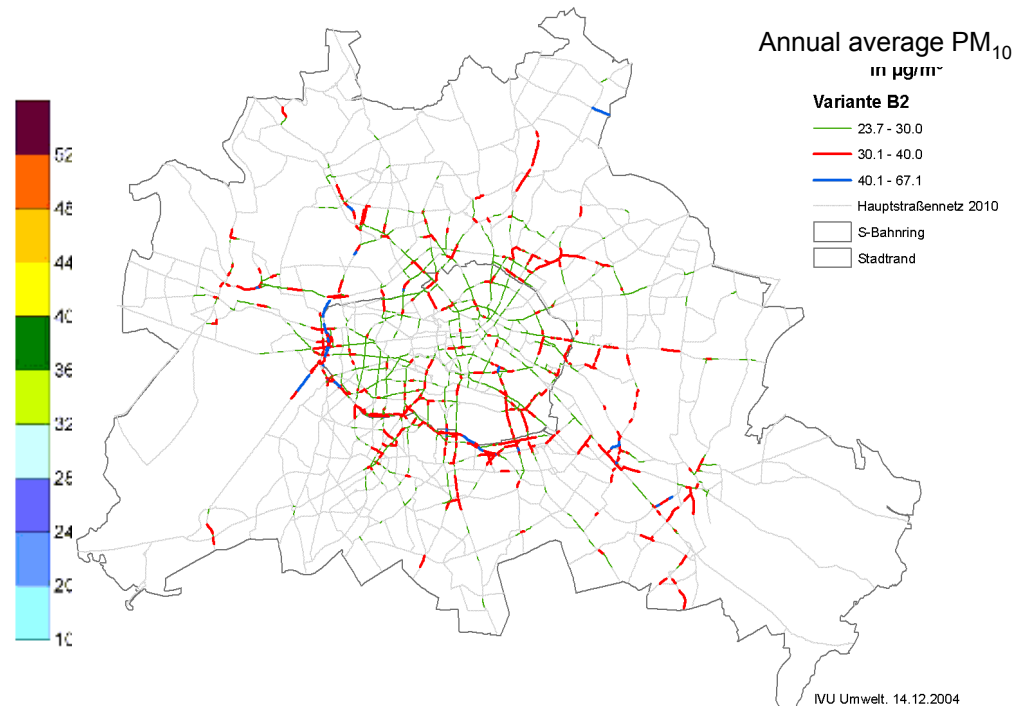
What could happen in 2010?

London NO₂ (LEZ, with Euro 4 NO_x)



19.4 km² > Limit Value
(compared with 40.5km²)

Berlin annual ave PM₁₀ (LEZ + traffic management)



remaining hot spots where local
traffic management is an option

Conclusion

- Action is needed to improve air quality in cities, for the health of city-dwellers
- There are many measures cities can take
- Need support from above
 - from EU, National Government etc.
- Can learn from each other
 - do not need to ‘re-invent the wheel’

Importantly, thanks to:

Martin Lutz & Annette Rauterberg-Wulff,
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Francaise de Sécurité Sanitaire Environnementale

Romain Launay, Drire, Ile de France

Greater London Authority, for whom I previously worked, and
source of the London information

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