Urban air pollution: a European overview

Outline

1. The EEA: mission and description
2. EEA´s work in air pollution
3. Air Quality in Europe: focus on the urban
   a) Emissions
   b) Concentrations
   c) Exposure
   d) Health impacts
4. Measures to improve air quality
5. Conclusions

1. The EEA's mission

What?
The provision of relevant, reliable, targeted and timely information to policy-making agents and the public.

Why?
To help achieve significant and measurable improvements in Europe's environment and to support sustainable development.

+ European environment information and observation network (EIONET)

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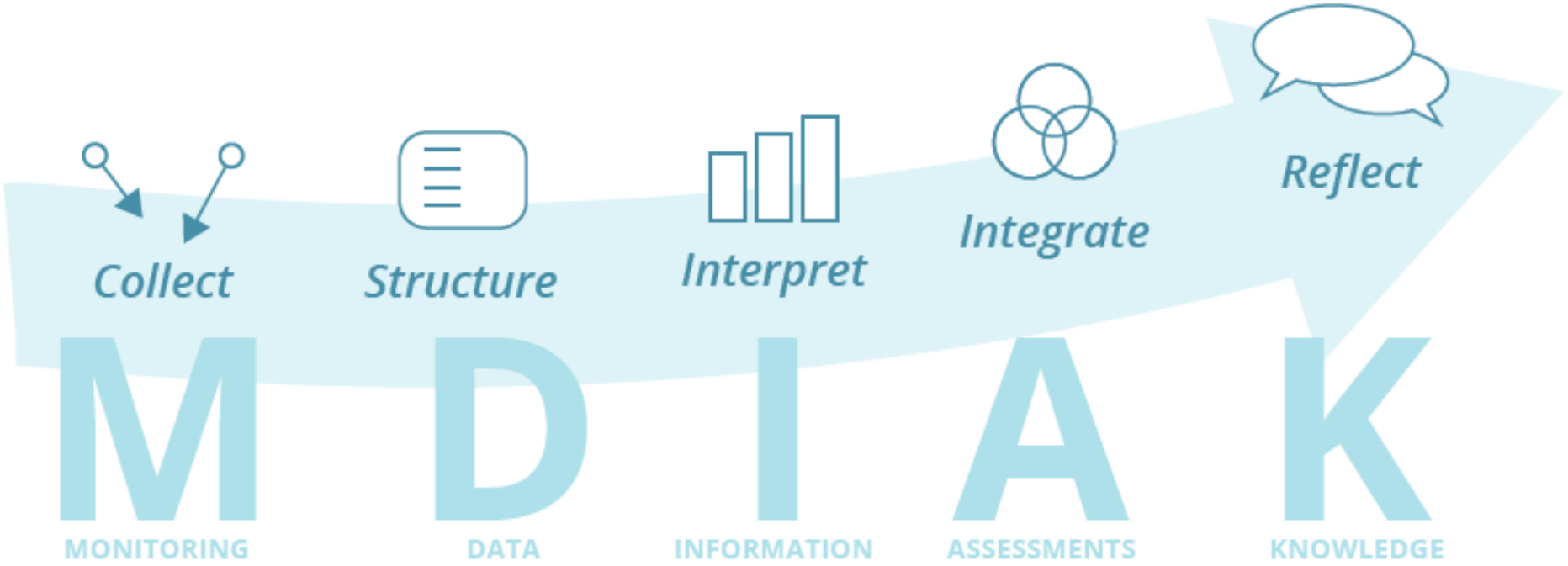
1. EEA: the MDIAK chain



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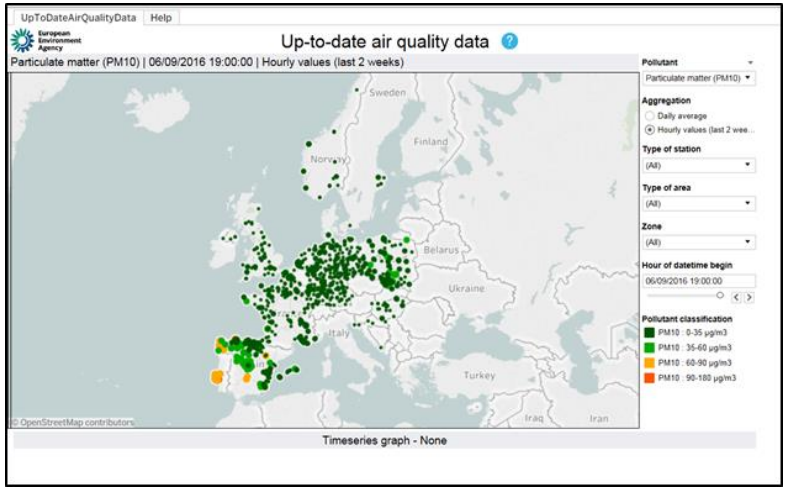
2. EEA´s work on air pollution (1)

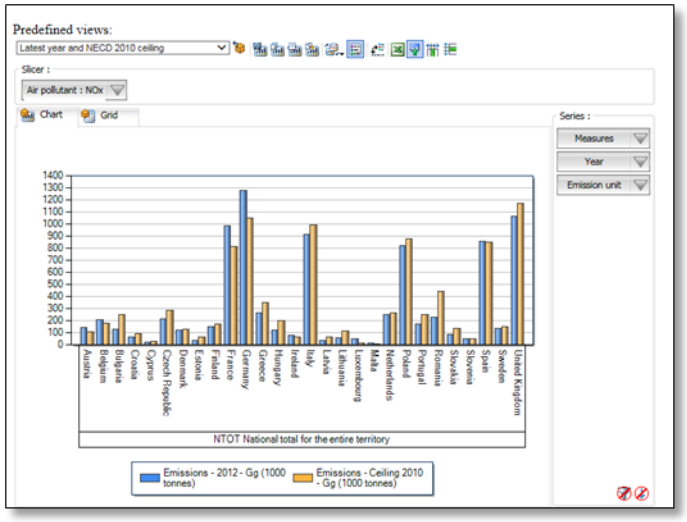
MONITORING: By Member States

Emission inventories (NEC Directive, Convention of Geneva (CLRTAP))

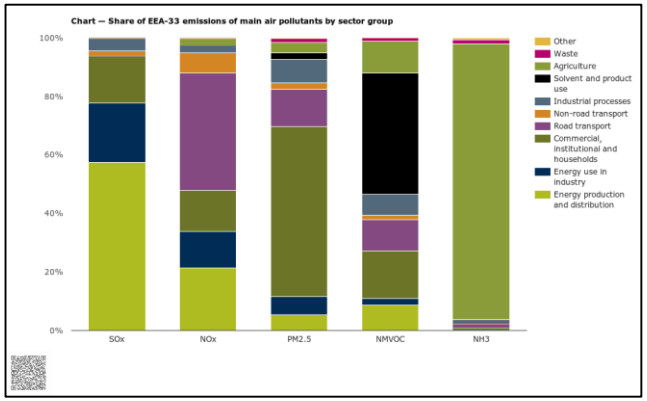
Air Quality (AQ Directives 2004/107/EC and 2008/50/EC)

DATA





INFORMATION



Together with the European Topic Centre on Air Pollution and Climate Change Mitigation

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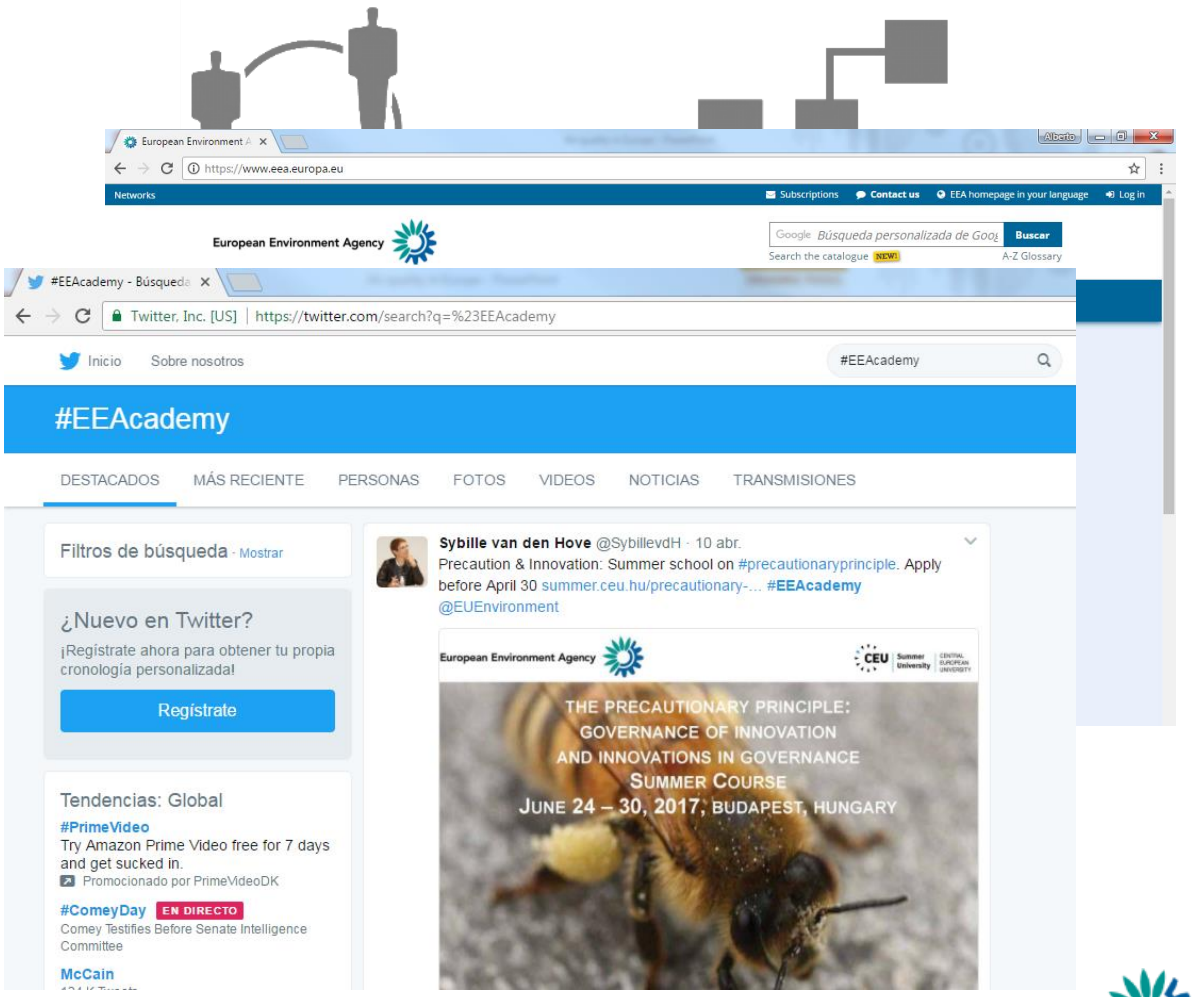
2. EEA´s work on air pollution (2)

ASSESSMENTS

KNOWLEDGE



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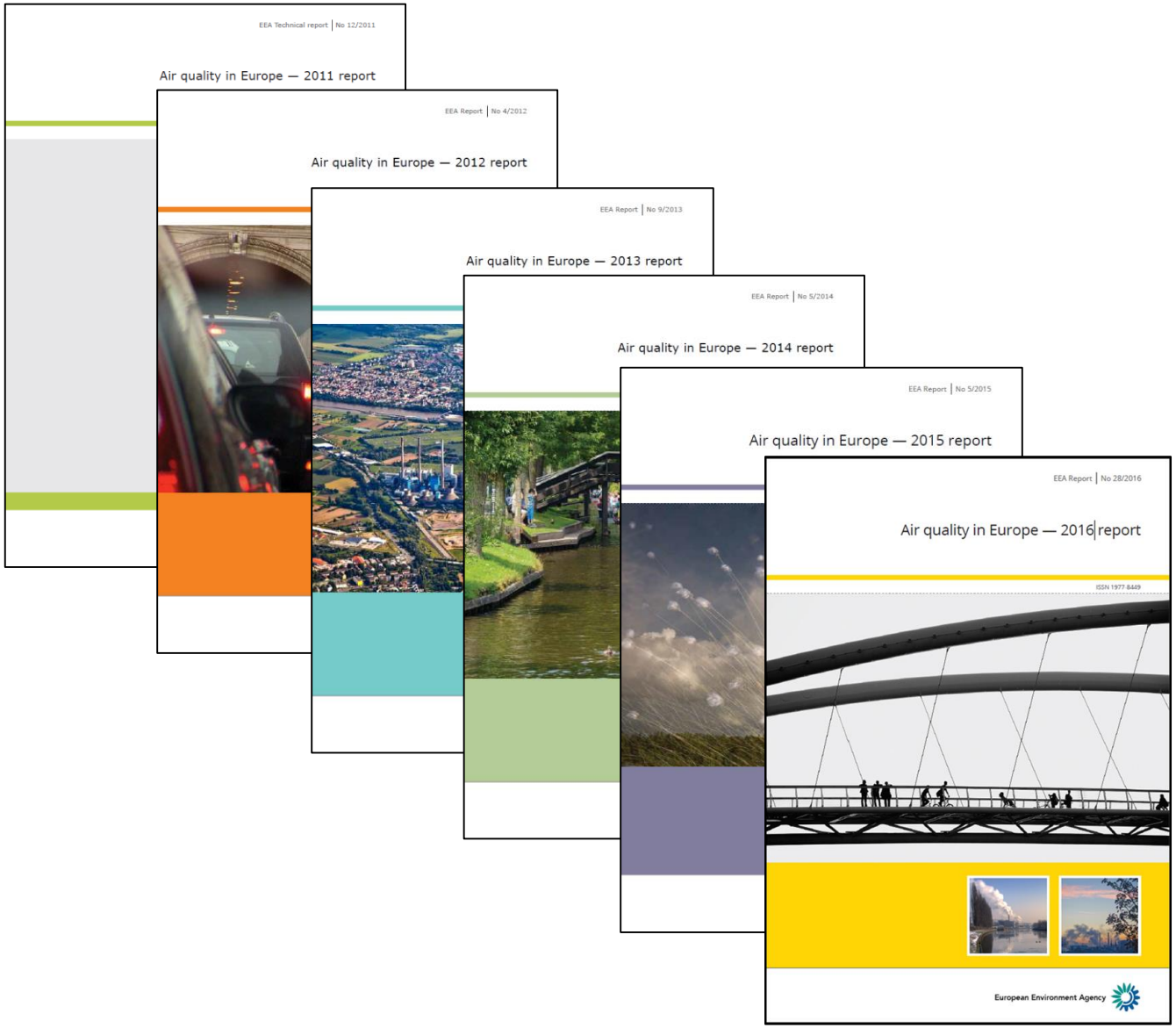
3. Air quality in Europe: *reports*



Air quality in Europe – 2017 report

Coming soon

http://www.eea.europa.eu/publications/air-quality-in-europe-2016

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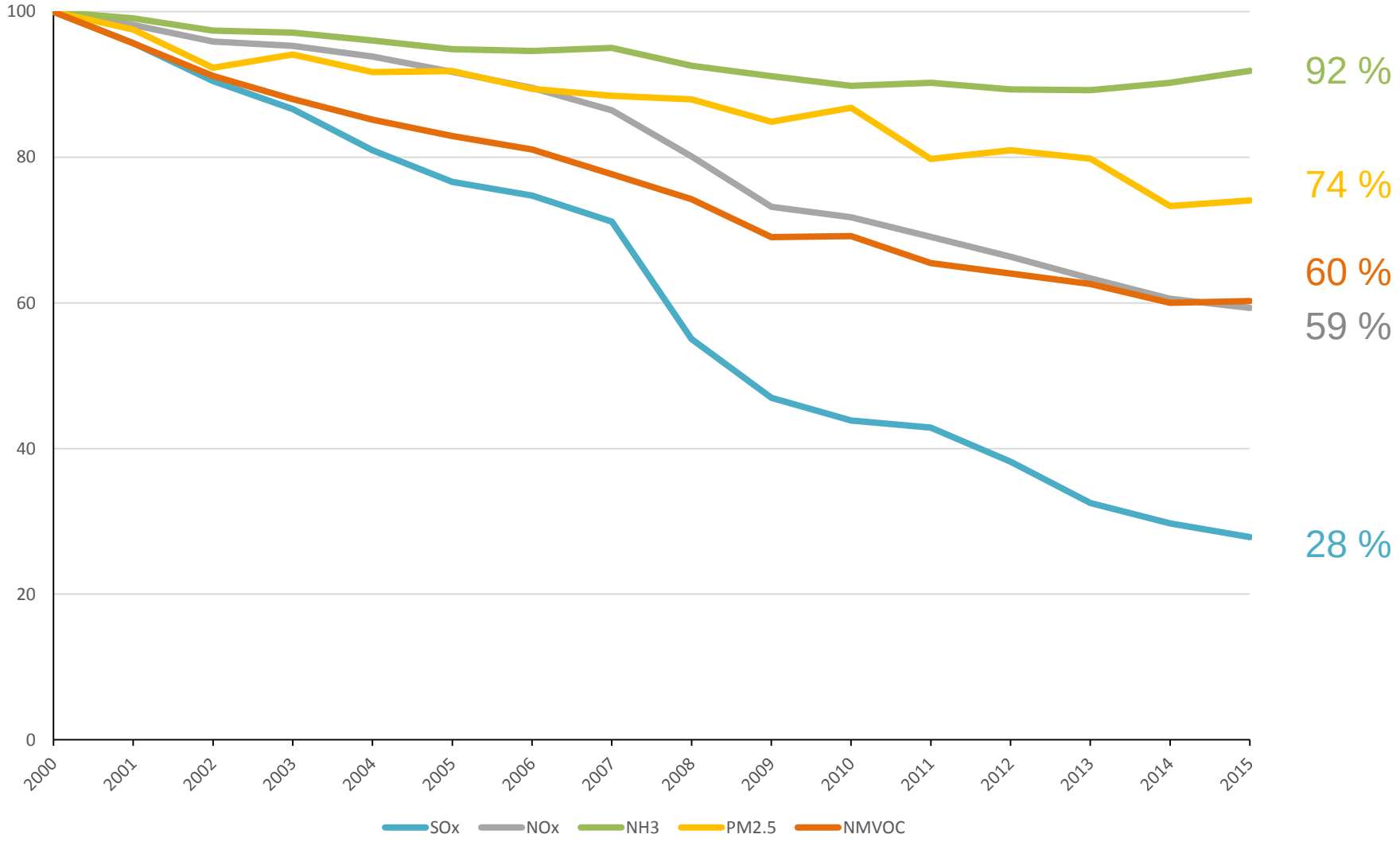
3. Air quality in Europe: emissions have decreased



EU Member States (2000 – 2015)

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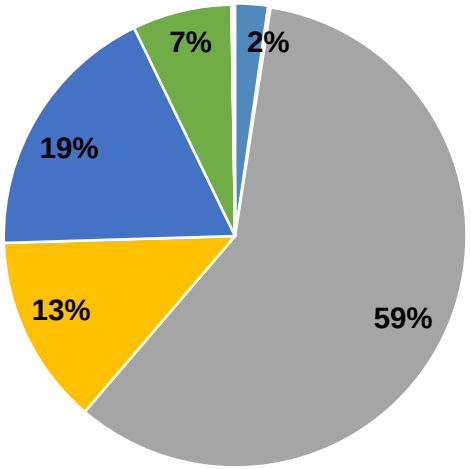
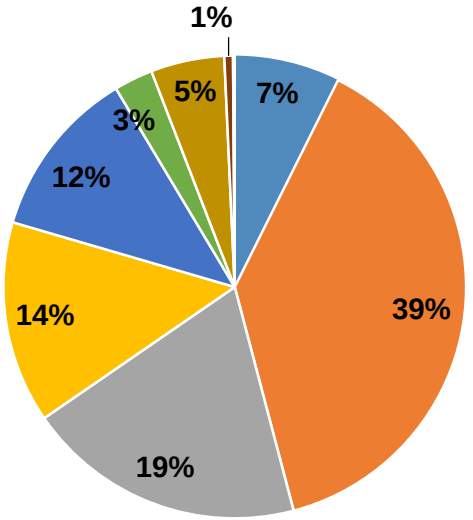
3. AQ in Europe: emissions from different sectors

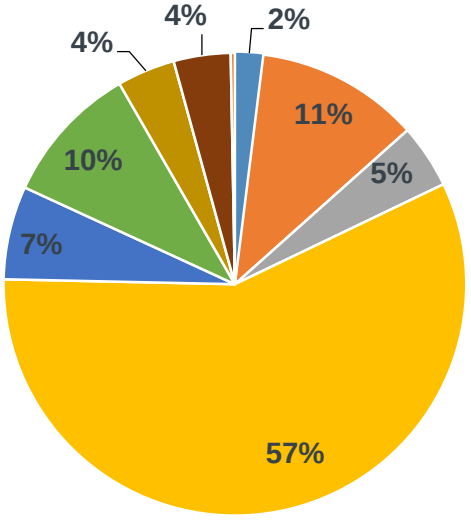
SO_x



NO_x

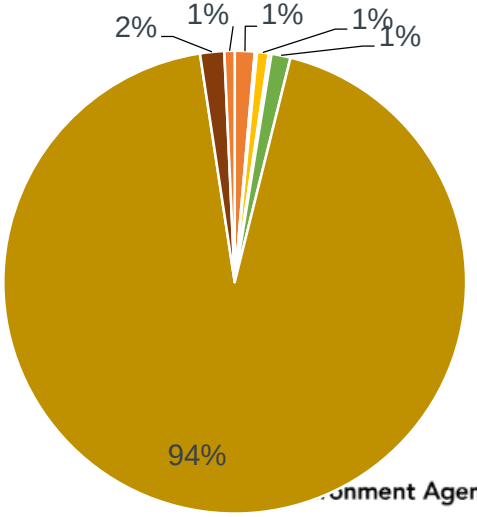


$PM_{2.5}$



- Non-road transport
- Road transport
- Energy production and distribution
- Commercial, Institutional and Households
- Energy use in industry
- Industrial processes and product use
- Agriculture
- Waste
- Other

NH_3



EU Member States (2015)

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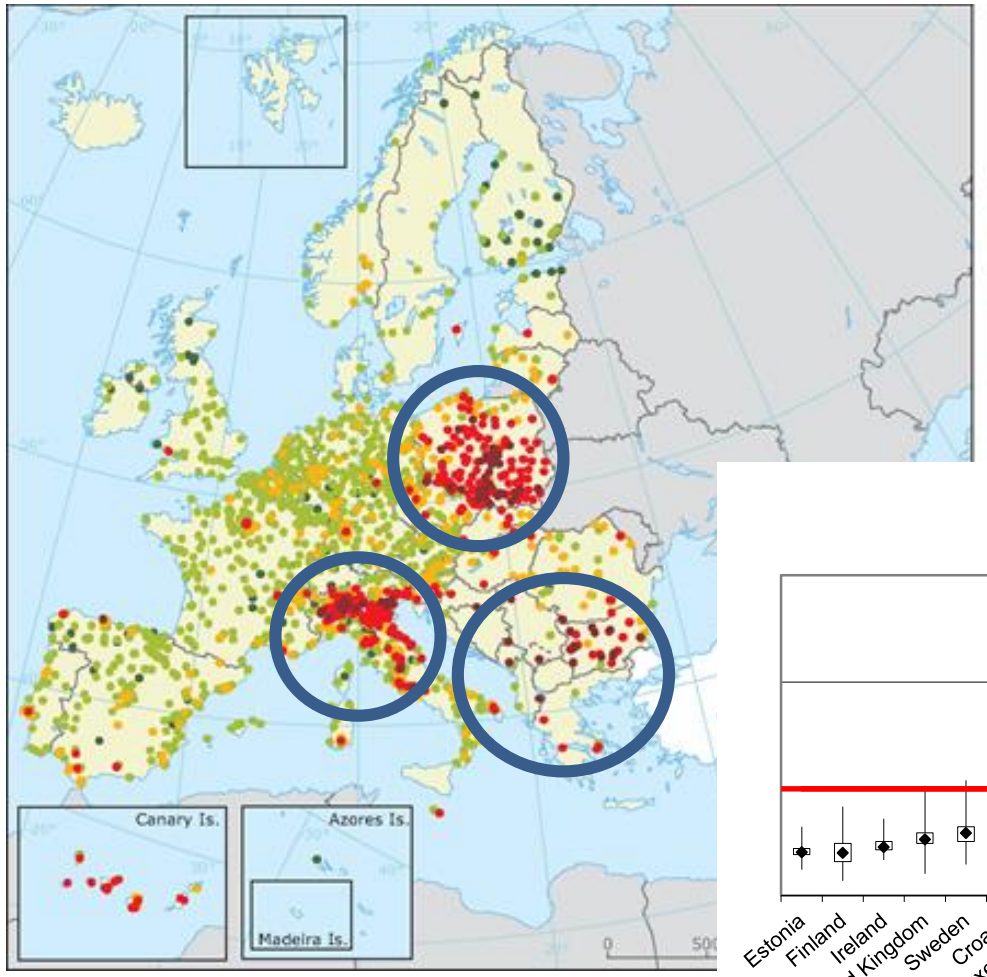
3. Particulate matter (PM_{10}) concentrations systematically exceed EU standards across large parts of Europe



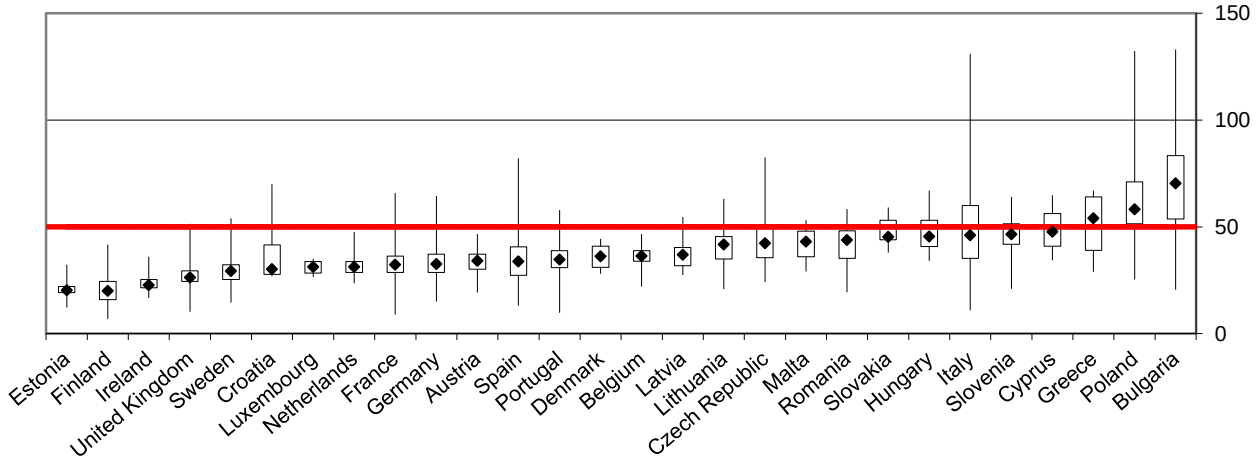
90.4 percentile of PM_{10} daily concentrations in 2015

µg/m³

- ≤ 20
- 20-40
- 40-50
- 50-75
- > 75

No data

Countries/regions not included in the data exchange process



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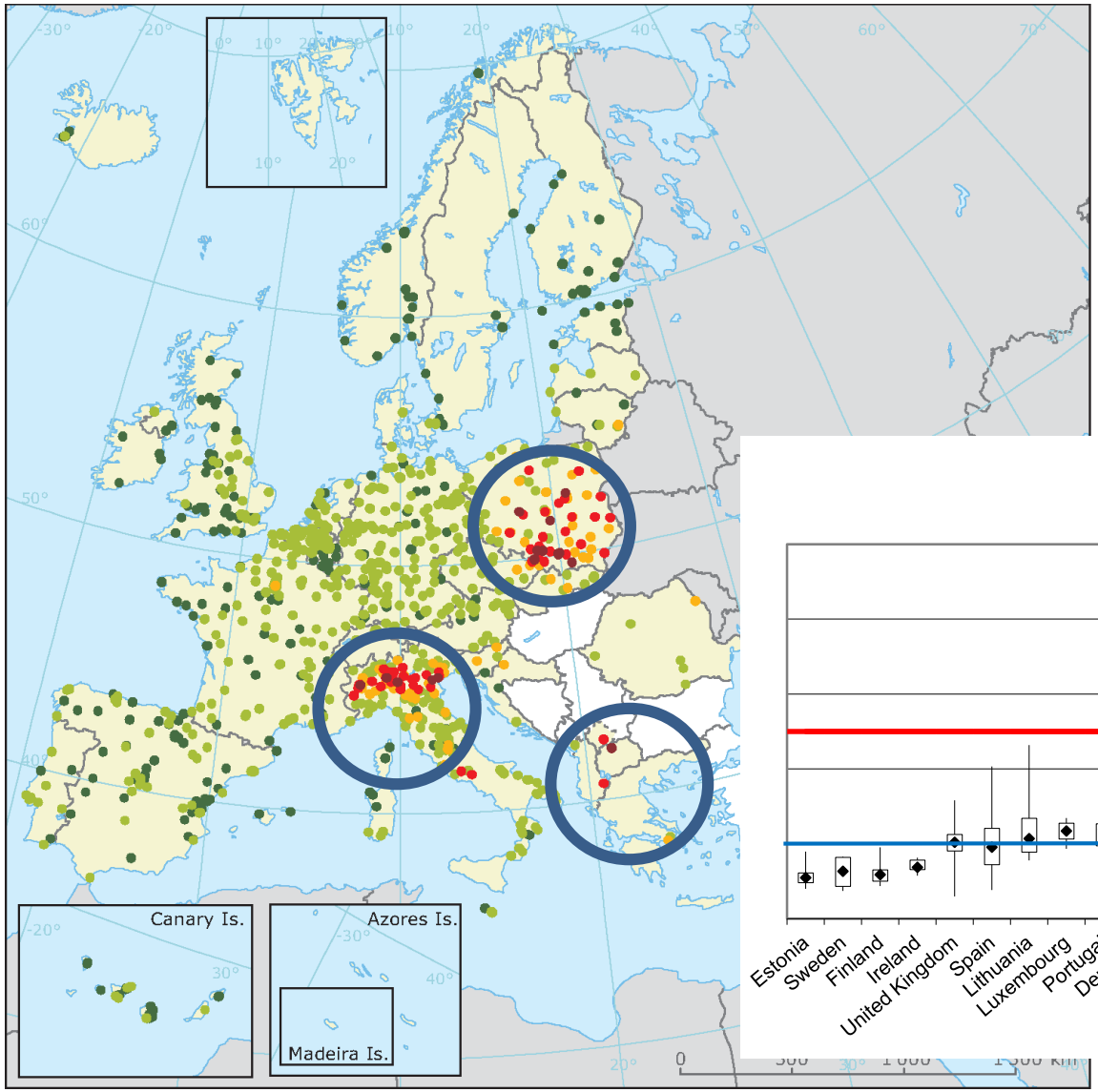
3. $PM_{2.5}$ high in the same regions as PM_{10}



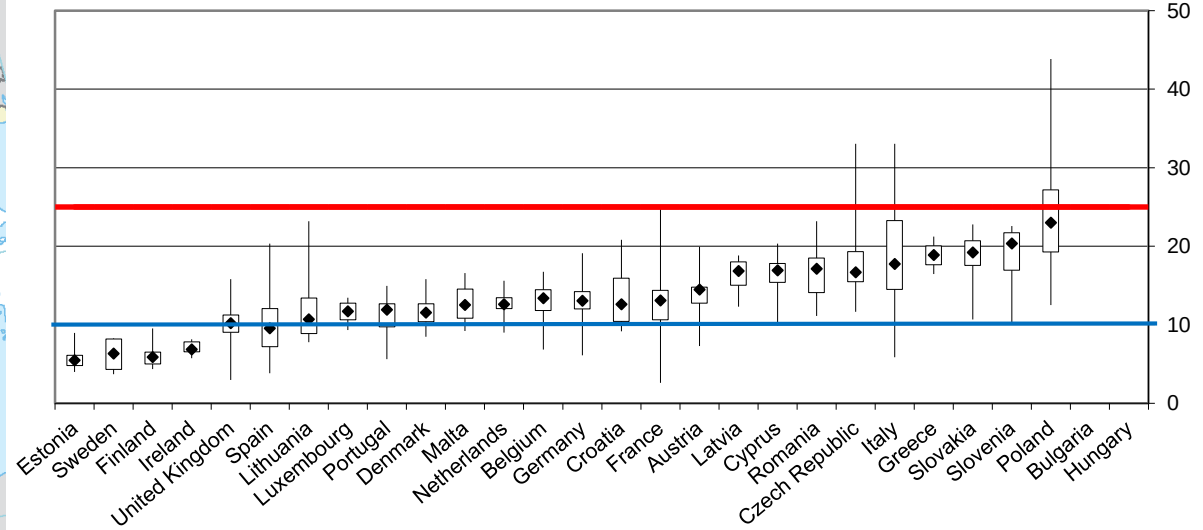
Annual mean $PM_{2.5}$ concentrations in 2015

µg/m³

- ≤ 10
- 10-20
- 20-25
- 25-30
- > 30

No data

Countries/regions not included in the data exchange process



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3. The $PM_{2.5}$ Average exposure indicator

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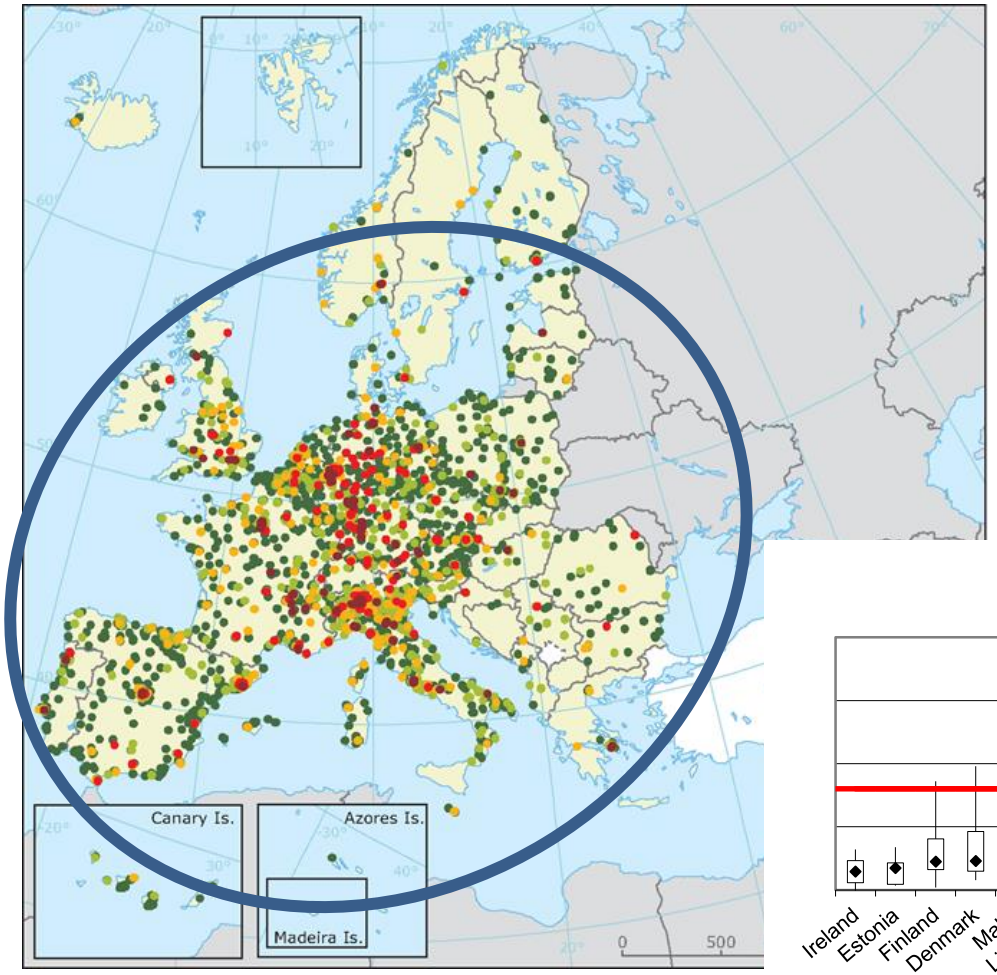
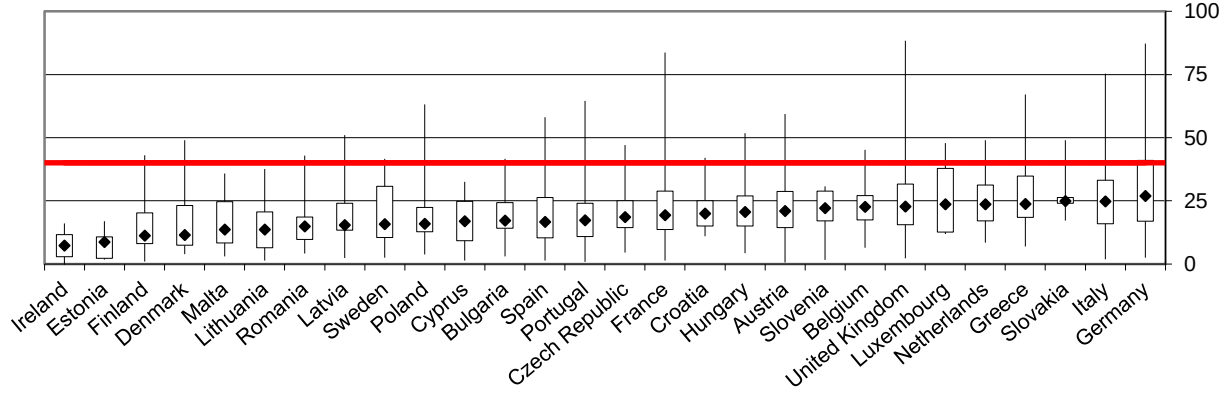
3. NO_2 harms the respiratory and cardiovascular systems





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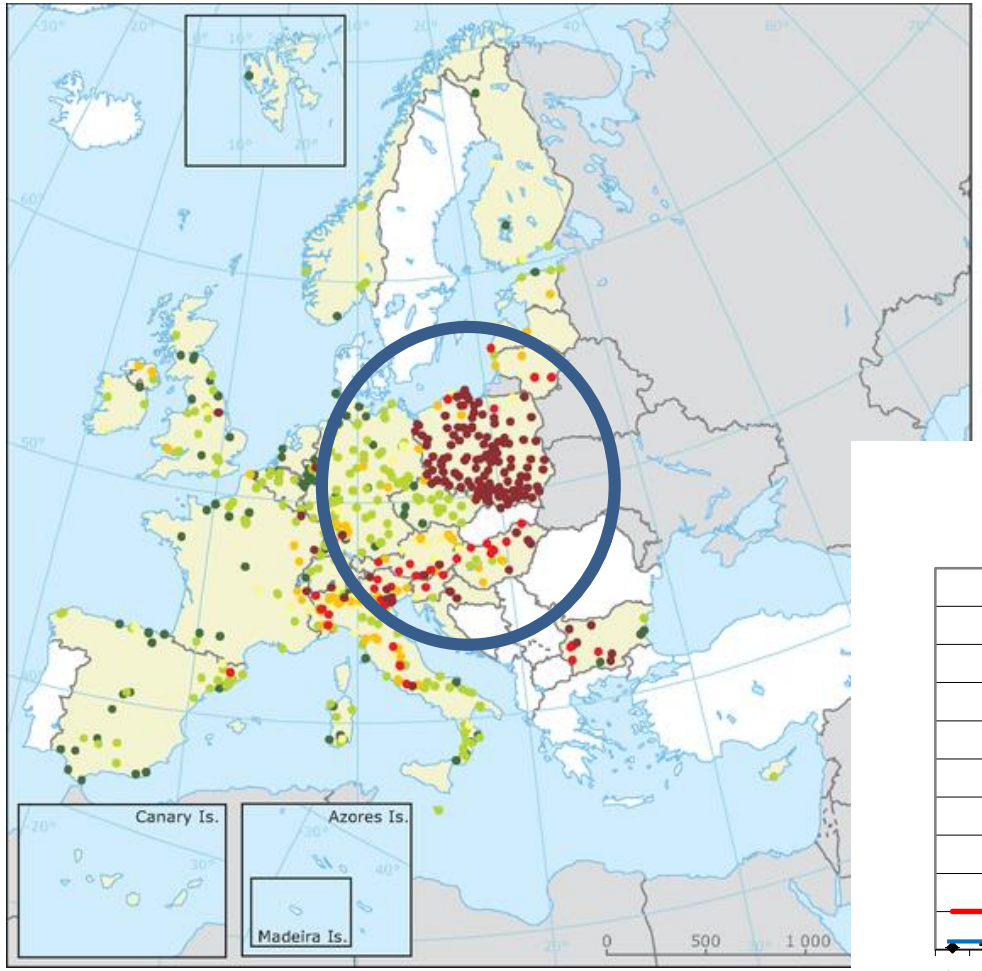
3. Benzo[*a*]pyrene concentrations are still high in Eastern Europe



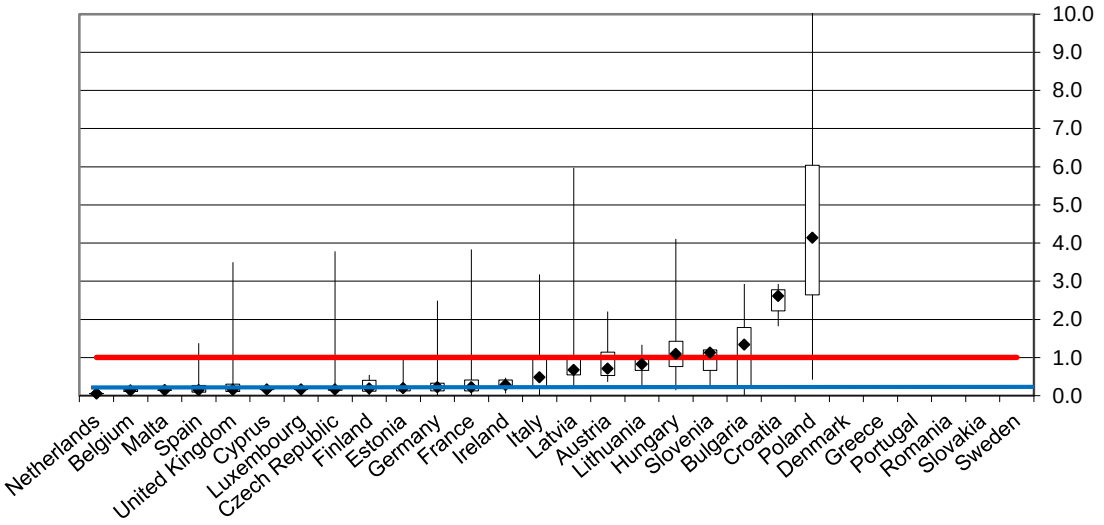
Annual mean BaP concentrations in 2015

ng/m³

- ≤ 0.12
- 0.12-0.4
- 0.4-0.6
- 0.6-1
- 1-1.5
- > 1.5

No data

Countries/regions not included in the data exchange process



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3. Many Europeans still exposed to harmful levels of air pollution

EU urban population exposed to harmful levels of air pollutant concentrations in 2013–2015, according to:

	EU limit/target values	WHO guidelines
$PM_{2.5}$	7–8 %	82–85 %
PM_{10}	16–20 %	50–62 %
O_3	7–30 %	95–98 %
NO_2	7–9 %	7–9 %
BaP	20–25 %	85–91 %
SO_2	<1 %	20–38 %

Source: CSI004

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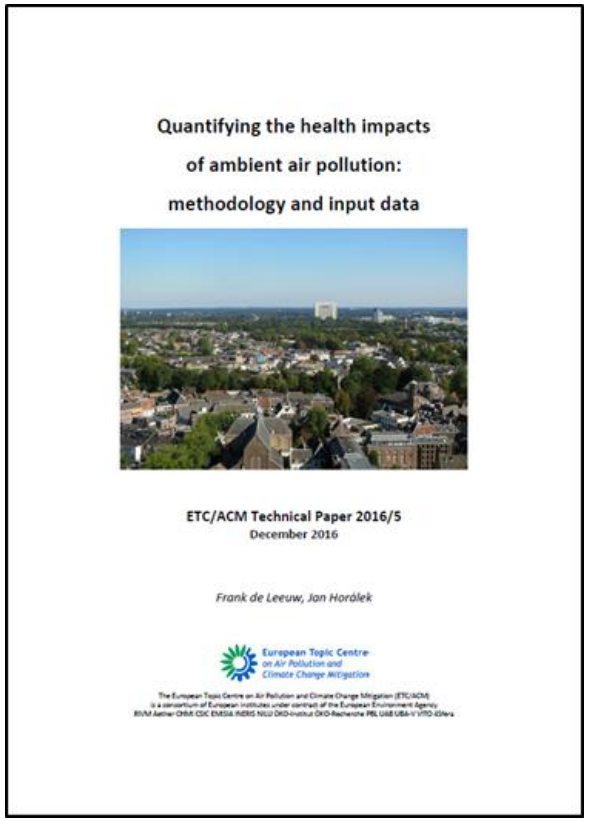
3. Health impacts - latest estimates (2014)



Country	Population (1 000)	PM2.5 Annual mean (c)	PM2.5 Premature deaths (a)	NO2 Annual mean (c)	NO2 Premature deaths (a)	O3 SOMO35 (c)	O3 Premature deaths
Austria	8 507	12.9	5 570	19.2	1 140	4 423	260
Belgium	11 181	13.7	8 340	21.9	1 870	2 297	190
Bulgaria	7 246	24	13 620	16.5	740	2 519	200
Croatia	4 247	15.6	4 430	15.7	300	4 503	180
Cyprus	1 172 (d)	17	600	12.8	20	5 426	30
Czech Republic	10 512	18.6	10 810	16.8	550	3 822	310
Denmark	5 627	11.6	3 470	11	130	2 611	110
Estonia	1 316	8.7	750	9	10	1 991	20
Finland	5 451	7.4	2 150	8.3	40	1 615	60
France	63 798	11	34 880	17.7	9 330	3 786	1 630
Germany	80 767	13.4	66 080	20.2	12 860	3 287	
Greece	10 927	17	11 870	14.9	1 660	5 926	
Hungary	9 877	17.3	11 970	17.1	1 210		20
Ireland	4 606	9	1 480	6.1			2 900
Italy	60 783	15.8	59 630	22.5			
Latvia	2 001	14.1	2 190			2 213	
Lithuania	2 943	15.5			60	2 457	70
Luxembourg	550	11.9					10
Malta	425			16		6 946	20
Netherlands						2 244	250
Poland			46 020		1 700	3 425	970
Portugal		8.7			610	3 519	280
	19 947			16.5	1 860	1 842	350
			5 160	15.2	100	4 344	160
Slovenia			1 710	15	60	5086	80
Spain		10.7	23 180	19.9	6 740	5 436	1 600
	9 645	7.6	3 710	9.9	130	2 318	150
United Kingdom	64 351	11.6	37 600	22.2	14 050	1 337	590
Andorra	77	10	40	15	< 1	6 692	< 5
Albania	2 896	16.5	1 670	14.8	90	4 376	60
Bosnia and Herzegovina	3 827	15.3	3 450	15.1	110	3 852	120
former Yugoslav Republic of Macedonia	2 066	27.4	3 060	16	60	3 215	50
Iceland	326	6.6	80	10.9	< 5	218	<1
Kosovo (b)	1 805	26.4	3 290	13.6	10	3 149	60
Liechtenstein	37	9	20	18.5	< 5	4 360	<5
Monaco	38	12.9	20	24.5	< 10	7 112	<5
Montenegro	622	15.6	550	14	< 5	4 012	20
Norway	5 108	7.2	1 560	12.4	190	2 113	60
San Marino	33	13.5	30	14.7	< 5	5 949	< 5
Serbia	7 147	21.5	10 770	19.6	1 380	2 668	190
Switzerland	8 140	11.6	4 240	20.9	980	4 417	220
Total (c)	534 471	14.1	**428 000**	18.6	**78 000**	3 501	**14 400**
EU-28 (c)	502 351	14.0	**399 000**	18.7	**75 000**	3 507	**13 600**

Around 400 000 premature deaths in the EU-28 each year originating from long-term exposure to PM.

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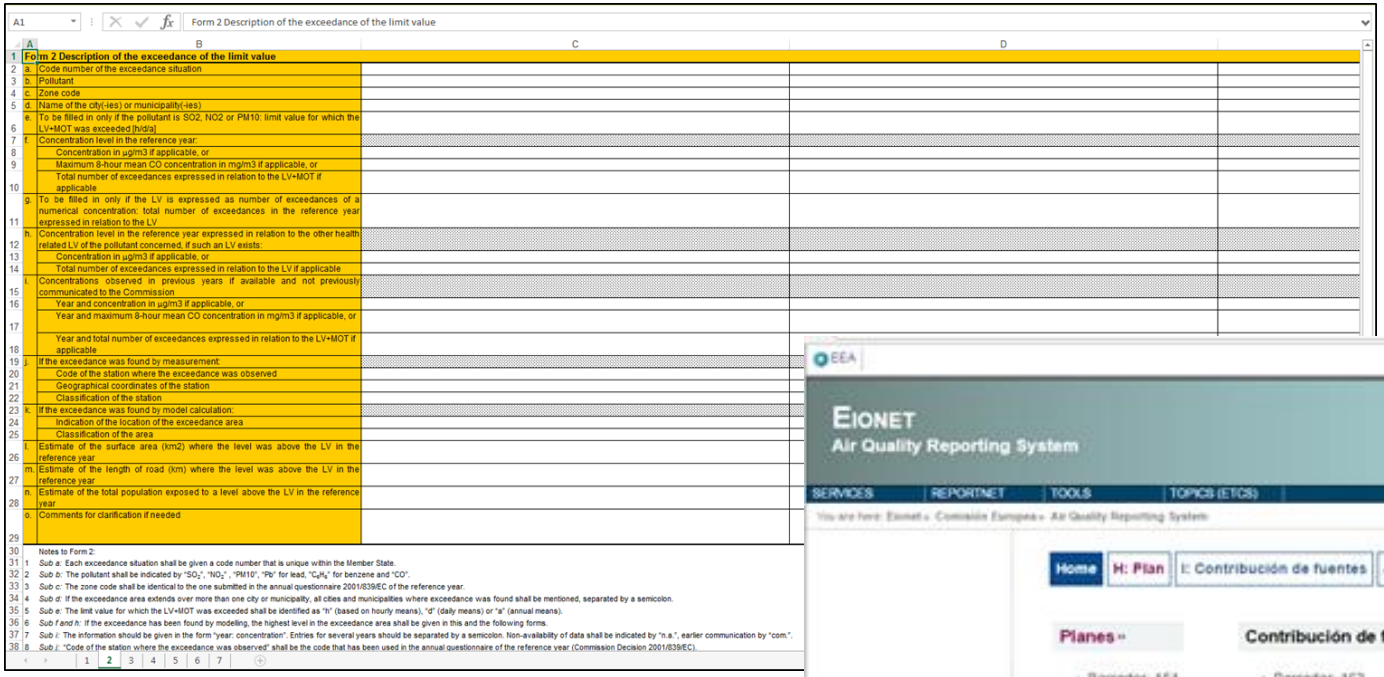
4. Measures to improve air quality

- European legislation
- National plans
- Regional and local measures

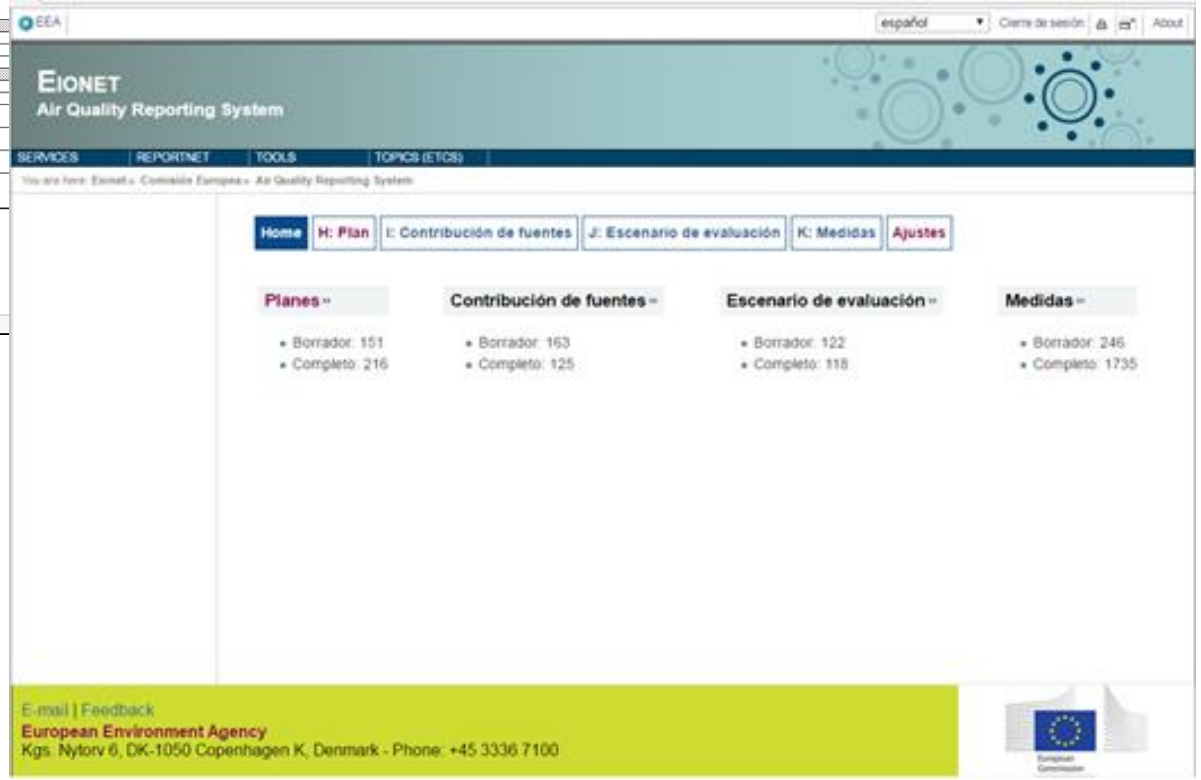
- Obligation of MS of implement and report measures
- Old questionnaire on Plan and Programmes
- New e-reporting

4. E-reporting of measures: moving from the old questionnaire



Form 2 Description of the exceedance of the limit value			
a.	Code number of the exceedance situation		
b.	Pollutant		
c.	Zone code		
d.	Name of the city(-ies) or municipality(-ies)		
e.	To be filled in only if the pollutant is SO2, NO2 or PM10: limit value for which the LV+MOT was exceeded [h/d/a]		
f.	Concentration level in the reference year:		
	Concentration in µg/m3 if applicable, or		
	Maximum 8-hour mean CO concentration in mg/m3 if applicable, or		
	Total number of exceedances expressed in relation to the LV+MOT if applicable		
g.	To be filled in only if the LV is expressed as number of exceedances of a numerical concentration: total number of exceedances in the reference year expressed in relation to the LV		
h.	Concentration level in the reference year expressed in relation to the other health related LV of the pollutant concerned, if such an LV exists:		
	Concentration in µg/m3 if applicable, or		
	Total number of exceedances expressed in relation to the LV if applicable		
i.	Concentrations observed in previous years if available and not previously communicated to the Commission		
	Year and concentration in µg/m3 if applicable, or		
	Year and maximum 8-hour mean CO concentration in mg/m3 if applicable, or		
	Year and total number of exceedances expressed in relation to the LV+MOT if applicable		
j.	If the exceedance was found by measurement:		
	Code of the station where the exceedance was observed		
	Geographical coordinates of the station		
	Classification of the station		
k.	If the exceedance was found by model calculation:		
	Indication of the location of the exceedance area		
	Classification of the area		
l.	Estimate of the surface area (km2) where the level was above the LV in the reference year		
m.	Estimate of the length of road (km) where the level was above the LV in the reference year		
n.	Estimate of the total population exposed to a level above the LV in the reference year		
o.	Comments for clarification if needed		

Notes to Form 2:
1 *Sub a*: Each exceedance situation shall be given a code number that is unique within the Member State.
2 *Sub b*: The pollutant shall be indicated by "SO_2", "NO_2" , "PM10", "Pb" for lead, "C_6H_6" for benzene and "CO".
3 *Sub c*: The zone code shall be identical to the one submitted in the annual questionnaire 2001/839/EC of the reference year.
4 *Sub d*: If the exceedance area extends over more than one city or municipality, all cities and municipalities where exceedance was found shall be mentioned, separated by a semicolon.
5 *Sub e*: The limit value for which the LV+MOT was exceeded shall be identified as "h" (based on hourly means), "d" (daily means) or "a" (annual means).
6 *Sub f and h*: If the exceedance has been found by modelling, the highest level in the exceedance area shall be given in this and the following forms.
7 *Sub i*: The information should be given in the form "year: concentration". Entries for several years should be separated by a semicolon. Non-availability of data shall be indicated by "n.a.", earlier communication by "com.".
8 *Sub j*: "Code of the station where the exceedance was observed" shall be the code that has been used in the annual questionnaire of the reference year (Commission Decision 2001/839/EC).



Commission Implementing Decision 2011/850/EC

European Environment Agency

5. E-reporting of measures: future

Additional QA/QC by EEA: consistency of the reported information

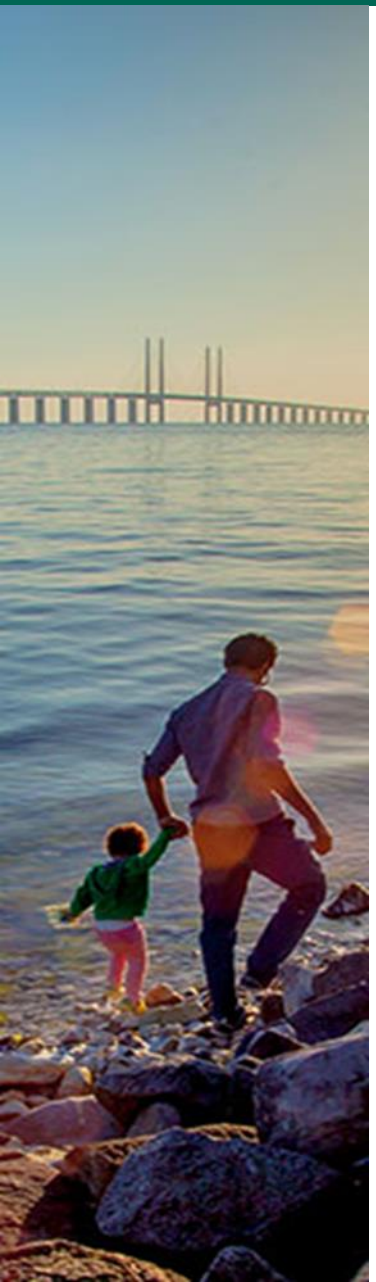
Viewers: they will facilitate the analysis of the reported information

Analysis of the information: ETC/ACM – EEA future technical report

AQ Portal:

http://eeadmz1-cws-wp-air.azurewebsites.net/

5. Conclusions



1. Policies are working: air quality is slowly improving as a direct result of past and current policies, and technological improvements.

2. However, air pollution remains responsible for more than 400 000 premature deaths in Europe each year. It continues to damage vegetation and ecosystems.

3. Effective air quality policies require action and cooperation at different scales: pan-European, national and local/city levels.

4. Systemic solutions must increasingly be found to move towards air quality consistent with the WHO AQ guidelines, and achieve the EU's 2050 vision of "living well within the limits of the planet".

Thank you

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