

THE EUROPEAN ENVIRONMENT STATE AND OUTLOOK 2015

AIR



Martin Adams
Head – Air Pollution, Transport and Noise group

European Environment Agency



Air pollution – successes and challenges

SYNTHESIS
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- Despite considerable improvements in past decades, air pollution is still responsible for more than 400 000 premature deaths in Europe each year. It also continues to damage vegetation and ecosystems.
- Continued improvements in air pollution levels are expected under current legislation, but beyond 2030 only slow progress is expected.
- Additional measures are needed if Europe is to achieve the long-term objective of air pollution levels that do not lead to unacceptable harm to human health and the environment.



Impacts of air pollutants and greenhouse gases

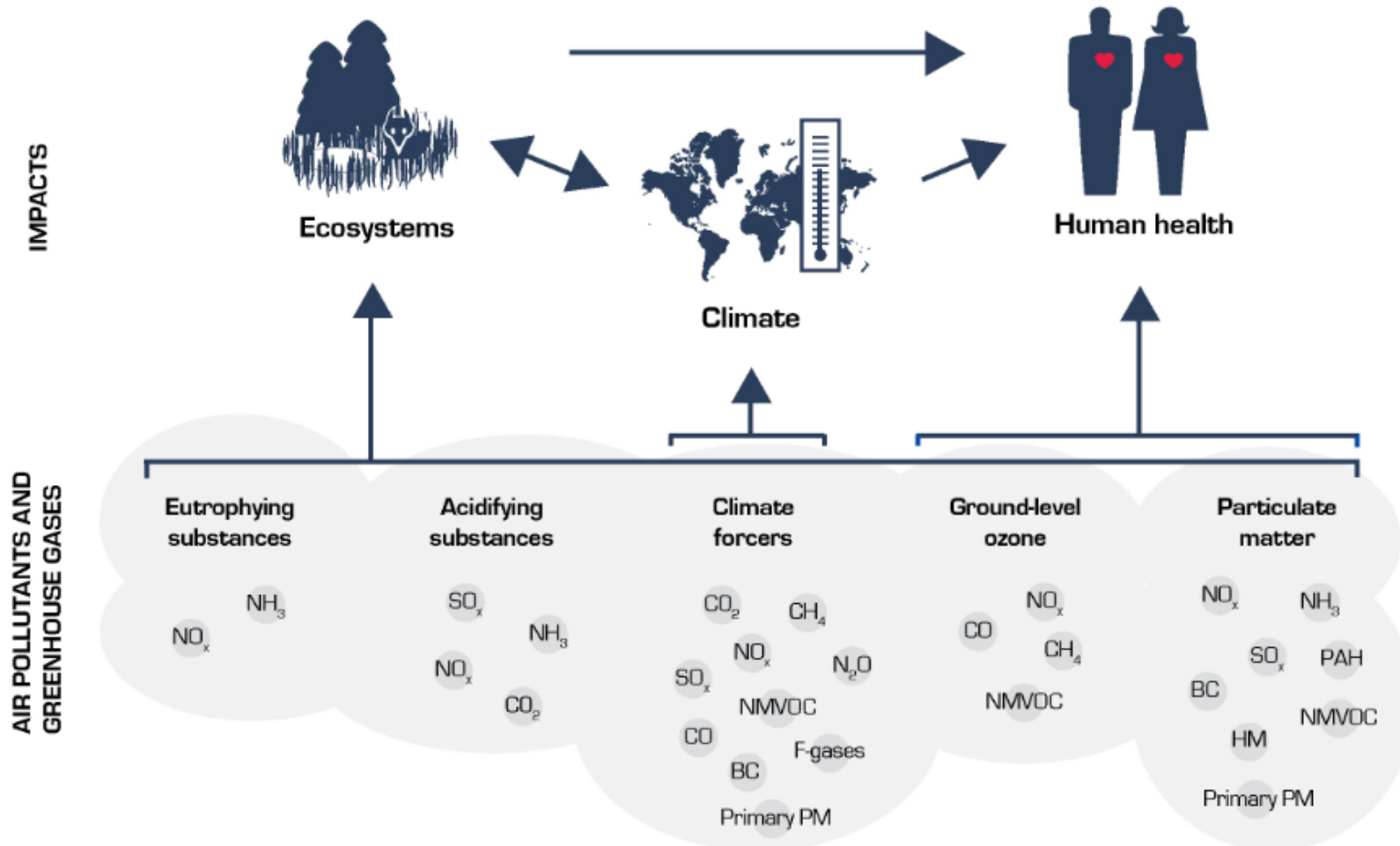
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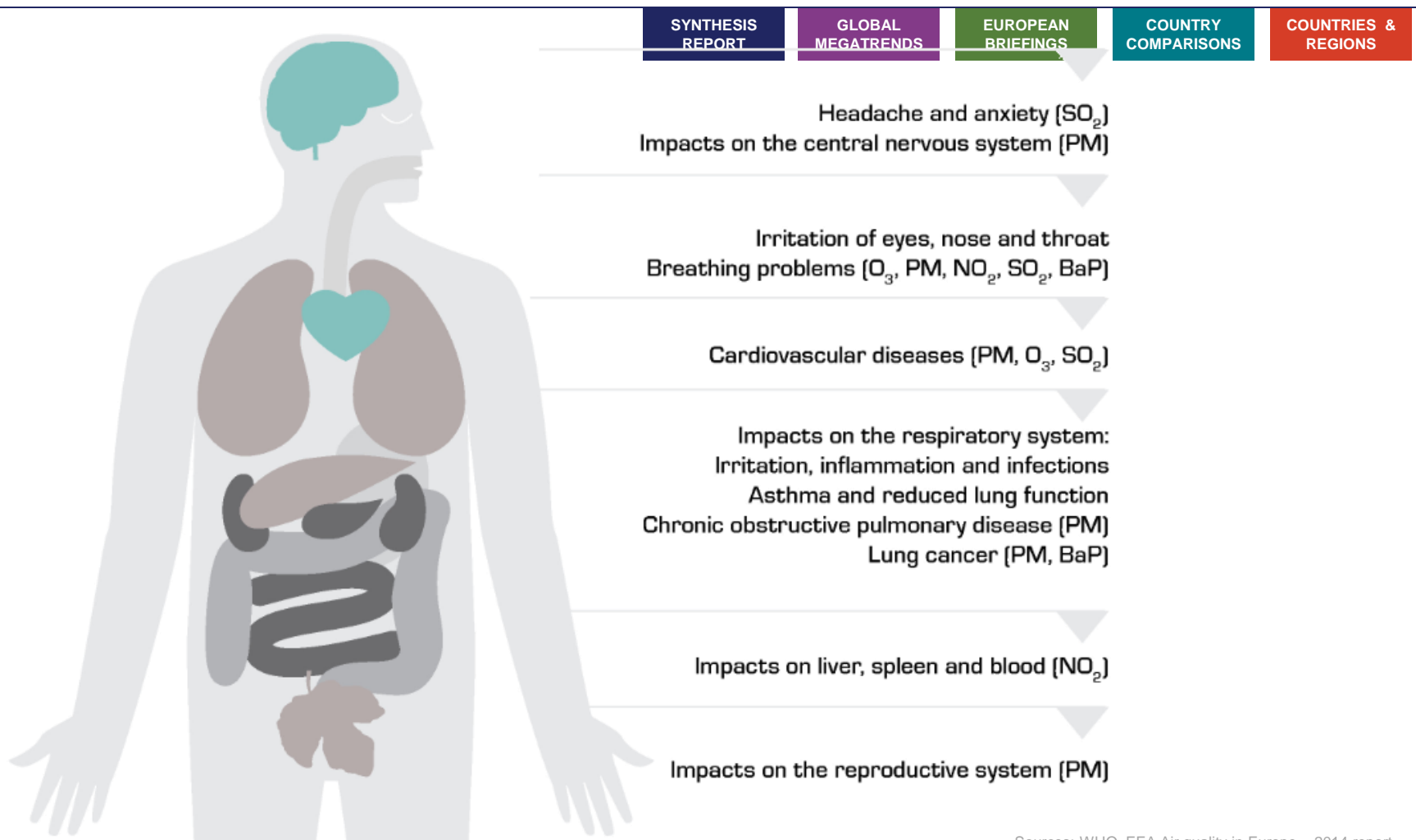
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Air Pollution – a pressing public health problem



Sources: WHO. EEA Air quality in Europe – 2014 report.

Air quality in Europe: Particulate matter (PM₁₀) concentrations systematically exceed EU standards across large parts of Europe

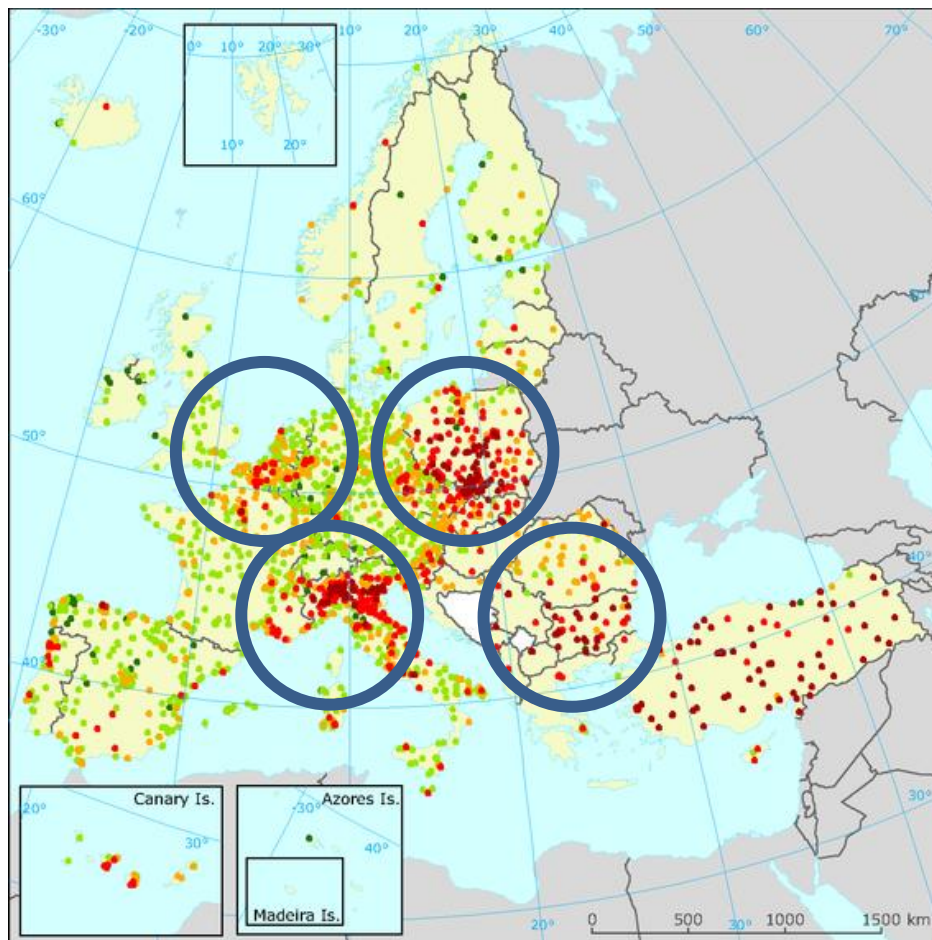
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90.4 percentile of PM₁₀ concentration in 2012, based on daily average with percentage valid measurements ≥ 75 % in $\mu\text{g}/\text{m}^3$

- ≤ 20
- 20–40
- 40–50
- 50–75
- > 75

□ No data

□ Countries/regions not included in the data exchange process

Source: AirBase — The European air quality database v. 8.

Air quality in Europe: High ozone concentrations harm both health and ecosystems (including crops)

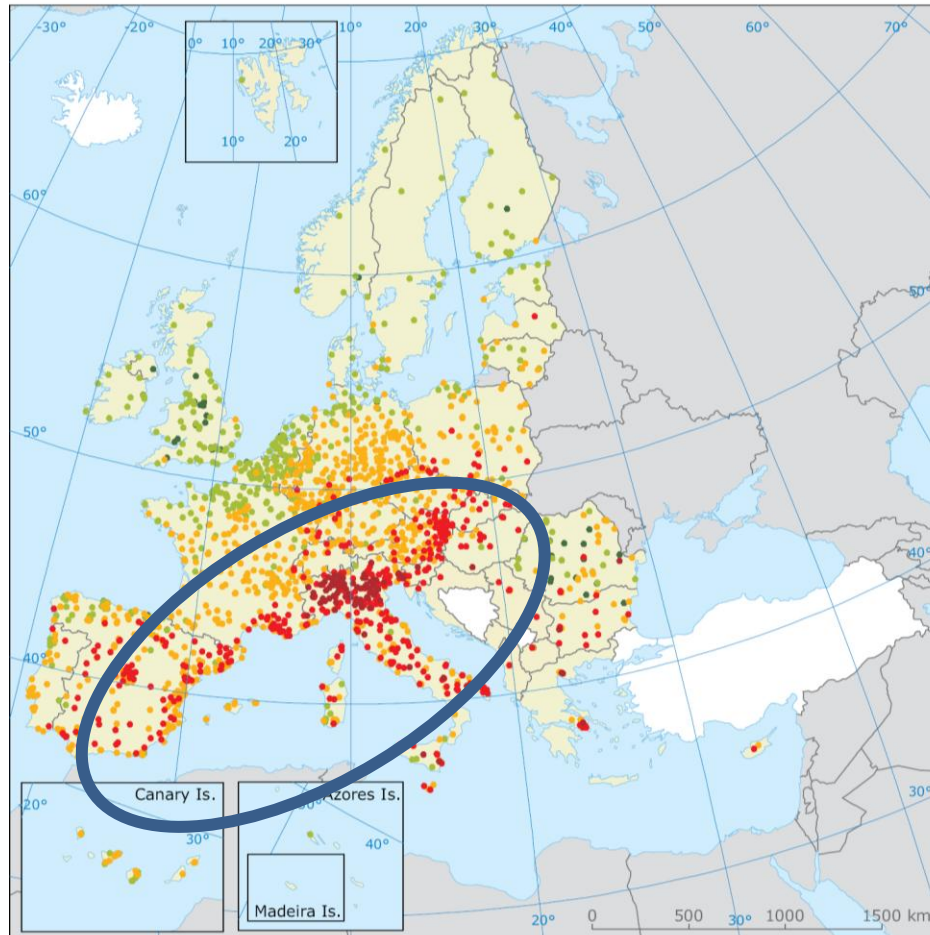
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93.2 percentile of O₃ concentration in 2012, based on daily running 8h max with percentage of valid measurements ≥ 75 % in µg/m³

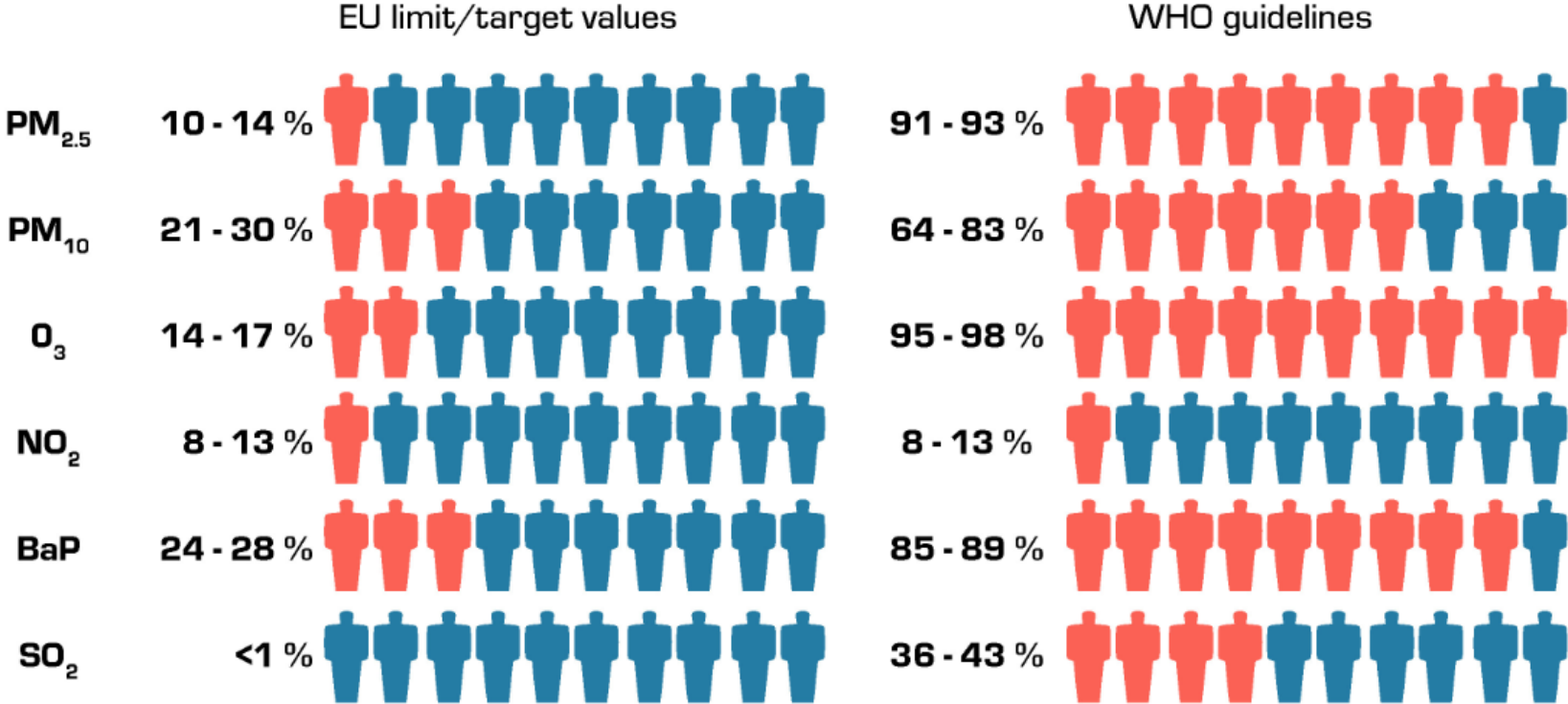
- ≤ 80
- 80-100
- 100-120
- 120-140
- > 140

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

Source: AirBase — The European air quality database v. 8.

Many Europeans are still exposed to harmful levels of air pollution

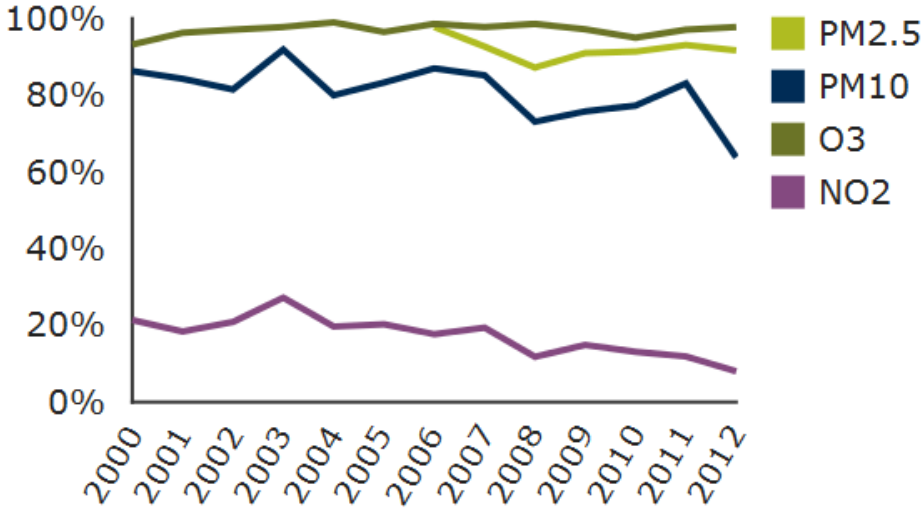
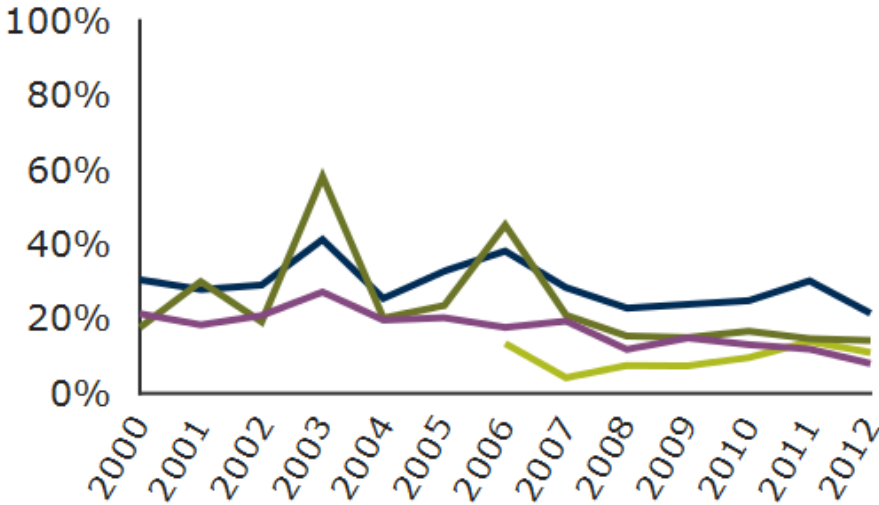
EU urban population exposed to harmful levels of air pollution in 2010 - 2012, according to:



Data sources: Eurostat. Gisco - Urban Audit 2012; EEA. AirBase - The European air quality database; EEA – Indicator CSI004. More: Air quality in Europe - 2014 report

Many Europeans are still exposed to harmful levels of air pollution

Urban population in the EU exposed to air pollutant concentrations above selected EU limit and target values (left) and WHO air quality guidelines (right)



Data sources: Eurostat. Gisco - Urban Audit 2012; EEA. AirBase - The European air quality database; EEA – Indicator CSI004. More: Air quality in Europe - 2014 report

Air quality status in Bulgaria

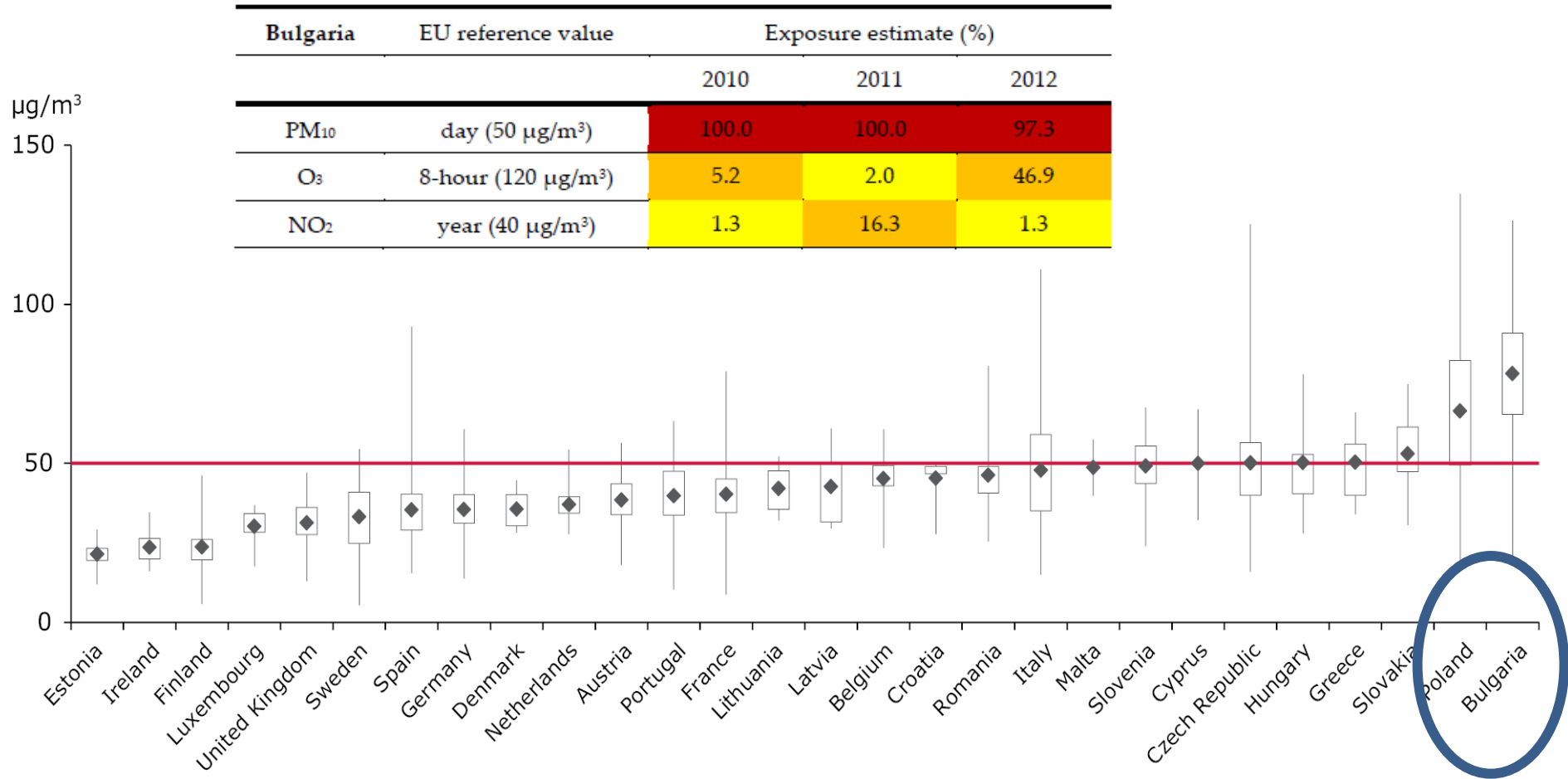
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Attainment of PM₁₀ daily limit value (EU-28)

Air quality status in Bulgaria

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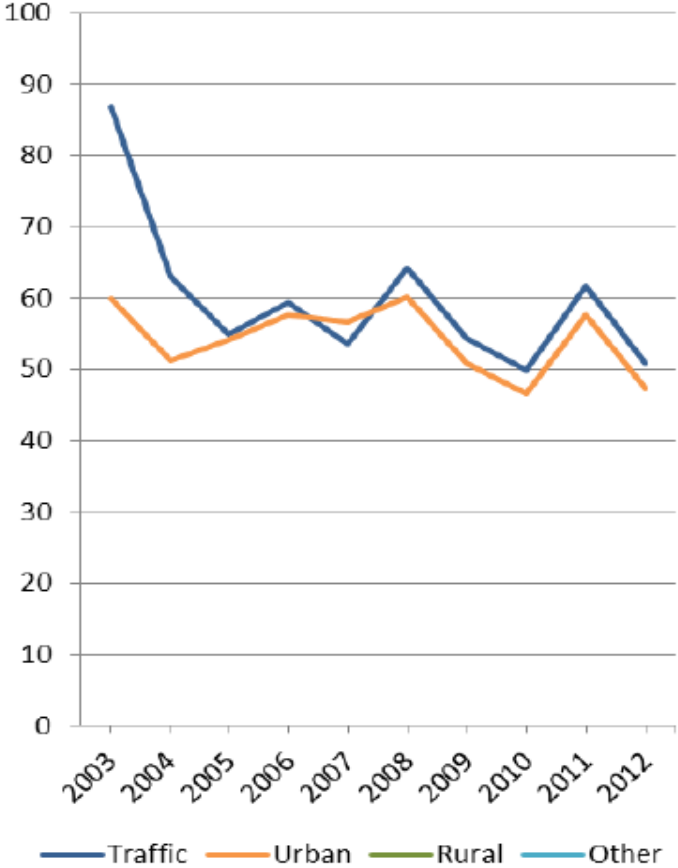
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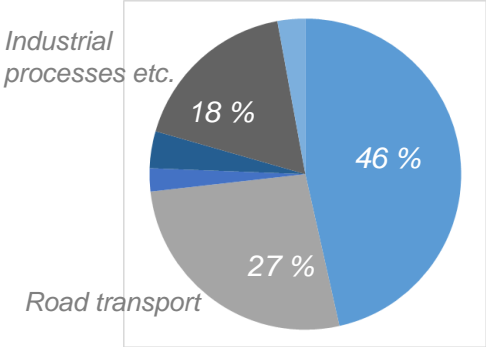
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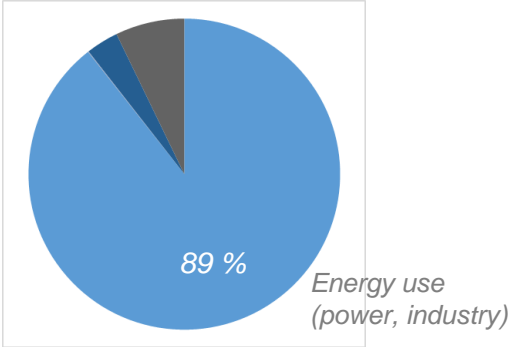
PM₁₀ annual mean (µg/m³)



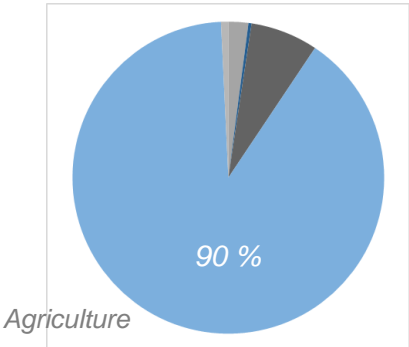
Nitrogen oxides



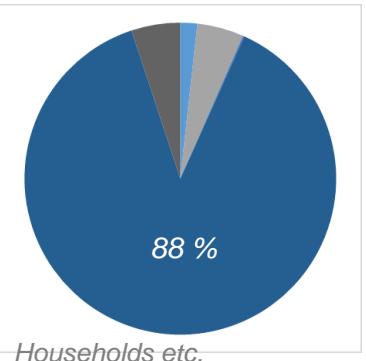
Sulphur oxides



Ammonia



Primary PM_{2.5}



Emission sources – Bulgaria 2012

Source: EEA Air Quality in Europe – 2014 Report

Health impacts

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- Despite considerable improvements in past decades, air pollution is still responsible for more than 400 000 premature deaths in Europe each year. It also continues to damage vegetation and ecosystems
- Bulgaria 2011: 10 800 estimated premature deaths occurred attributable to PM_{2.5} exposure

Table 4.4 Premature deaths attributable to PM_{2.5} and O₃ exposure in 2011 in 40 European countries and the EU-28

Country	Population	PM _{2.5}					O ₃				
		Annual mean	Best estimate	Low (*)	High (*)	SOMO35	Best estimate	Low (*)	High (*)		
AT Austria	8 045 346	16.3	6 768	4 450	8 899	5 452	309	149	458		
BE Belgium	10 325 029	17.3	10 304	6 776	13 547	2 714	220	106	326		
BG Bulgaria	8 117 809	18.3	10 806	7 131	14 161	5 215	425	205	629		
CY Cyprus	886 301	21.0	710	468	929	8 773	41	20	61		
CZ Czech Republic	10 234 773	18.8	10 872	7 166	14 262	4 743	376	182	557		
DE Germany	82 201 457	14.8	69 762	45 754	91 947	3 668	2 342	1 131	3 469		
DK Denmark	5 394 271	12.5	3 979	2 603	5 257	2 752	117	57	174		
EE Estonia	1 343 899	8.0	647	421	859	2 516	27	13	40		
ES Spain	39 113 763	11.1	25 046	16 365	33 127	5 858	1 772	857	2 625		
FI Finland	5 174 350	7.4	2046	1 331	2 717	2 052	74	36	110		
FR France	58 494 279	15.3	46 339	30 418	61 024	4 439	1 829	884	2 709		
GR Greece	10 939 253	16.8	10 700	7 037	14 066	9 182	796	385	1 179		
HR Croatia	4 440 678	19.6	5 437	3 586	7 128	6 470	246	119	365		
HU Hungary	10 186 452	23.1	15 952	10 554	20 852	5 828	556	269	824		
IE Ireland	3 740 194	7.9	1 229	800	1 631	1 353	28	14	42		
IT Italy	56 769 828	19.8	64 544	42 650	84 475	7 532	3 377	1 633	5 001		
LT Lithuania	3 493 293	12.7	2 556	1 672	3 376	3 131	85	41	126		
LU Luxembourg	446 716	13.3	284	186	375	3 527	10	5	15		
LV Latvia	2 393 215	11.1	1 789	1 169	2 367	2 708	58	28	86		
MT Malta	394 641	15.6	247	162	326	7 127	15	7	23		
NL Netherlands	15 942 494	17.1	12 634	8 305	16 617	2 283	229	111	340		
PL Poland	38 193 972	21.8	42 412	28 051	55 460	4 065	1 100	531	1 629		
PT Portugal	9 876 540	10.5	5 707	3 726	7 553	4 552	330	159	488		
RO Romania	22 325 418	20.5	28 582	18 870	37 437	3 276	633	306	938		
SE Sweden	8 879 647	8.1	4 221	2 749	5 600	2 628	181	87	268		
SI Slovenia	1 968 954	19.4	1 938	1 278	2 543	7 062	97	47	143		
SK Slovakia	5 417 705	21.8	6 300	4 163	8 245	6 051	243	117	360		
UK United Kingdom	59 050 805	12.4	39 450	25 809	52 116	1 471	634	306	940		
AD Andorra	82 833	13.7	51	34	67	7 891	4	2	6		
AL Albania	3 613 517	17.2	2 042	1 344	2 684	7 769	129	62	191		
BA Bosnia and Herzegovina	4 558 292	17.2	3 412	2 246	4 483	5 702	154	75	229		
CH Switzerland	7 687 824	12.6	4 394	2 876	5 803	5 435	256	124	378		
IS Iceland	294 964	4.6	54	35	72	1 094	2	1	3		
LI Liechtenstein	37 372	8.5	16	10	21	5 128	1	1	2		
MC Monaco	52 324	16.4	29	19	38	8 354	2	1	3		
ME Montenegro	671 451	15.1	482	317	634	6 970	31	15	45		
MK former Yugoslav Republic of Macedonia, the	2 071 302	15.8	1 763	1 158	2 319	7 110	108	52	160		
NO Norway	4 629 088	6.3	1473	958	1 957	2 395	74	36	110		
RS Serbia	9 212 284	21.2	13 063	8 640	17 083	5 793	495	239	733		
SM San Marino	27 602	14.7	25	16	33						
All	516 729 933		458 065	301 304	602 092		17 407	8 413	25 782		
EU-28	487 038 228		430 219	282 943	565 573		16 160	7 810	23 937		

Note: (*) The low and high columns show the upper and lower boundary of the 95 % confidence interval taking only into account the uncertainty in the relative risk.

The numbers presented are not rounded to ease comparison.

Source: EEA Air Quality in Europe – 2014 Report

Air pollution causes real economic costs

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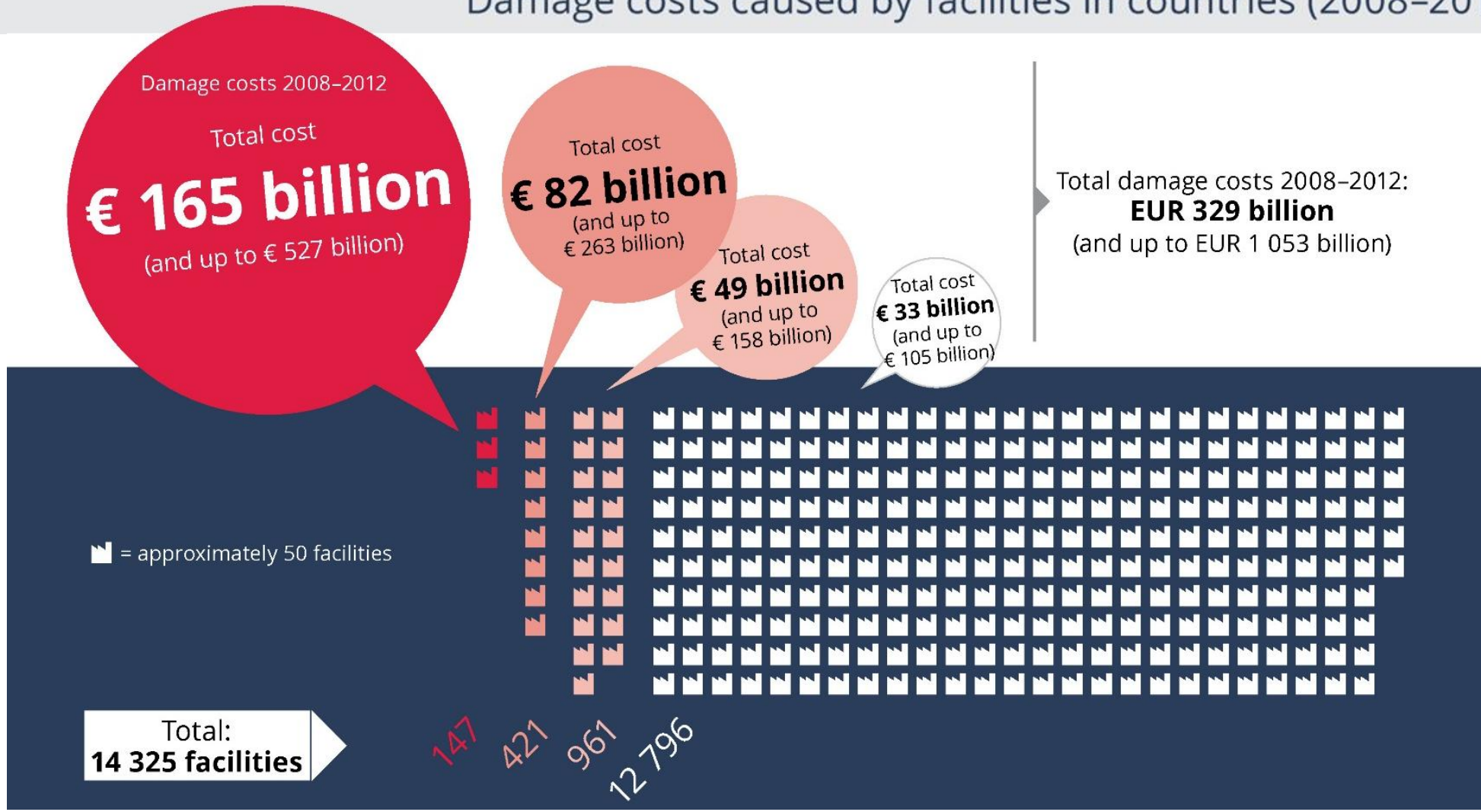
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- Damage cost of mortality – at least EUR 330 billion
- Direct economic damage - EUR 15 billion from workdays lost
- Direct economic damage - EUR 4 billion in healthcare cost
- Direct economic damage - EUR 3 billion crop yield loss

(Source: European Commission, for year 2010)

Health and environmental costs of air pollution from industrial facilities in Europe Damage costs caused by facilities in countries (2008–2012)



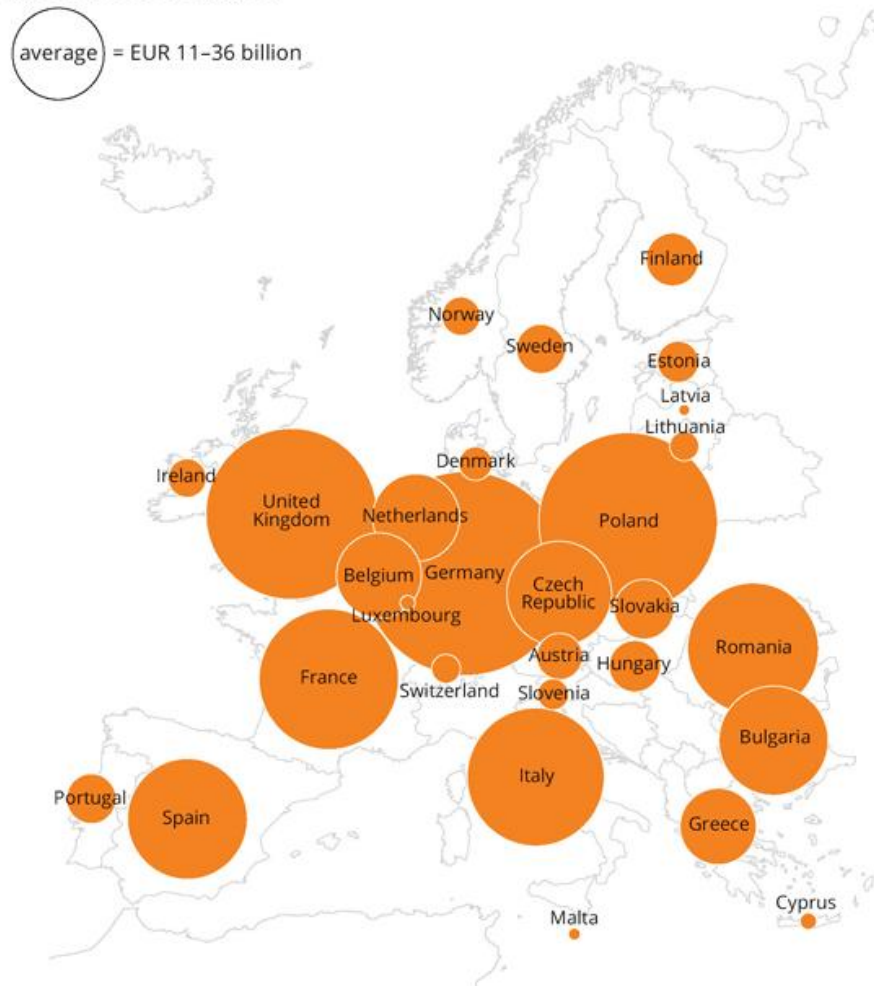
Source: EEA Technical report No 20/2014. Costs of air pollution from European industrial facilities 2008–2012 — an updated assessment

Half of the damage costs were caused by emissions from just 1 % of Europe’s industrial plants

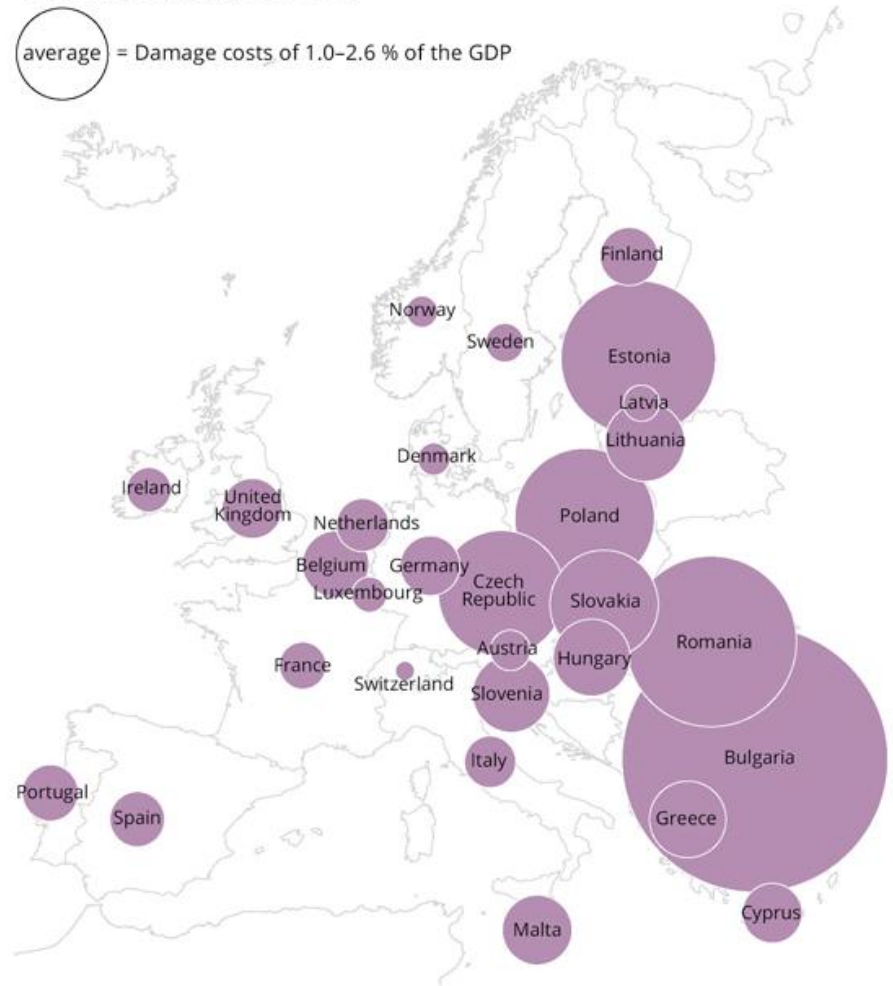
Damage costs caused by facilities in countries (2008–2012)

Countries such as Germany, Poland, the United Kingdom, France and Italy, which have many large facilities, contribute the most to total damage costs. However, the ordering of countries changes significantly if damage costs are corrected to reflect the output of national economies. Emissions from a number of eastern European countries (Bulgaria, Romania, Estonia and Poland) are then more important.

Absolute costs caused



Costs caused relative to GDP



Note 1: The report does not assess whether a facility's emissions are consistent with its legal requirements to operate. **Note 2:** The low-high range of damage cost values reflects a) the different approaches used to value health impacts from air pollution and b) the range of values used to estimate CO2 related damage costs.

Location of the 147 E-PRTR facilities that contributed 50 % of the total damage costs estimated for 2008–2012

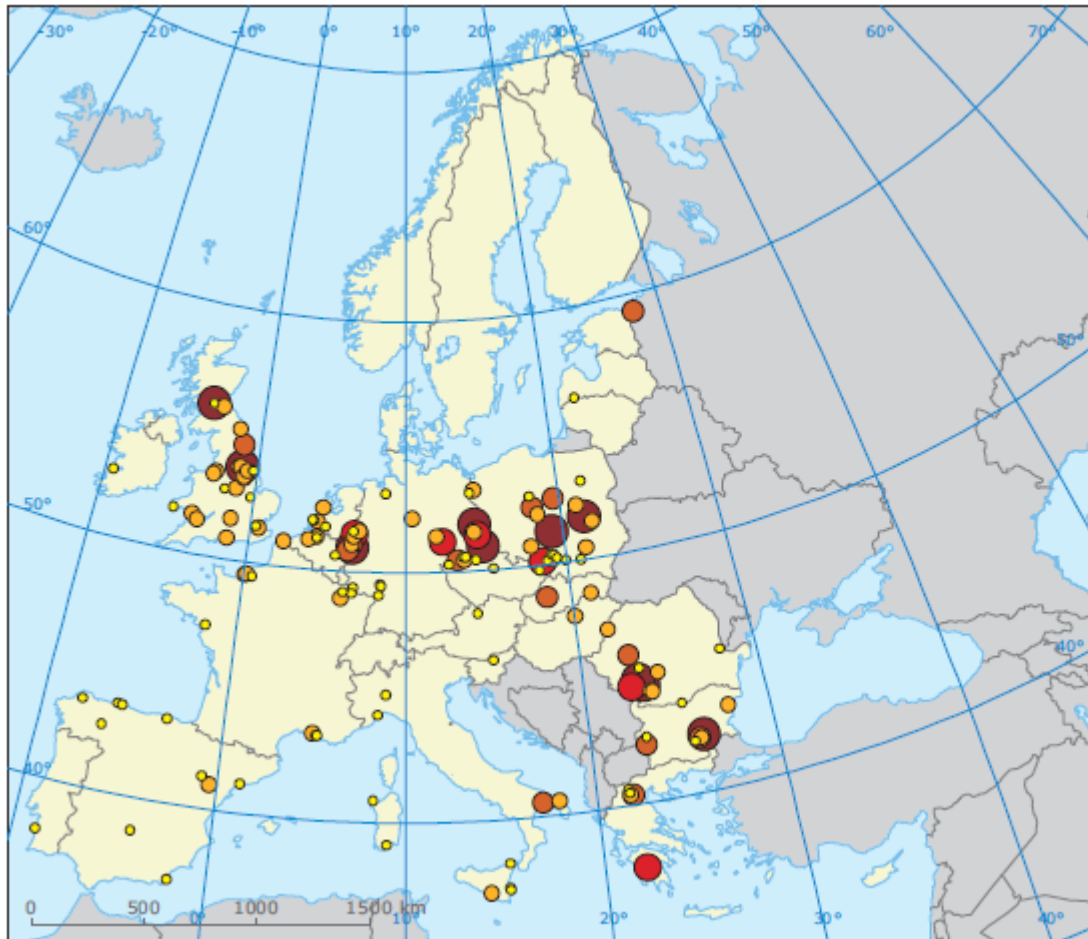
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Aggregated damage costs, 2008–2012

(million EUR VOLY)

- < 800
- 800–1 400
- 1 400–1 825
- 1 825–2 200
- > 2 200

□ Outside coverage

Three industrial facilities from Bulgaria are among the top 30 facilities with the highest damage costs:

TETs 'Maritsa iztok 2'
TETs 'Bobov dol'
TPP 'Brikel'

Kovachevo
Golemo selo
Galabovo



Air pollution and environment– key conclusions

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5-10 year trends:

Lower emissions of air pollutants have contributed to fewer exceedances of acidification and eutrophication limits.



20+ year outlook:

Long-term problems from eutrophication are forecast to persist in some areas, although adverse impacts caused by acidification will be greatly improved.



Progress to policy targets:

There has been mixed progress in meeting the EU's 2010 interim environmental objectives for eutrophication and acidification.



Air pollution and health – key conclusions

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5-10 year trends:

Europe's air quality is slowly improving, but fine particulate matter (PM_{2.5}) and ground-level ozone in particular continue to cause serious impacts on health.



20+ year outlook:

Air quality is expected to further improve in the years to 2030, but harmful levels of air pollution will persist.



Progress to policy targets:

The number of countries meeting existing EU air quality standards is slowly increasing, but a large number are still not in compliance.



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martin.adams@eea.europa.eu

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