



25 May 2020

Storie d'Aria, WebinAIR, remotely  
organized by Cittadini per l'Aria

# Air quality in Europe – 2019 report. Focus on Italy

## EEA air pollution data

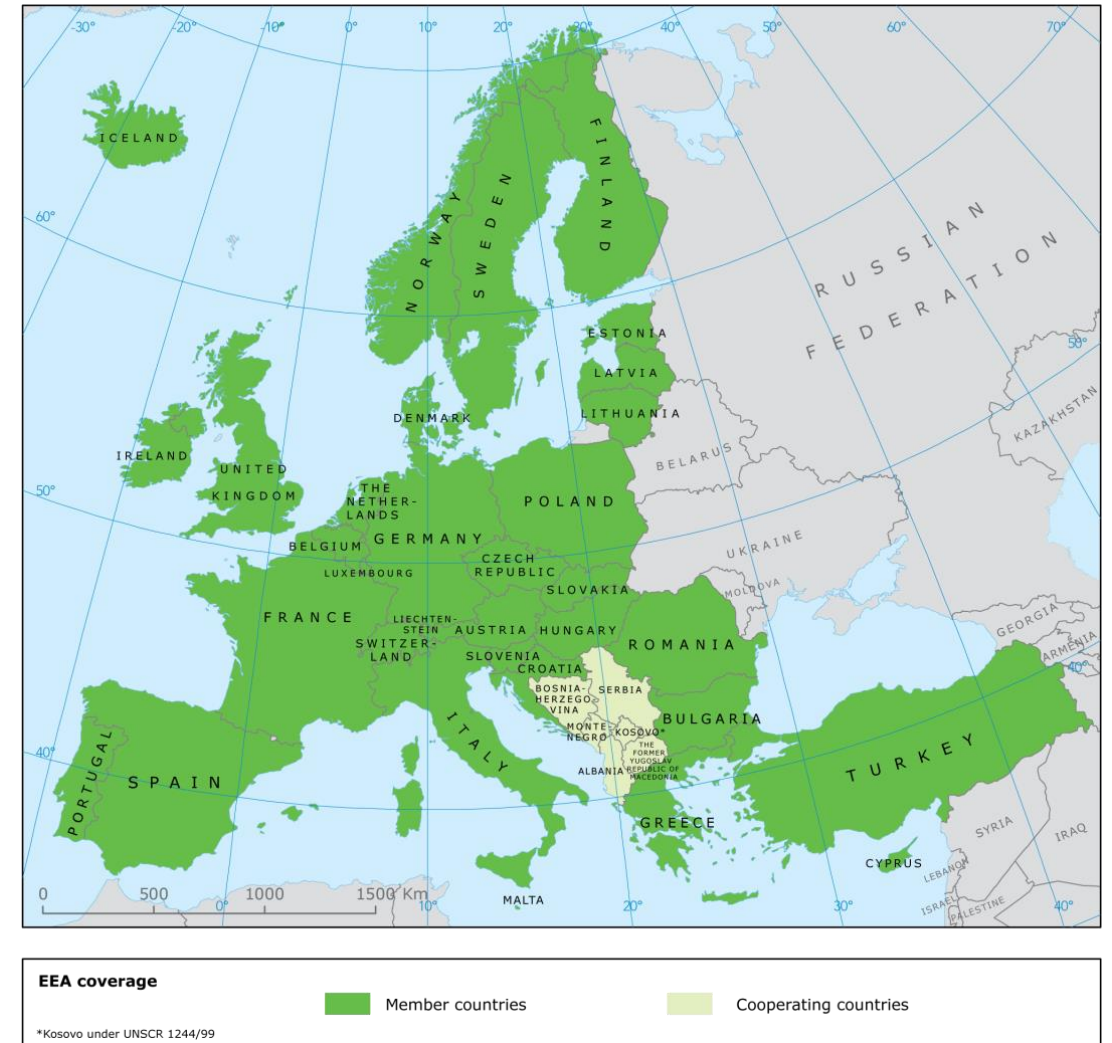


# The European Environment Agency

The EEA is an EU agency that operates at the **interface of science and policy.**

The EEA provides **timely, reliable, targeted and relevant** information to support sustainable development.

The Eionet (European environment information and observation) network comprises **1800 experts** from over **400 national institutions** in **39 countries.**



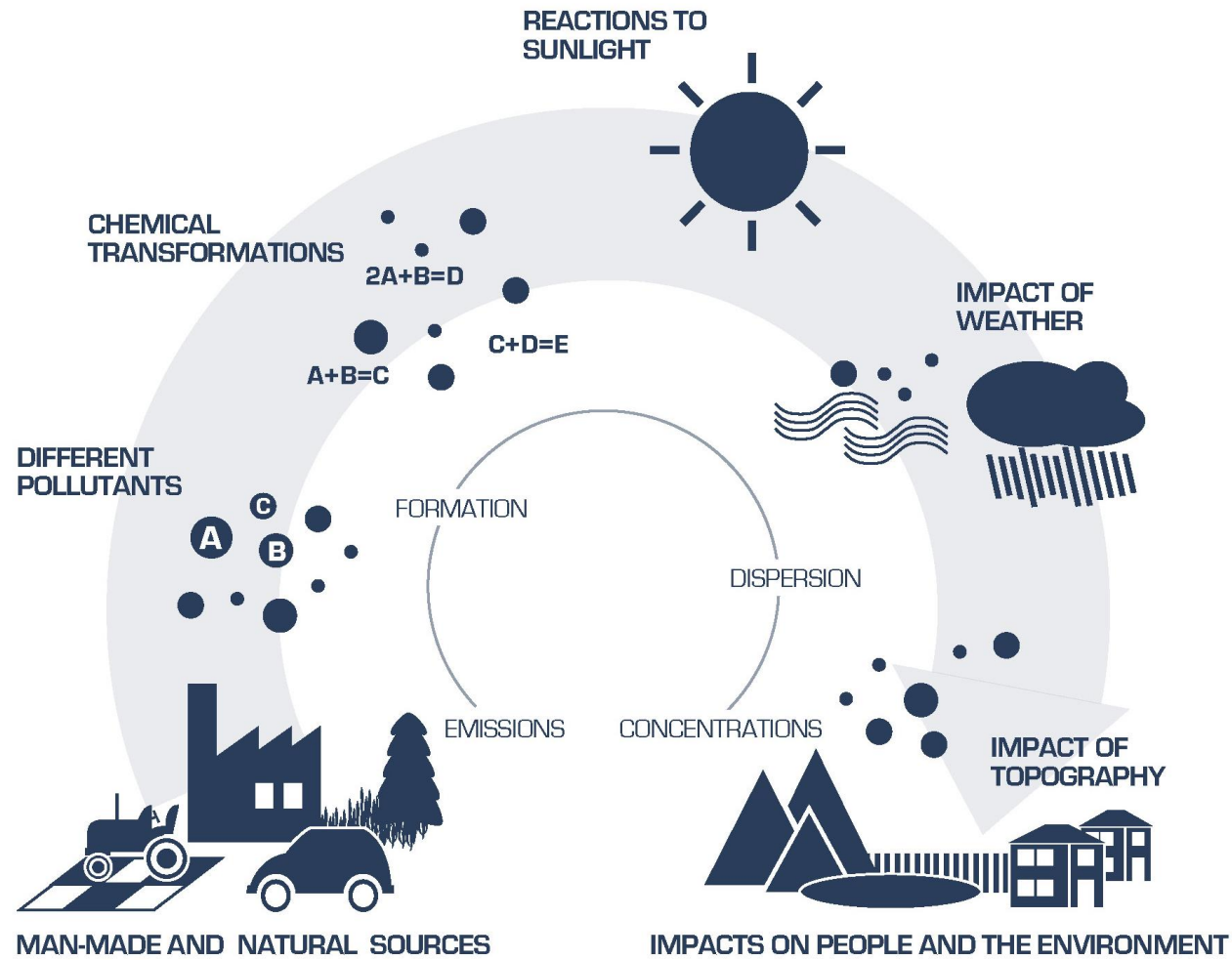
# Outline

1. Air pollution: basics and data
2. The *Air Quality in Europe* report
3. Emissions
4. Concentrations
5. Exposure of population
6. Health effects
7. Exposure of vegetation
8. Conclusions
9. Air pollution data at EEA



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# 1. Air pollution basics: from emissions to concentrations and impacts



# 1. European air pollution policies: emissions

## National Emission Ceiling Directive:

- SO<sub>2</sub>, NO<sub>x</sub>, NMVOCs, NH<sub>3</sub>, PM<sub>2.5</sub>
- Ceilings for (2010, 2019); 2020 and 2030

## Sectoral legislation

- Transport (road, ships, non-road mobile machine, fuels)
- Industry (IED, Industrial Emissions Directive)
- Combustion (Directive on medium combustion plants)
- Products (paints)



European Commission: DG ENV – [European legislation](#)

**Convention of Long-Range transboundary air pollution**

# 1. Air pollution policies: air quality

## Air Quality Directives

- Objectives and standards for several pollutants
- Assessment of air quality:
  - Zones/agglomerations, measurement, models
- Management of air quality:
  - Short term action plans
  - Plans to improve/maintain air quality
- Information to the public



## Implementing Decision on reporting

- Information to be reported to the European Commission via the European Environment Agency.

# 1. Air pollution policies: some air quality standards

EU Air Quality Directive				WHO Guidelines	
Pollutant	Averaging Period	Objective and legal nature and concentration	Comments	Concentration	Comments
PM <sub>2.5</sub>	Hourly			25 µg/m <sup>3</sup>	99th percentile (3 days/year)
PM <sub>2.5</sub>	Annual	Limit value, 25 µg/m <sup>3</sup>		10 µg/m <sup>3</sup>	
PM <sub>10</sub>	Hourly	Limit value, 50 µg/m <sup>3</sup>	Not to be exceeded on more than 35 days per year	50 µg/m <sup>3</sup>	99th percentile (3 days/year)
PM <sub>10</sub>	Annual	Limit value, 40 µg/m <sup>3</sup>		20 µg/m <sup>3</sup>	
O <sub>3</sub>	Maximum daily 8-hour mean	Target value, 120 µg/m <sup>3</sup>	Not to be exceeded on more than 25 days per year, averaged over three years	100 µg/m <sup>3</sup>	
NO <sub>2</sub>	Hourly	Limit value, 200 µg/m <sup>3</sup>	Not to be exceeded on more than 18 times a calendar year	200 µg/m <sup>3</sup>	
NO <sub>2</sub>	Annual	Limit value, 40 µg/m <sup>3</sup>		40 µg/m <sup>3</sup>	

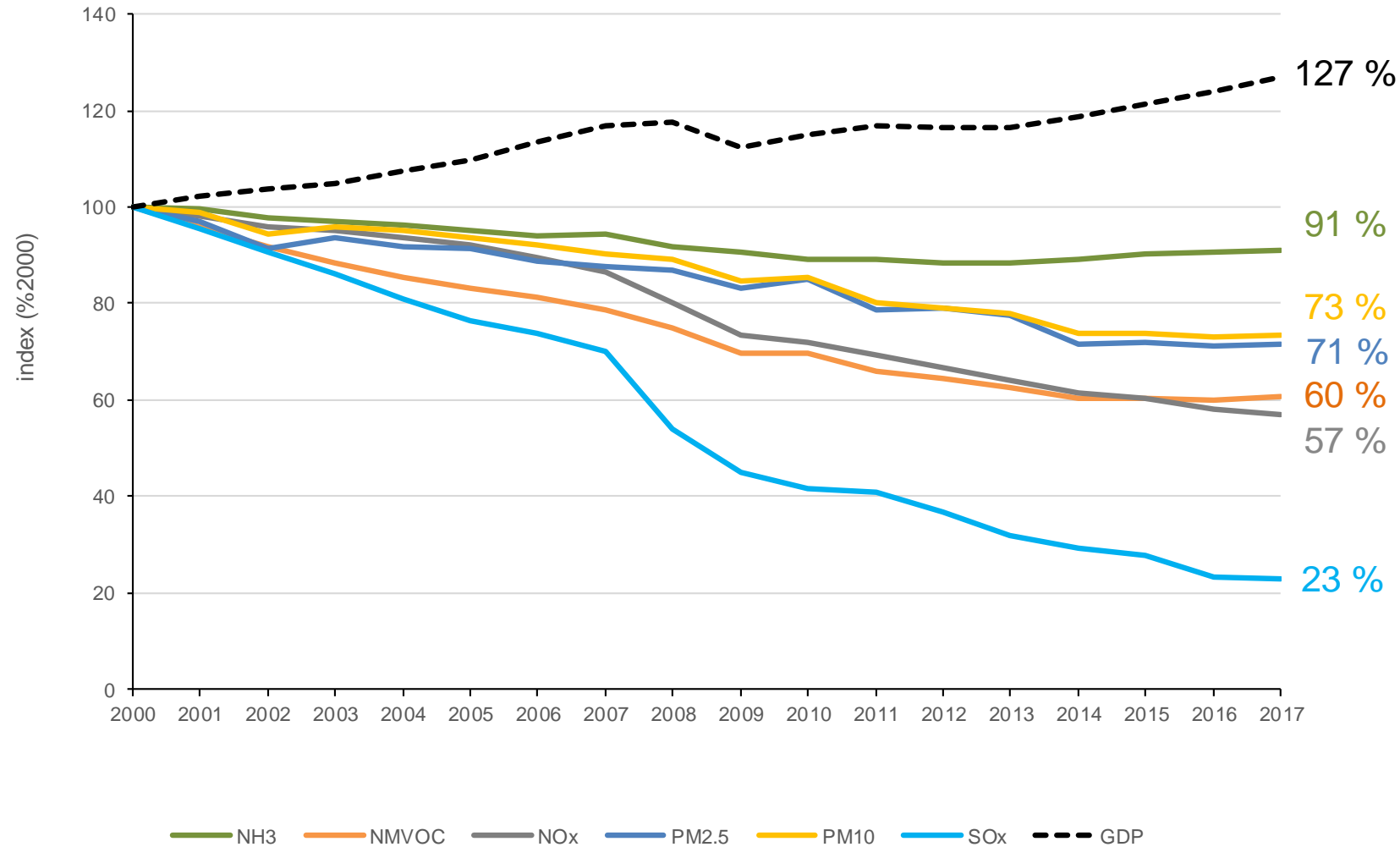
# 2. The *Air quality in Europe* report

<https://www.eea.europa.eu/publications/air-quality-in-europe-2019>





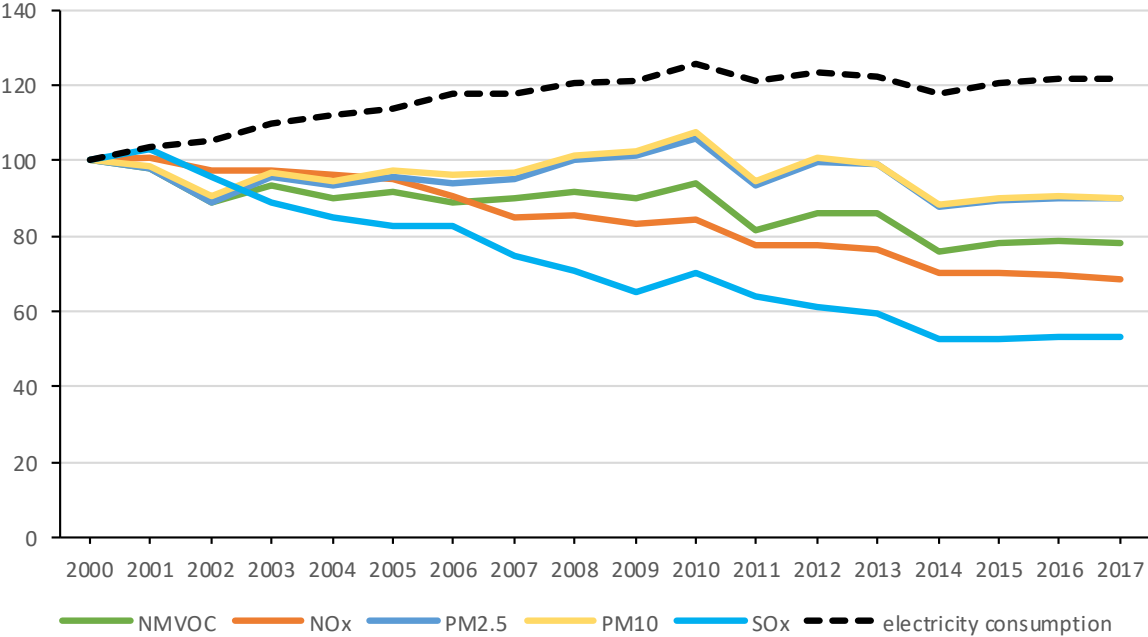
# 3. Air quality in Europe: emissions have decreased



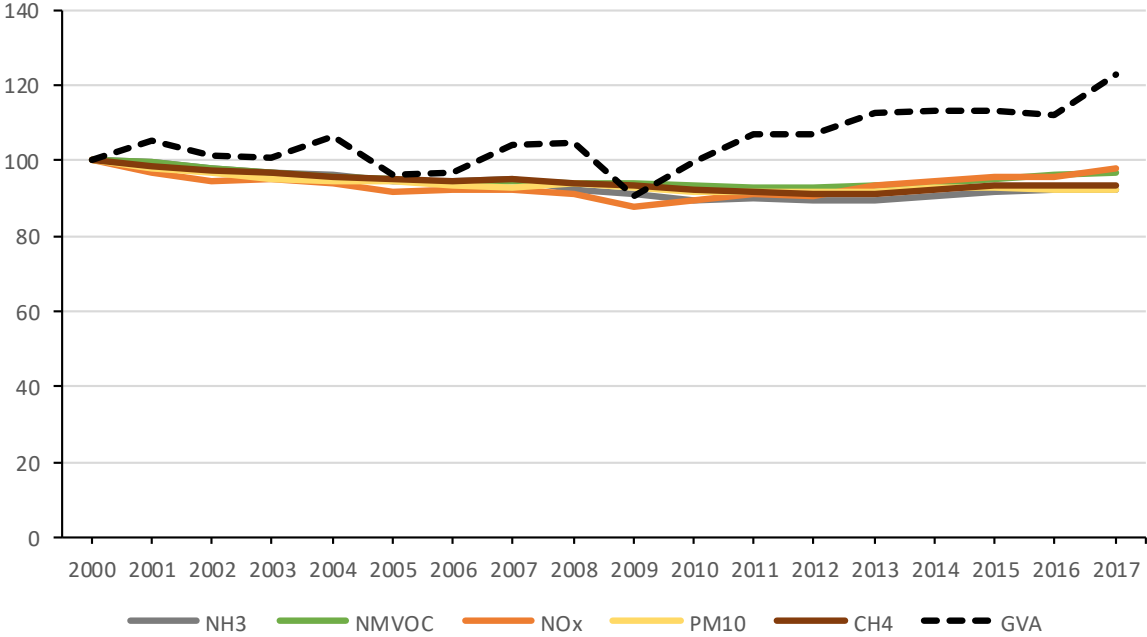
EU Member States (2000 – 2017)

# 3. Emissions have decreased but not equally from all sectors

Commercial, institutional and households

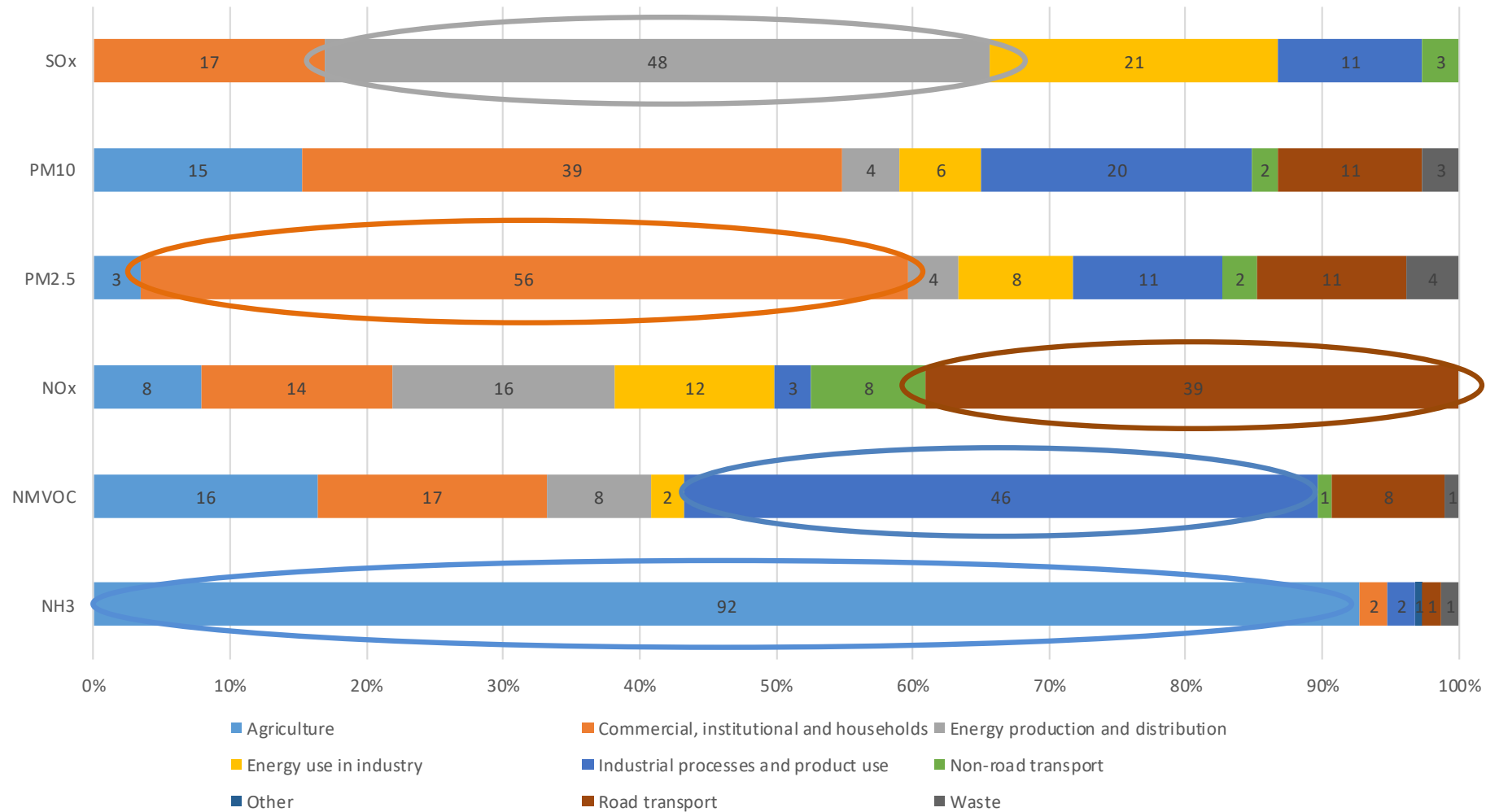


Agriculture

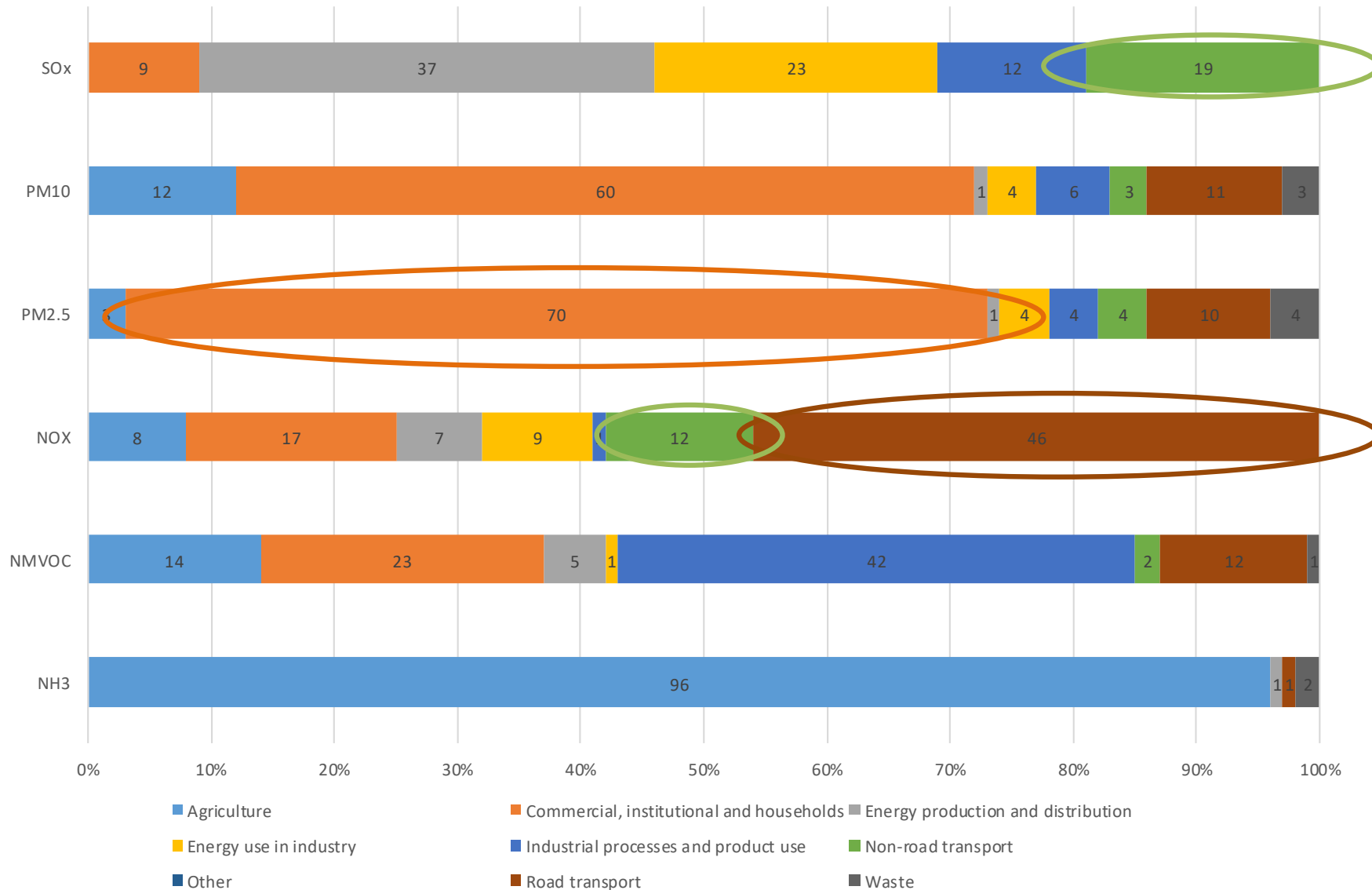


EU Member States (2017)

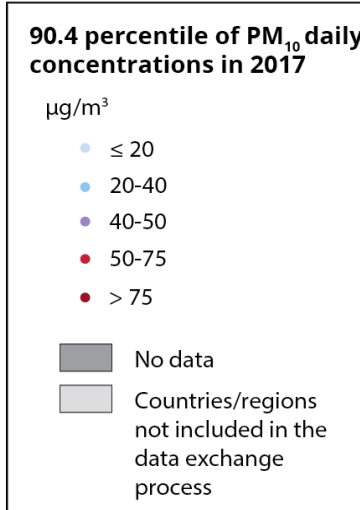
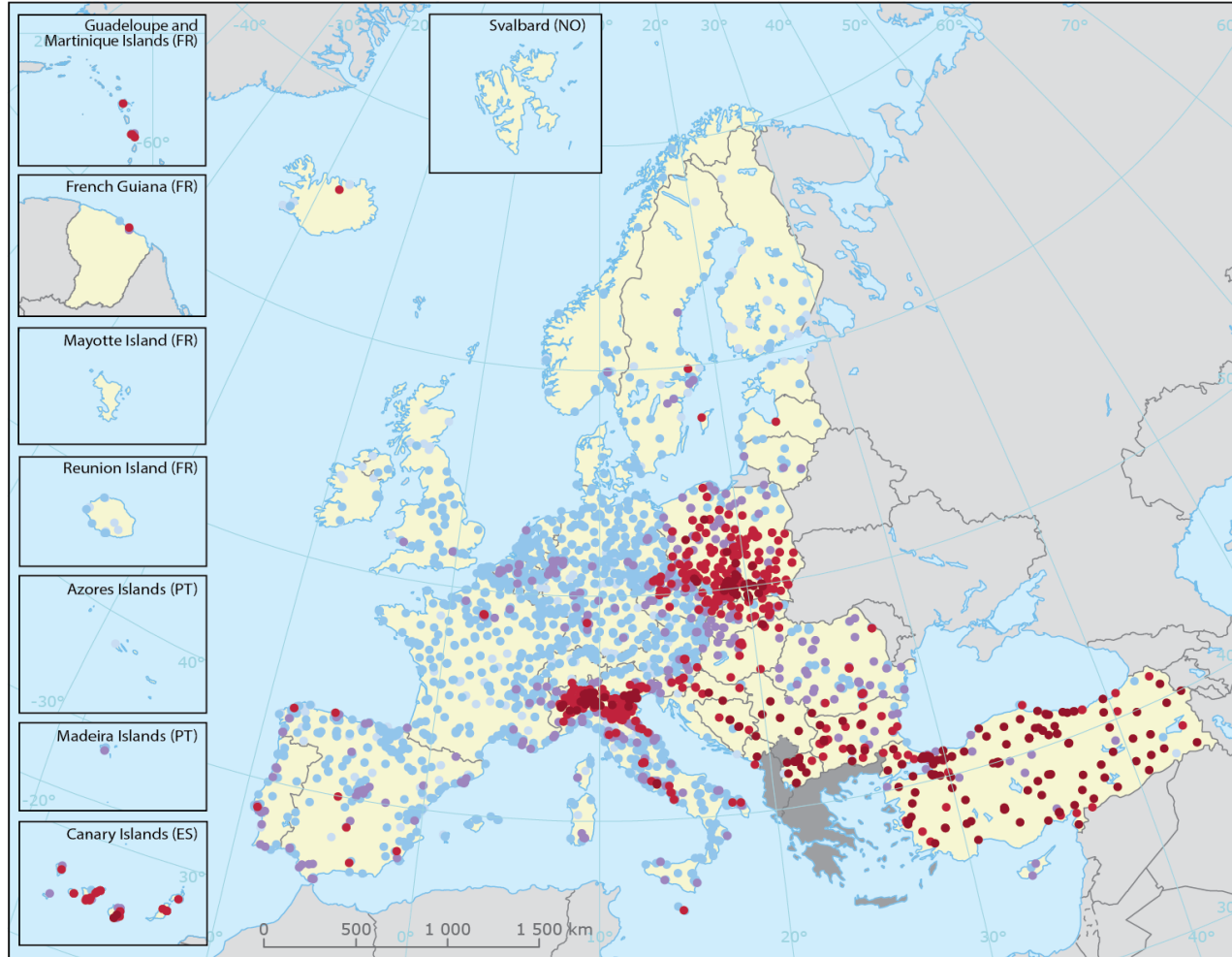
# 3. European emissions from different sectors



# 3. Italian emissions from different sectors



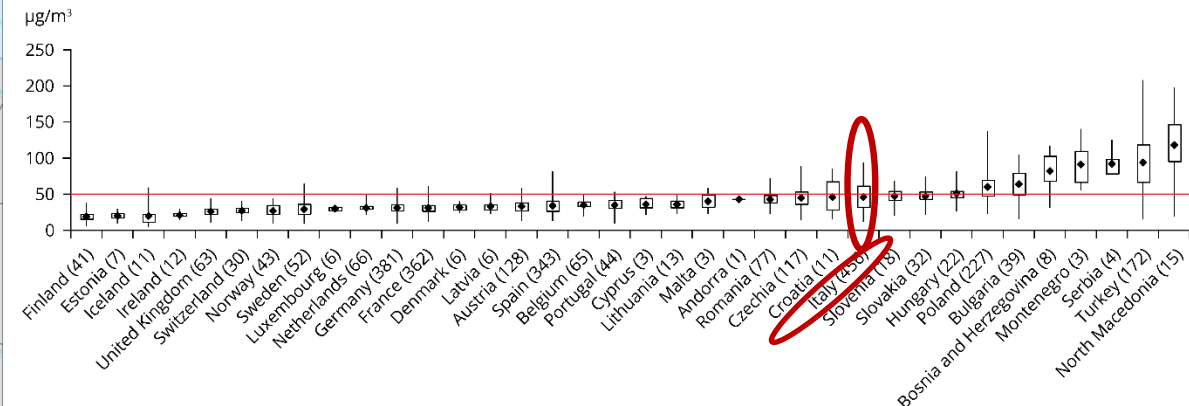
# 4. Particulate matter (PM<sub>10</sub>) concentrations over Europe



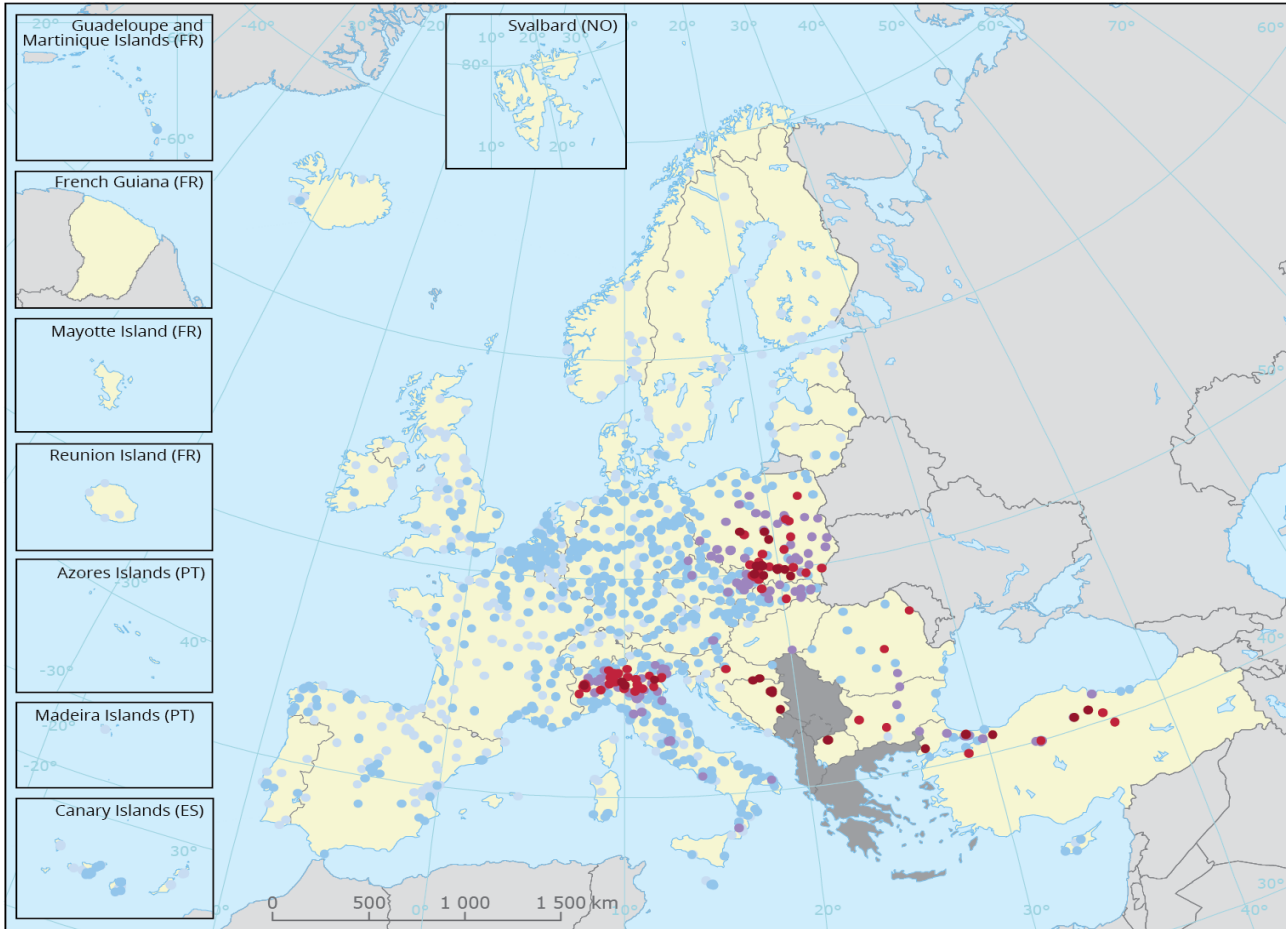
17 MS + 6 other reporting countries exceeded DLV

22 % of reporting stations

Urban issue



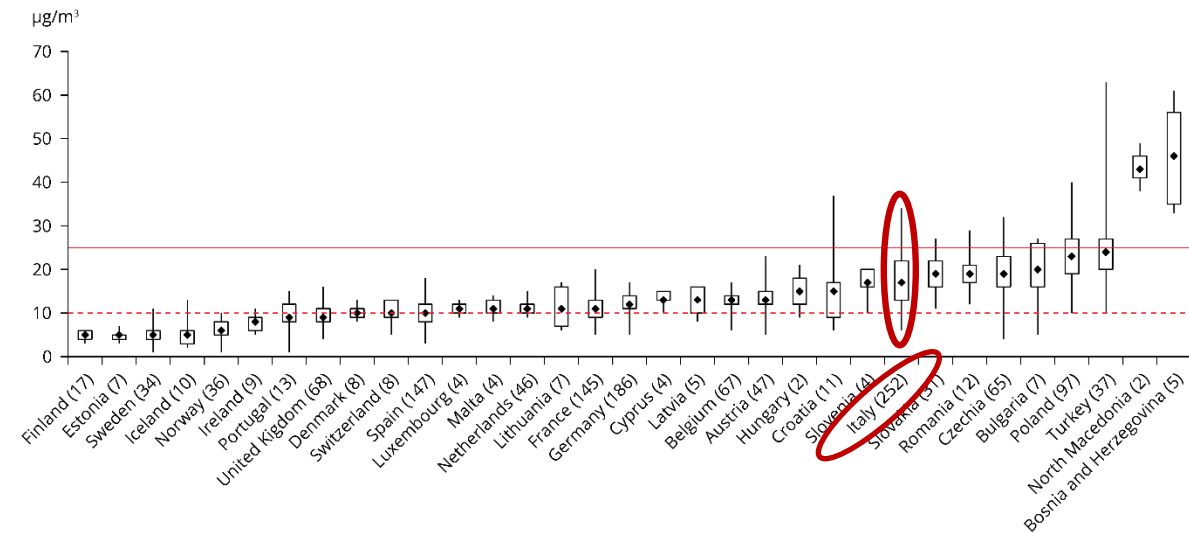
# 4. PM<sub>2.5</sub> concentrations over Europe



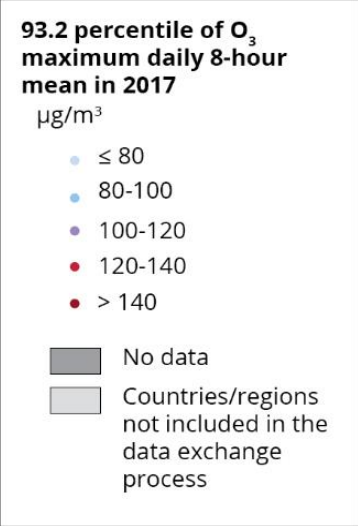
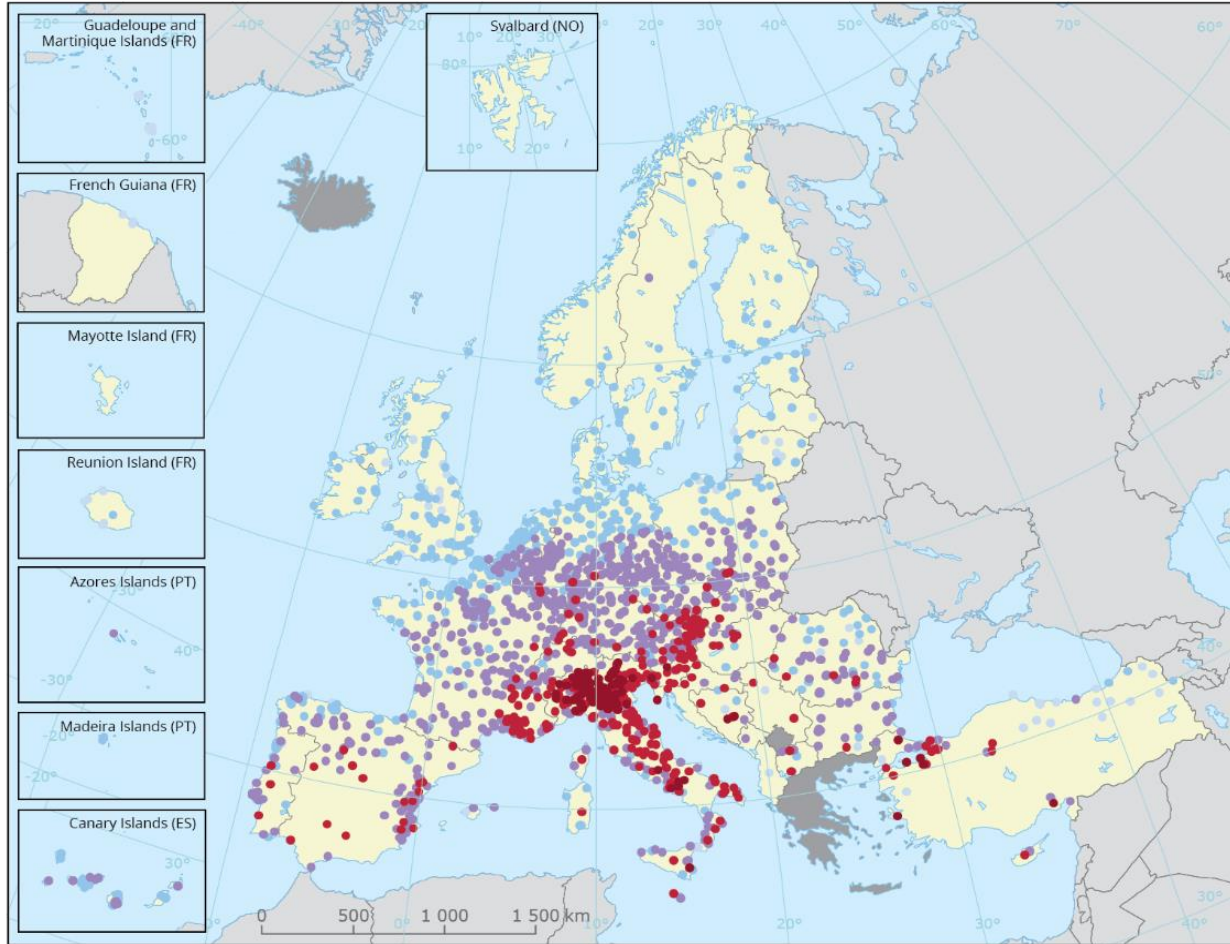
7 MS + 3 other reporting countries exceeded ALV

7 % of reporting stations

Only Estonia, Finland and Norway complied with the WHO AQG



# 3. O<sub>3</sub> concentrations over Europe

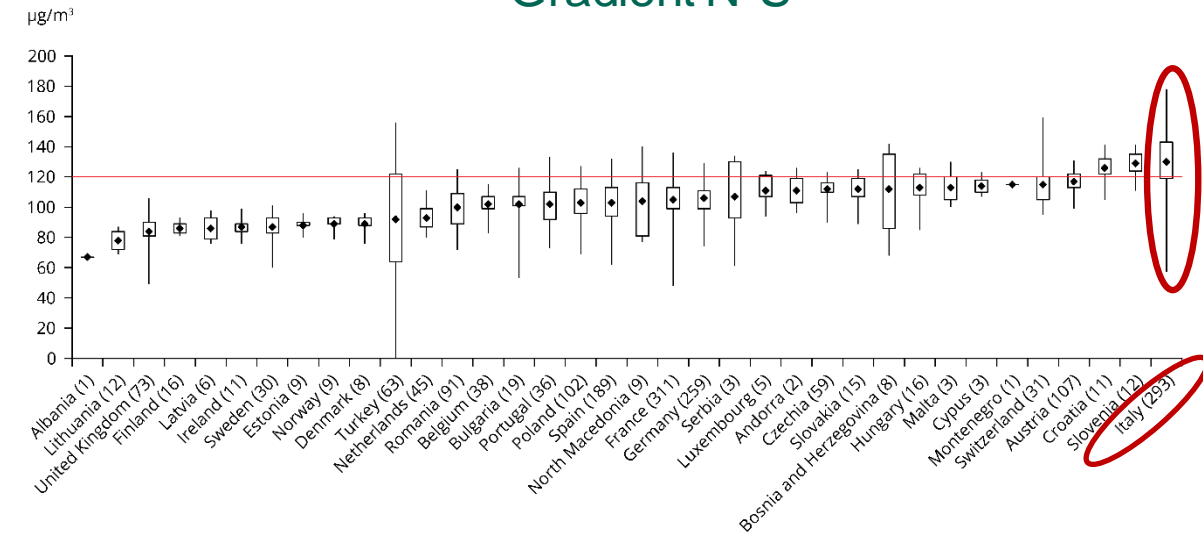


17 MS + 6 other reporting countries exceeded TV

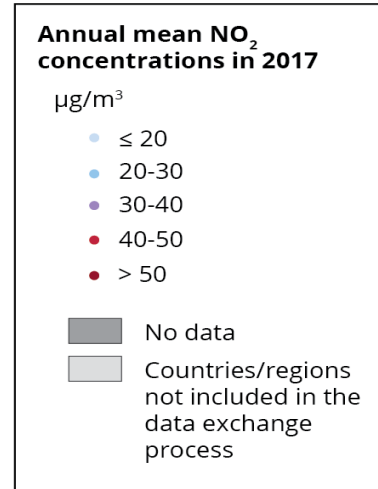
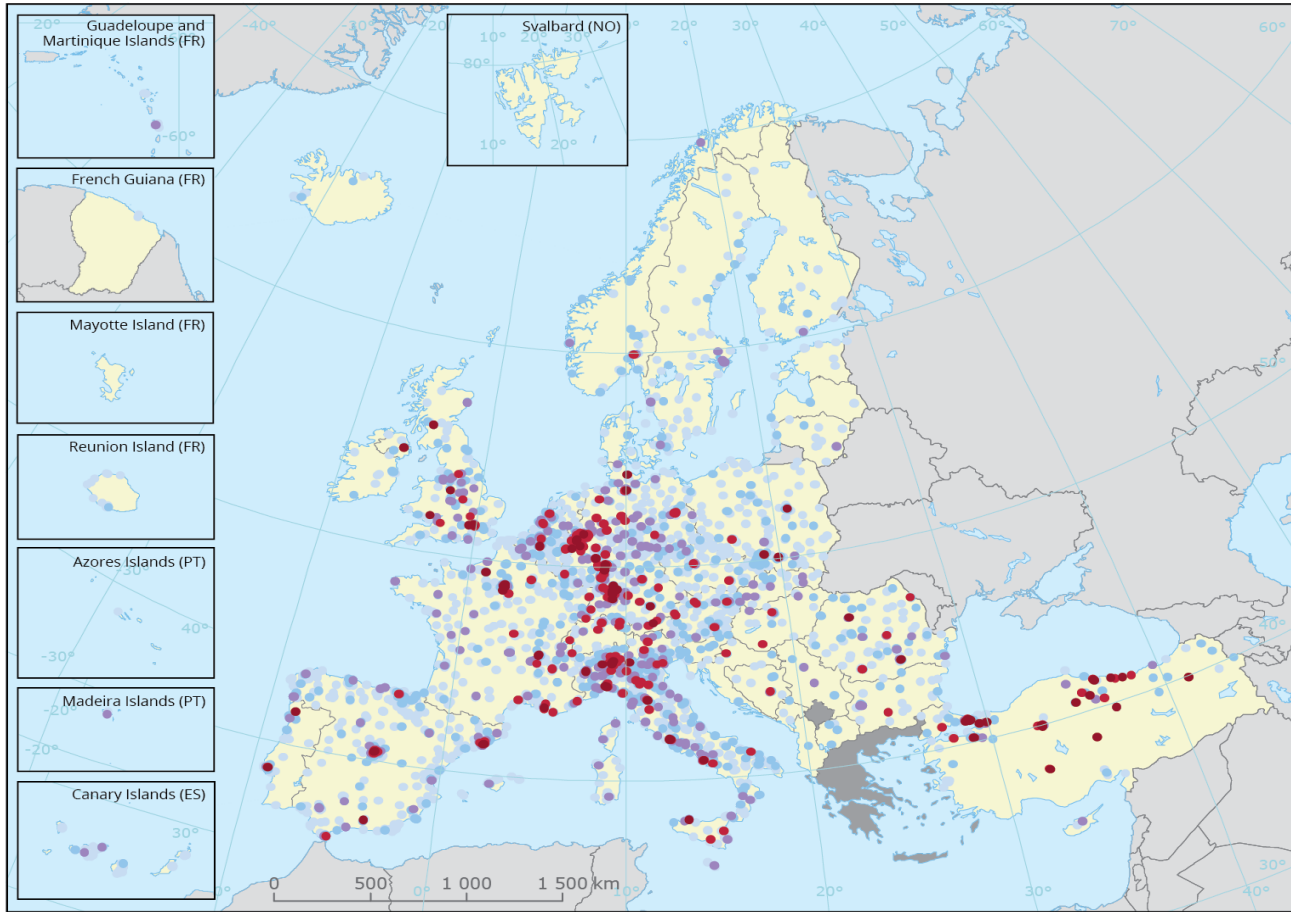
20 % of reporting stations

Only 18 % of stations fulfilled the long-term objective

Gradient N-S



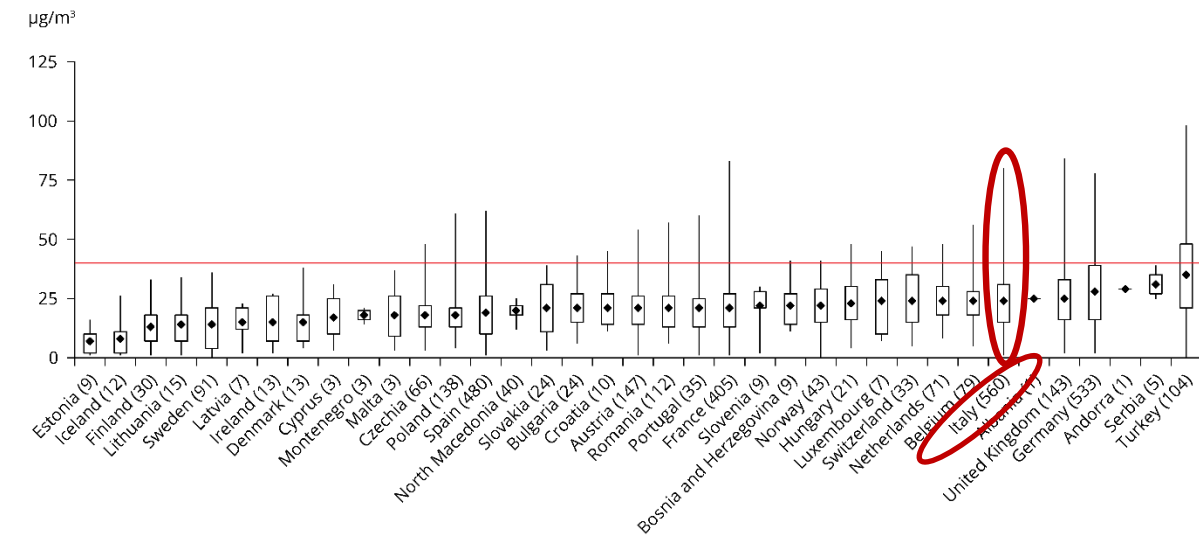
# 4. NO<sub>2</sub> concentrations over Europe



16 MS + 4 other reporting countries exceeded ALV

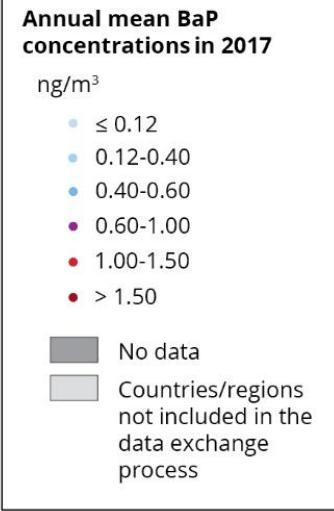
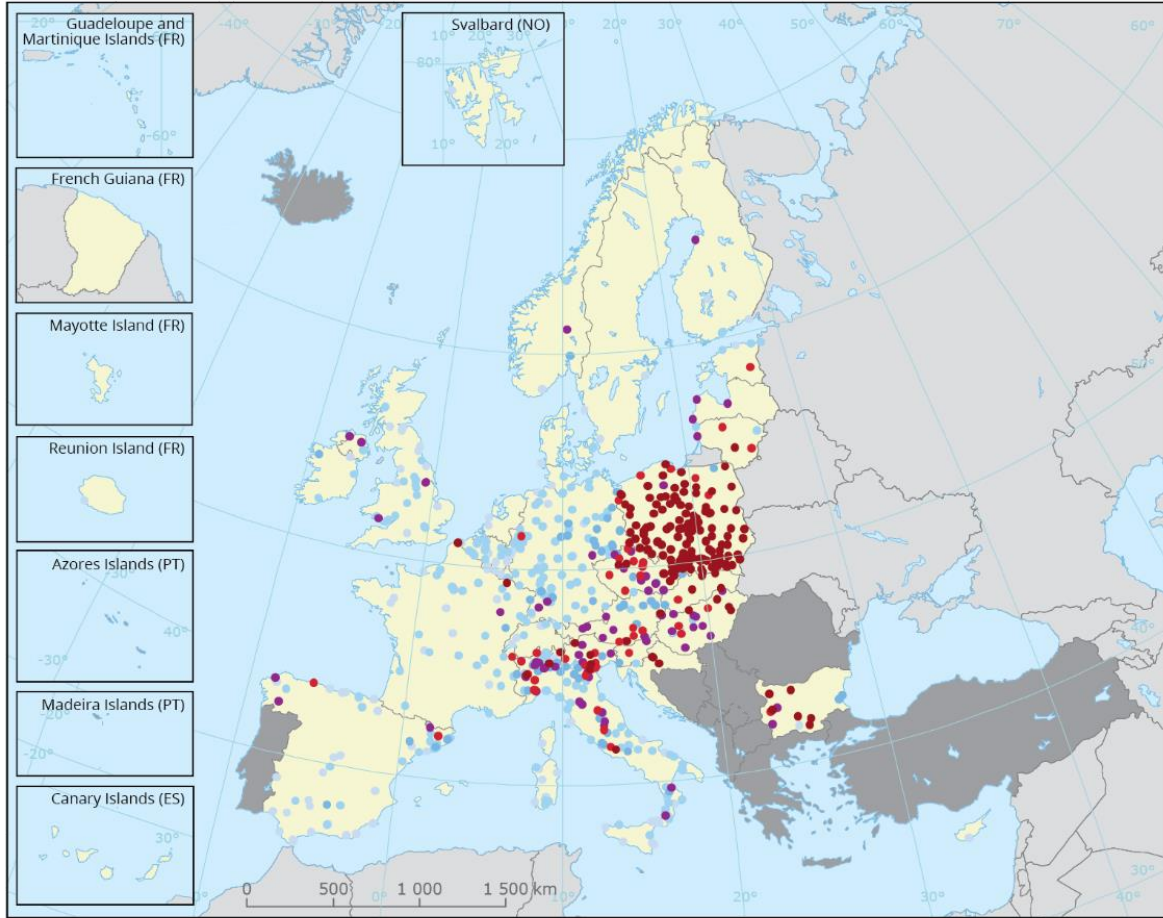
10 % of reporting stations

Traffic issue





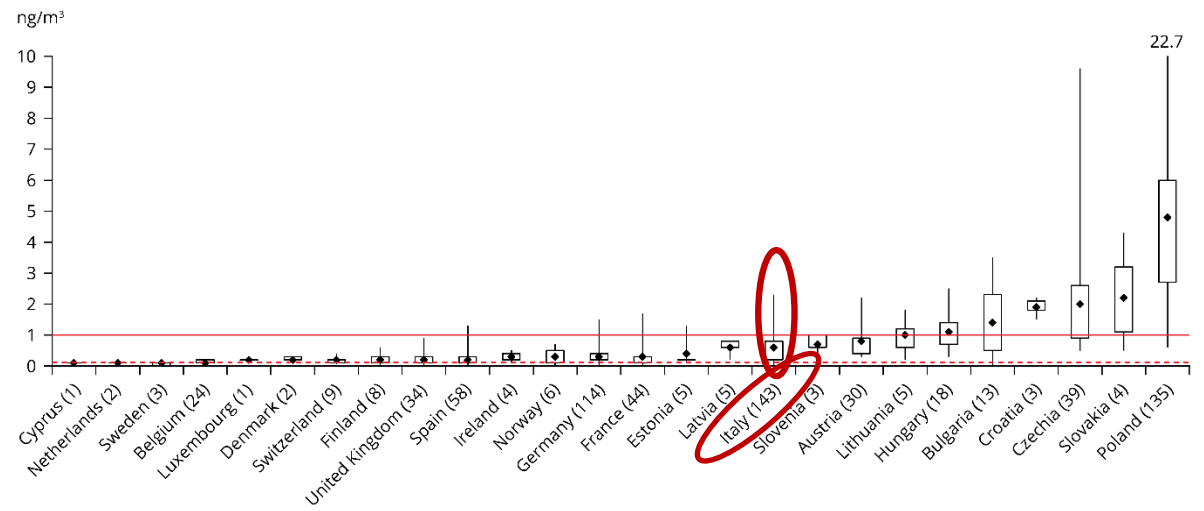
# 4. Benzo[a]pyrene concentrations are still high in Eastern Europe



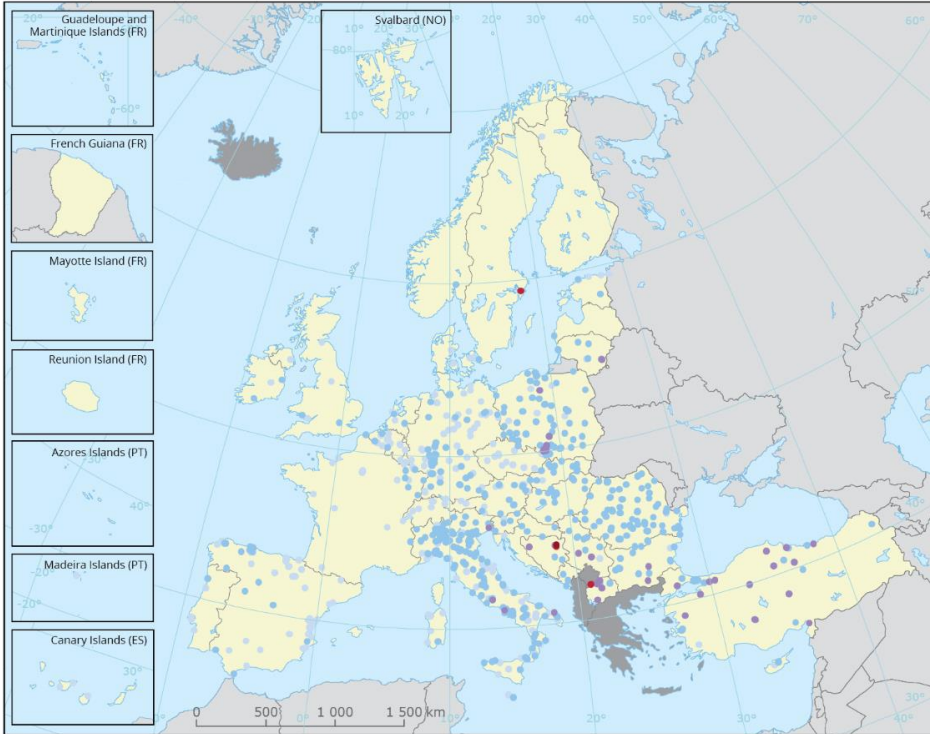
13 MS reported concentrations above 1 ng/m<sup>3</sup>

31 % of reporting stations

Linked to domestic combustion of coal and wood



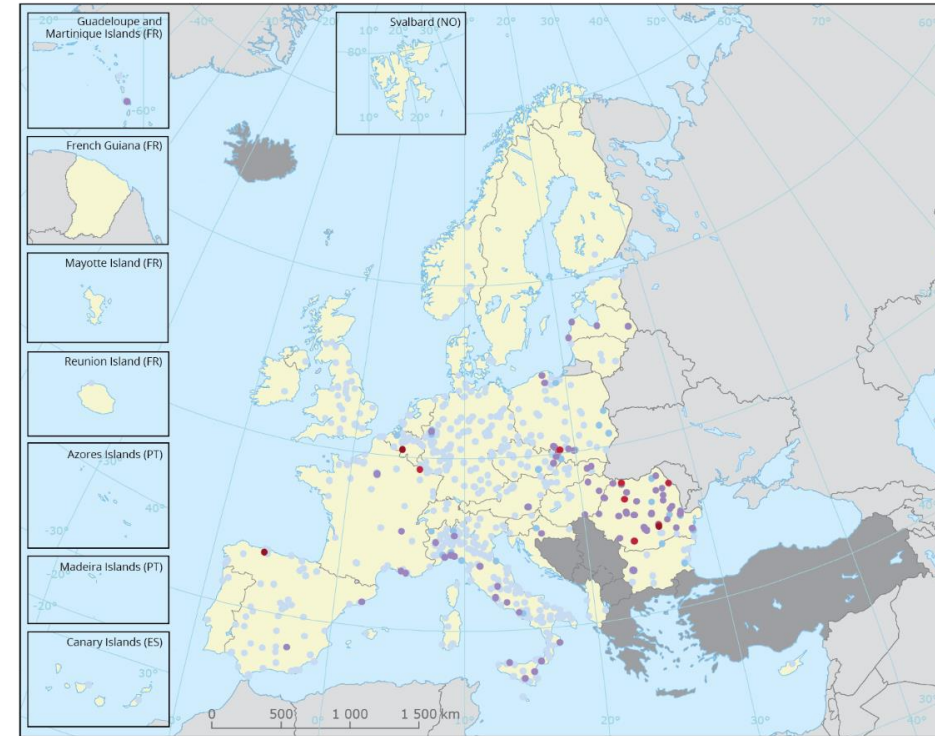
# 4. CO and benzene concentrations are very rarely above LV



**CO maximum daily 8-hours mean in 2017**  
mg/m<sup>3</sup>

- ≤ 1
- 1-5
- 5-10
- 10-15
- > 15

■ No data  
■ Countries/regions not included in the data exchange process



**Annual mean benzene concentrations in 2017**  
µg/m<sup>3</sup>

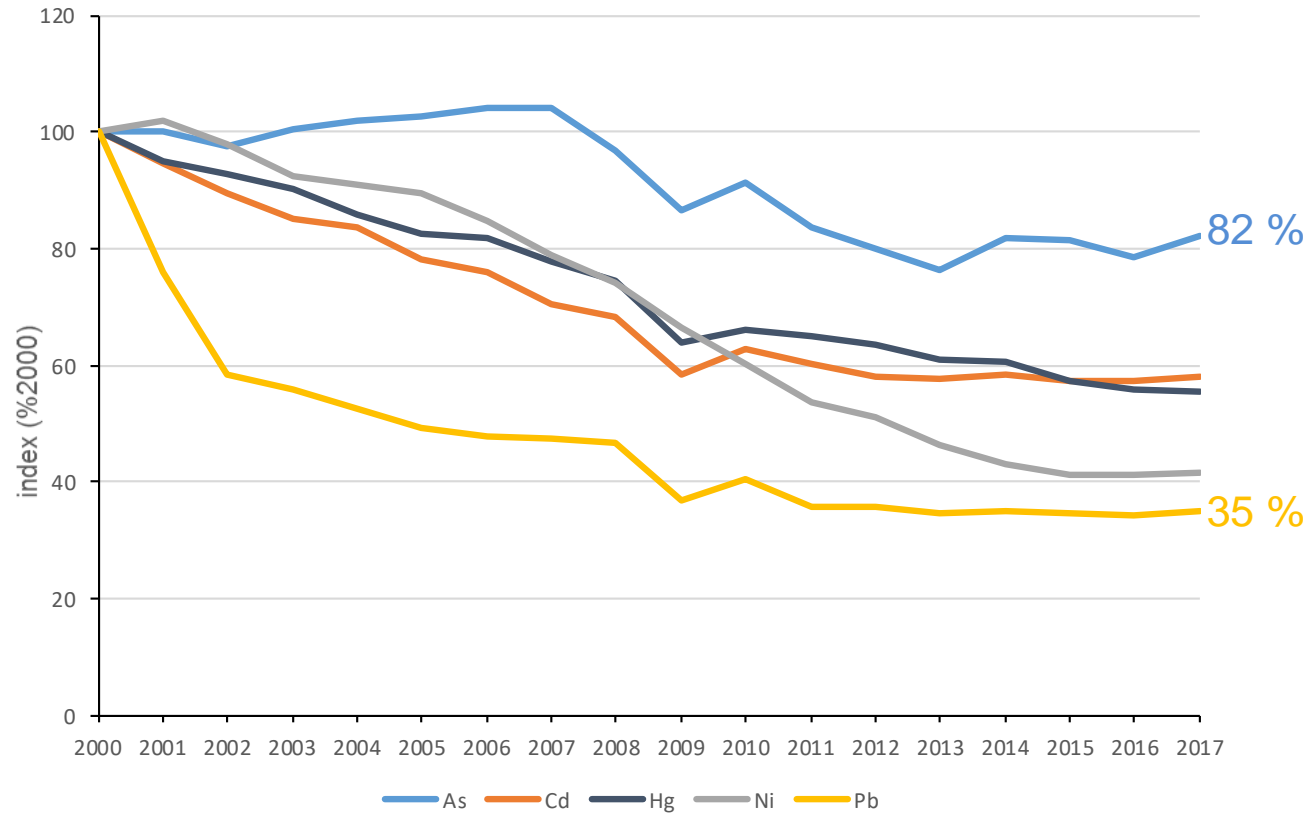
- ≤ 1.7
- 1.7-2.0
- 2.0-3.5
- 3.5-5.0
- > 5.0

■ No data  
■ Countries/regions not included in the data exchange process

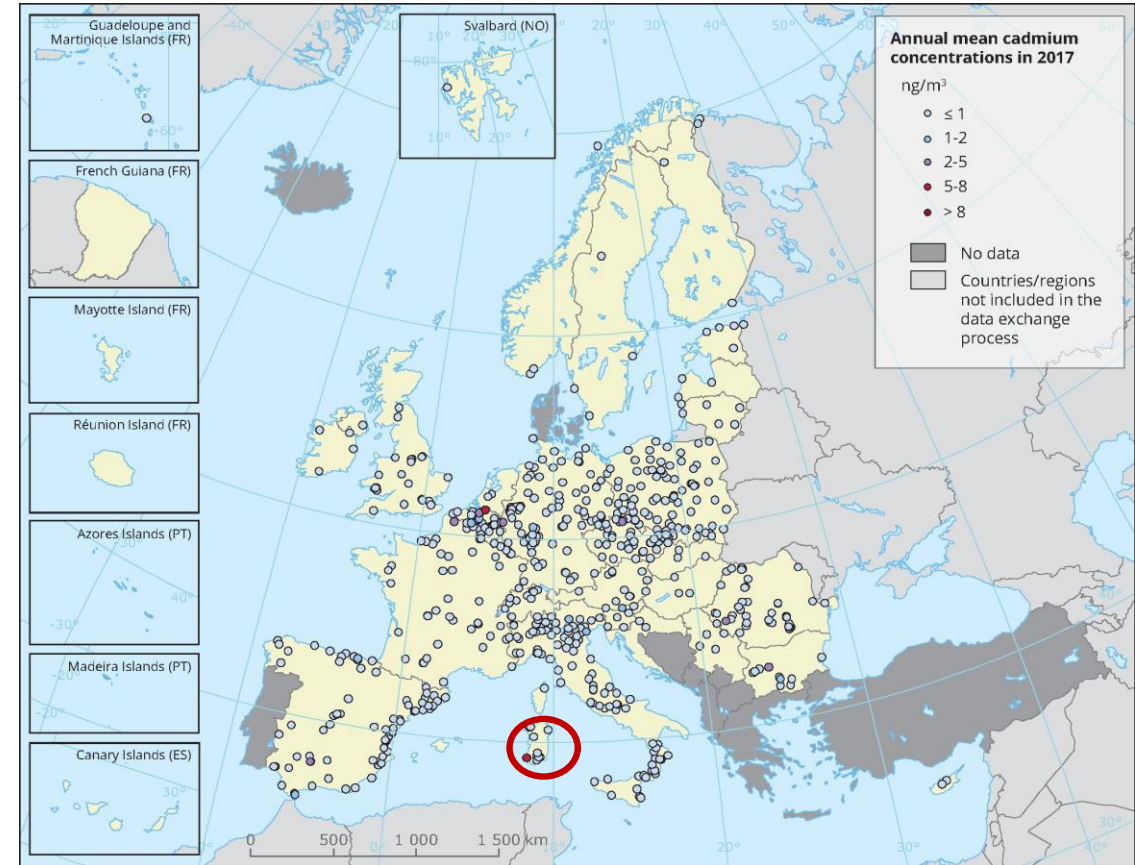
3 reporting stations above C<sub>6</sub>H<sub>6</sub> LV

4 reporting stations above CO LV

# 4. Toxic metals exceedances very localized



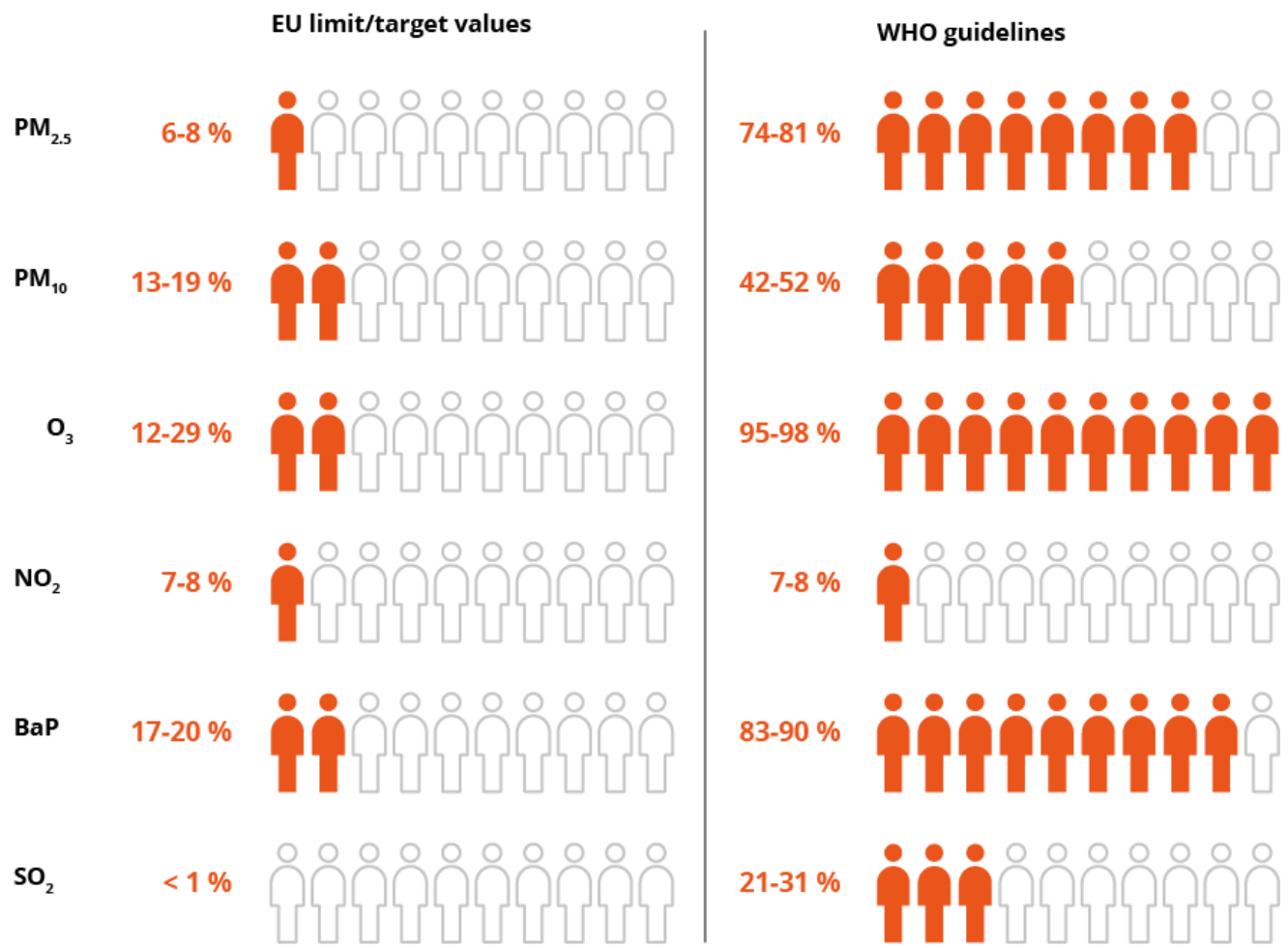
EU Member States (2000 – 2017)



Cd: 1 suburban background station exceeding the TV in Italy

# 5. Many Europeans still exposed to harmful levels of air pollution

Share of the EU urban population exposed to air pollutant concentrations above EU and WHO reference values in 2015 - 2017



## Air pollution country profile: Italy



### Air quality

The table below shows the percentage of urban population exposed to concentrations above EU standards for selected air pollutants such as PM<sub>10</sub>, PM<sub>2.5</sub>, O<sub>3</sub>, NO<sub>2</sub> and BaP for the years 2012-2017.

		2013	2014	2015	2016	2017
<b>BaP</b>	annual mean	2.8	1.5	7.8	5.7	6.6
<b>NO2</b>	annual mean	27.5	15.7	27.9	23.2	23.8
<b>O3</b>	percentile 93.15	52.0	25.6	72.5	45.4	62.9
<b>PM10</b>	percentile 90.41	64.9	48.9	64.9	42.5	44.2
<b>PM2.5</b>	annual mean	72.0	27.0	78.3	59.2	75.0

Source: [CSI004](#)



# 6. Health impacts of air pollution - latest estimates (2016)

**Table 10.1** Premature deaths attributable to PM<sub>2.5</sub>, NO<sub>2</sub> and O<sub>3</sub> exposure in 41 European countries and the EU-28, 2016

Country	Population (1 000)	PM <sub>2.5</sub>		NO <sub>2</sub>		O <sub>3</sub>	
		Annual mean (*)	Premature deaths (*)	Annual mean (*)	Premature deaths (*)	SOMO35 (*)	Premature deaths (*)
Austria	8 700	12.0	5 300	18.9	1 000	4 522	270
Belgium	11 311	12.7	7 600	21.7	1 600	2 203	180
Bulgaria	7 154	22.3	13 100	18.8	1 100	3 347	280
Croatia	4 191	19.4	5 300	15.2	260	4 996	190
Cyprus	1 184	13.7	580	24.0	240	5 612	30
Czechia	10 554	16.6	9 600	15.2	240	4 353	350
Denmark	5 707	9.2	2 700	10.4	80	2 293	90
Estonia	1 316	5.9	500	7.8	< 1	1 949	20
Finland	5 487	5.1	1 500	8.0	< 1	1 510	60
France	64 977	10.9	33 200	17.3	7 500	3 420	1 400
Germany	82 176	11.6	59 600	20.2	11 900	3 368	2 400
Greece	10 784	19.6	12 900	19.6	2 900	6 871	640
Hungary	9 830	17.5	12 100	16.6	770	3 952	380
Ireland	4 726	6.8	1 100	11.0	50	1 323	30
Italy	60 666	16.6	58 600	22.1	14 600	6 058	3 000
Latvia	1 969	10.9	1 700	12.0	60	2 773	60
Lithuania	2 889	11.8	2 600	11.7	20	2 456	70
Luxembourg	576	11.4	230	20.7	50	2 211	10
Malta	450	11.1	210	14.9	< 1	5 985	0
Netherlands	16 979	11.3	9 200	20.5	1 500	2 428	0
Poland	37 967	20.6	43 100	15.2	1 500	3 420	0
Portugal	9 809	8.3	4 900	15.3	610	4 188	320
Romania	19 761	16.8	23 400	17.6	2 700	3 330	490
Slovakia	5 426	17.6	4 800	13.5	100	3 530	100
Slovenia	2 064	16.0	1 700	11.0	0	5 007	0
Spain	44 145	11.1	24 100	17.0	700	3 420	1 500
Sweden	9 851	5.7	1 500	10.1	< 1	499	120
United Kingdom	65 379	11.3	9 200	21.8	1 500	1 161	530
Albania	2 876	11.1	210	14.9	< 1	5 985	180
Andorra	78	11.1	210	14.9	< 1	5 985	< 5
Bosnia and Herzegovina	3 531	11.1	210	14.9	< 1	5 985	120
Iceland	338	11.1	210	14.9	< 1	5 985	< 5
Kosovo	1 772	11.1	210	14.9	< 1	5 985	100
Montenegro	628	11.1	210	14.9	< 1	5 985	< 5
North Macedonia	2 071	14.3	30	26.8	10	7 186	< 5
North Macedonia	2 071	20.3	630	11.9	< 1	5 269	20
North Macedonia	2 071	34.6	3 400	17.4	110	4 434	70
North Macedonia	5 211	5.9	1 300	12.4	130	1 502	50
North Macedonia	33	14.3	30	16.3	< 1	5 667	< 5
North Macedonia	7 076	24.6	13 700	19.4	1 500	3 508	280
Switzerland	8 327	10.1	1 500	19.7	500	4 842	240
<b>EU-28</b>	<b>506 028</b>	<b>12.9</b>	<b>374 000</b>	<b>16.3</b>	<b>68 000</b>	<b>3 547</b>	<b>14 000</b>
<b>Total</b>	<b>538 014</b>	<b>14.4</b>	<b>412 000</b>	<b>16.3</b>	<b>71 000</b>	<b>3 811</b>	<b>15 100</b>

Around 400 000 premature deaths in Europe each year originating from long-term exposure to PM.

PM<sub>2.5</sub>:

41 countries: 412 000  
 EU28: 374 000  
 Italy: 58 600

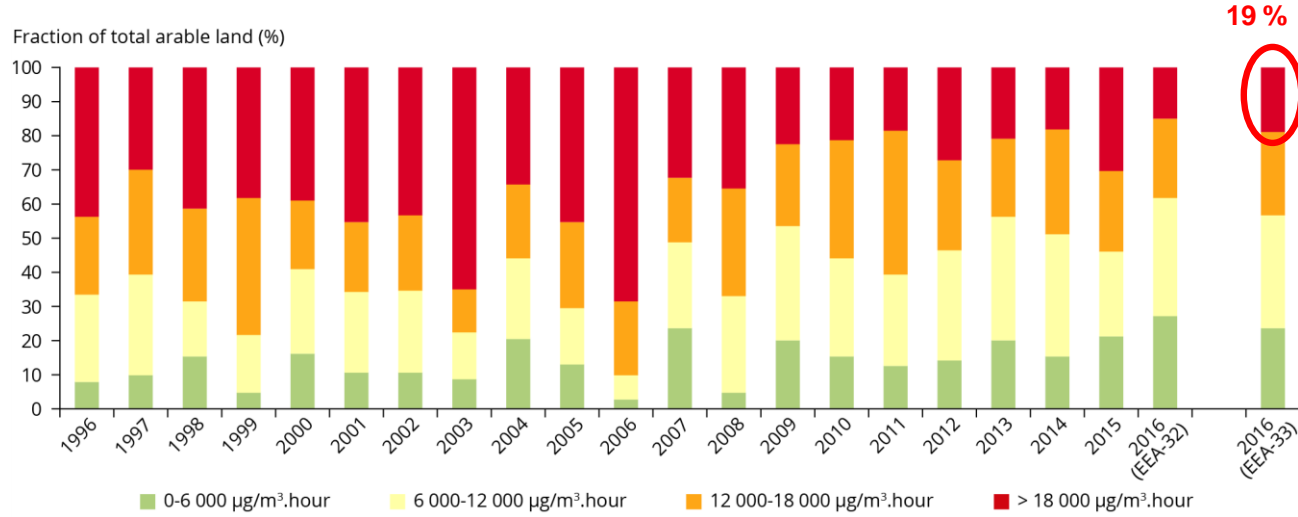
Decrease of at least ~ 30 % premature deaths if PM<sub>2.5</sub> WHO AQ guideline attained everywhere

EU28: 374 000 → 272 000  
 41 countries: 412 000 → 290 000

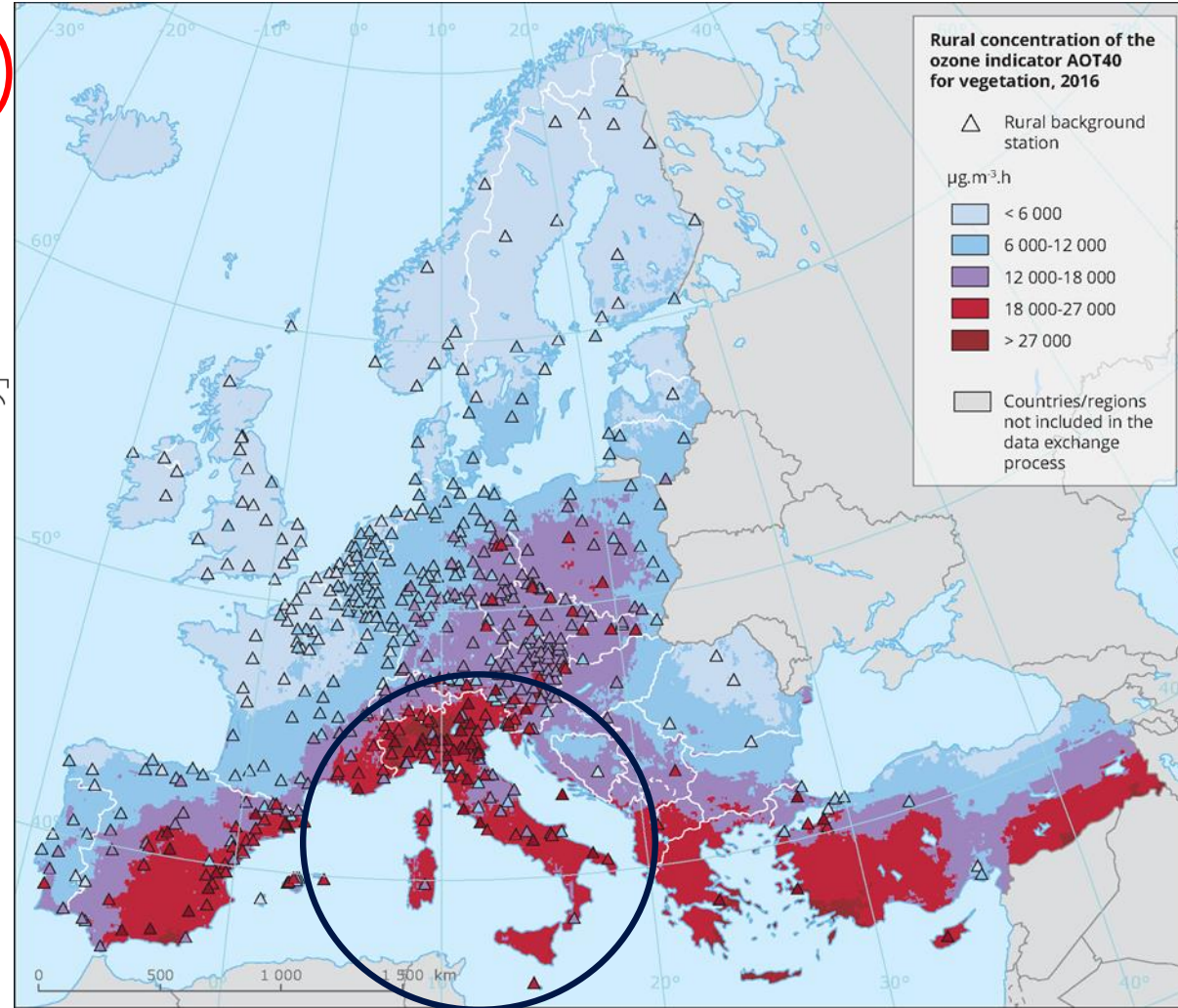
Notes: (\*) The annual mean (in µg/m<sup>3</sup>) and the SOMO35 (in µg/m<sup>3</sup> days), expressed as population weighted concentration, is obtained according to the methodology described by ET/ACM (2019) and references therein and not only from monitoring stations.

(\*) Total and EU-28 premature deaths are rounded to the nearest thousand (except for O<sub>3</sub>, nearest hundred). The national totals are rounded to the nearest hundred or ten.

# 7. Exposure of vegetation



EEA33 **crops** exposure to ozone



Source: [Eionet Report ETC/ACM 2018/8](#)

# 8. Conclusions

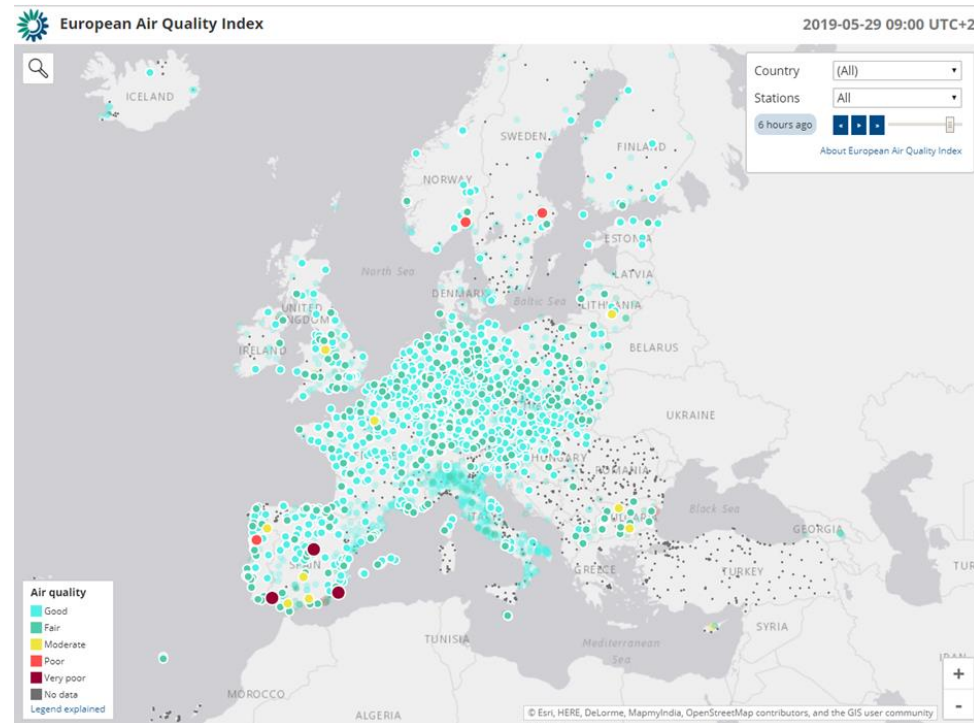


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- The emissions of pollutants have decreased in the period 2000–2017.
- The emissions have not decreased at the same pace for all pollutants and for all sectors.
- Concentrations of main pollutants have also declined.
- Still exceedances of legal concentrations and WHO standards
- Persistent impacts on health, vegetation, materials...
- Additional measures are needed especially from agriculture, transport and domestic heating.
- Need for a systemic change in the food, mobility and energy systems.
- Maintain coordination at international, national and local levels.





# EEA's air pollution data



# EEA web page on air

← → ↻ eea.europa.eu/themes/air

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Home > Topics and subtopics > Air pollution

## Air pollution

Intro EU policies EEA activities

### Subtopics

- Air pollution sources
- Air quality and COVID-19
- Air quality concentrations
- Air quality index
- Air quality management
- **Explore air pollution data**
- Health impacts of air pollution
- Urban air quality

**Air pollution is the biggest environmental health risk in Europe**

Air pollution is hard to escape, no matter where you live. It can seriously affect your health and the environment. Even

Windows taskbar: 17:00 20/05/2020

## Explore air pollution data

Page — Last modified 21 Nov 2019 — 3 min read

Topics: [Air pollution](#)

The EEA gathers air pollution data from a wide range of sources. This page provides links to available data and information on Europe's air quality.

[Air quality status](#) [Air quality management](#) [Emissions to air](#) [Indicators and reports](#) [Countries and regions](#)

### Air quality status

Air quality is the air we breathe. Explore and download EEA's air quality data via a range of interactive data viewers and services.

#### **Air quality live: European Air Quality Index (EAQI)**

EAQI combines information for five different air pollutants to show the current status of Europe's air quality.

#### **Air quality live: Up-to-date air quality measurements**

Latest measurements from Europe's air quality monitoring network.

#### **Air quality in past years**

Statistics for air pollutants calculated from officially-verified country data for years until 'X-2'.

- [Key air quality statistics for the main air pollutants: map viewer](#)
- [Detailed air quality parameters: advanced map viewer](#)



# Air quality status

← → ↻ eea.europa.eu/themes/air/explore-air-pollution-data#tab-air-quality-status 🔑 ☆ 👤 ⋮

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**Data and downloads**

- **Interactive data table:** air quality statistics for past years calculated by EEA (AIDE F)
- **Data by country:** raw air quality monitoring data reported by countries
- **Up-to-date air quality data** for external applications and APIs

## Related content

Sort by:  ▾

[Interactive charts](#) [Interactive maps](#) [See also](#)

# Air quality management

← → ↻ eea.europa.eu/themes/air/explore-air-pollution-data#tab-air-quality-management 🔑 ☆ 👤 ⋮

[Air quality status](#) [Air quality management](#) [Emissions to air](#) [Indicators and reports](#) [Countries and regions](#)

## Air quality management

EEA collects a range of information officially reported by countries following the requirements of the EU's Air Quality Directives (2004/107/EC and 2008/50/EC) and Implementing Provisions (2011/850/EU). The following links provide access to the data and information that accompanies the reported measurements of air quality.

- [Air quality zones – interactive map](#)
- [Information on air quality zones and agglomerations \(AIDE B\)](#)
- [Information on assessment regimes \(AIDE C\)](#)
- [Information on assessment methods, including details of monitoring stations and networks \(AIDE D\)](#)
- [Information on the attainment of environmental objectives, including declarations of exceedances \(AIDE G\)](#)
- [Information on air quality plans relating to declared zones \(AIDE H\)](#)
- [Information on air quality source apportionment \(AIDE I\)](#)
- [Information on scenarios for the attainment year \(AIDE J\)](#)
- [Information on measures to improve air quality \(AIDE K\)](#)

More information on the reporting of air quality information can be found at the [European Air Quality Portal](#)

### Related content

Sort by:  ▼

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# Emissions to air

← → ↻ eea.europa.eu/themes/air/explore-air-pollution-data#tab-emissions-to-air 🔑 ☆ 👤 ⋮

[Air quality status](#) [Air quality management](#) [Emissions to air](#) [Indicators and reports](#) [Countries and regions](#)

## Emissions to air

The EEA maintains a number of datasets containing officially-reported estimates of the amount of air pollutants emitted into the atmosphere from different sources.

### EU National Emission Ceilings (NEC) Directive

Air pollutant national emissions inventory and projections data reported by EU Member States. The recommended dataset for users wishing to assess the progress being made by Member States towards meeting their emission reduction commitments under the NEC Directive.

- [About the NEC Directive](#)
- [Annual NEC Directive reporting status report](#)
- [Interactive data viewer](#)
- [Download data](#)

### Convention on Long-range Transboundary Air Pollution (LRTAP)

Emissions data reported by EEA's member countries and used in the European Union's annual submission to the UNECE LRTAP Convention. This is the dataset used by EEA in its indicators and reports on air pollution.

- [Annual EU emission inventory report](#)
- [Interactive data viewer](#)
- [Download data](#)

### Emissions from industrial facilities

Emissions data from Europe's largest industrial facilities, reported under the requirements of the European Pollutant Release and Transfer Register (E-PRTR) Regulation ([No 1266/2006](#)) and the Large Combustion Plant Directive ([2001/80/EC](#))

- [E-PRTR and LCP website](#)
- [Download E-PRTR data](#)
- [Download LCP data](#)

# Indicators and reports

← → ↻ eea.europa.eu/themes/air/explore-air-pollution-data#tab-indicators-and-reports



[Air quality status](#) [Air quality management](#) [Emissions to air](#) [Indicators and reports](#) [Countries and regions](#)

## Indicators and reports

EEA's reports and indicators on air pollution are designed to address key policy questions and to support different phases of environmental policy making: from designing policy frameworks to setting targets, and from policy monitoring and evaluation to communicating to policy-makers and the public.

### Reports

- [Access EEA's publications on air pollution](#)

### Indicators

#### Emissions to air

- Emissions of the main air pollutants in Europe (CSI040)
- Heavy metal emissions (APE005)
- Persistent organic pollutant (POPs) emissions (APE006)
- Emissions of air pollutants from transport (TERM003)
- Emissions of air pollutants from large combustion plants (INDP002)

#### Air quality status

- Exceedance of air quality limit values in urban areas (CSI004)
- Exceedances of air quality objectives due to traffic (TERM004)
- Air pollution due to ozone: health impacts and effects of climate change (CLIM006)

#### Air quality effects on ecosystems

- Exposure of ecosystems to acidification, eutrophication and ozone (CSI005)



# Countries and regions

## Air pollution country fact sheets

Information on the air quality situation in each of the 33 EEA member countries. Explore and download information and key air pollution statistics for each country.

Austria	Liechtenstein
Belgium	Lithuania
Bulgaria	Luxembourg
Croatia	Malta
Cyprus	Netherlands
Finland	Norway
France	Poland
Estonia	Portugal
Czech Republic	Romania
Denmark	Slovakia
Germany	Slovenia
Greece	Spain
Hungary	Sweden
Iceland	Switzerland
Ireland	Turkey
Italy	United Kingdom



# Thanks for your attention!!

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