

Ambient Air Quality : the EU approach

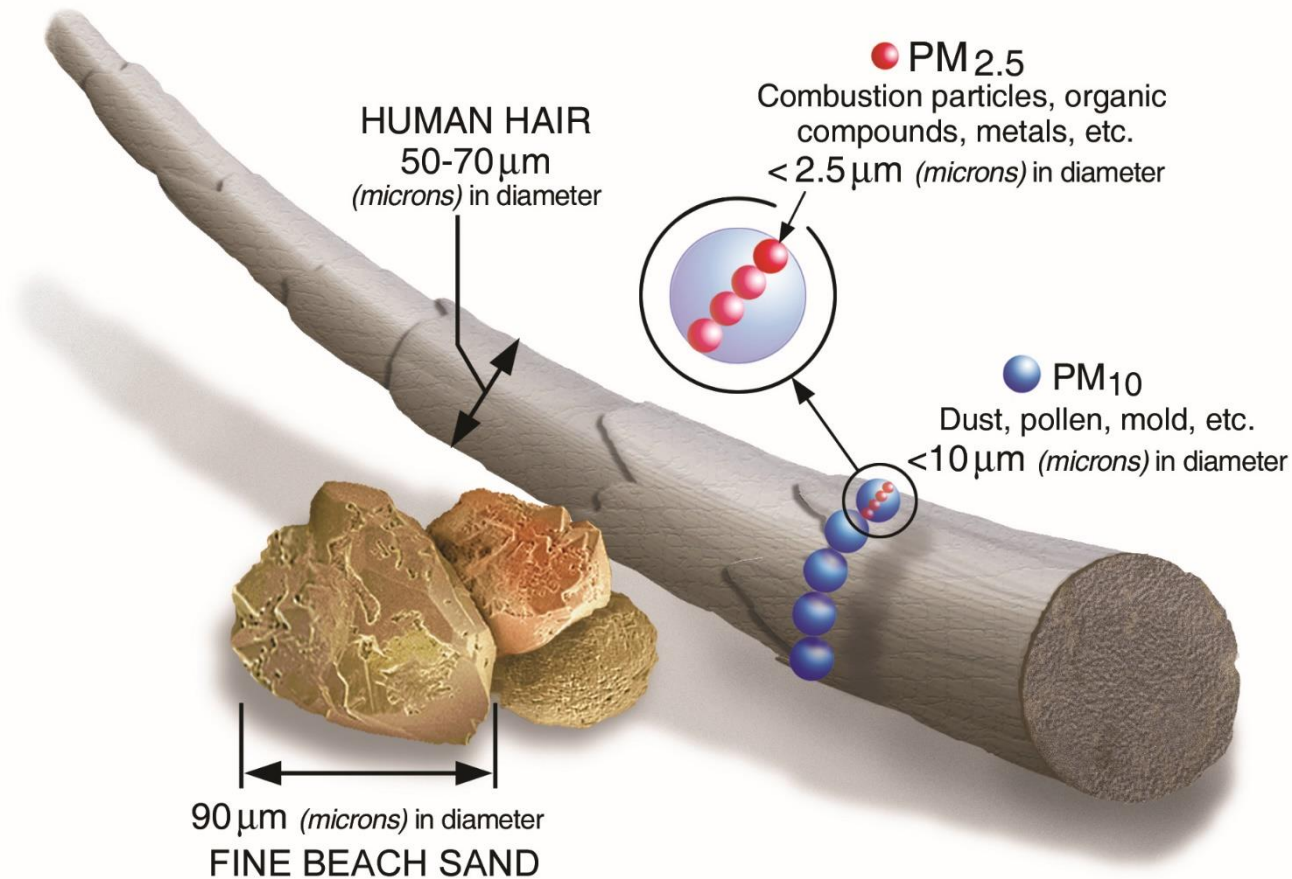


March 2024

*European Commission
Clean Air & Urban Policy Unit*

EU Clean Air Policy focuses on key pollutants

Understanding particulate matter



List of key air pollutants

- Particulate matter (PM_{2.5}, PM₁₀)
- Nitrogen dioxide (NO₂)
- Ozone (O₃)
- Sulphur dioxide (SO₂)
- Carbon monoxide (CO)
- Benzene (C₆H₆)
- Benzo(a)Pyrene (BaP)
- Heavy metals attached to PM (arsenic, cadmium, nickel, lead)
- Volatile organic compounds (VOC)
- Particulate matter precursor pollutants, such as ammonia (NH₃)
- + air pollutants of emerging concern

How does EU clean air policy work?



Ambient Air Quality (AAQ) Directives

Maximum concentrations of
air polluting substances

(PM_{2.5}, PM₁₀, NO₂, O₃, SO₂, CO, C₆H₆, BaP, As, Cd, Ni, Pb)

**SETTING OBJECTIVES
FOR GOOD AIR QUALITY**

**REDUCING EMISSIONS
OF POLLUTANTS**



**National Emission reduction
Commitments Directive**

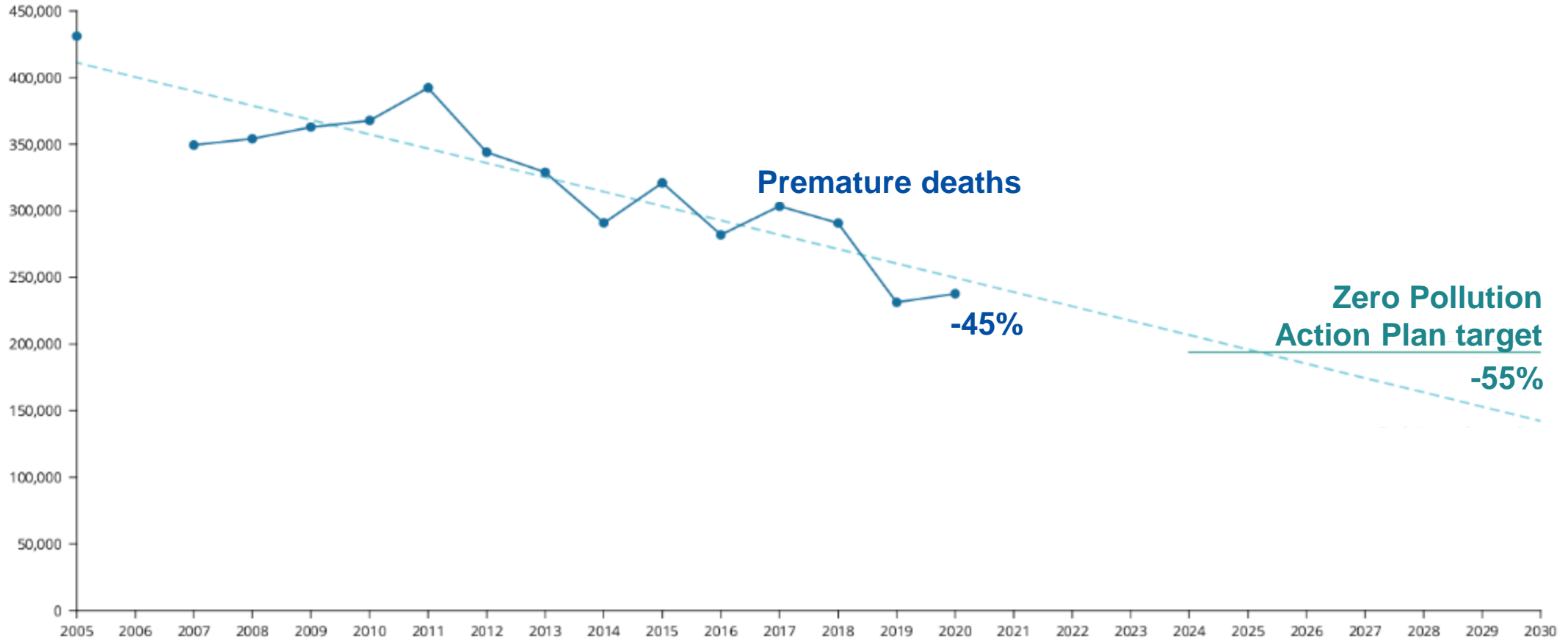
National emission totals
(SO₂, NO_x, NMVOC, PM_{2.5}, NH₃)

**Source-specific
emission standards**

- IE Directive
- MCP Directive
- Eco-design Directive
- Energy efficiency
- Euro and fuel standards

Does EU clean air policy work? Yes ... but ...

Number of premature deaths attributed to fine particulate matter (PM_{2.5})



Why is air pollution (still) a problem in the EU?

- **Health impacts:** Air pollution is the number one environmental cause of health impacts in the EU, with significant morbidity effect and estimates of up to **300 000 premature deaths per year**.
- **Social impacts:** It disproportionately affects **vulnerable groups** - children, elderly, persons with pre-existing conditions, socioeconomically disadvantaged.
- **Environmental impacts:** It causes **eutrophication** (74%) and **acidification** (5%) of ecosystem area exceeding critical loads, + crop and forest damage.
- **Economic impacts:** It causes annual costs at **€231-853 billion (bn)** in health impacts, €8 bn in lost workdays, €4-12 bn in ecosystems damage, €10-11 bn in crop yield loss, €19 bn in forest damage, €1 bn in damage to buildings.
- and **Europeans care about the air they breathe (Eurobarometer 2022)**

“The Commission will draw on the lessons learnt from the evaluation of the current air quality legislation.

It will also propose to strengthen provisions on monitoring, modelling and air quality plans to help local authorities achieve cleaner air.

The Commission will notably propose to revise air quality standards to align them more closely with the World Health Organization recommendations.”

Communication on the European Green Deal (COM/2019/640 final)

#EUGreenDeal

Ambient air quality : revision of EU Rules

Adopted on 26 October 2022:

- Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on ambient air quality and cleaner air for Europe (recast) - **COM/2022/542 final**
- Commission Staff Working Document Impact Assessment Report - **SWD/2022/545 final** - and the corresponding Executive Summary - **SWD/2022/345 final**

Supported by

- **Study to support the impact assessment** for a revision of the EU Ambient Air Quality Directives – Final Report & Appendix + Robustness checks and Sensitivity Analysis
- Study on systematic assessment of **monitoring of other air pollutants** not covered under Directives 2004/107/EC and 2008/50/EC

Which policy options have been considered?

For example for PM_{2.5}

AMBITION LEVEL



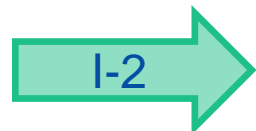
EU standards today / baseline



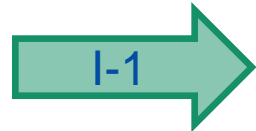
Policy option I-3



Policy option I-2



Policy option I-1



WHO – Air Quality guidelines and interim targets for PM_{2.5} (annual mean)

Annual mean level	PM _{2.5} (µg/m ³)	Mortality
Interim target 1	35	+ 24 % above guideline level
Interim target 2	25	+ 16 % above guideline level
Interim target 3	15	+ 8 % above guideline level
Interim target 4	10	+ 4 % above guideline level
AQ guideline level	5	mortality at guideline level



How did different policy options compare?

All three options assessed would render **significant health and environment benefits**, which outweigh the implementation costs by 2030 – albeit to varying degrees.

Table 17 – A Comparison of policy options on level of alignment with the WHO Air Quality Guidelines (2030)

		Baseline	Policy Option I-3	Policy Option I-2	Policy Option I-1
Air Quality standard	PM _{2.5}	25 µg/m ³	15 µg/m ³	10 µg/m ³	5 µg/m ³
	NO ₂	40 µg/m ³	30 µg/m ³	20 µg/m ³	10 µg/m ³
Exposed > WHO levels	PM _{2.5}	333 million	267 million	243 million	226 million
	NO ₂	52 million	46 million	44 million	42 million
Is the standard achievable with available measures? ^(a)		For >99% of PM _{2.5} sampling points	For 99% of PM _{2.5} sampling points	For 94% of PM _{2.5} sampling points	For 29% of PM _{2.5} sampling points
Key economic impacts					
Mitigation costs	Central	0	€3.3 bn	€5.6 bn	€7.0 bn
	If corrected for 'border cell effect' ^(b)	0	€1.0 bn	€5.1 bn	€7.0 bn
Gross benefits	Low ^(c)	0	€32.4 bn	€41.8 bn	€45.0 bn
	High ^(d)	0	€93.8 bn	€121.4 bn	€130.8 bn
Net benefits	Low ^(c)	0	€29.0 bn	€36.2 bn	€37.9 bn
	High ^(d)	0	€90.4 bn	€115.7 bn	€123.6 bn
Benefit-cost ratio	Low ^(c)	-	10:1	7.5:1	6:1
	High ^(d)	-	28:1	21:1	19:1
Net GDP impact		+ /- 0%	+ 0.26 %	+ 0.38 %	+ 0.44 %
Key health impacts ^(e)					
Annual premature mortality	Due to PM _{2.5}	56 100	38% less	49% less	53% less
	Due to NO ₂	4 050	12% less	16% less	20% less

Key criteria:

- Achievability
- Mitigation costs
- Gross benefits
- Benefit vs Cost
- Health impact



What does our proposal improve?

Environment & health

- **Zero pollution objective** at the latest by 2050
- **Intermediate 2030 EU air quality standards**
- Update of **other air quality metrics**, including more refined average exposure obligations
- **Regular review mechanism**

Governance & enforcement

- Air quality plans to be more effective in **ending and preventing exceedances** of EU standards
- **Improved enforceability**: new provisions on access to justice, compensation and penalties
- More **transboundary cooperation** on air quality



Monitoring & assessment

- Refined approach to **air quality monitoring**, increased use of **air quality modelling**
- Additional information on representativeness of **sampling points**, better inform air quality action
- Monitoring **pollutants of emerging concern** (e.g. ultrafine particles, black carbon, ammonia)

Information & communication

- More **up-to-date air quality information**
- Requirements for **air quality indices** to provide hourly reporting of available air quality data
- **Informing the public** about possible health impacts and provide recommendations

the agreement between co-legislators

What does ~~our proposal~~ improve?

Environment & health

- ✓ **Zero pollution objective** at the latest by 2050
- ✓ **Intermediate 2030 EU air quality standards**
- ✓ Update of **other air quality metrics**, including more refined average exposure obligations
- ✓ **Regular review mechanism**

Governance & enforcement

- ✓ Air quality plans to be more effective in **ending** and **preventing exceedances** of EU standards
- ✓ **Improved enforceability**: new provisions on access to justice, compensation and penalties
- ✓ More **transboundary cooperation** on air quality

Monitoring & assessment

- ✓ Refined approach to **air quality monitoring**, increased use of **air quality modelling**
- ✓ Additional information on representativeness of **sampling points**, better inform air quality action
- ✓ Monitoring **pollutants of emerging concern** (e.g. ultrafine particles, black carbon, ammonia)

Information & communication

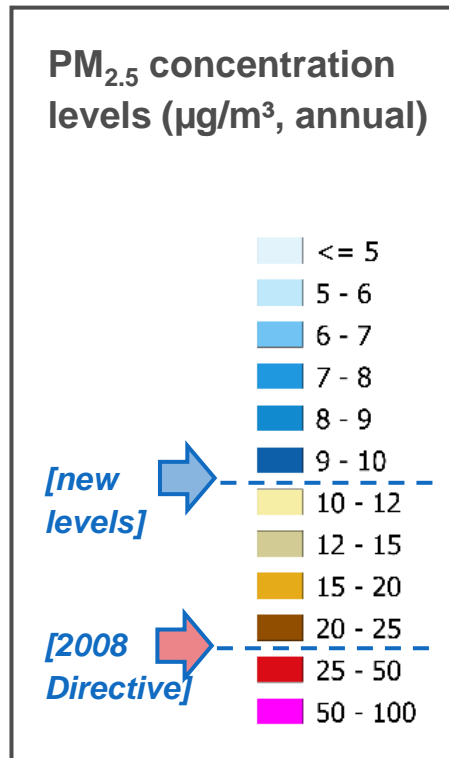
- ✓ More **up-to-date air quality information**
- ✓ Requirements for **air quality indices** to provide hourly reporting of available air quality data
- ✓ **Informing the public** about possible health impacts and provide recommendations



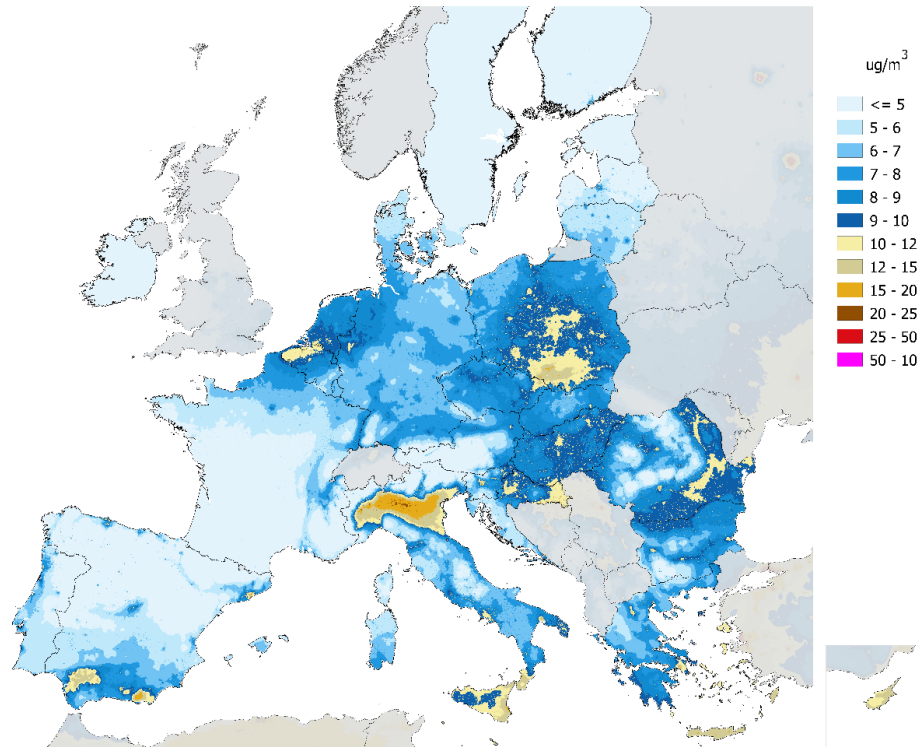
What do we expect the revision will achieve?

Significant reductions of PM_{2.5} levels, based on baseline projections plus additional measures (note: no hotspot specific measures assessed)

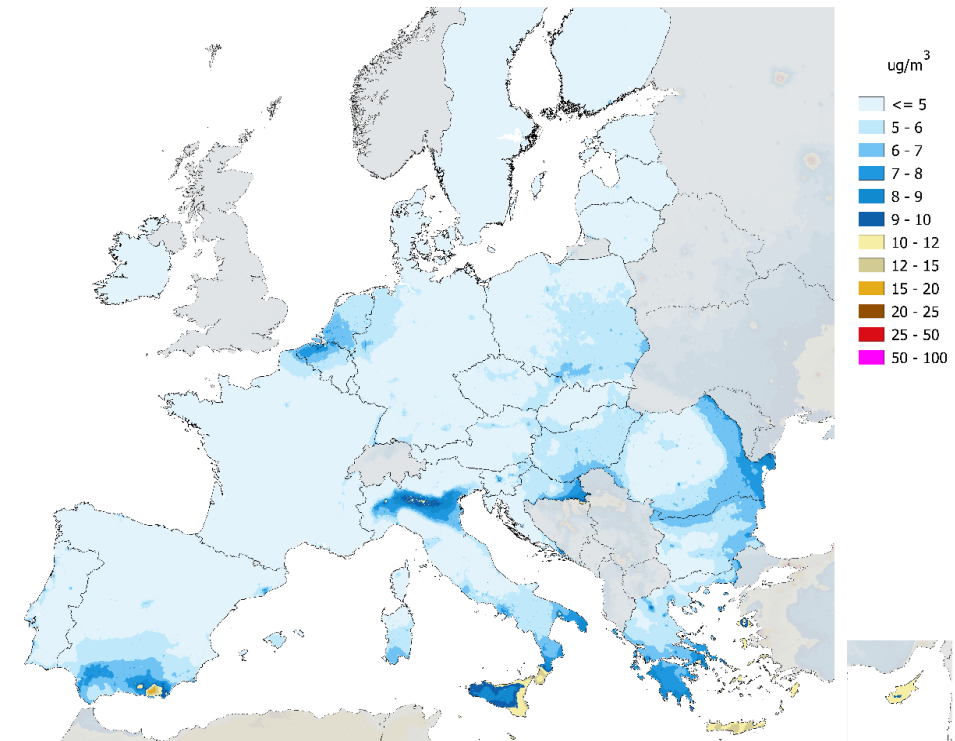
94%
of sampling points to
meet proposed limit
values by 2030



PM_{2.5} levels in 2020



PM_{2.5} levels in 2030 with COM proposal



Based on GAINS/EMEP/uEMEP. Note that these maps show the total concentration levels, and include also contributions from natural sources of wind blown dust and sea salt.

What do we expect the revision will achieve?

- **Health benefits:** Reduces **annual mortality** (premature deaths) linked to air pollution by more than 75% (and by 50% more than without this policy)⁽¹⁾
 - also reduces **related morbidity** (illnesses) by 50% more than without this policy.
- **Social benefits:** Stricter limit values particularly protect sensitive populations and vulnerable groups; Directive requires additional health impact information.
- **Environmental benefits:** Decreases in **eutrophication (-22%)** and **acidification (-63%)** of ecosystems; less crop losses and damage to forests.
- **Economic benefits:** Benefits far outweigh the costs, with annual total gross **benefits estimated at €42 bn** (and up to €121 bn depending on the valuation method) in 2030, compared to measures that costs less than €6 bn annually.

Some concluding reflections

- **EU Clean Air Policy works!** We have seen major improvements in air quality since the 1990s.
- Air quality monitoring (4.000 monitoring stations) and air quality modelling provide us with an **exceptionally robust, comparable and harmonized information basis** across the EU.
- The proposed revised Ambient Air Quality Directive – when adopted and implemented – will render **significant health, social, environmental and economic benefits** across the EU.
- **Some regions** in the EU face more of a challenge to reach current and future EU air quality standards, but also these regions have seen striking improvements in recent years.
- **Implementation, governance and communication** will be key to bank benefits of EU Clean Air Policy. EU funding available for clean air amounts to €147 bn (2021-2027).

Contact us:

env-air@ec.europa.eu

Have your say:

<https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12677-Revision-of-EU-Ambient-Air-Quality-legislation>

Thank you

