

# Inquinamento atmosferico e particolato fine

Cosa possono fare le città per migliorare la qualità dell'aria?

*P. Thunis, EC-JRC Novembre 24, 2020* 



PM ~ 470 ug/m3











#### Background

![](_page_3_Figure_1.jpeg)

### 379.000 premature deaths in the EU28 (PM $_{\rm 2.5}$ 2018)

THE **INVISIBLE KILLER** 

Air pollution may not always be visible, but it can be deadly.

![](_page_4_Figure_3.jpeg)

Air pollution is estimated to cause at least € 24 billion per year in direct costs; and €330 billion to € 940 billion per year in indirect costs.

![](_page_4_Picture_5.jpeg)

#### Number of deaths by risk factor, Italy, 2017

Total annual number of deaths by risk factor, measured across all age groups and both sexes.

![](_page_5_Picture_2.jpeg)

![](_page_5_Figure_3.jpeg)

#### Europe's air quality is slowly improving...

![](_page_6_Figure_1.jpeg)

#### Europe's air quality is slowly improving...

![](_page_7_Figure_1.jpeg)

![](_page_7_Picture_2.jpeg)

#### but 2/3 of EU citizens breath polluted air in cities

![](_page_8_Figure_1.jpeg)

![](_page_8_Picture_2.jpeg)

# Different pollutants originate from different sources and lead to different challenges

**PM10 exceedances:** often linked to fuel combustion (i.e. energy, heating)

![](_page_9_Figure_2.jpeg)

**NO2 exceedances:** often linked to traffic, in more than 130 cities in EU.

![](_page_9_Figure_4.jpeg)

#### Improving Air Quality – Effective Measures

![](_page_10_Picture_1.jpeg)

Boosting **energy efficiency** by refurbishing buildings

#### **Examples for Particulate Matter**

![](_page_10_Picture_4.jpeg)

![](_page_10_Picture_5.jpeg)

![](_page_10_Picture_6.jpeg)

Implementing cleaner industrial processes

![](_page_10_Picture_8.jpeg)

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

![](_page_10_Picture_10.jpeg)

![](_page_10_Figure_11.jpeg)

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

#### A tool to support the design of air quality plans

![](_page_11_Figure_1.jpeg)

European Commission

#### Air Quality is a complex issue

![](_page_12_Figure_1.jpeg)

European Commission

#### Main challenges and dedicated tools

![](_page_13_Figure_1.jpeg)

Screening for High Emission Reduction Potentials on Air quality

![](_page_13_Picture_3.jpeg)

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#### Research article

On the design and assessment of regional air quality plans: The SHERPA approach

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![](_page_13_Picture_11.jpeg)

![](_page_14_Figure_1.jpeg)

![](_page_14_Picture_2.jpeg)

![](_page_14_Picture_3.jpeg)

#### Overview maps

![](_page_15_Figure_1.jpeg)

![](_page_15_Figure_2.jpeg)

source: Agriculture Contribution of agriculture

![](_page_15_Figure_4.jpeg)

![](_page_15_Picture_5.jpeg)

Urban PM2.5 Atlas

![](_page_15_Picture_6.jpeg)

![](_page_16_Figure_1.jpeg)

![](_page_16_Picture_2.jpeg)

European

Commission

![](_page_17_Figure_0.jpeg)

European Commission

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![](_page_18_Picture_1.jpeg)

#### Air quality plans (sectors, scales) should be city specific

![](_page_18_Picture_3.jpeg)

![](_page_18_Picture_4.jpeg)

![](_page_19_Picture_1.jpeg)

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

![](_page_19_Figure_3.jpeg)

![](_page_19_Picture_4.jpeg)

![](_page_20_Picture_1.jpeg)

Sectoral measures addressing agriculture at country or EU scale would have a clear benefit on urban air quality.

![](_page_20_Picture_3.jpeg)

![](_page_20_Picture_4.jpeg)

#### Available documents and tools

• The urban Air Quality PM2.5 Atlas is available at:

https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technicalresearch-reports/urban-pm25-atlas-air-quality-european-cities

• The SHERPA Air Quality integrated tool is available at:

http://aqm.jrc.ec.europa.eu/sherpa.aspx

![](_page_21_Picture_5.jpeg)

# Grazie

![](_page_22_Picture_1.jpeg)