NO2 atlas at: https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/urban-no2-atlas


European Commission
URBAN NO2 ATLAS
IMPROVING AIR QUALITY IN CITIES
Emission sources:
86%
of highest NO2 concentrations are measured close to roads
39%
Transport
18%
Energy production
13%
Commercial, institutional and households
30%
Other
NO2 is an air pollutant and is associated with
68000
premature deaths annually
How can the urban NO2 atlas help?

The urban atlas was created to analyse the contribution of different vehicle types to NO_2 concentrations.

Solutions for NO_2 reductions are **city specific**. However, when the local share of transport is important, contributions from vehicle types are on average as follows:



30
cities analysed

with transport representing up to

75%
of NOx emissions

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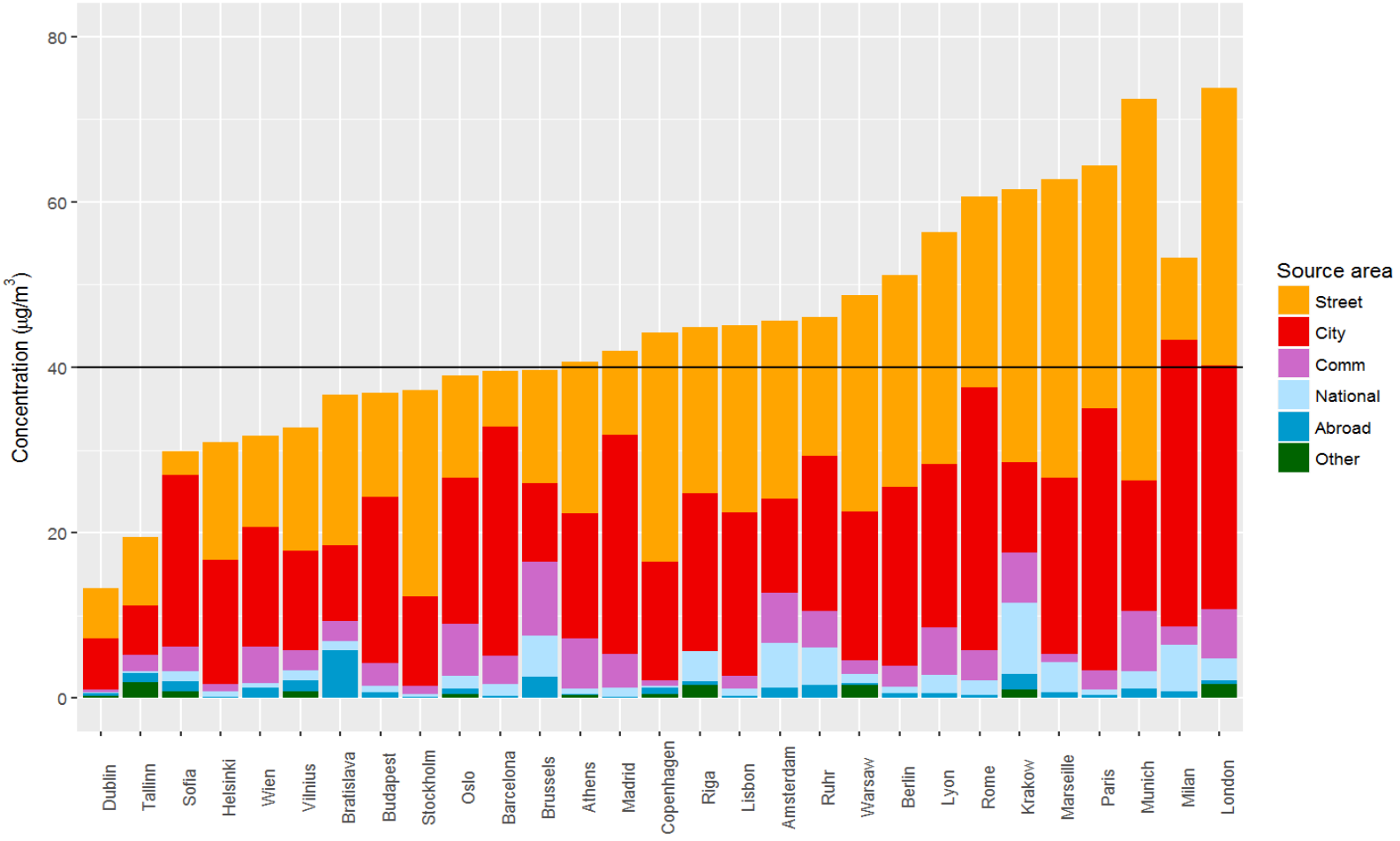


Joint
Research
Centre

European
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Modelling approach

SHERPA shows that the street and urban contributions are dominant ➔ urban areas can solve their NO_2 problem.



What cities can do

Introduction of a low emission zone (LEZ), typically a ban for older diesels and trucks.



Reduce the amount of traffic with a tax.

- Congestion charge in London
- Area C in Milan



Promote a modal shift to walking and cycling.

- ‘bike streets’, where cyclists have priority



But how to design these measures and assess their effectiveness?

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SHERPA-city

- A webtool accessible to everyone (https://integrated-assessment.jrc.ec.europa.eu/sherpacity)

- To improve user-friendliness:
  - A default road network with traffic flows is provided
  - Predefined vehicle fleets per country:
    - Current and future fleets
    - Typical LEZ fleets: i.e. no pre-Euro 4 diesels

- Fast calculation of concentrations with a kernel approach.
  - average concentration around a (1 kg/h) emission source
  - Depends on weather conditions (wind speed and direction)

Observations

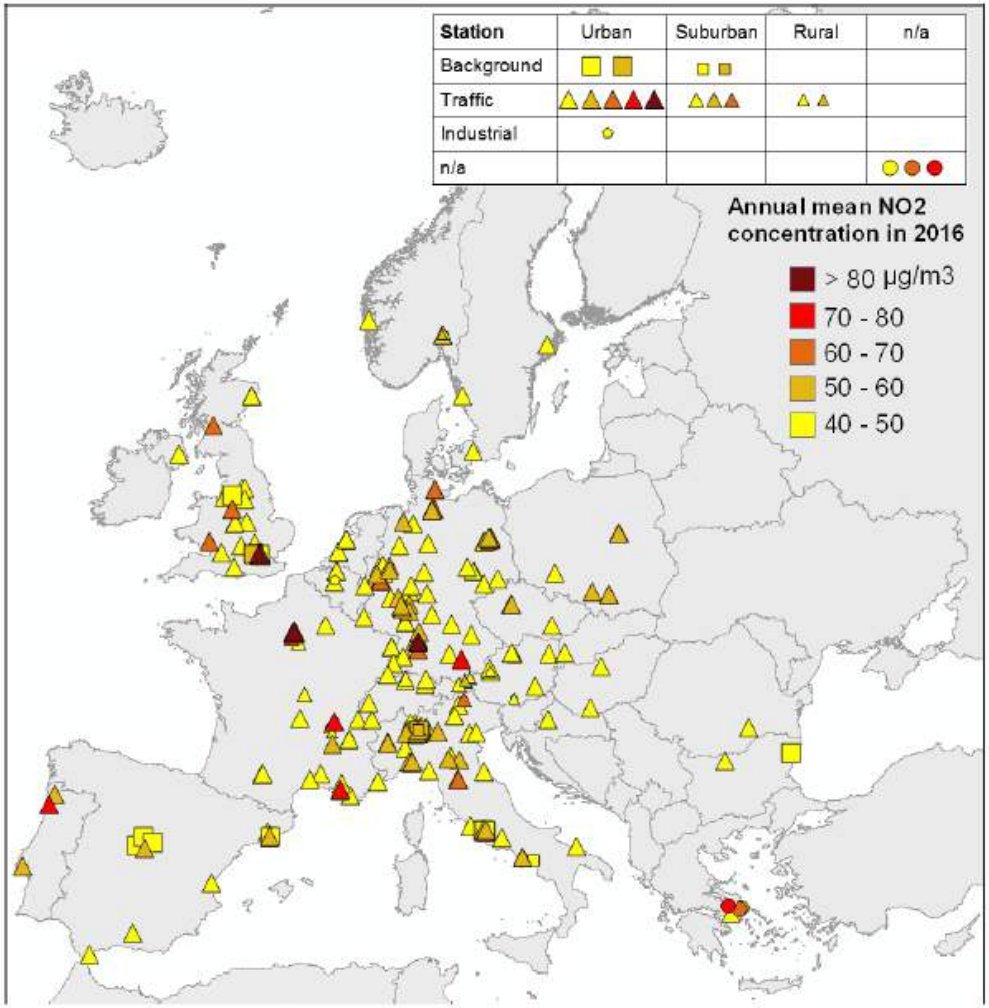


Figure 2: Annual mean observed NO_2 concentrations above the limit value of 40 µg/m³, by station type. Only stations with > 75% of valid data have been included in the map. (Source: JRC based on EEA data, 2018).

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Traffic share on total NOx

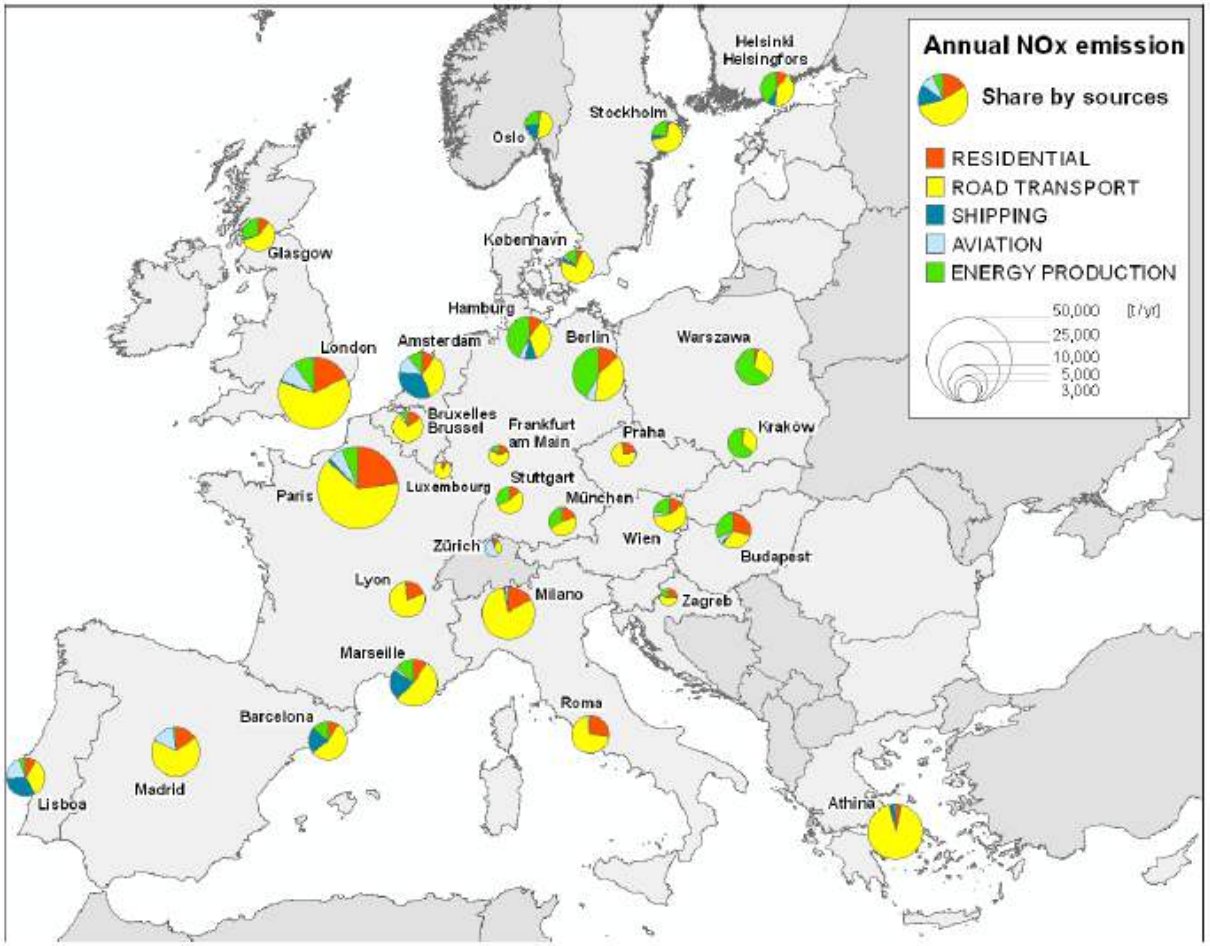


Figure 3: Sector share for NOx emissions, in 2015. (Source: JRC, analysis based on EMEP gridded emissions).

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NOx contributes to secondary PM

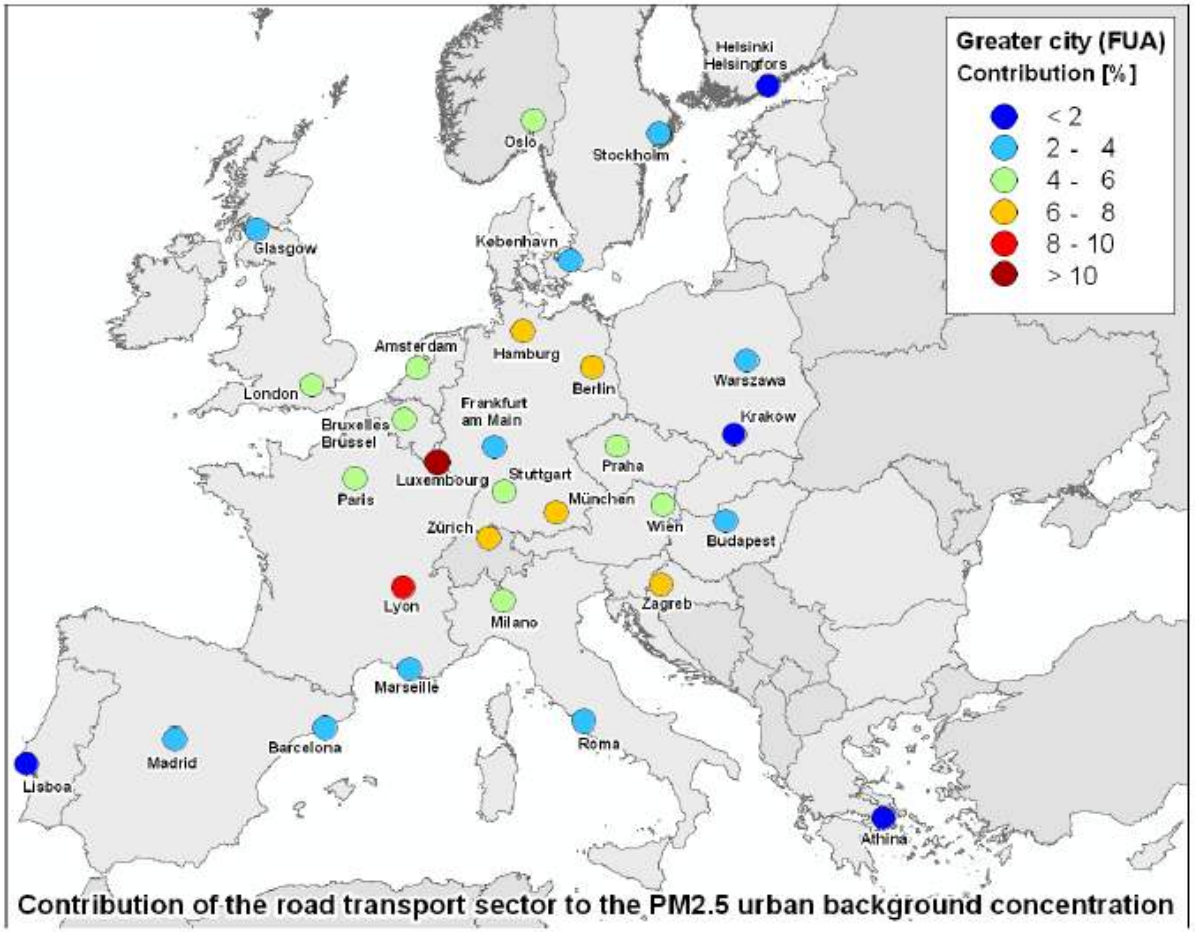


Figure 4: Contribution of the NOx road transport emissions to the PM2.5 urban background concentration (indirect effects). Each dot represents one of the 30 cities considered in this study (using the Functional Urban Area definition, as from OECD, 2012). Functional Urban Areas consist of the core city plus the wider commuting zone, defined as the surrounding travel-to-work areas where at least 15% of the employed residents work in the city.

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Diesel is the main issue

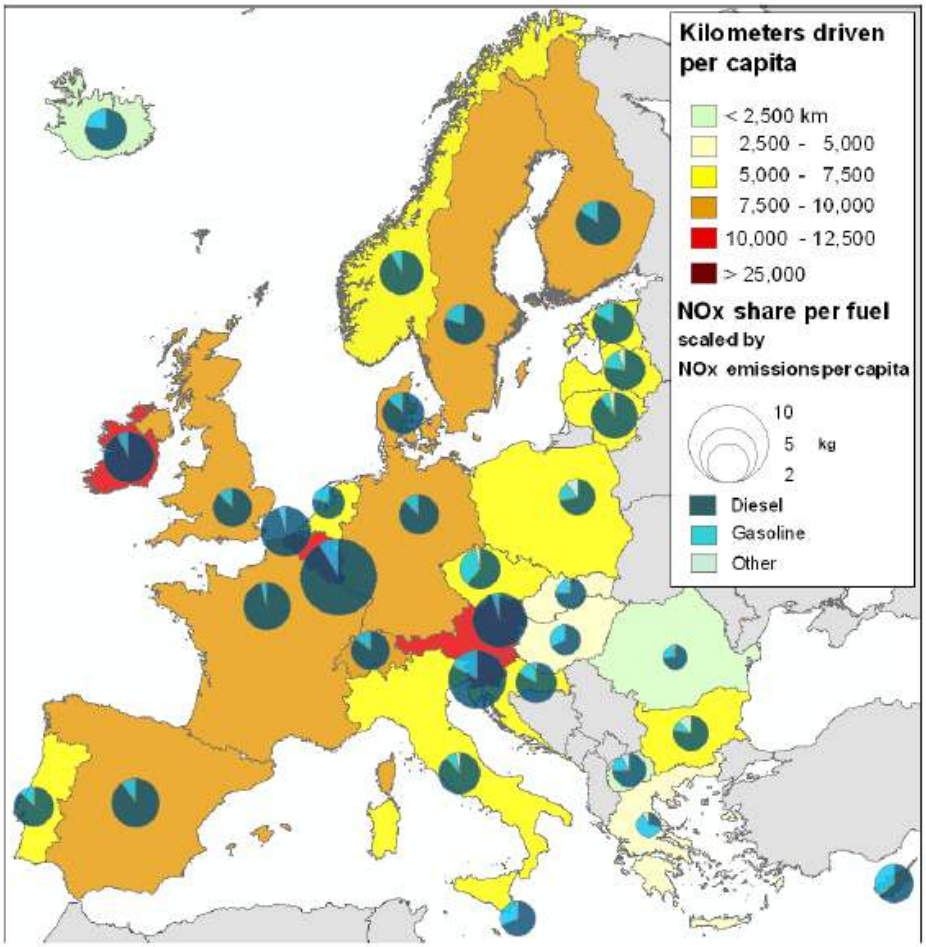


Figure 5: Country share of the NO_X emissions per type of fuel (diesel, gasoline and other), correlated with kilometers driven per capita (country shading).

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Euro standard in Europe

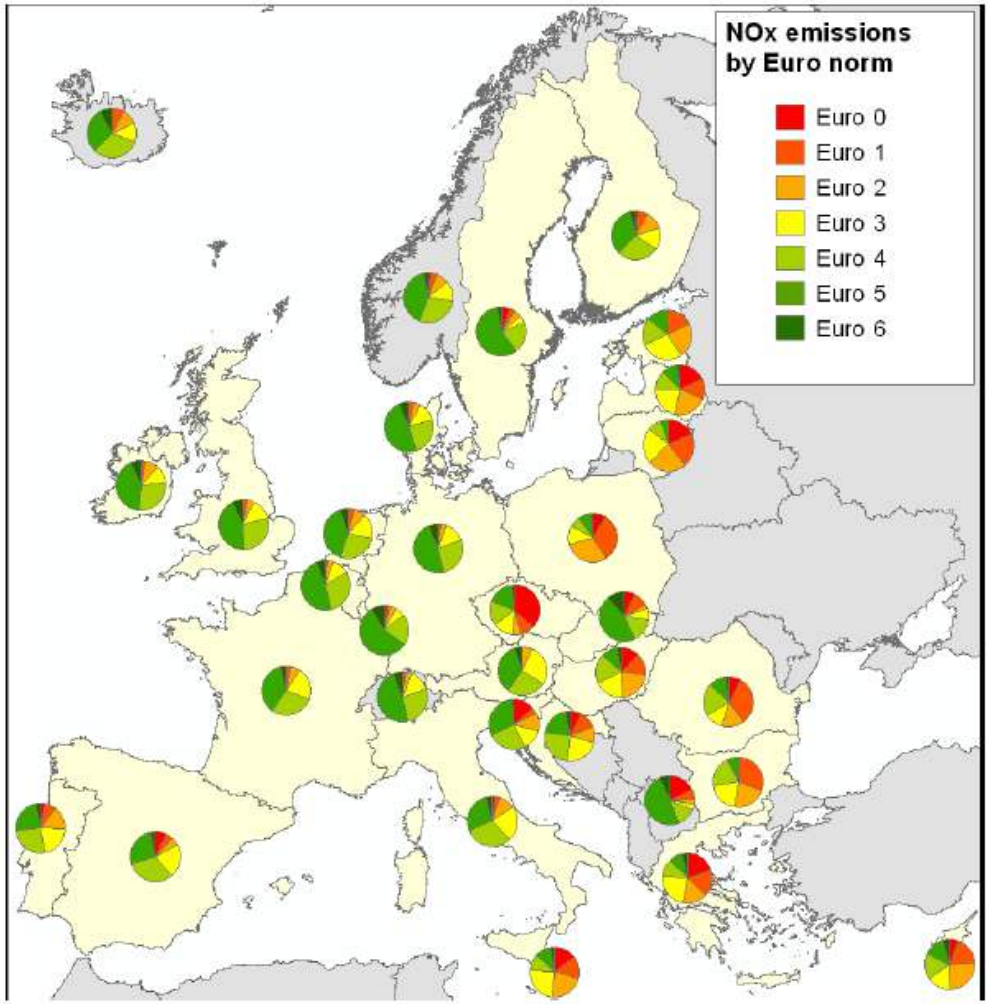
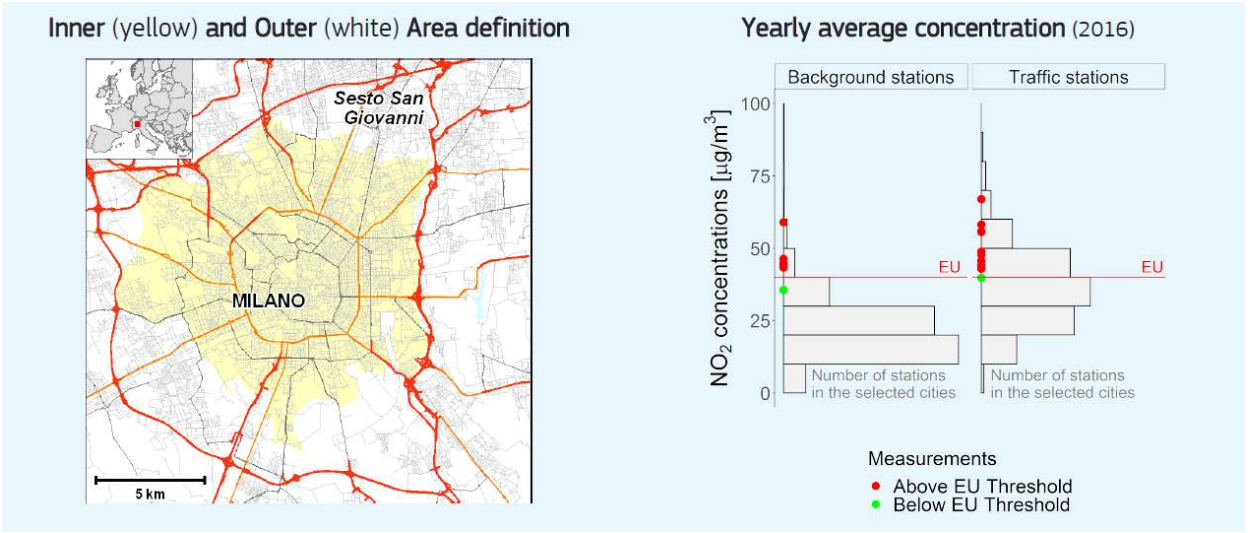
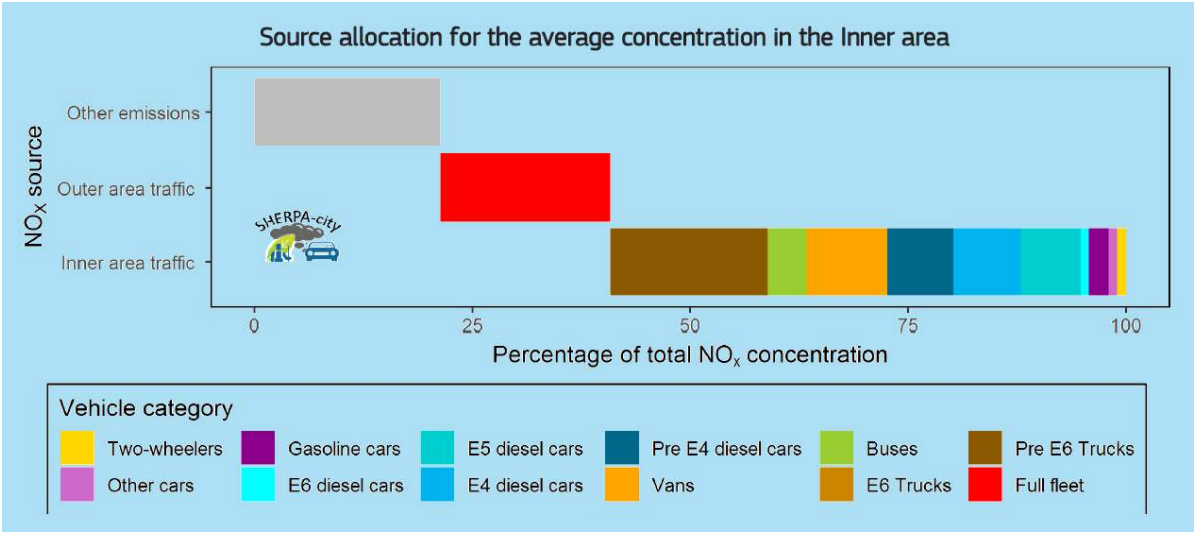


Figure 6: Country share of the NO_X emissions, by Euro norm.

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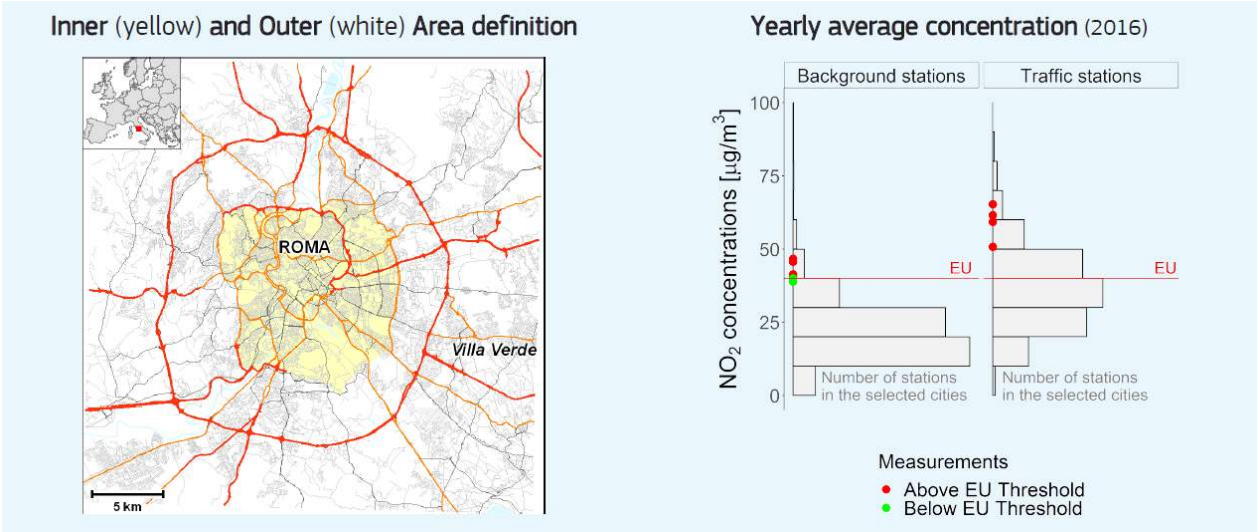
Milan results

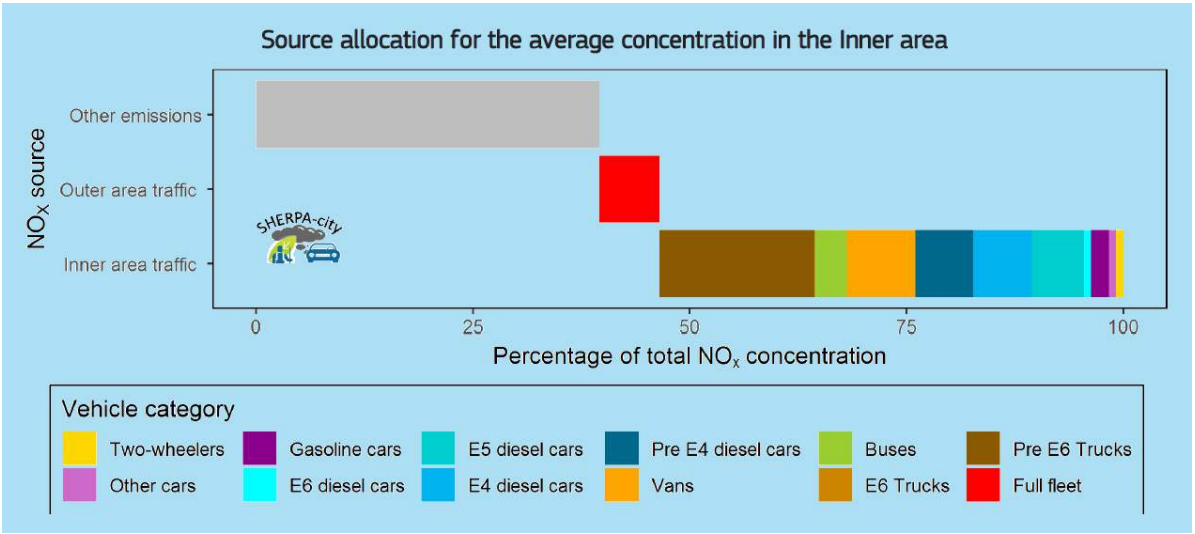




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Rome results





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Thank you



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