

Air Quality and Health in Southeastern Europe to Inform Policy Action

Brussels Meeting on Air Pollution and Health: Taking stock of the proposed revision to the Ambient Air Quality Directive

Brussels | May 24, 2023

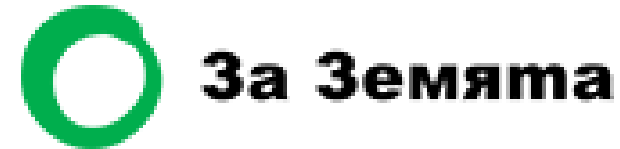
Pallavi Pant, PhD
Health Effects Institute
ppant@healtheffects.org

STATE OF
GLOBAL AIR

Thank you to our collaborators

Medical University Plovdiv, Bulgaria

Dr. Angel Dzhambov



University of Novi Sad, Serbia

Dr. Nataša Dragic



Dr. Elizabet Paunovic



Dr. Michal Krzyzanowski

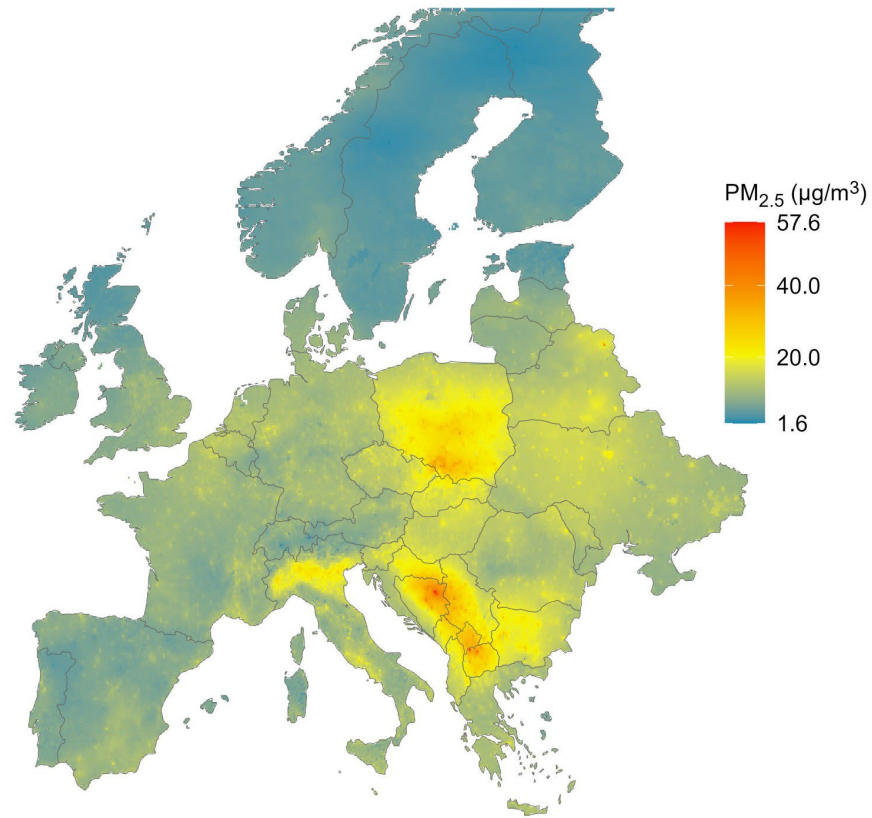
Key messages

There are huge disparities in exposure to air pollution and associated health impacts across Europe.

(Local) evidence on health effects of air pollution in Southeast Europe is limited but growing.

Need for further mobilization as well as targeted, bold action on clean air at regional, national, and local levels.

Air pollution's contribution to disease is not borne equally across Europe

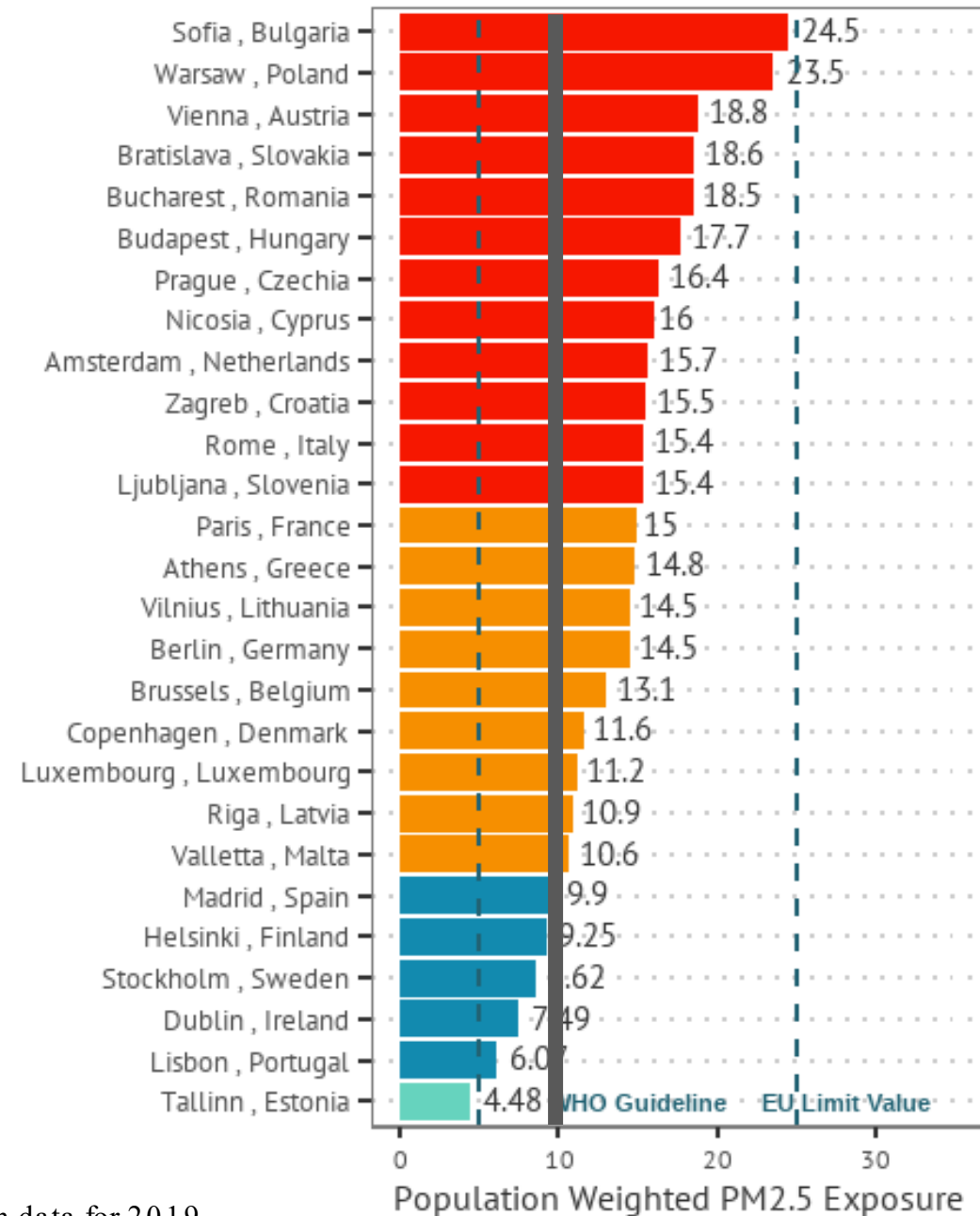


More than 95% of the population in the region in areas where the PM_{2.5} exposures exceed the WHO guideline for healthy air (5 µg/m³);

~70% live in areas that don't meet the current EU Limit Value (25 µg/m³)

Sofia has the highest average $PM_{2.5}$ exposure among capital cities in the EU

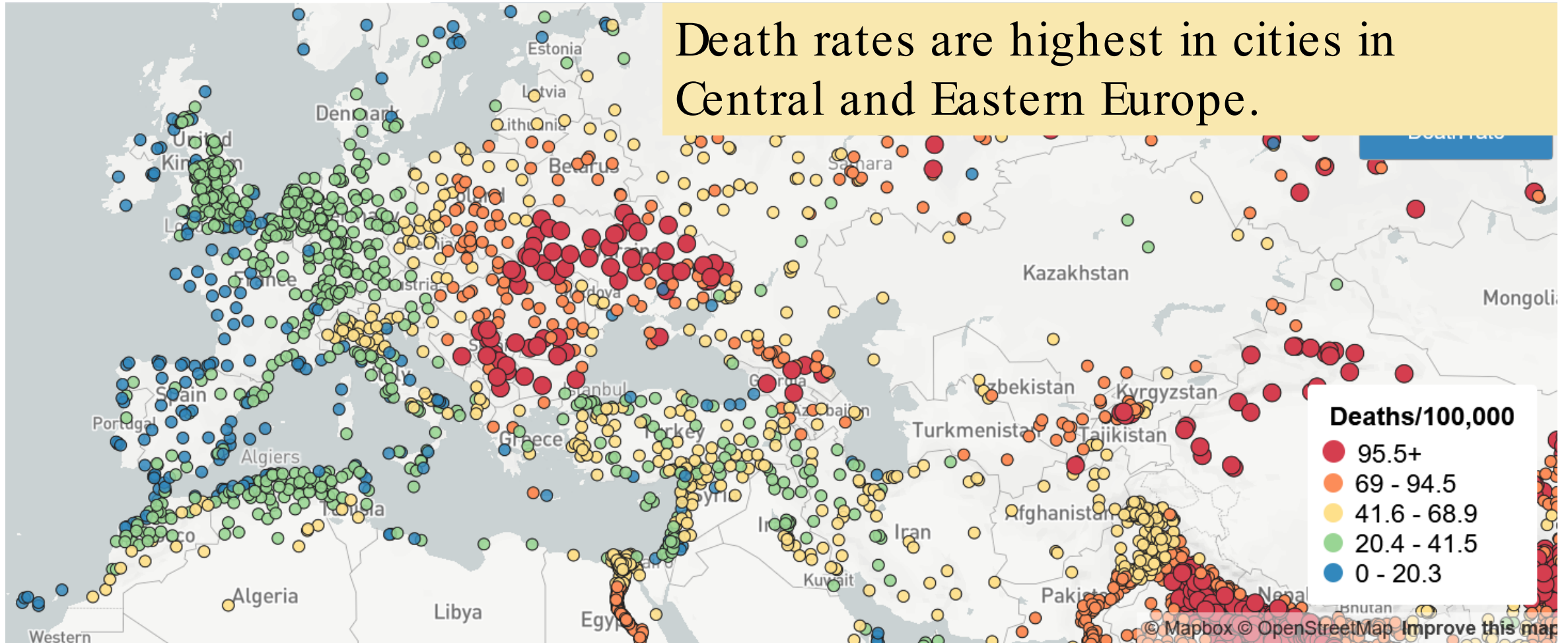
Annual Average $PM_{2.5}$ Exposure in Capital Cities in the EU



Based on data for 2019

Stark differences in health impacts linked to air pollution across the EU

Death rates are highest in cities in Central and Eastern Europe.



What does evidence from the region tell us?

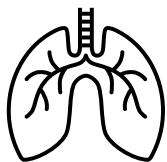


Increases in respiratory, cardiovascular, gastrointestinal, and neurological disease-related outpatient and hospital emergency services in Bulgaria (Simidchiev et al 2020), more patients were admitted for stroke on days when ozone levels are higher (Knezovic et al 2018)



positive associations between type 2 diabetes and PM_{2.5} and polycyclic aromatic hydrocarbons (PAHs) (Dzhambov and Dimitrova 2016)

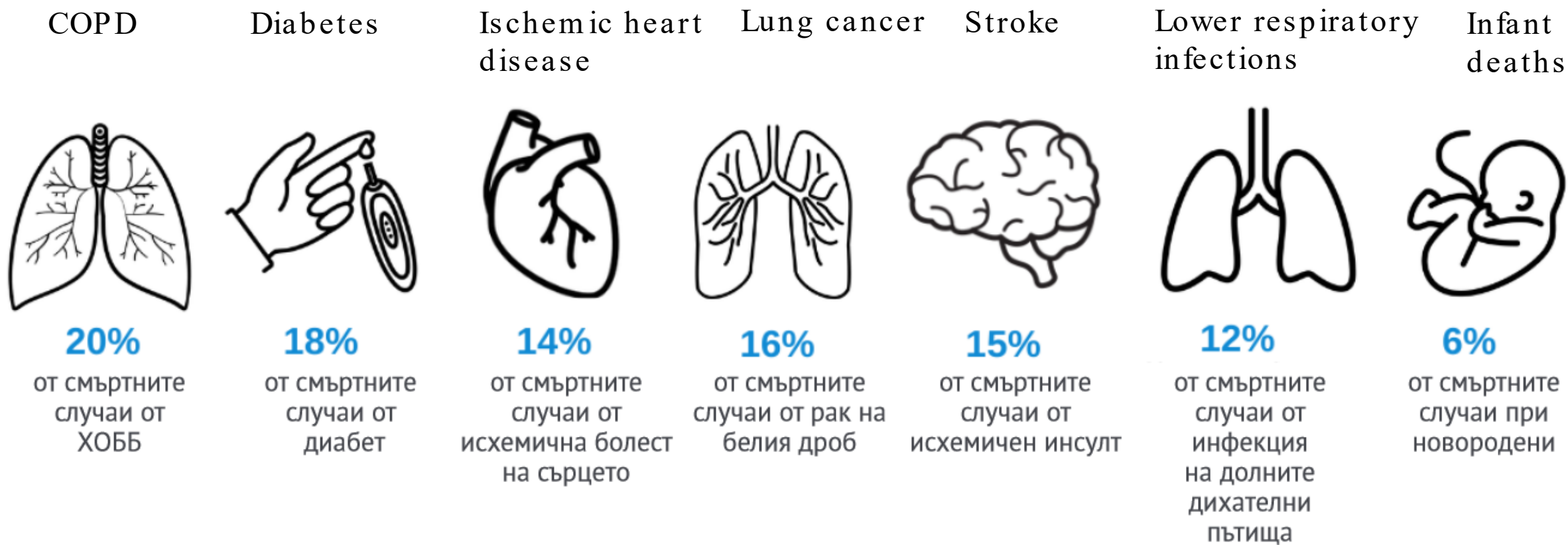
correlation between acute COPD aggravations and average PM₁₀ in the previous six days (Krachunov et al 2017)



association between higher PM₁₀ and COPD exacerbation and longer hospitalizations (Doneva et al 2019)

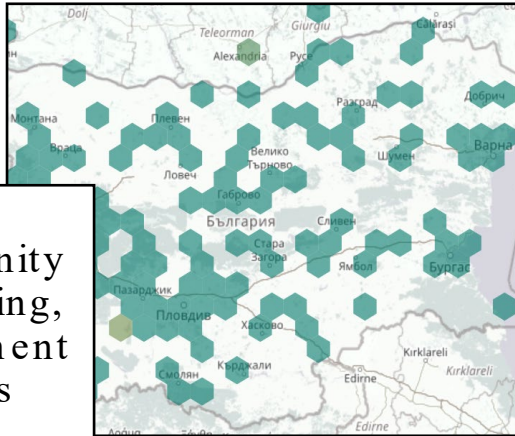
increased ambient concentrations of polycyclic aromatic hydrocarbons increased risk of lifetime lung cancer, especially during heating season (Radonic et al 2017)

Процент от смъртните случаи (по причина), свързани със замърсяването на въздуха в България през 2019 г



Various efforts are underway to improve air quality

Community monitoring, engagement efforts



Low emissions zone in Sofia



Engaging medical experts, health policymakers



Expanding public engagement on air quality and health



Community monitoring of nitrogen dioxide- various cities in the EU



Targeted campaigns on air quality during the 'pollution' or 'heating' season- Western Balkans

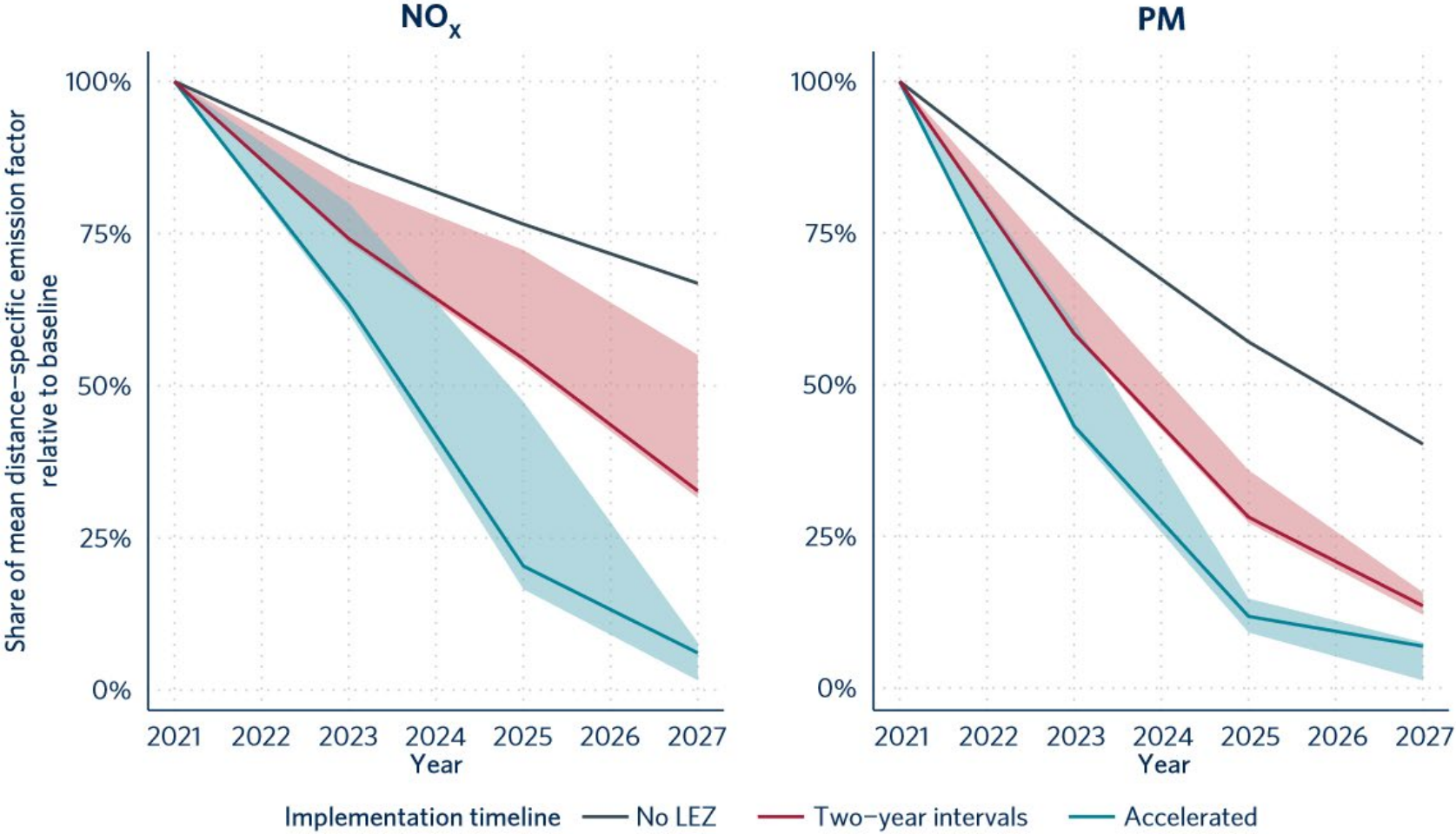
Nudging for clean air action – Skopje, North Macedonia

<https://www.balkanfund.org/general-news/laying-all-cards-about-air-quality-on-the-table>

<https://www.duh.de/no2airpollution/>

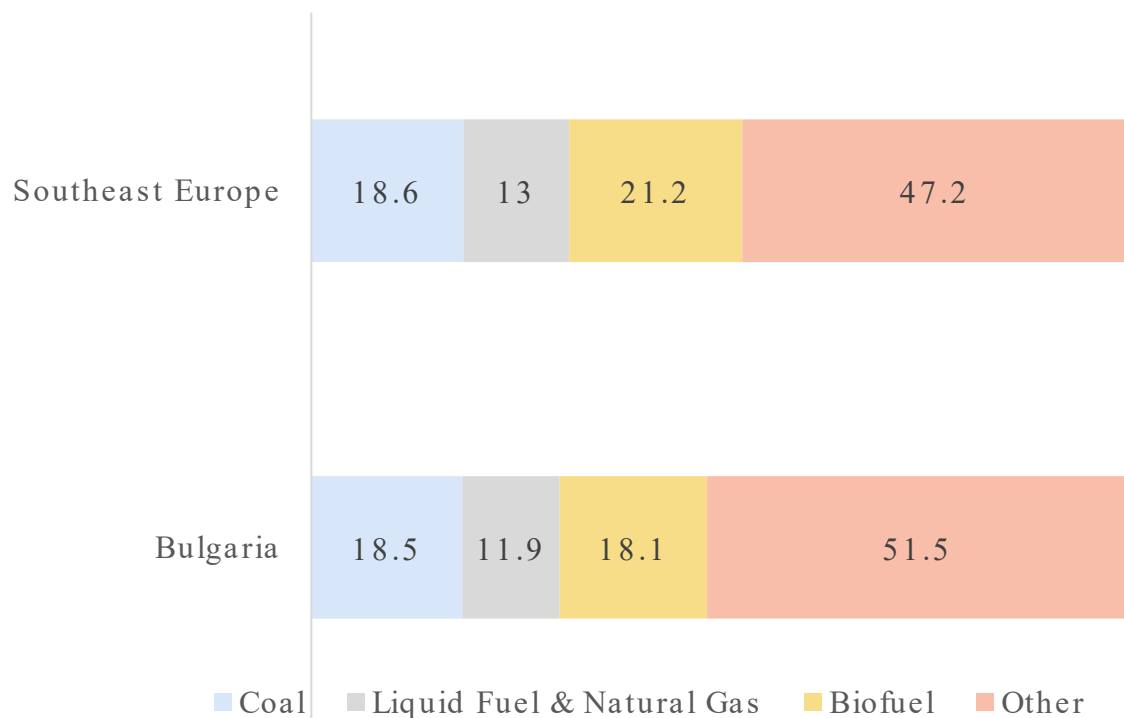
<https://www.undp.org/north-macedonia/blog/behavioral-change-activities-reduce-air-pollution-skopje>

Sectoral interventions: [Upcoming] Low emissions Zone in Sofia, Bulgaria



Sectoral interventions: Cleaning up the heating sources

Fuel contribution to outdoor PM_{2.5}



Thank you!

Email

ppant@healtheffects.org

Twitter

[@HEISoGA](https://twitter.com/HEISoGA) | [@HEIresearch](https://twitter.com/HEIresearch)

Website

www.stateofglobalair.org | www.healtheffects.org

How are these estimates produced?

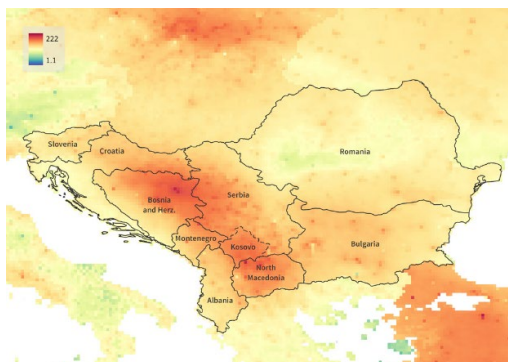


Satellite data

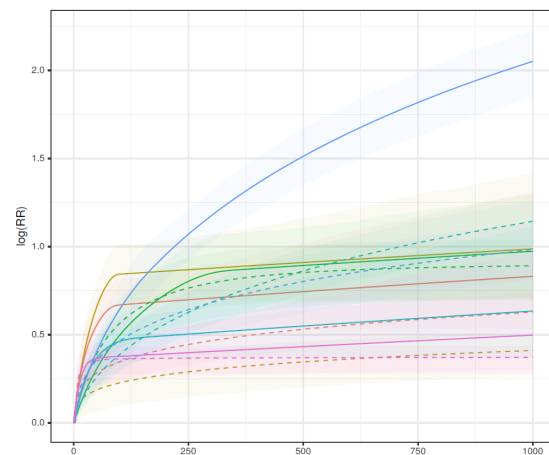


Chemical Transport Models

Ground monitoring data



Concentration-response relationship



Baseline disease rates

Burden of Disease Linked to Air Pollution

Minimum risk exposure level



Epidemiology studies on health effects of air pollution

Producing the air quality estimates; gaps in data

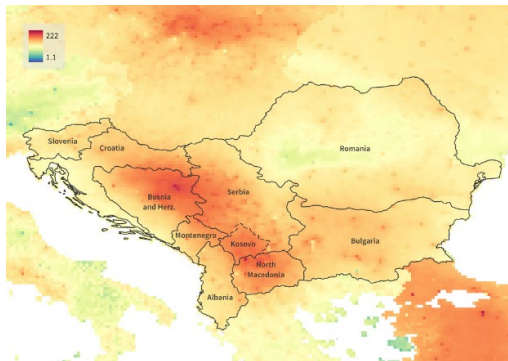


Satellite data



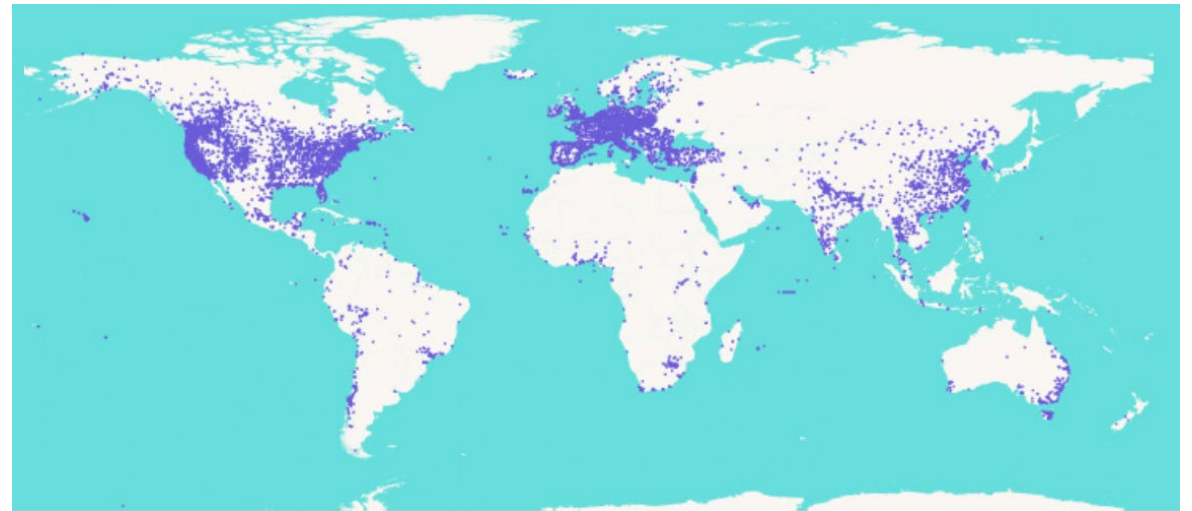
Chemical Transport Models

Ground monitoring data



Minimum risk exposure level

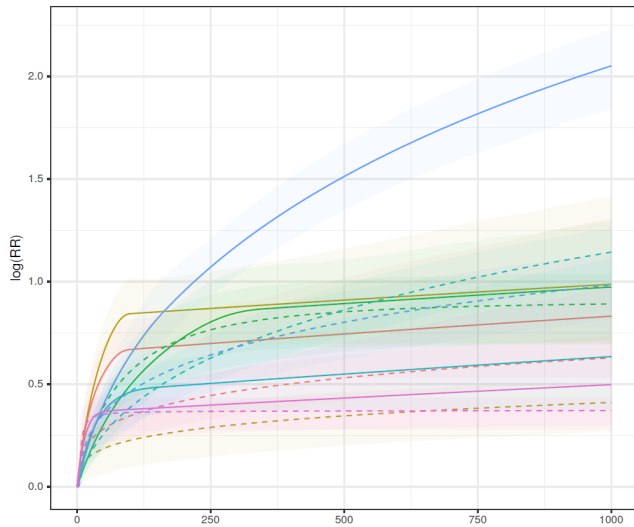
Limited ground monitoring data from Africa >>
higher uncertainties in exposure estimates



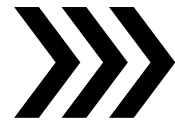
Source: 2022 Open Air Quality Data: The Global Landscape, OpenAQ

Estimating health impacts; gaps

Concentration-response relationship



Epidemiology studies on health effects of air pollution



Baseline disease rates

Burden of Disease Linked to Air Pollution

Limited studies on health effects of air pollution in high-pollution environments, no studies from Africa in the integrated concentration-response functions

Limited availability of baseline disease rates

Since 1990, air pollution emissions have declined.

Sectors with the largest contributions to emissions in 2017 were **residential** (37%), **on-road transportation** (19%), and **energy** (15%).

“Transport is absolutely dominant source of PM₁₀ pollution in the central city area (Sofia) and along the roads with heavy traffic during both cold and warm season” (Dimitrova and Velizarova 2021)

