

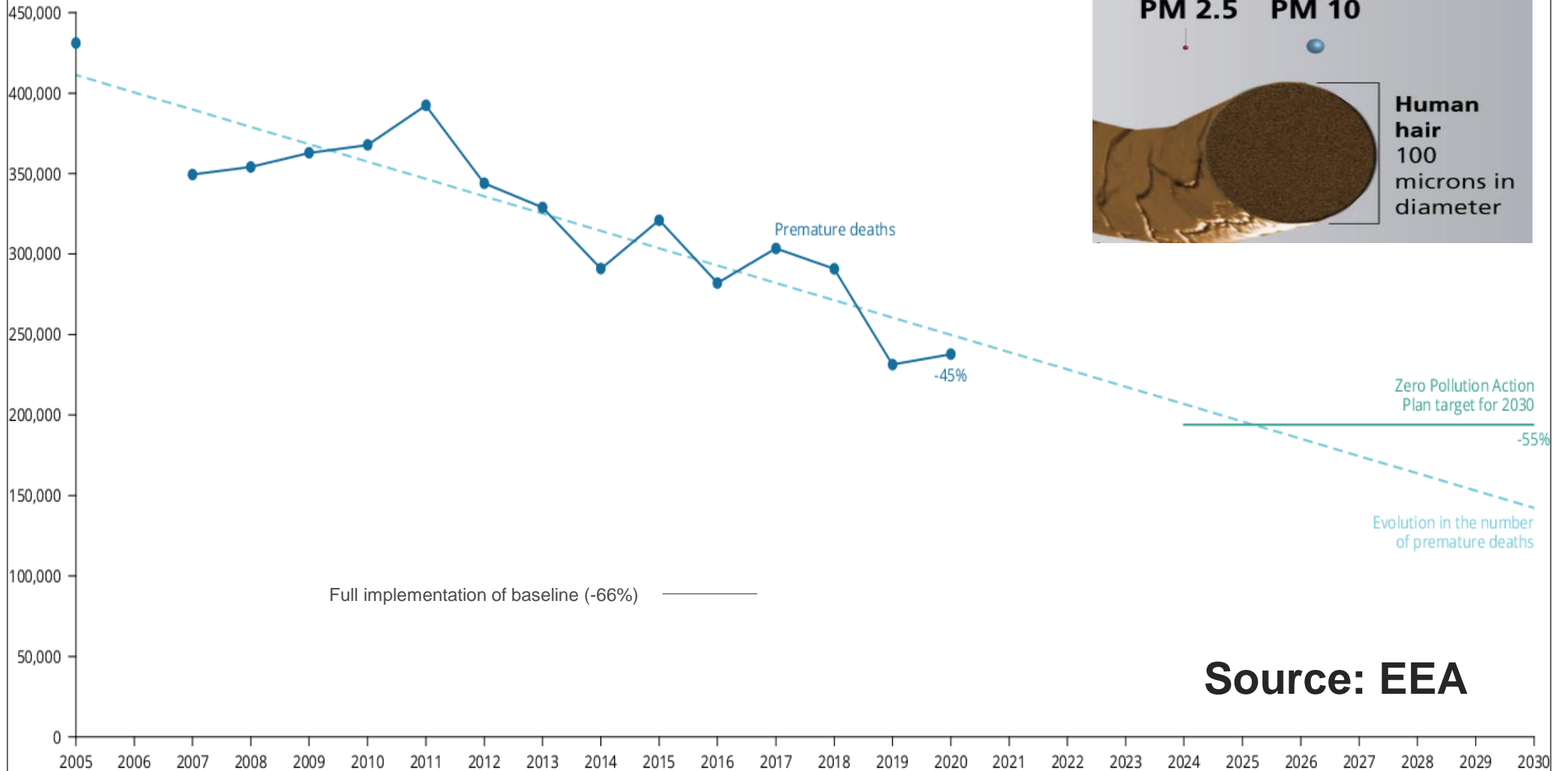


PM2.5 source allocation in 708 European cities: a modelling study

*Stefano Zauli Sajani, Philippe Thunis, Enrico Pisoni, Bertrand Bessagnet, **Fabio Monforti-Ferrario**, Alexander De Meij, Ferenc Pekar, Elisabetta Vignati*

Why PM2.5?

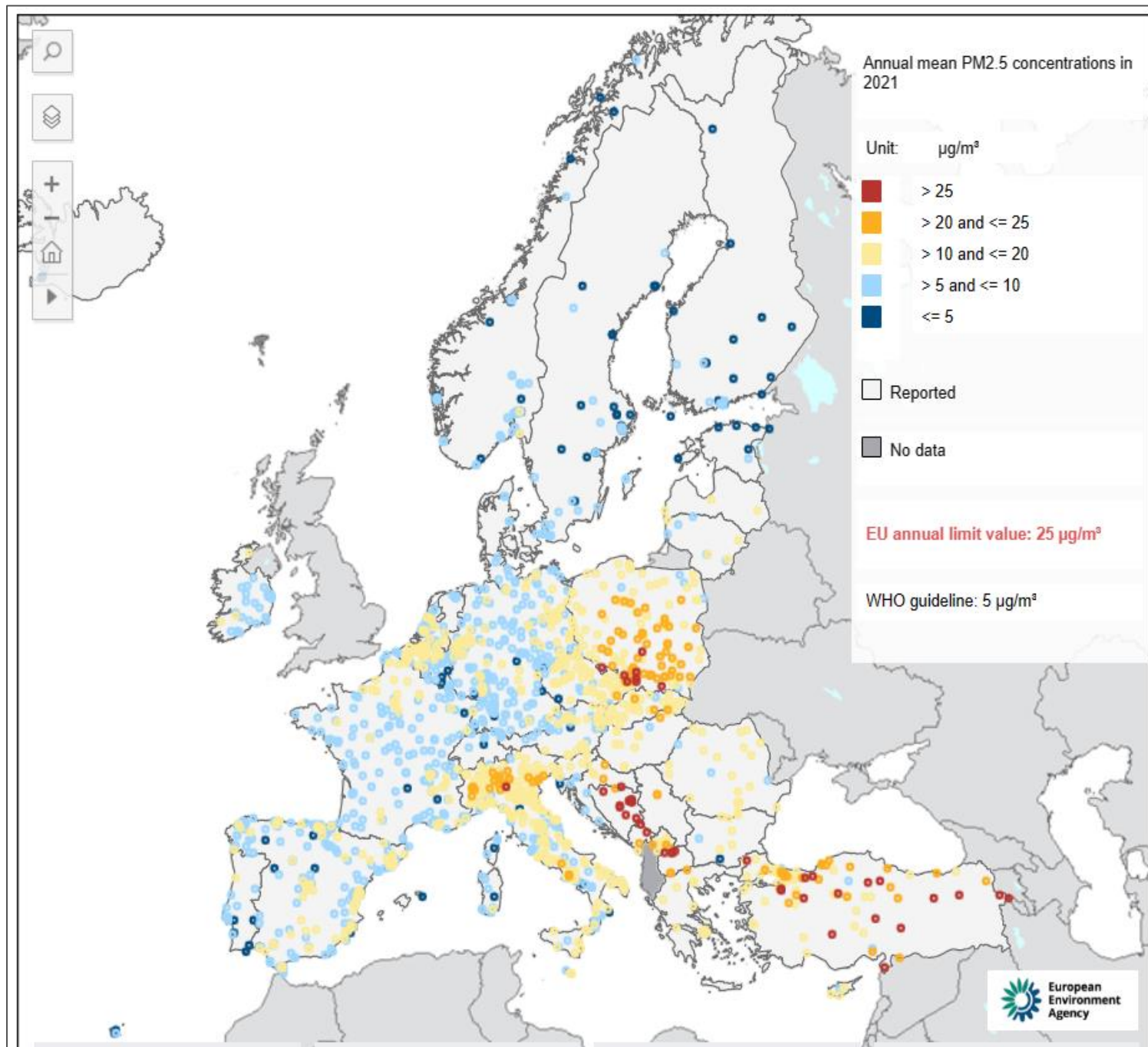
Number of premature deaths attributed to fine particulate matter



Why urban?



Share of the EU urban population exposed to air pollutant concentrations above the WHO guidelines ($5 \mu\text{m}^{-3}$) in 2021 (EEA, 2023)



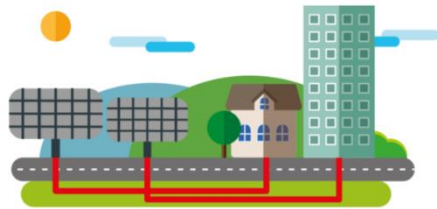
Why an atlas?



Boosting **energy efficiency** by refurbishing buildings



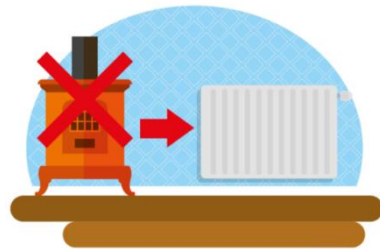
Reliable, affordable and clean **public transport** such as electric buses and trams and new Euro VI



City or district heating, using heat from existing industry or renewable energy sources

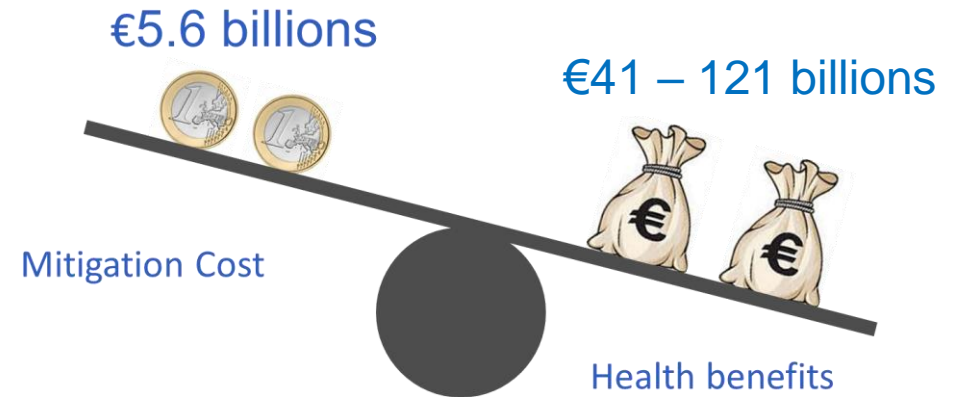


Implementing **cleaner industrial processes**



Promoting substitution of old, dirty **stoves and boilers** with clean models, and banning **dirty fuels for household heating/cooking**

Measures are known



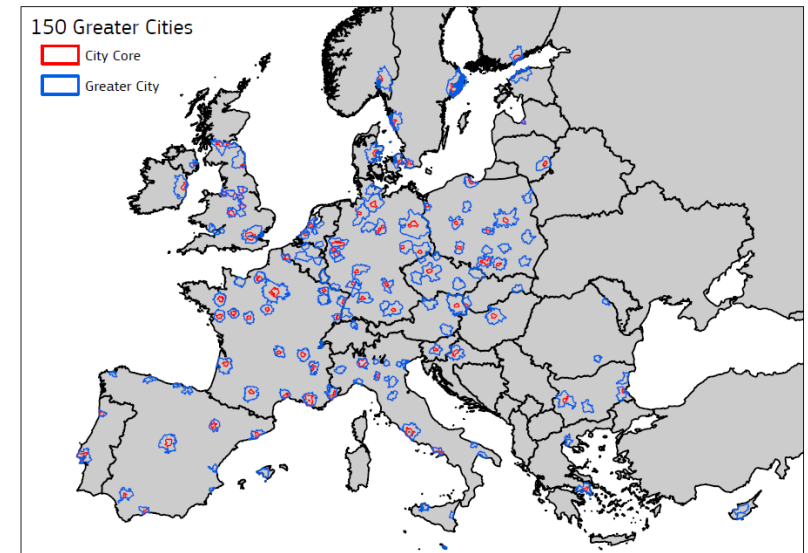
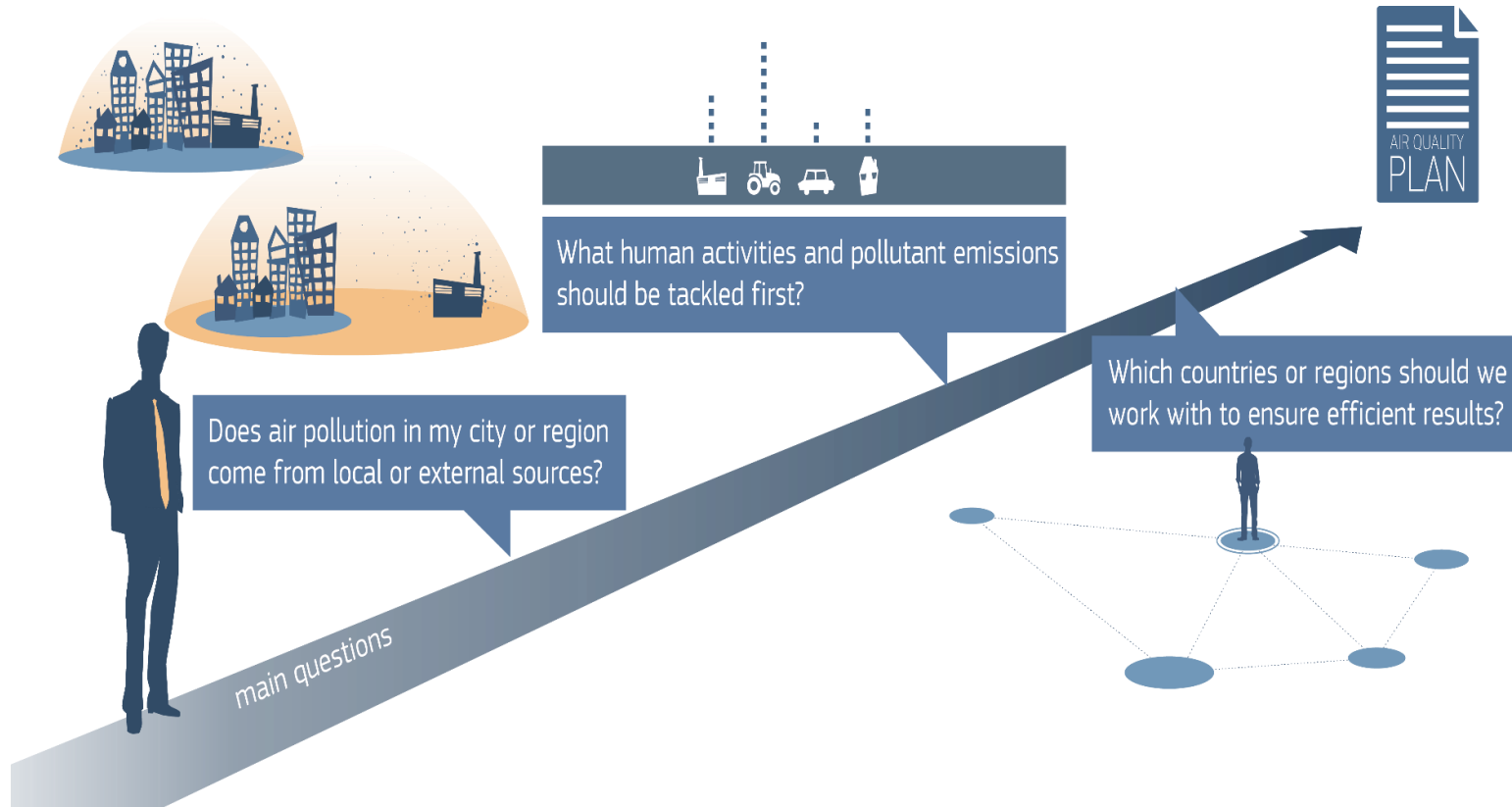
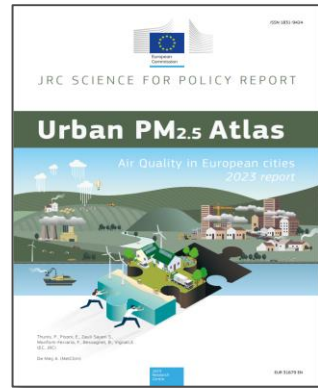
Ref: AAQD 2022 impact assessment

Their cost/benefit ratio is high

but which measure?
where?
at which scale?

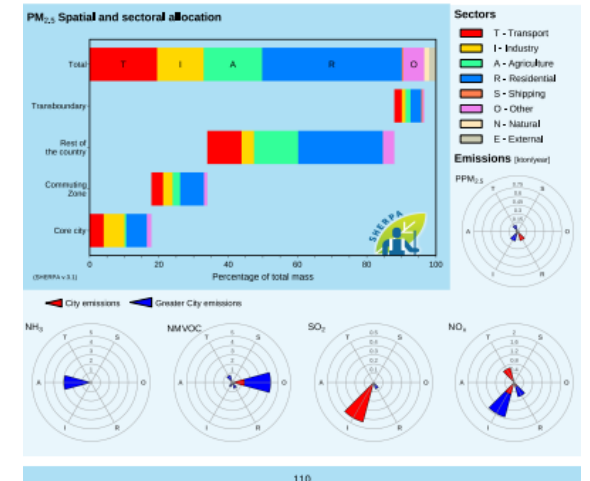
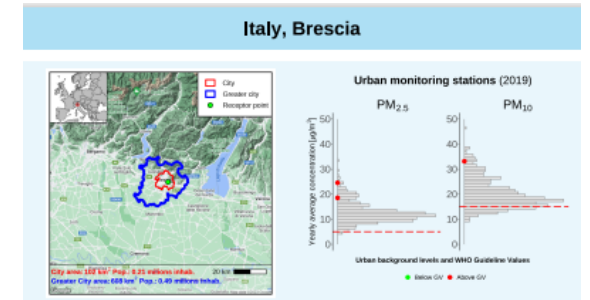
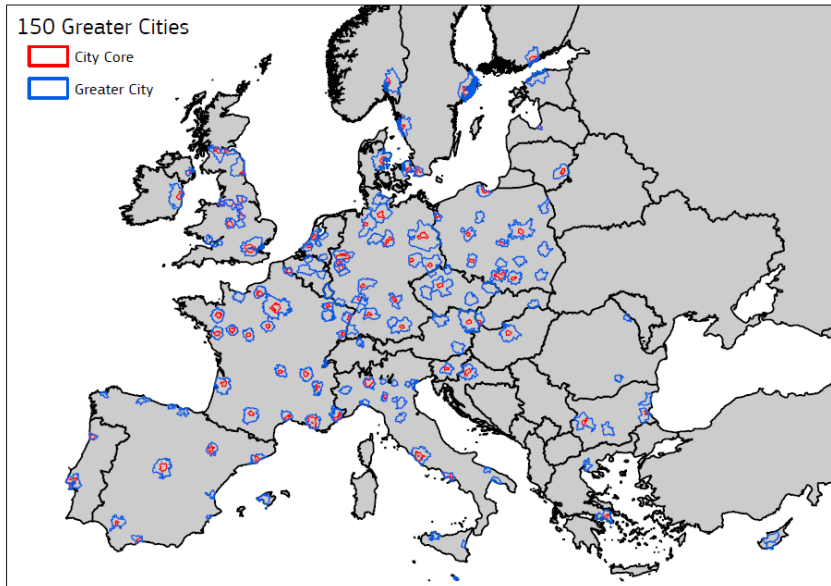
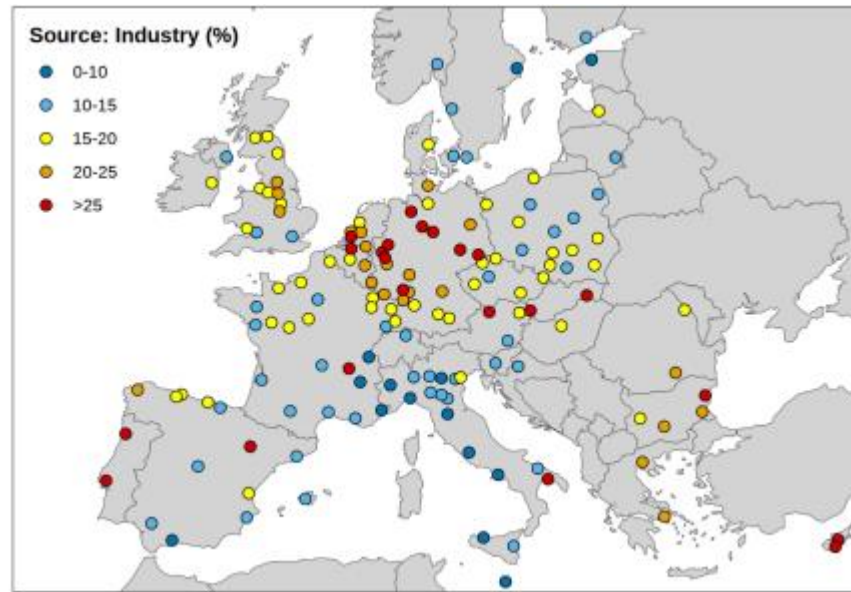
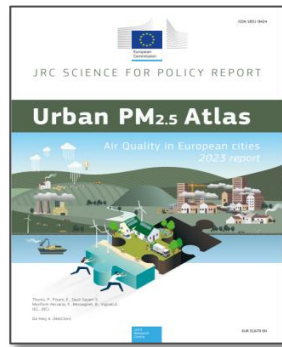
The JRC PM2.5 urban atlas

to help local/regional policy makers design their air quality plans



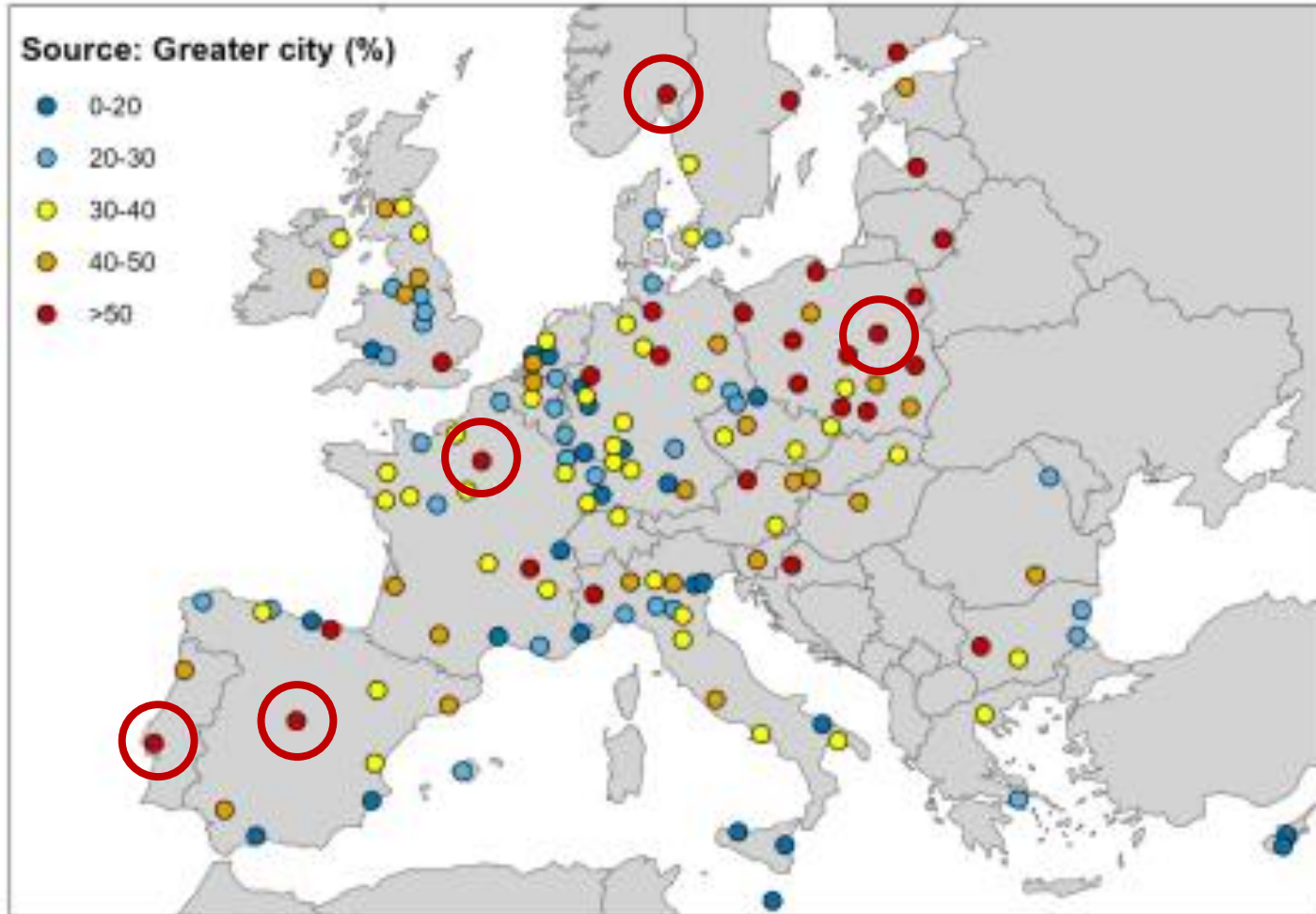
150 cities (atlas)
+
550 cities (online)

Two main visualisations



Atlas main findings

I - Local actions at the city scale are an effective means of improving air quality

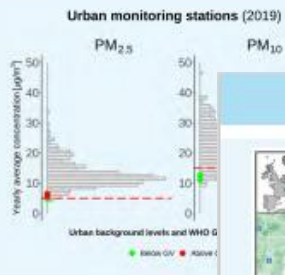


- In average cities (greater area) contribute to 36% of their pollution
- Oslo (75%), Warsaw (72%), Lisbon(68%), Paris (65%), Madrid (63%)

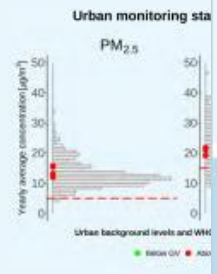


II - Target sectors and scales to abate air pollution are city specific

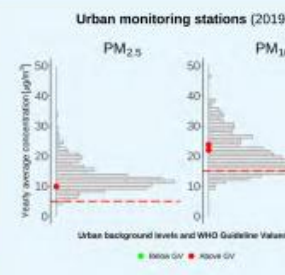
Sweden, Stockholm



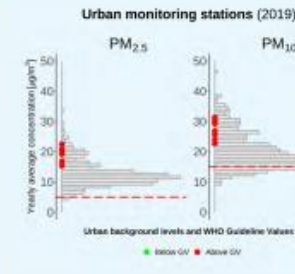
Slovakia, Bratislava



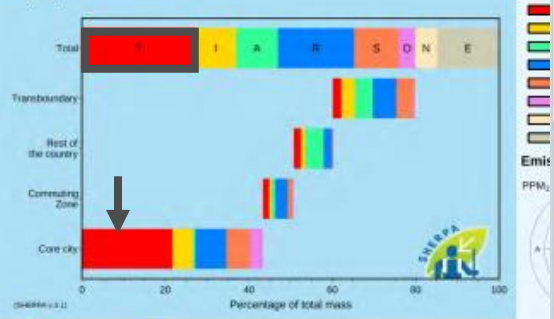
Spain, Málaga



Italy, Milano

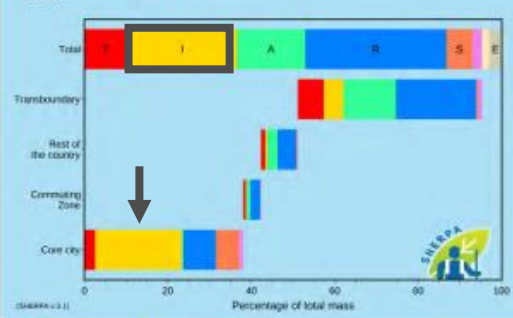


PM_{2.5} Spatial and sectoral allocation



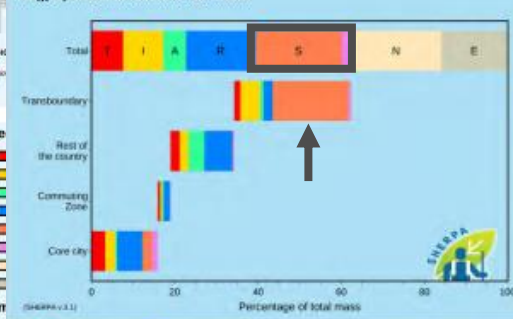
171

PM_{2.5} Spatial and sectoral allocation



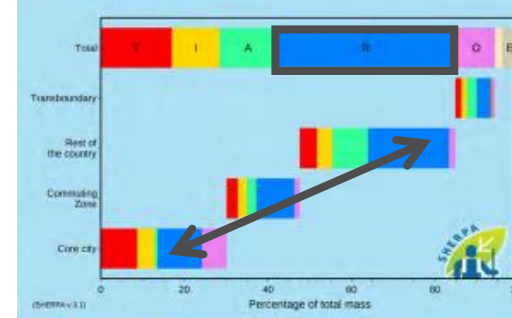
153

PM_{2.5} Spatial and sectoral allocation



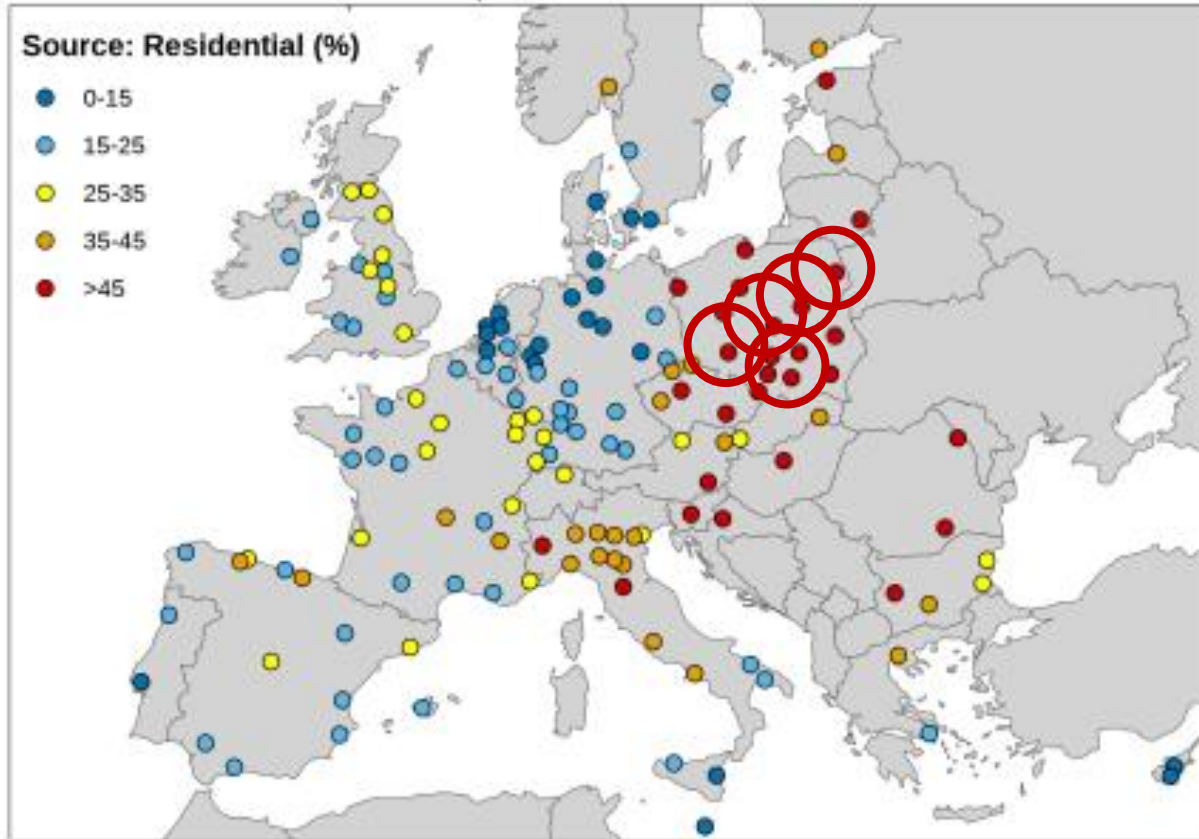
162

PM_{2.5} Spatial and sectoral allocation



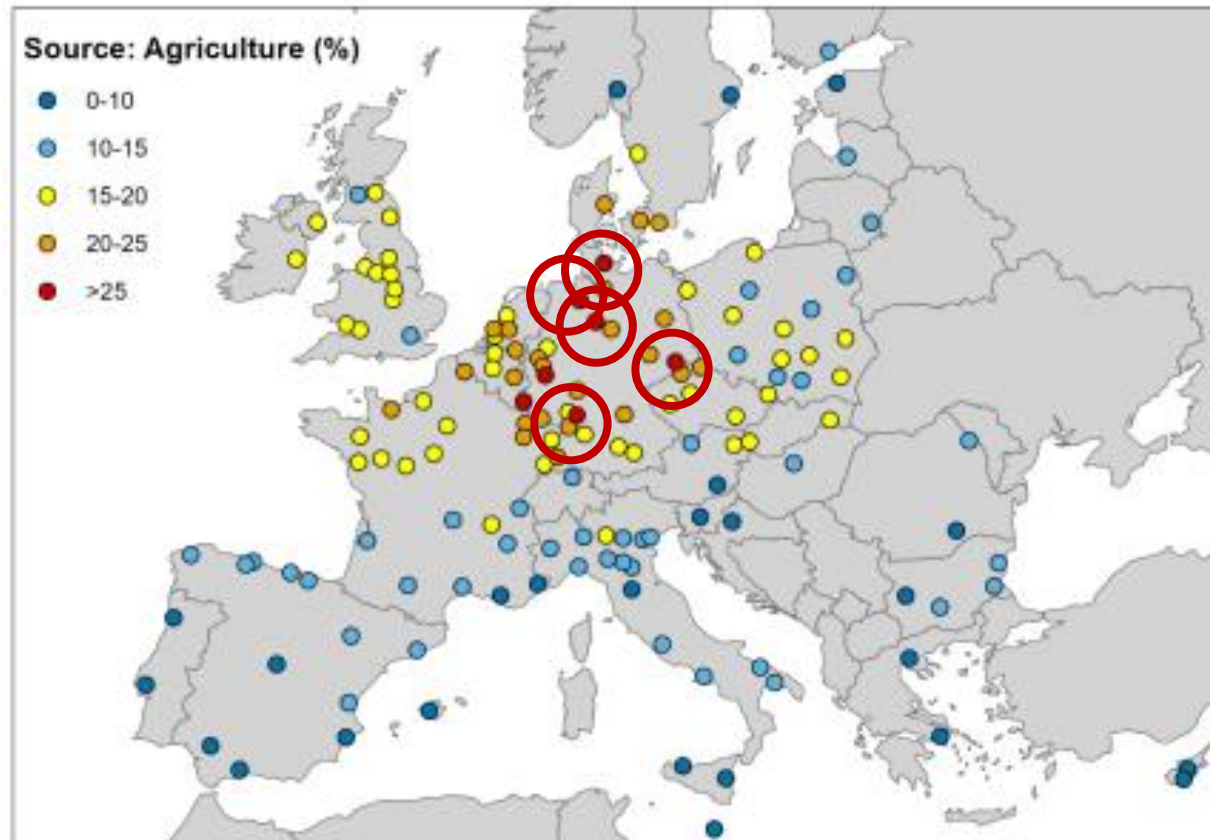
114

III - Measures addressing residential heating at the local level would be very effective



- In average 30% of the PM2.5 pollution in cities originate from residential emissions
- Warszawa (64%), Krakow (63%), Wroclaw (60%), Lodz (59%), Bialystok (59%)

IV - Measures addressing agriculture at country/EU scale would clearly benefit urban AQ



- In average 15% of the PM2.5 pollution in cities originate from agriculture emissions
- Kiel (28%), Hannover (27%), Heidelberg (27%), Dresden (27%), Bremen (26%)



Our users

The Atlas was designed for (but not only for):

- Local administrators preparing actions (also in climate mitigation)
- Regional administrators coordinating basin policies
- National authorities setting up longer term strategies
- European policy makers
- Informed and active citizens
- Air quality scientists looking for further benchmarks

Technical details and outlook

The Atlas was developed with SHERPA online tool

- <https://aqm.jrc.ec.europa.eu/Section/Sherpa/Background>
- <https://jeodpp.jrc.ec.europa.eu/eu/dashboard/voila/render/SHERPA/Sherpa.ipynb>

Base year: 2019

regular updates expected every second year)

Tomorrow @ 9.10 in room E2.



Thanks!



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