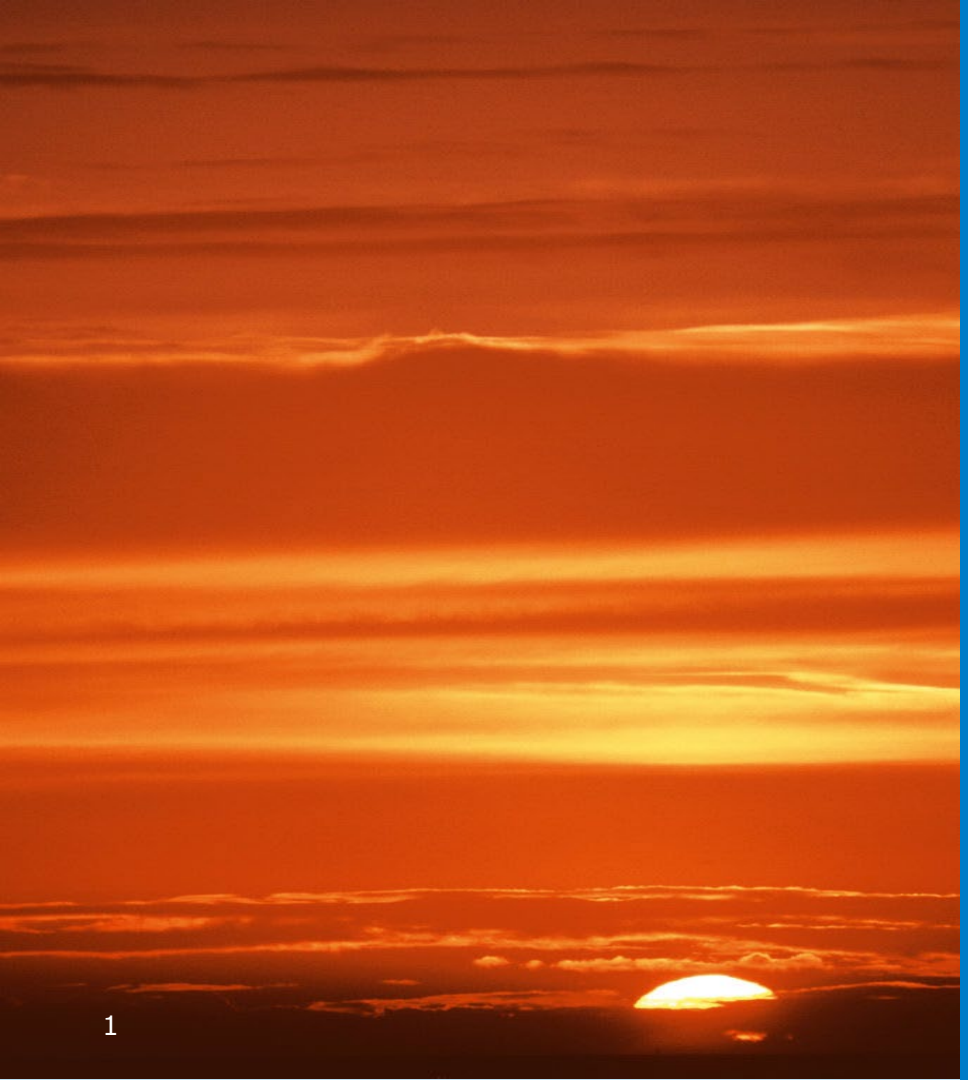


EPCAC – Expert Panel on Clean Air in Cities

Status and Position paper

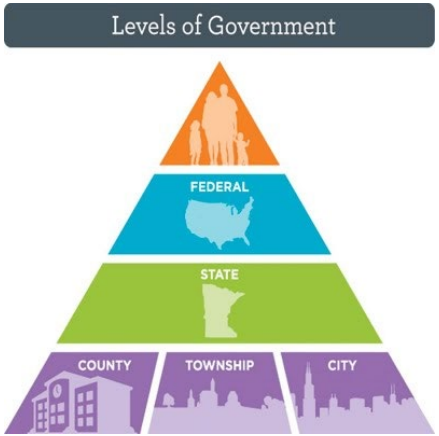
Co-chairs:

- **Martine Ouwersloot**, Ministry of Infrastructure and Water management, Netherlands
- **Guus Velders**, RIVM, Netherlands

Key questions

EPCAC: Adopted by the Executive Body of the UNECE Air Convention, Dec 14, 2018

- **Which actions** at **which government level** are most effective to reduce health effects?
- Can we say more about the (**cost-) effectiveness** of measures at different government levels?
- What **knowledge** should be improved for robust policy advice?



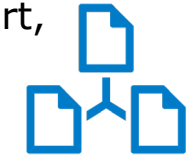
Summary of Position Paper

Goal: Provide cities with options to improve their air quality

- Sources of air pollution differ per city and pollutant ➔ Tools: GAINS, Sherpa, …

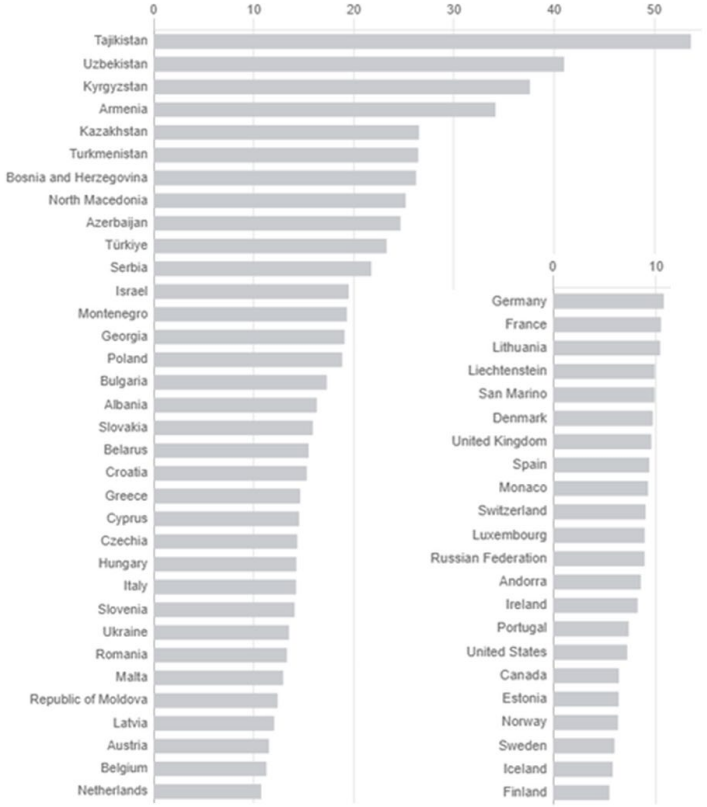
- Many sources outside the city ➔ Collaboration at regional, national and international level necessary

- Synergies between policies are needed: Climate, Transport, Air quality



Air quality in cities

Measured annual mean $PM_{2.5}$ (population weighted, µg/m³) in 2019



Already significant reductions in urban air pollution

Still largest environmental threat to public health globally

Large differences between cities:

- Closely connected cities
- Cities in industrial areas
- … in rural areas
- … in mountains

(UNECE, 2024)

Air quality in cities: key elements

- Cities contribution to **their own pollution**: NO_2 (dominant), PM (often significant)
- Significant pollution from **outside the city**
- Pollutants from cities transported over long distances ➔ **background air pollution**

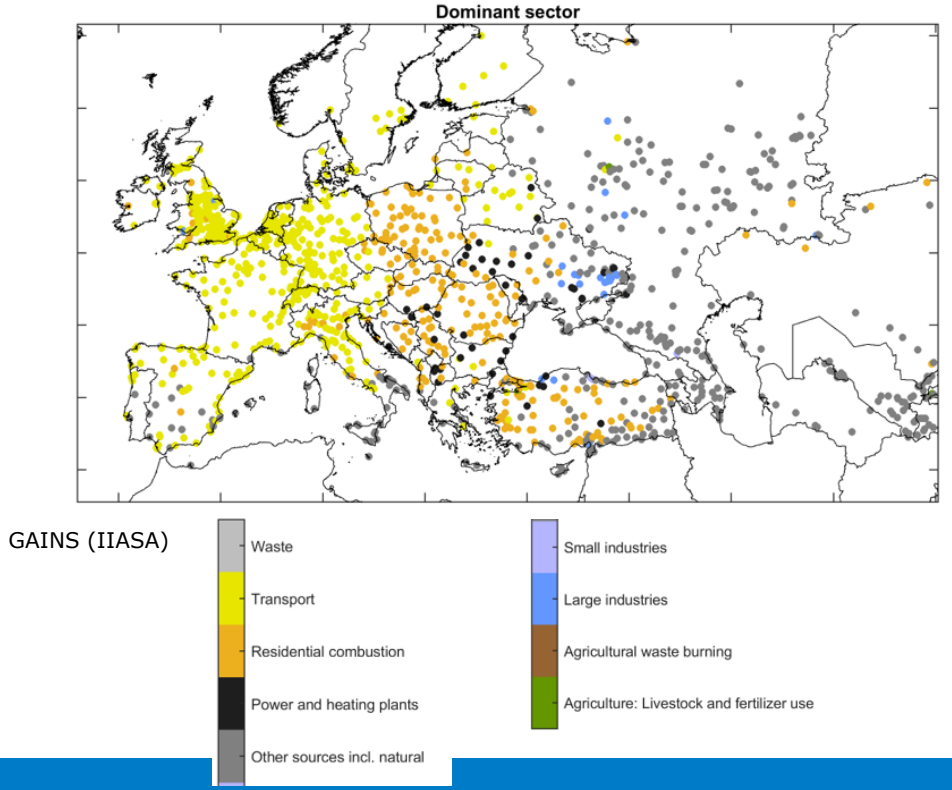
- Local measures essential when local contribution is high; achieving WHO guidelines require **actions are various levels**
- Largest benefits for public health by **reductions in population exposure**
- Many measures that offer **win-win solutions** to objectives in other policy areas (energy, health, urban planning)

Tools: Sources of air pollution: GAINS

- Central and Eastern European countries: residential combustion dominant

- Western Europe: transport

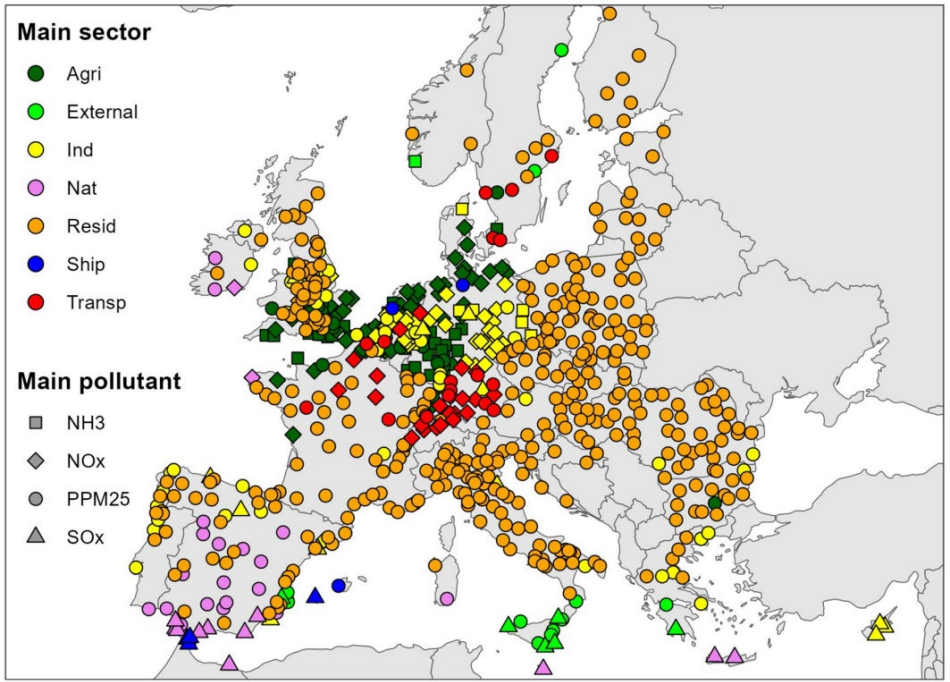
Main emission sector contributing to $PM_{2.5}$



Tools: Sources of air pollution: JRC atlas (SHERPA)

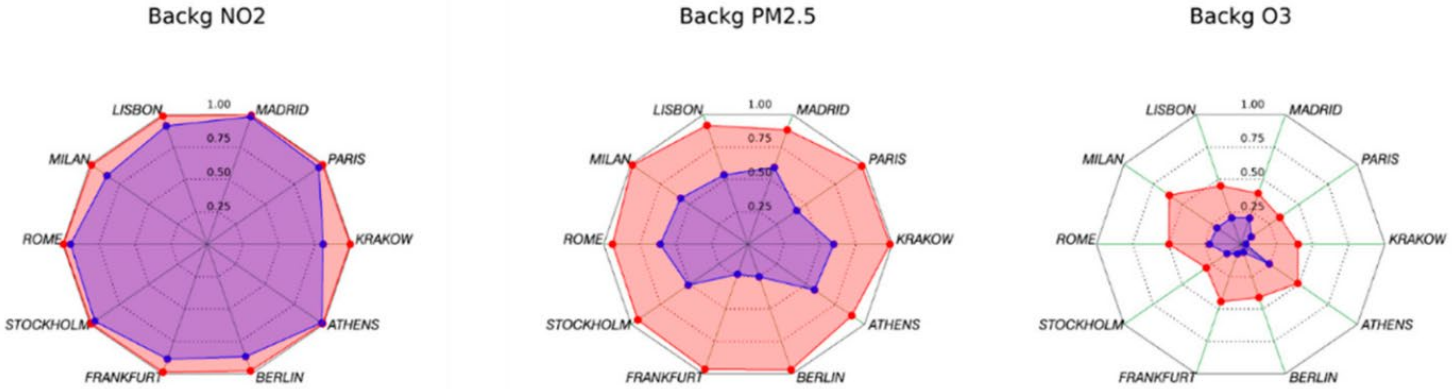
- Central and Eastern European countries: residential combustion dominant
- Western Europe: residential
- Benelux, western Germany: agriculture
- Differences SHERPA and GAINS:
  - Model setup
  - Inventory emissions
  - Year of calculation
  - Only most important sectors shown

Main emission sector contributing to $PM_{2.5}$



JRC atlas, Zauli-Sajani et al. (2024)

City (blue) versus EU reductions (red)



Annually averaged NO_2, $PM_{2.5}$, and summertime daily 8-hour maximum of ozone

Pisoni et al., (2022)

$PM_{2.5}$: Measures needed on all spatial scales

NO_2: Exposure reduction almost entirely by local measures

Ozone: Strong focus on large-scale measures (also outside of Europe)

But, to what extent do urban measures require regulatory/financial support from national governments (or EU)

Wide range of measures exists

- Most effective combination depends on local conditions and distribution of sources
- Local authorities are main actor, but collaboration across all levels of governments is essential for effective implementation
- Coherence between policy areas is essential: air quality, climate/energy action
- To maximise health benefits, measures with a city-wide effect should receive more focus than hot-spot measures

- Regional/national/larger level ➔ (inter)national collaboration

- Agriculture: Controlling ammonia from livestock, manure management/storage and fertilizer ➔ essential to reduce $PM_{2.5}$ exposure in cities

Next steps EPCAC

Policy: Maintain, strengthen network of experts and policy makers

- **Focus on cities**: Eurocities, Governance of Mayors

Science: Continue work on model comparisons

- Differences in source attribution and emission reductions: EMEP/GAINS, JRC/Sherpa, Chimere, local/national modelling experiences
- Connections with TFMM, TFH, HTAP

Meeting: Annual EPCAC meeting, next in (fall) 2026

Report: Annually to TFIAM on progress

Thank you

Position paper:
https://iiasa.ac.at/sites/default/files/2024-12/EPCAC_Position_Paper_27nov2024.pdf

Presentations and summary previous meeting:
https://iiasa.ac.at/web/home/research/researchPrograms/air/policy/TFIAM.html