



# **EU air quality and ammonia emissions - Policy, legislation and implementation**

Brussels, 26 November 2018

Susanne Lindahl  
European Commission  
DG ENV C.3  
Clean Air

**EU air quality** is slowly improving, but fine particulate matter continue to cause serious impacts on health

Estimated around **400.000 premature deaths** in EU-28 each year

**1 out of 12** EU citizens are exposed to particulate matter (PM<sub>2.5</sub>) above EU limit values; compared to WHO guidelines **more than 8 out of 10**



**400 000 premature deaths** in the EU every year are linked to air pollution

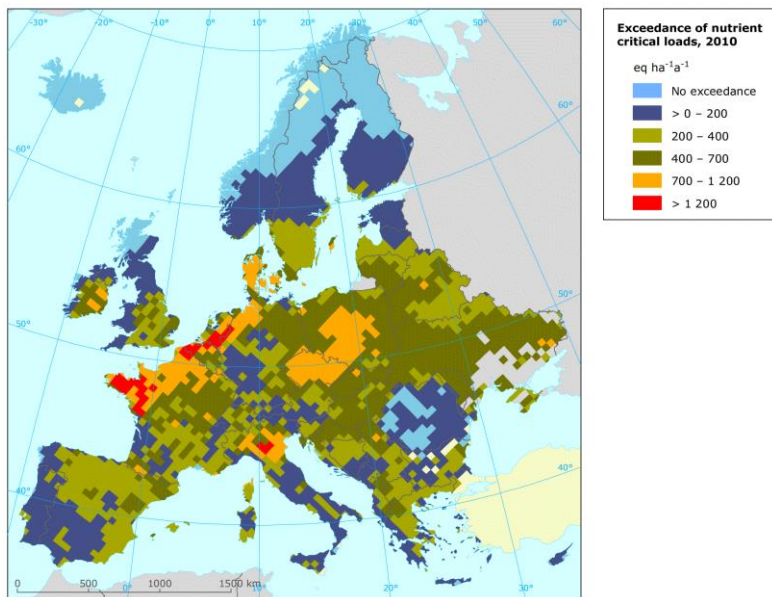


Air pollution costs over **€4 billion in healthcare** and **€16 billion in lost workdays**

Air pollution exceeds **eutrophication limits** in 63% of the ecosystem area, in 73% of all Natura2000 area.

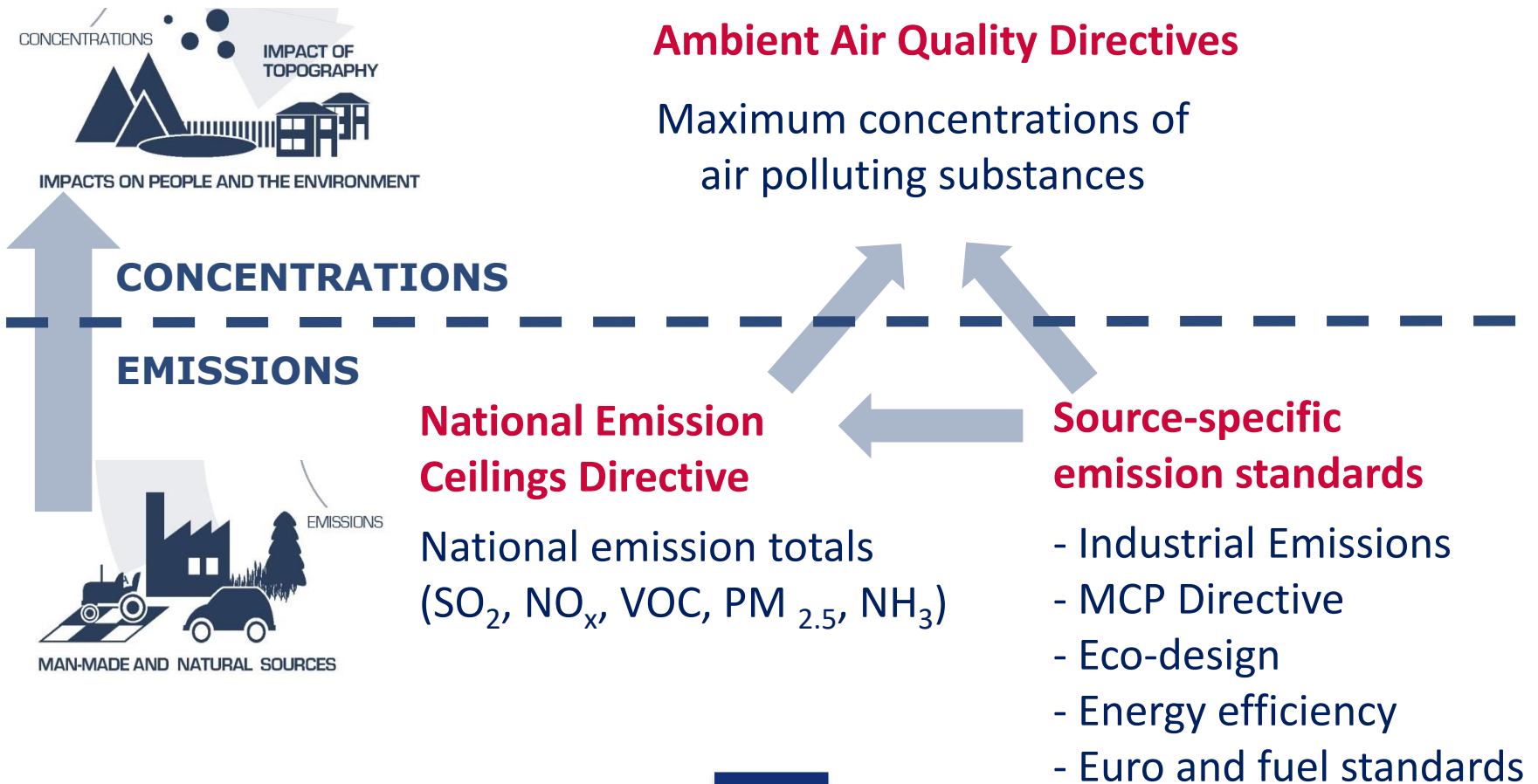


Air pollution costs **€3 billion** in lost crops and **€1 billion** in building damage



9% of the forest area and 25% of the lake area exceeding **acidification limits**

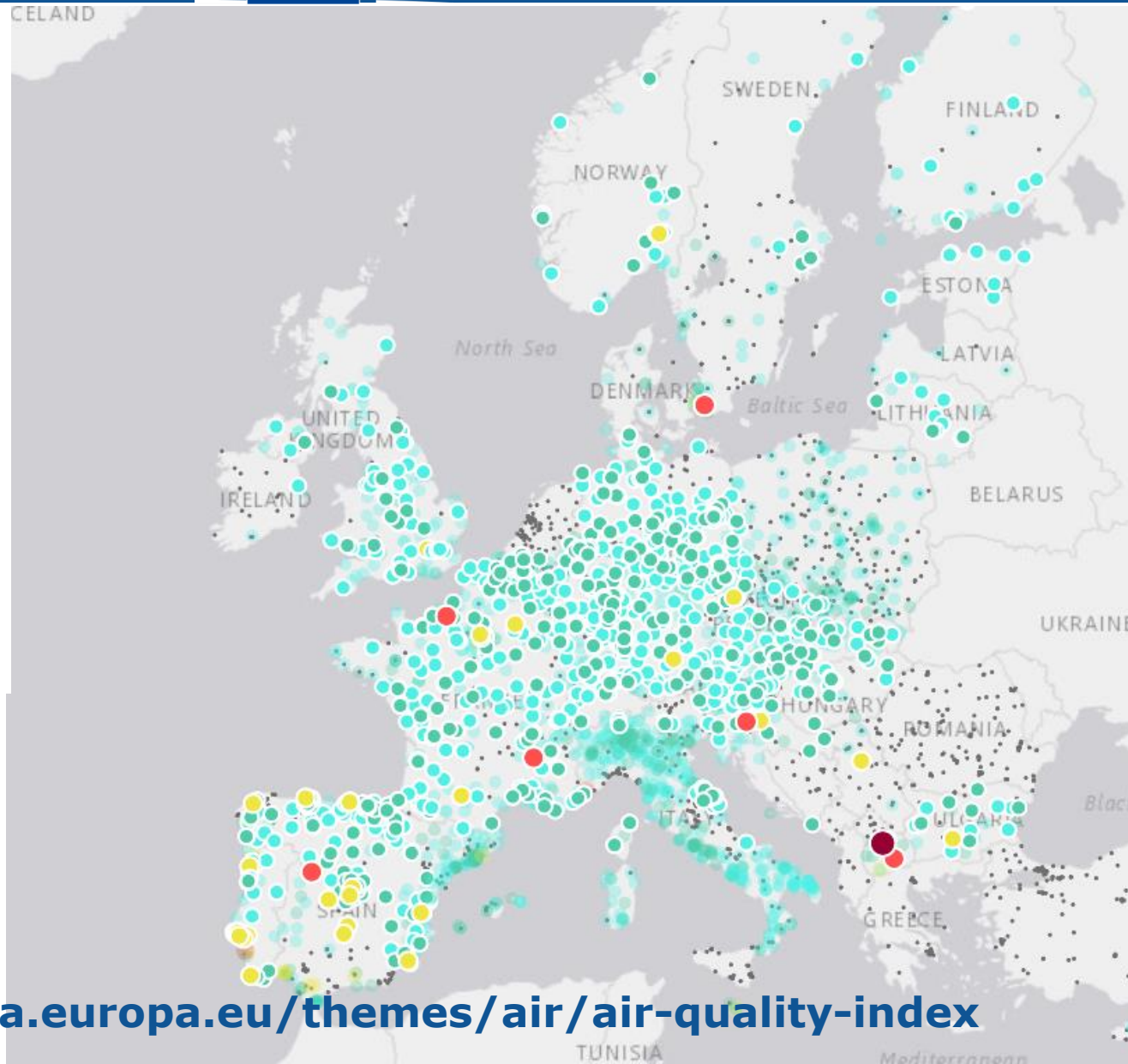
# Clean Air Policy in Europe – An Overview





## Ambient Air Quality Directive(s):

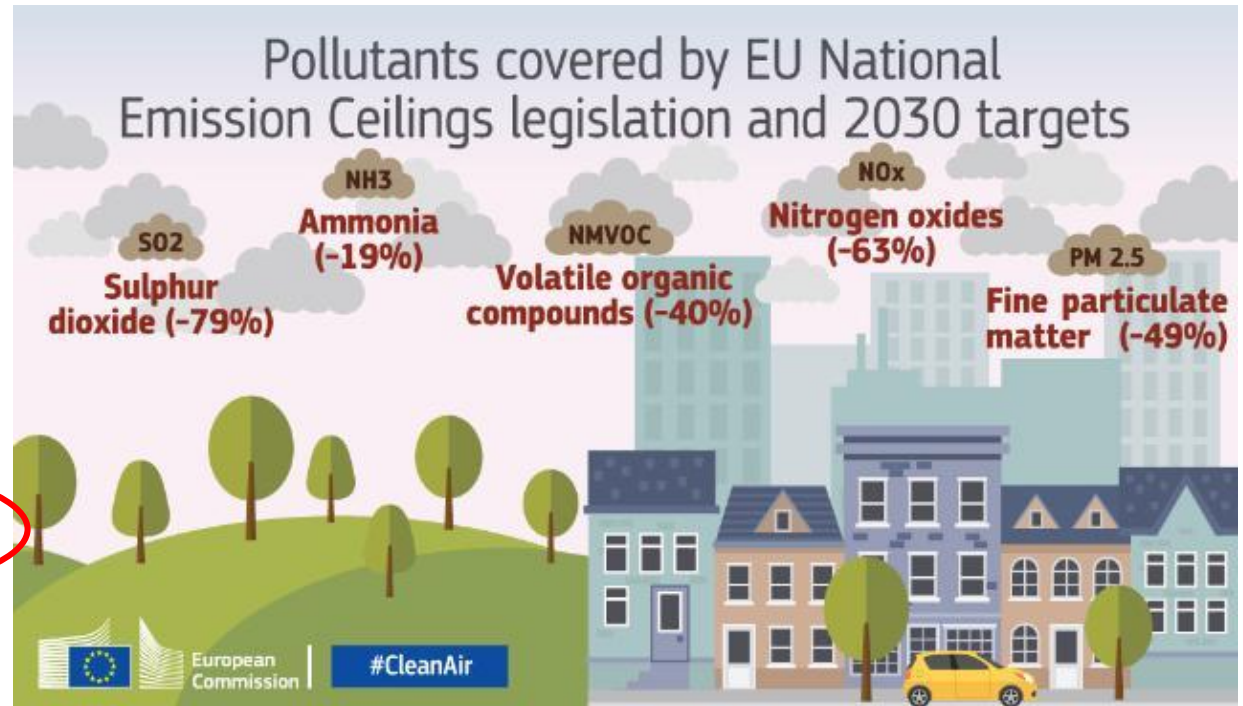
- Measurement of concentrations
- Target and limit values
- Air quality plans/programmes



<https://www.eea.europa.eu/themes/air/air-quality-index>

# Directive on national emission reduction (NEC)

	2020	2030
SO <sub>2</sub>	-59%	-79%
NO <sub>x</sub>	-42%	-63%
VOC	-28%	-40%
NH <sub>3</sub>	-6%	-19%
PM <sub>2.5</sub>	-22%	-49%



## Global framework: CLRTAP + Gothenburg Protocol

- **UNECE Convention on Long-range Transboundary Air Pollution** and linked task forces and knowledge centres – guidelines, manuals for assessments, data analysis; guidelines for cost-efficient countermeasures, etc.
- **The 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone** (“Gothenburg Protocol” – equivalent to EU NEC Directive)
- Ratification and implementation of the Convention and its protocols → reducing health and environmental impacts in a more cost-effective way than with unilateral action



## Source-specific standards and rules

**Industrial Emission Directive**, Industrial Emissions Performance Standards, Ecodesign and Eco-Label standards, BATs and BREFs, ...

**Road transport** including type approval standards, ensure real driving emission Euro 6 standards (with conformity factor of 2.1 from 2019, '1.5' from 2021), ...

**Non-Road Mobile Machinery** (NRMM Directive) type approval standards, fuel quality standards (e.g. sulphur in liquid fuels), ...



## Beyond legislation

Support and dialogue with Member States, Peer-to-Peer workshops, Clean Air Dialogues, etc

Availability of funding – e.g. Structural Funds, Agricultural Fund for Rural Development, LIFE, EFSI – for projects to reduce air pollution

Technical guidelines, templates, exchange of expertise

Persistent exceedances lead to legal action – court cases

# Ammonia – the problem

$\text{NH}_3$  **harms human health** by forming secondary particulate matter (PM)

$\text{NH}_3$  is detrimental to ecosystems due to **eutrophication** and **acidification**

$\text{NH}_3$  reduction since 1990 is **far less** than other air pollutants

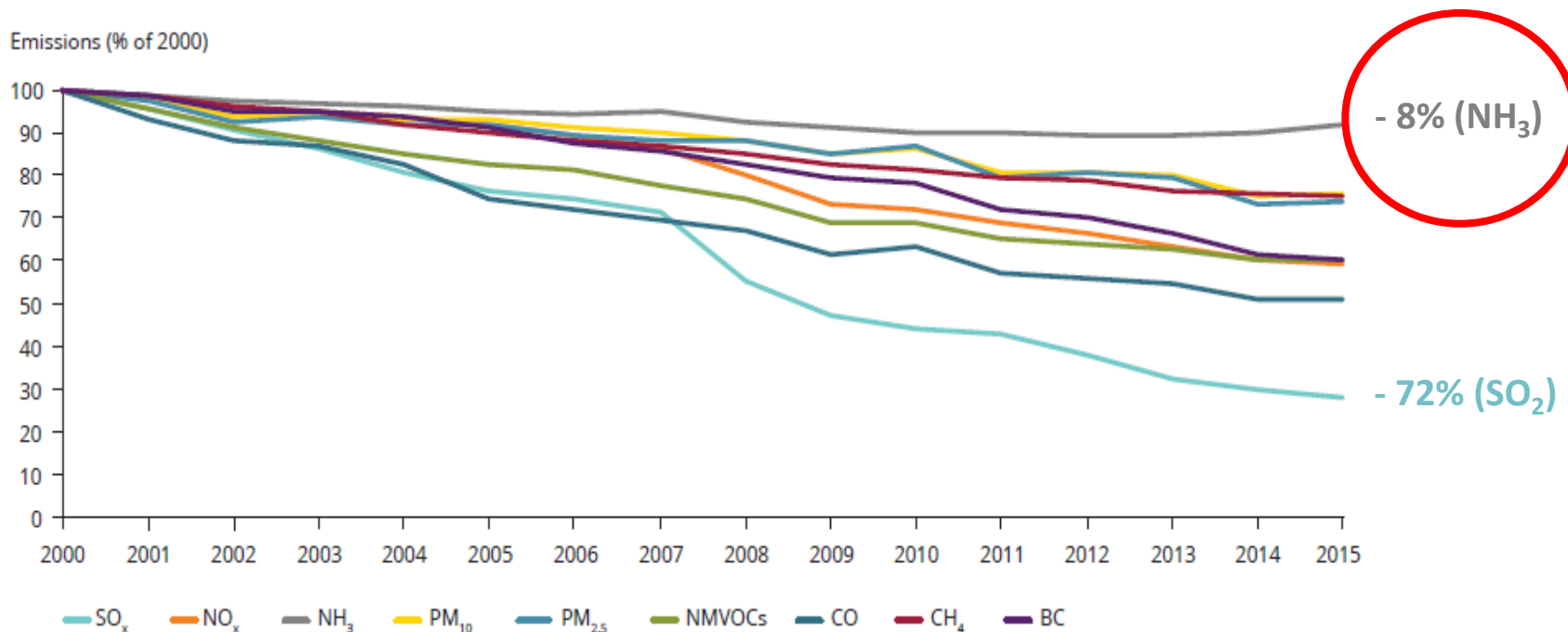


Ammonia contributes to the formation of (secondary) **particulate matter**, which is very harmful to human health



Ammonia-induced particulate matter contributes up to **58%** of particulate matter in cities

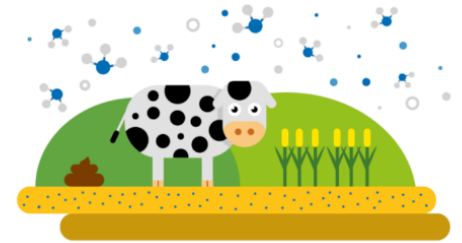
## Development EU-28 emissions 2000-2015



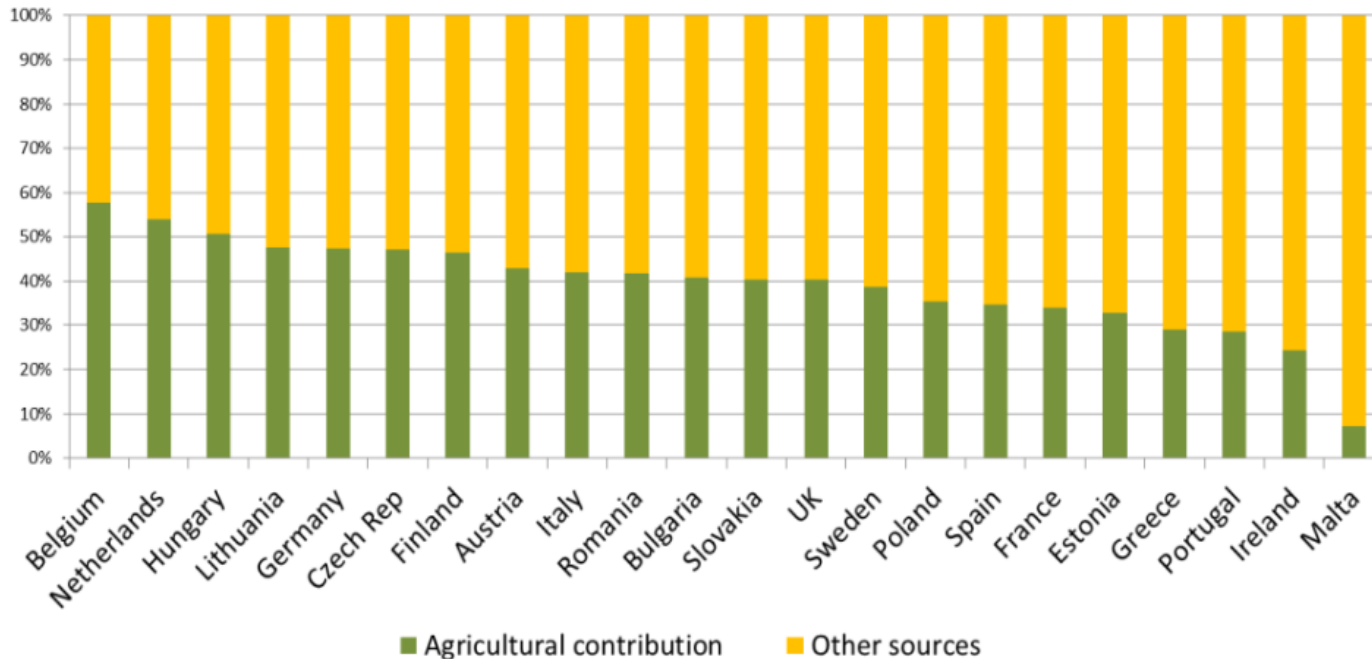
Large differences between Member States on NH<sub>3</sub> trends:

- 1990-2015 between -70% (↓) and +6% (↑); EU-average: -23% (↓)
- 2013-2015 between -8% (↓) and +11% (↑); EU-average: +2% (↑)

# Almost **95%** of $\text{NH}_3$ emissions originate from agriculture



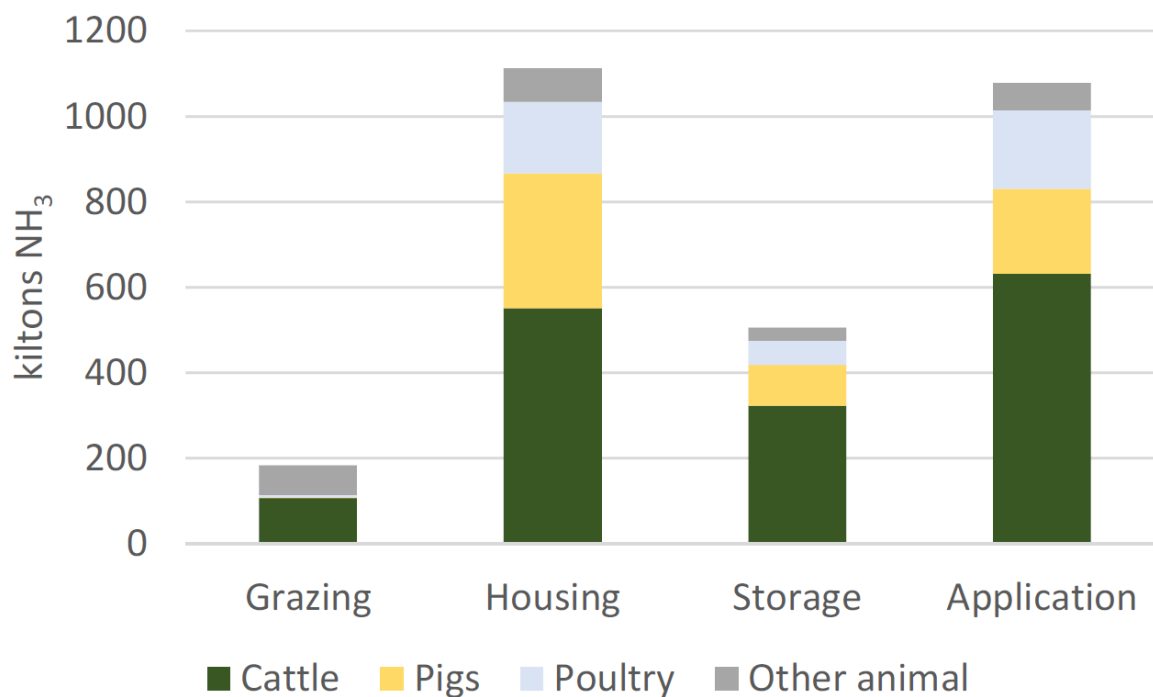
**95%** of ammonia emissions come from agriculture: 80% from **manure** and 20% from **inorganic fertilisers**



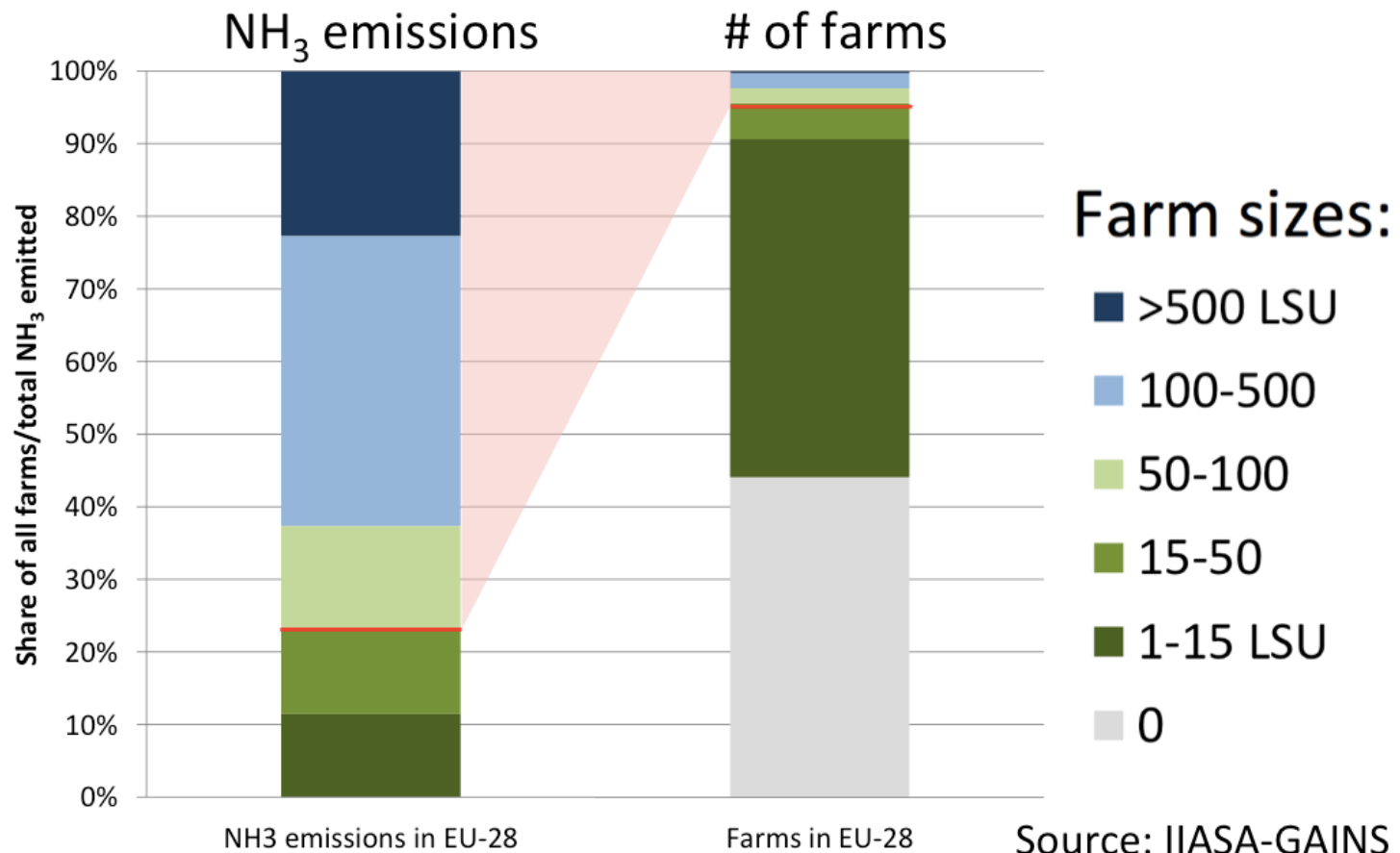
**Contribution of agriculture to urban PM2.5 levels**

## Origin of ammonia emissions – livestock

NH<sub>3</sub> emissions from livestock farming emerging during the different stages in the manure management chain



## Origin of ammonia emissions – farm size



# Possible measures for ammonia

## Annex III of the NEC:

- a) nitrogen management, taking into account the full nitrogen cycle;
- b) livestock feeding strategies;
- c) low-emission manure spreading approaches;
- d) low-emission manure storage systems;
- e) low-emission manure processing and composting systems;
- f) low-emission animal housing systems;
- g) low-emission approaches for mineral fertiliser application.

Based on the **2001 UNECE Framework Code** for Good Agricultural Practice for Reducing Ammonia Emissions.



Europeans consider **protecting the environment** as a top responsibility for farmers

United Nations Economic Commission for Europe  
Framework Code for Good  
Agricultural Practice for Reducing  
Ammonia Emissions

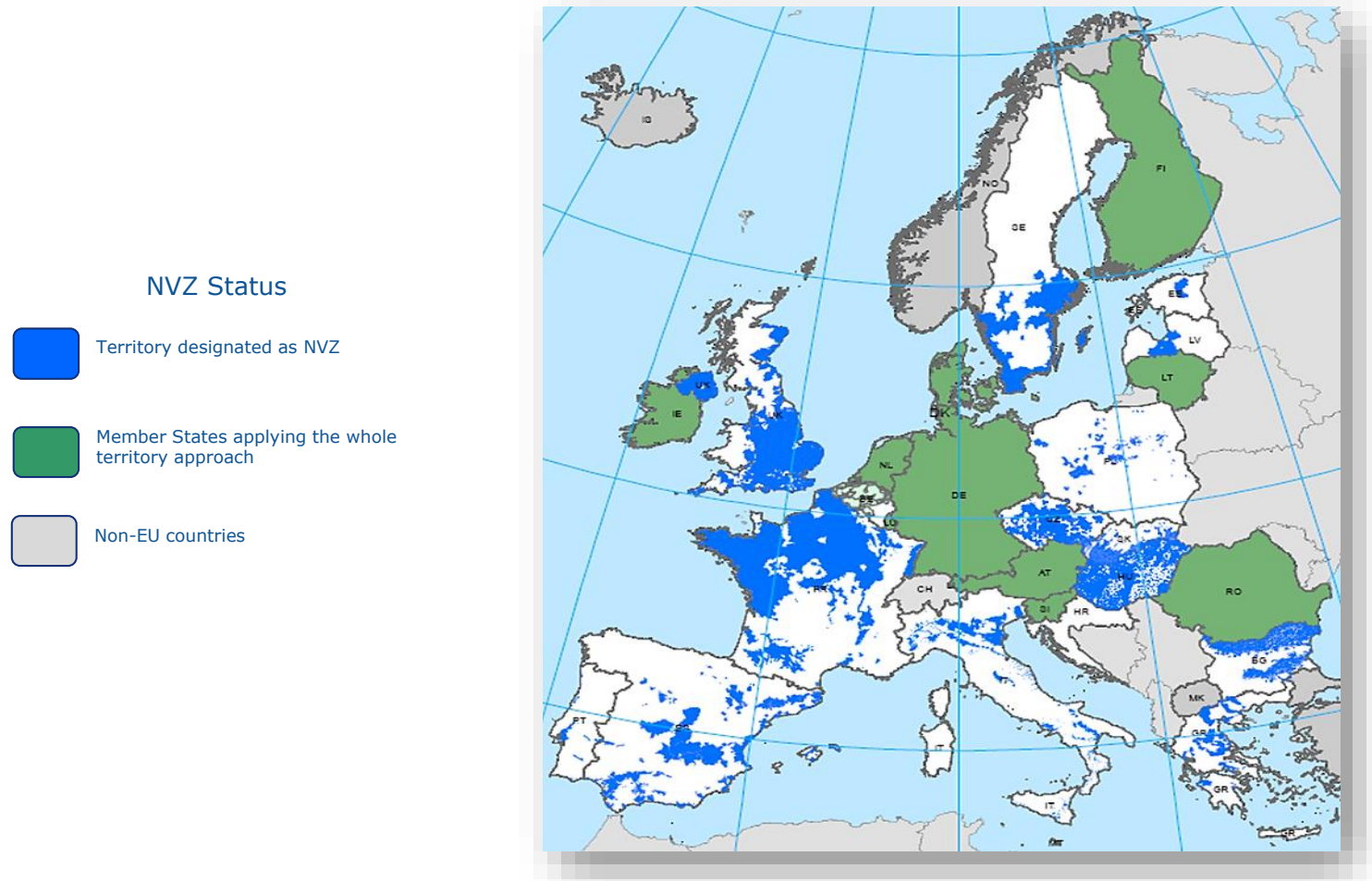




# EU Water Protection – Nitrates Directive

- Water pollution caused by nitrates from agricultural sources
- Codes of Good Practice (voluntary), action programmes, measures
  - When to put fertilisers (closed periods)
  - How to store manure
  - How much fertilisers to use
  - Where NOT to use fertilisers
  - Where to put barriers (buffer strips near water courses)
- Practices in EU Member States to apply balanced fertilisation
- Mandatory crop specific application standards
- Mandatory soil sampling, mandatory nutrient balance accounts, other methodologies, using various approaches and indicators (e.g. field balance vs farm gate balance)

# Nitrate Vulnerable Zones designation



# Marine strategy framework directive and HELCOM convention

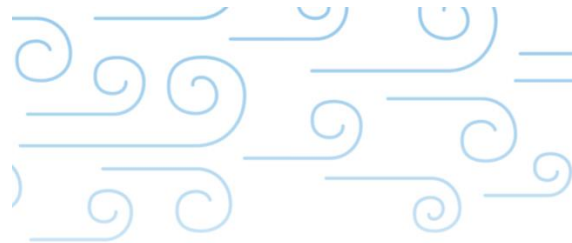
- To ensure **good environmental status** of marine environments (e.g. the Baltic Sea)
- Ensuring minimal eutrophication
- Precautionary principle

# Slurry acidification?

- Risk-based approach
- Side-effect mitigation and proper techniques (safety, over-fertilisation, CO<sub>2</sub> and VOCs)
- Consider entire nutrient/nitrogen cycle
- **Not just promotion but *smart and responsible* promotion**

## More Information

<http://ec.europa.eu/environment/air/>



*Clean air is essential for healthy living.  
The EU is working to ensure that every  
citizen can breathe without risking  
their well-being.*

[ENV-AIR@ec.europa.eu](mailto:ENV-AIR@ec.europa.eu)