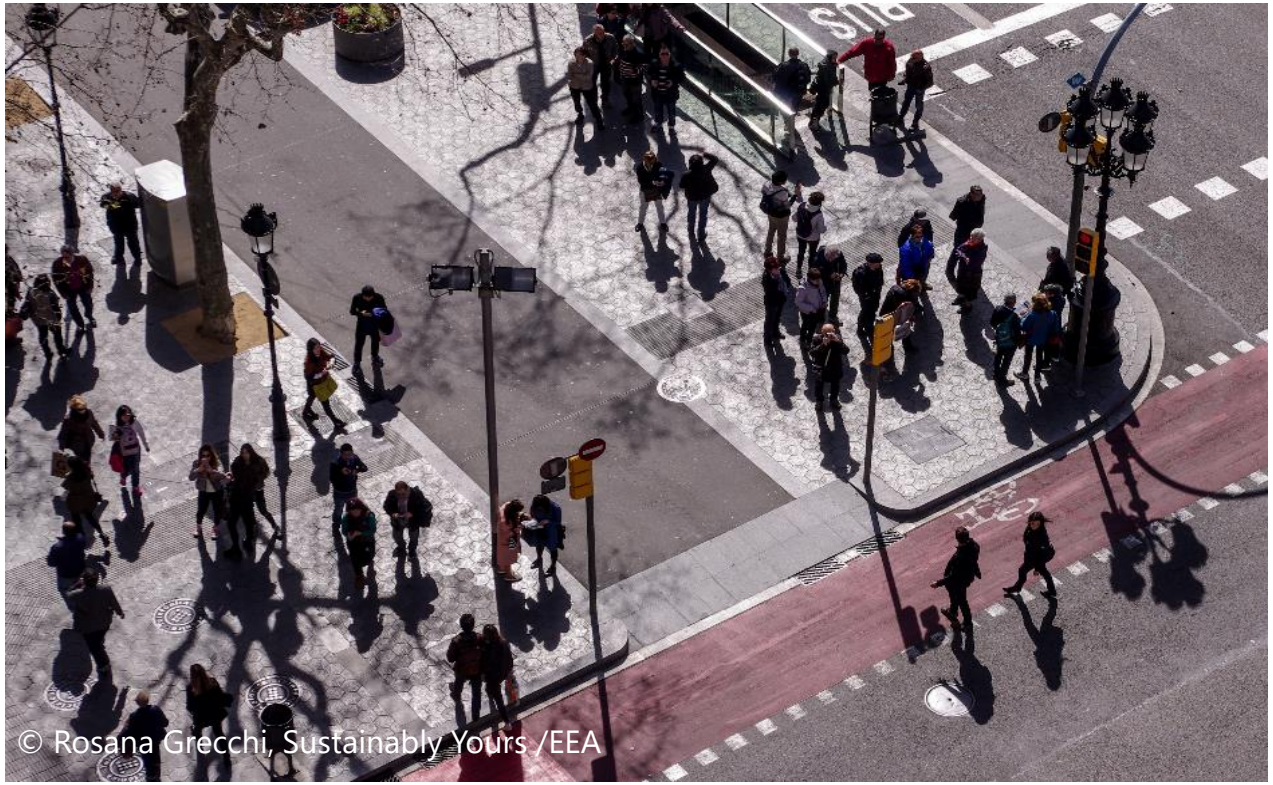
Urban air quality in Europe

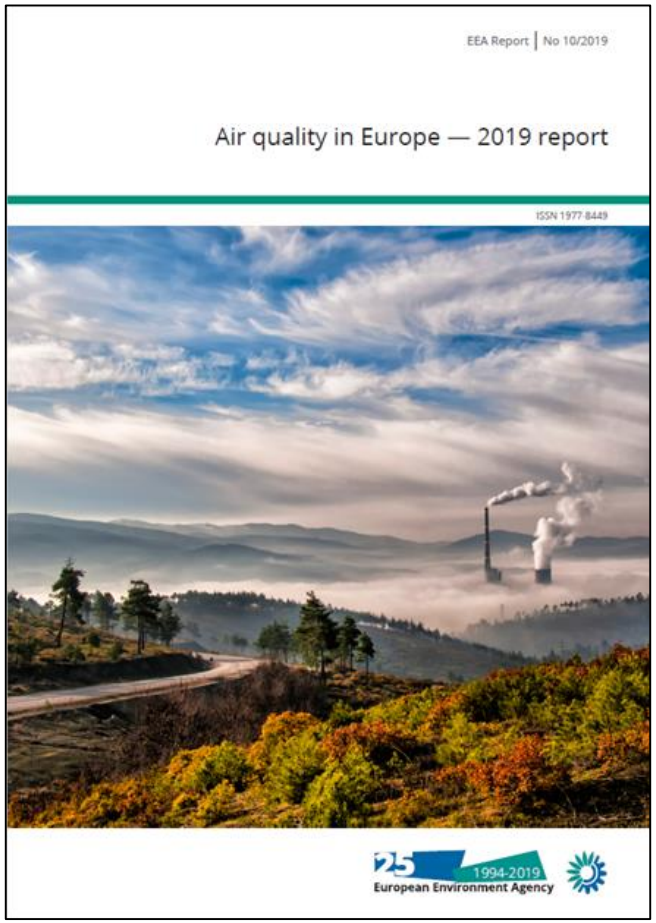


Outline

- The Europe's *Air Quality 2019* report (Annex 2)
- Urban population exposure
- The European Air Quality City Ranking
- The Europe's Urban *Air Quality 2019 report*

The *Air quality in Europe 2019* report

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



Impact of AQ report 2018 by 30/10/19:

- 13 456 total visits
- 6 756 unique visitors
- 2 571 total downloads of the report

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Urban background concentrations in some European cities

Figure A2.1 Annual mean concentrations of PM_{10} in some cities of EEA-33 countries in 2017 (average of (sub)urban background stations)

Exceedances in 84 out of 970 cities

Figure A2.2 Annual mean concentrations of $PM_{2.5}$ in some cities of EEA-33 countries in 2017 (average of (sub)urban background stations)

Exceedances in 53 out of 526 cities

Figure A2.3 Annual mean concentrations of O_3 in some cities of EEA-33 countries in 2017 (average of (sub)urban background stations)

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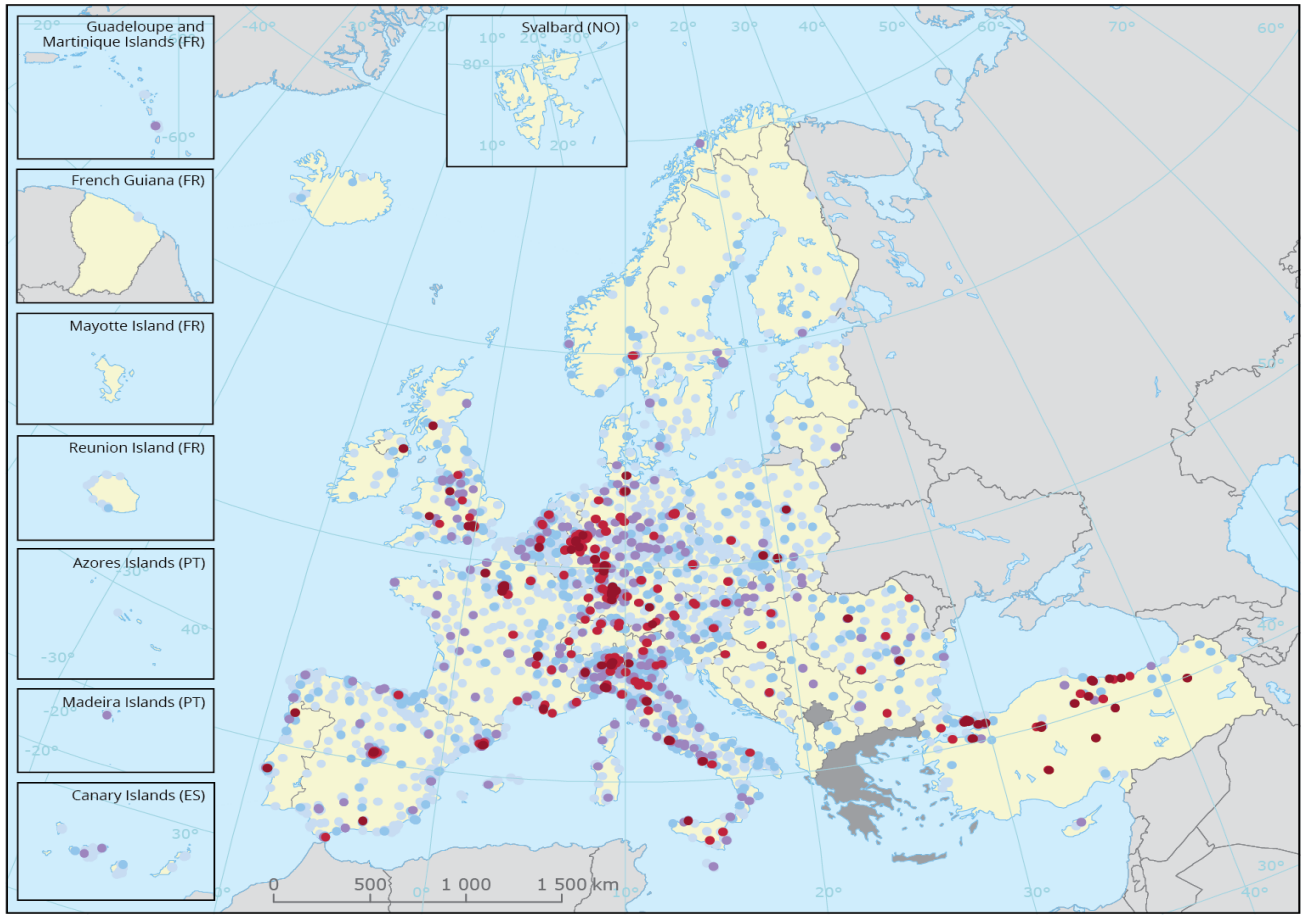
NO_2 concentrations over Europe



16 MS + 4 other reporting countries exceeded ALV

10 % of reporting stations

Traffic stations showing hot spots in the cities!

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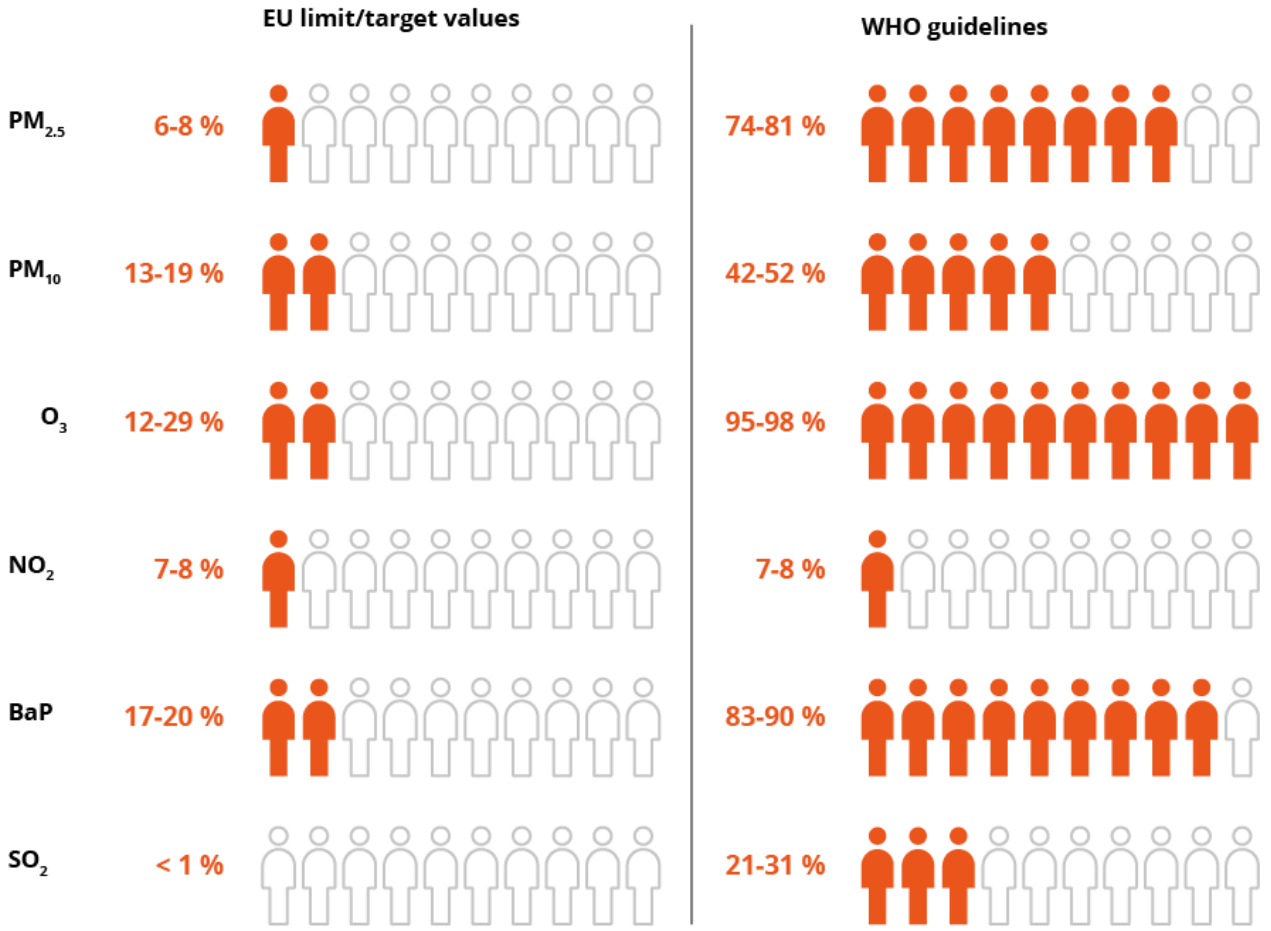
Many Europeans still exposed to harmful levels of air pollution

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



Source: CSI004

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Health impacts - latest estimates (2016)

Table 10.1 Premature deaths attributable to $PM_{2.5}$, NO_2 and O_3 exposure in 41 European countries and the EU-28, 2016

		$PM_{2.5}$		NO_2		O_3	
Country	Population (1 000)	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	
Greece	10 784	19.6	12 900	19.6	2 900	6 871	
Hungary	9 830	17.5	12 100	16.6	770		
Ireland	4 726	6.8	1 100	11.0	50		
Italy	60 666	16.6	58 600	22.1			3 000
Latvia	1 969	10.9	1 700			773	60
Lithuania	2 889	11.8	2 600			2 456	
Luxembourg	576	11.4			50	2 211	
Malta	450	11.1			< 1		20
Netherlands	16 979			20.5		428	270
Poland	37		3 100			3 699	1 100
Portugal			4 900		610	4 074	320
Romania		16.8			2 600	2 485	490
Slovakia					13.5	20	4 232
	2 064		700		15.4	70	5 007
			24 100		20.0	7 700	5 212
		5.7	2 900		10.7	30	1 819
United Kingdom		9.5	31 800		21.8	11 800	1 161
	2 876	22.3	5 100		13.7	70	5 475
	73	12.1	40		18.2	< 1	4 423
Herzegovina	3 516	28.7	5 400		13.2	20	4 409
	333	4.8	60		10.1	< 1	499
Kosovo	1 772	27.1	3 800		14.4	20	4 769
Liechtenstein	38	10.3	20		17.8	< 1	4 945
Monaco	38	14.3	30		26.8	10	7 186
Montenegro	622	20.3	630		11.9	< 1	5 269
North Macedonia	2 071	34.6	3 400		17.4	110	4 434
Norway	5 211	5.9	1 300		12.4	130	1 502
San Marino	33	14.3	30		16.3	< 1	5 667
Serbia	7 076	24.6	13 700		19.4	1 500	3 508
Switzerland	8 327	10.1			19.7		4 842
EU-28	**506 028**	**12.9**	**374 000**		**16.3**	**68 000**	**3 547**
Total	**538 014**	**14.4**	**412 000**		**16.3**	**71 000**	**3 811**

Notes: (*) The annual mean (in µg/m³) and the SOMO35 (in µg/m³.day), expressed as population-weighted concentration, is obtained according to the methodology described by ETC/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_3, nearest hundred). The national totals are rounded to the nearest hundred or ten.

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

Decrease of at least ~ 30 % premature deaths if $PM_{2.5}$ WHO AQ guideline attained everywhere

EU28: 374 000 → 272 000

41 countries: 412 000 → 290 000

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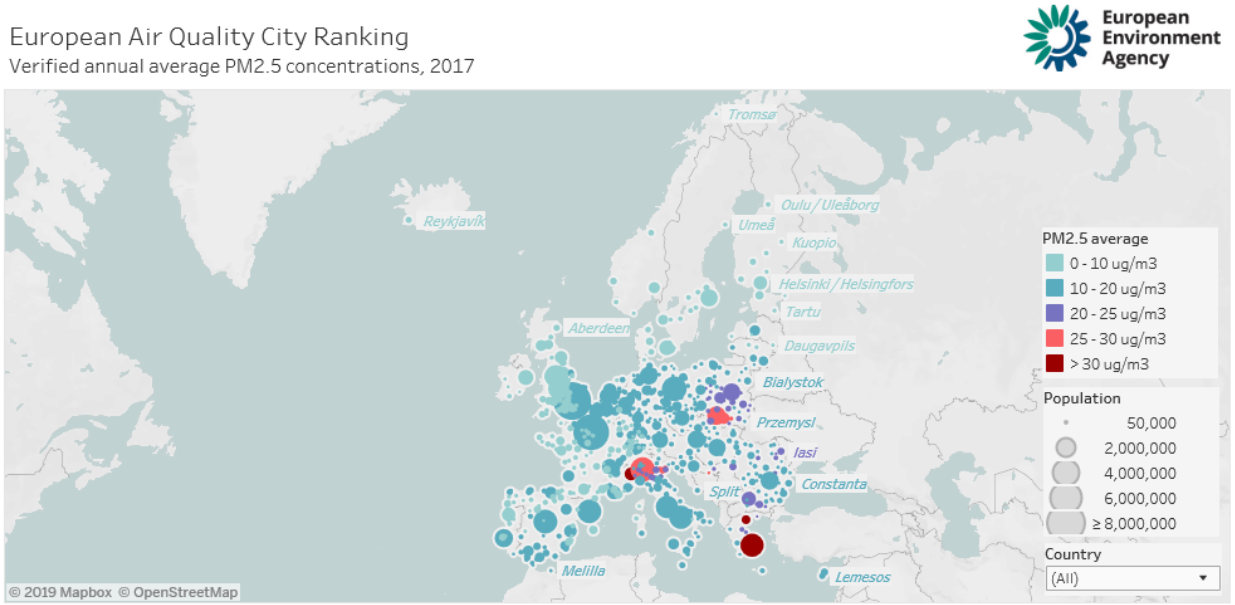
European Air Quality City Ranking



City	Country	City PM2.5 Rank	PM2.5 Average [ug/m3]	Population
Tromsø	Norway	1	2.2	60,639
Umeå	Sweden	2	2.5	122,971
Kuopio	Finland	3	3.2	102,596
Jyväskylä	Finland	4	3.4	140,717
Trondheim	Norway	5	3.4	199,073
Oulu / Uleåborg	Finland	6	3.4	147,531
Uppsala	Sweden	7	3.5	216,655
Borås	Sweden	8	3.6	112,448
Bergen	Norway	9	3.6	268,514
Kristiansand	Norway	10	3.7	86,790
Västerås	Sweden	11	3.7	150,142

- focus on the status of PM2.5 annual mean concentration at city level
- based on official measurement data, EMEP model and other supplementary data (altitude, population density, wind speed)

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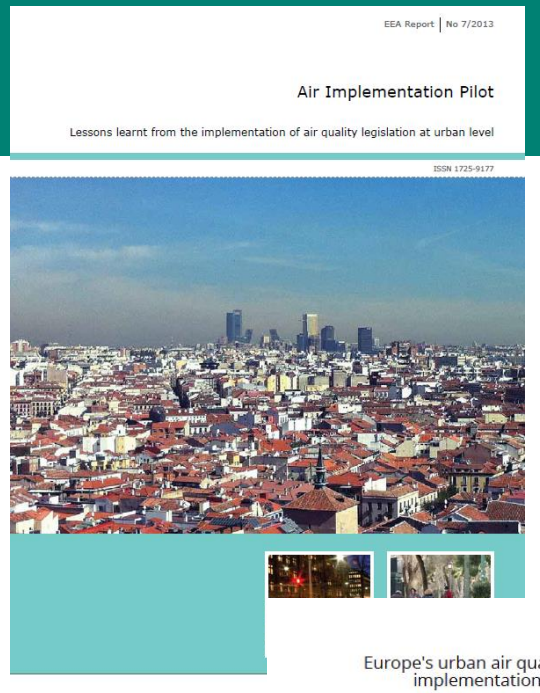
Air Implementation Pilot 2018



- follow-up of AIP 2013
- initiative of EEA, supported by ETC
- the state of play after 5 years in the original cities in the light of the lessons learnt
- challenges cities faced in implementing air policy
- explore further needs of cities to overcome challenges
- exchange of experiences and knowledge (good practices) among pilot cities
- not intended to check the compliance, but develop general proposals to improve implementation of air policy
- contribute to the Fitness Check process of the Commission

Methodology: questionnaire, webinar and workshop with local authorities to explore results

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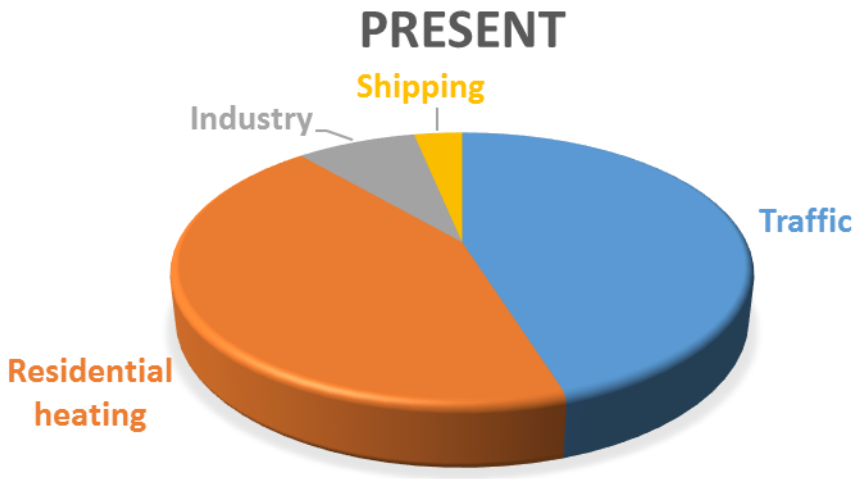
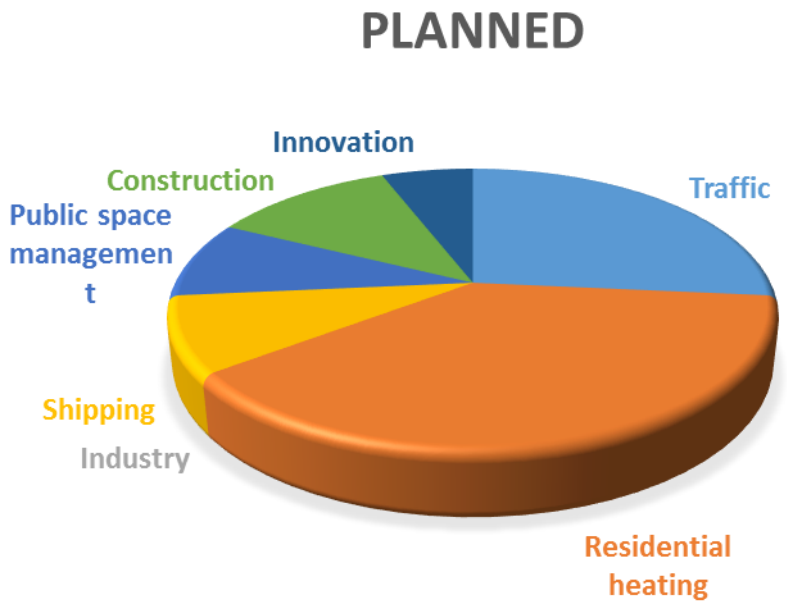
Air quality trends in pilot cities in the period 2012-2016

- Above PM_{10} daily LV: 6 cities
- Above NO_2 annual LV: 7 cities
- Above hourly NO_2 LV: 9 cities

- PM10 is an urban issue!
- NO2 is a traffic issue!

Emission sources targeted in the pilot cities





A **shift** is evidenced in the sources targeted:

- Emerging sources (e.g., construction, inland shipping) are addressed by current/future plans.
- Sectors which need continued action (e.g., traffic, residential combustion) are addressed by ongoing measures.

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Local air quality measures

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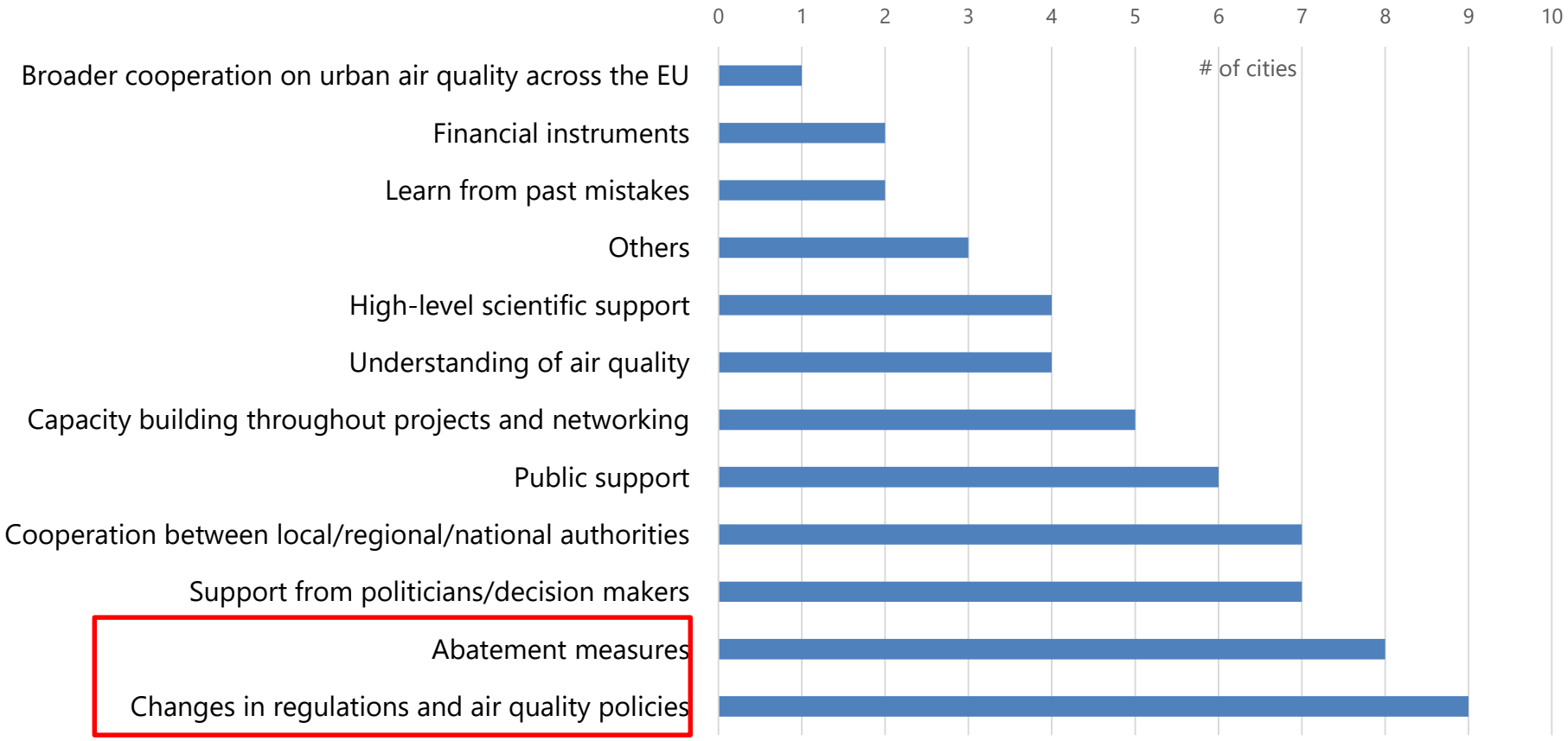
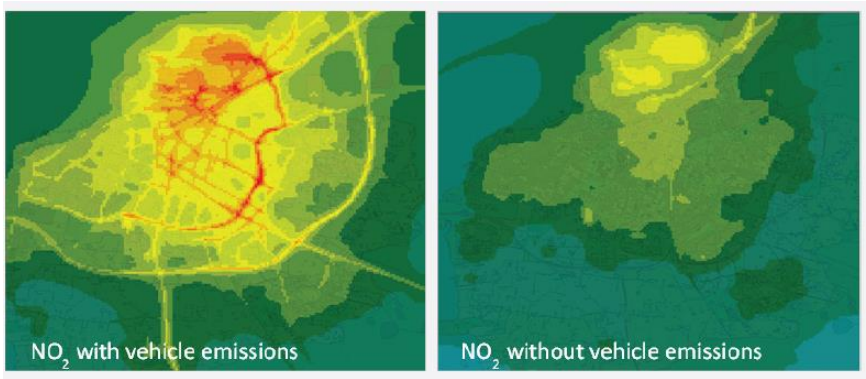
Drivers for the improvement of air quality in cities



Good practices

- health benefits via scenario analysis of exhaust-free transport in Malmö
  - less premature deaths
  - less respiratory diseases in children each year



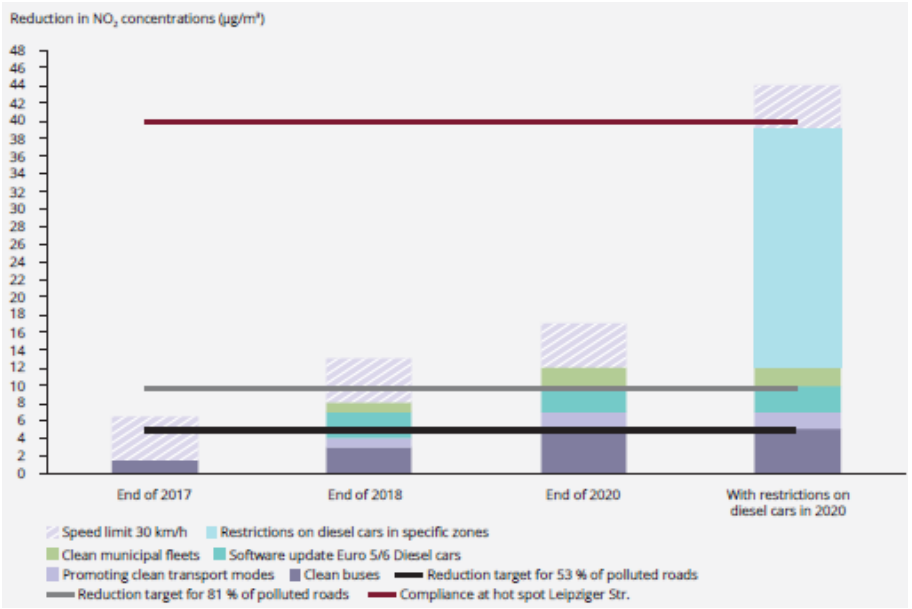
Source: Malmqvist et al., 2018, Estimated health benefits of exhaust free transport in the city of Malmö, Southern Sweden

- co-benefits of congestion charge area in central Milan
  - decrease of traffic
  - increase in use of public bike-sharing (%500)
  - increase in private car-sharing schemes with the incentives of free admission to the congestion charge and allowing free parking,
  - extension of bike roads

Good practices

- extending the ban on smoky bituminous coal from local level (Greater Dublin area in 1990) to national level (Ireland in 2018)
  - fewer annual premature deaths
  - estimate of financial benefits over € 20 million

- quantifying the impacts of traffic measures and modelled reduction in NO2 concentrations in Berlin
  - speed limit 30 km/hr
  - clean buses
  - software update Euro 5/6 diesel cars
  - clean municipal fleets
  - restriction on diesel cars in specific zones



Conclusions

- Local authorities are the front runners
  - in the implementation of the air policies and
  - best placed to ensure an effective transition towards more liveable and breathable cities.
- There is a need
  - for integrated policies focusing on health and
  - for a systemic change in the food, mobility and energy systems considering the urban sustainability
- Many city-specific measures have proven their efficiency but there is still much to do in terms of
  - further empowering citizens and
  - reaching coordinated action across all governance levels.

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Thanks for your attention

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