

# **Towards Cleaner Air**

**Scientific Assessment Report 2016:  
Summary for Policymakers**

**Launch:  
31 May 2016  
Norway House  
Brussels**

# Acknowledgements

All networks: bodies under WGE, EMEP, AMAP, Task Forces, (inter)national monitoring  
Individuals who contributed text, ideas, opinions, reviewers



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# Background documents

## WGE trend report:

Trends in ecosystem and health responses to long-range transported atmospheric pollutants

*Contributions from*

ICP Forests, ICP Integrated Monitoring, ICP Materials, ICP Modelling and Mapping, ICP Vegetation, ICP Waters, JEG DM, TF Health, EMEP, AMAP



Convention on Long-range Transboundary Air Pollution  
**emep** Co-operative programme for monitoring and evaluation of the long-range transboundary emissions of air pollutants in Europe



## Air Pollution Trends in the EMEP region between 1990 and 2012

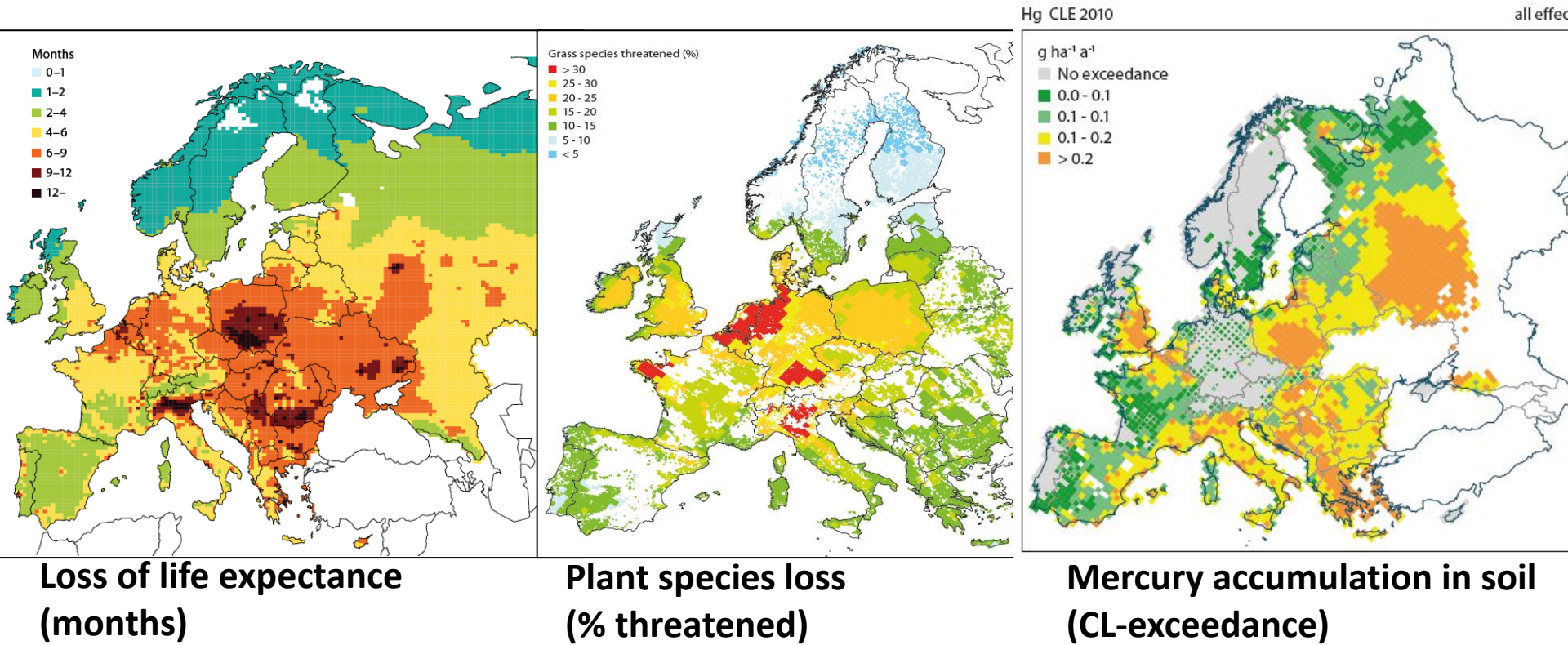
Task Force on Measurements and Modelling

European Monitoring and Evaluation Programme

Convention on Long-Range Transboundary Air Pollution

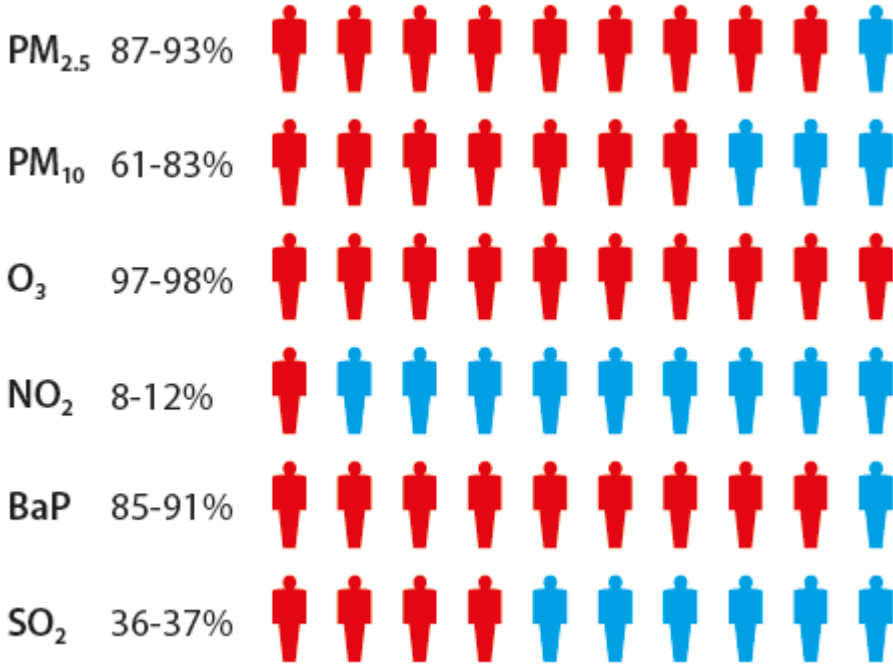
U.S. EPA & Environment and Climate Change Canada:  
Scientific Assessment Report 2016: North America”

# 1. Air pollution still causes serious damage to health and ecosystems



**unfinished work:  
particulate matter, nitrogen, ozone, HM&POP**

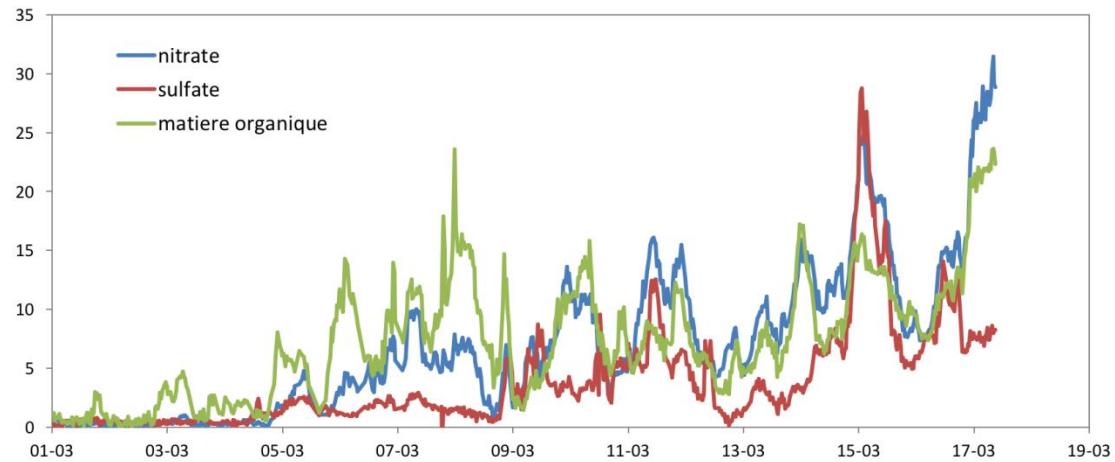
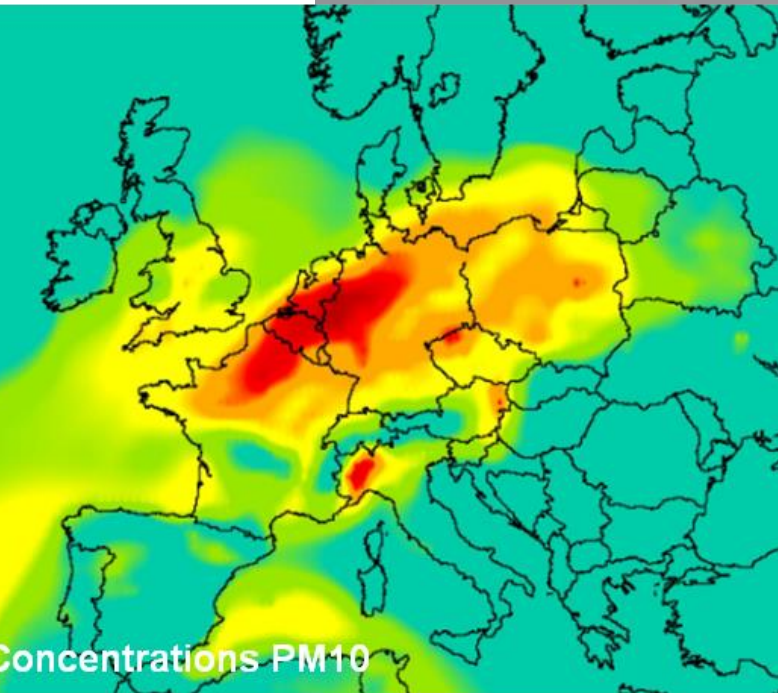
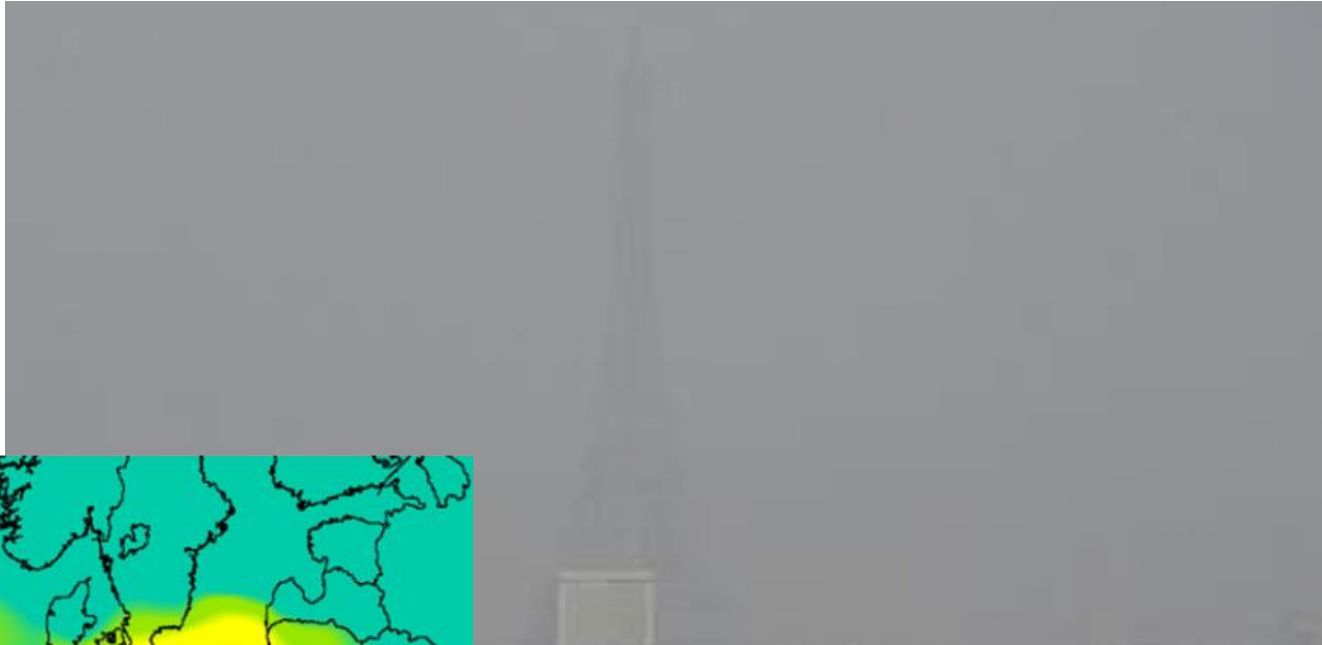
# Majority of the EU population is exposed to concentrations above WHO guideline levels



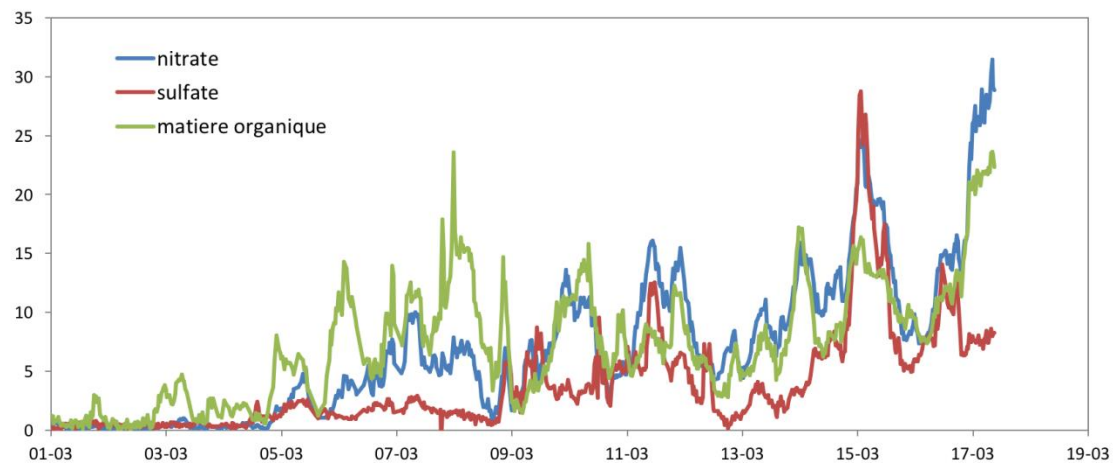
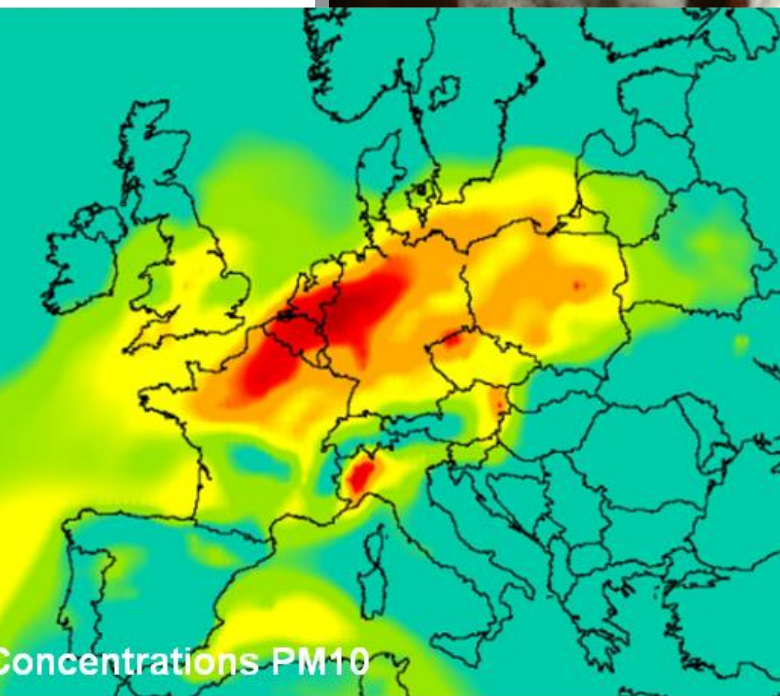
## 2. Air pollution remains an international problem



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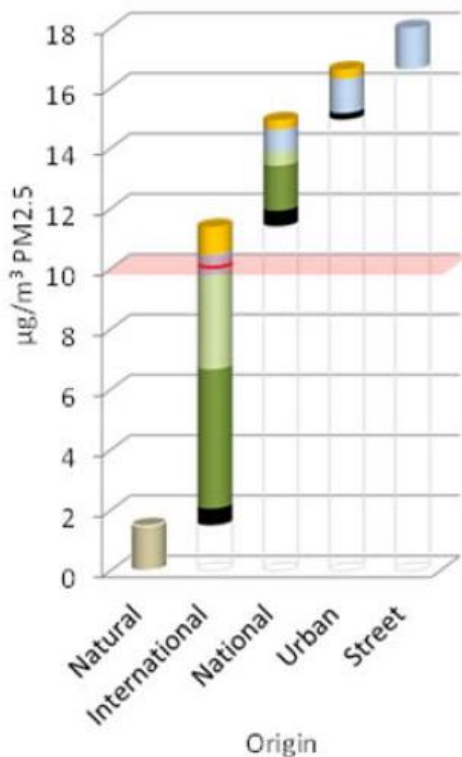
## 2. Air pollution remains an international problem



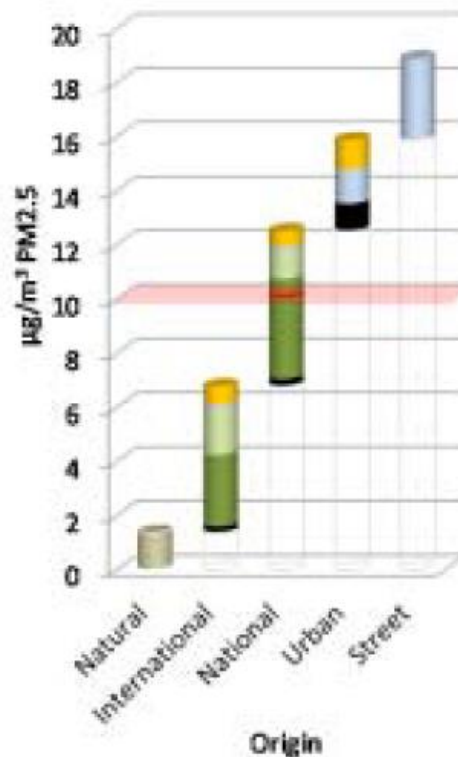


# International cooperation is needed to reduce secondary particulate matter

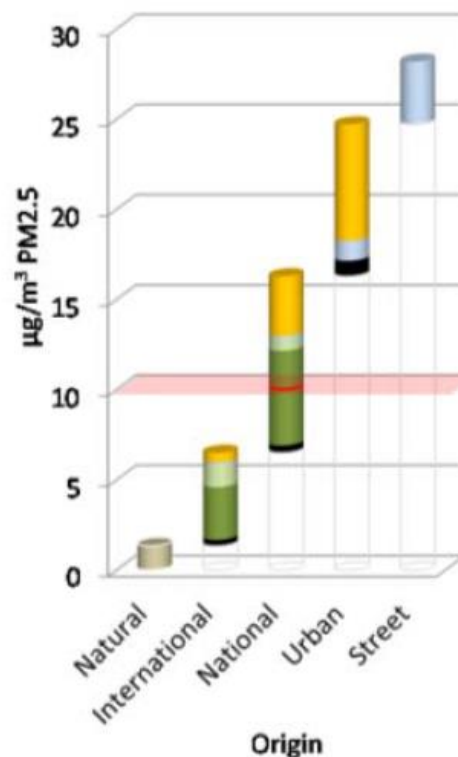
## Netherlands



## Germany



## Poland



- Households
- Primary PM: Traffic
- Sec. PM: Traffic + agri.
- Sec. PM: Industry + agri
- Primary PM: Industry
- Natural

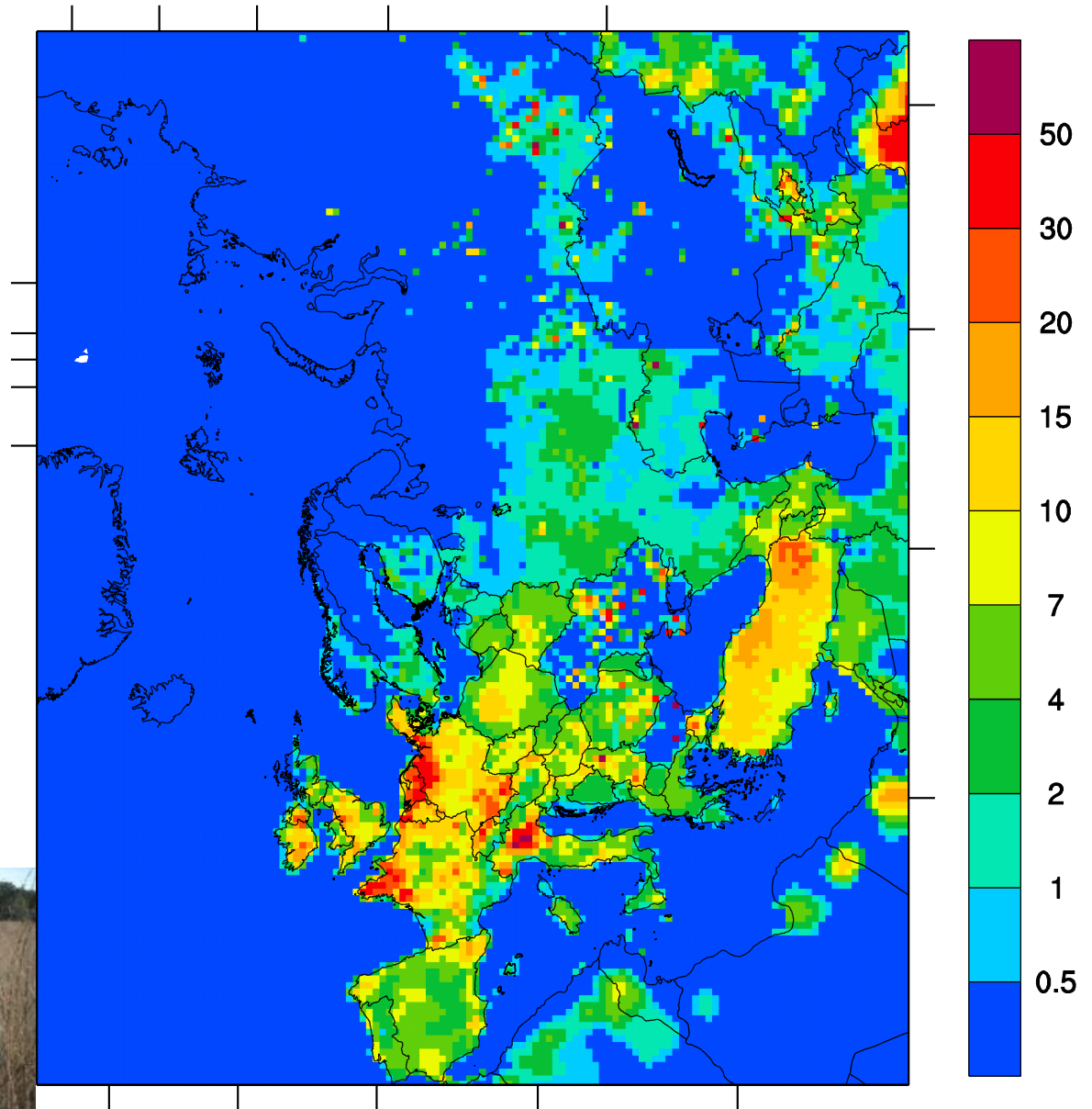
Local measures alone will often be insufficient to meet WHO guideline levels

**Ammonia emission reduction will have transboundary impacts: reduced urban PM-exposure and biodiversity protection**



NH<sub>3</sub>

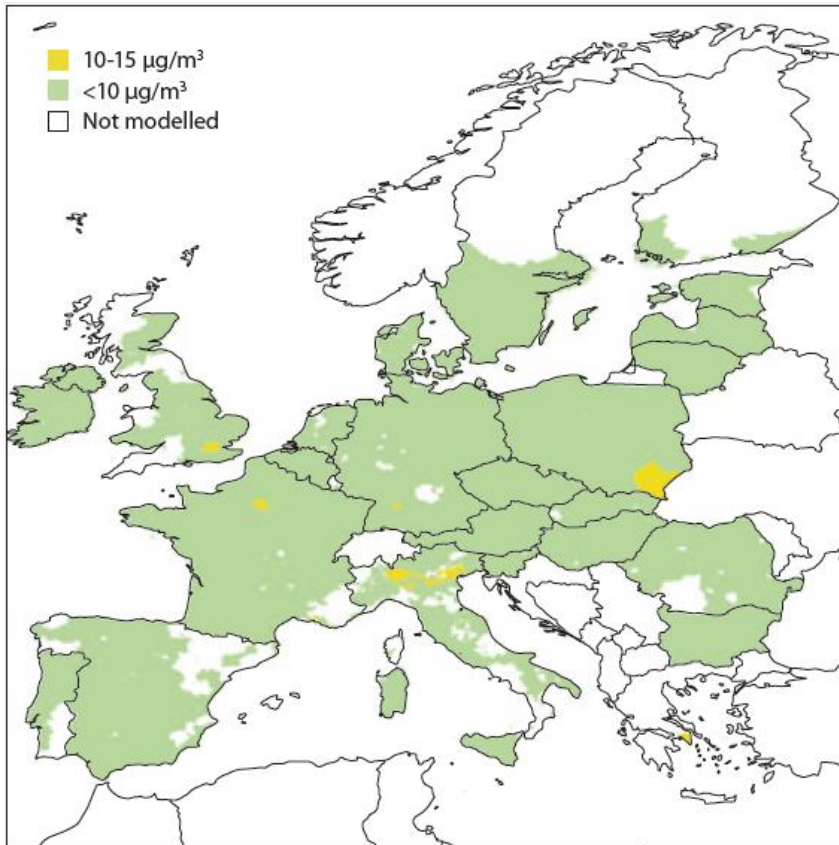
kg(N)/ha



NH<sub>3</sub> emissions in 2013 (EMEP)

# 3. Solutions are available

## Possible actions to meet WHO PM2.5 guideline levels



### Continental

1. Ensure Euro-6 standards work in reality
2. Implement climate & energy targets
3. Set emission-standards for e.g. wood burning large cattle farms, ships, ...

### National

1. Ratify LRTAP Protocols
2. Implement climate and energy policies
3. Control on maintenance of Euro-6 vehicles
4. Scrapping schemes for old vehicles/motorcycles
5. Enforce (agricultural) emission regulation

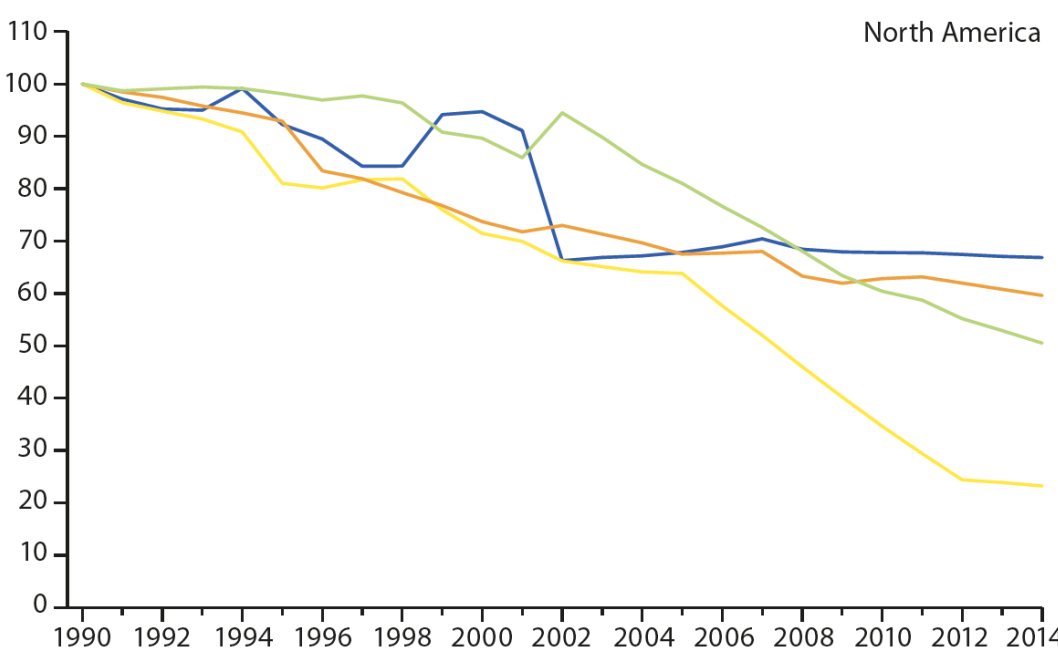
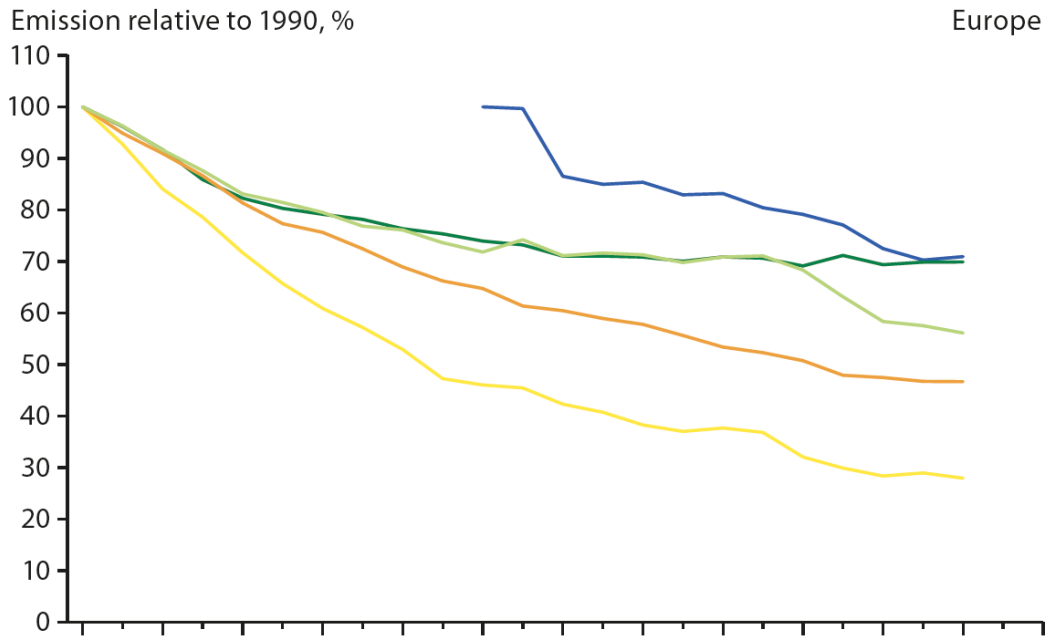
### Cities

1. Low emission zones
2. Stimulate electric vehicles
3. Set speed limits
4. Healthy city design (walking/cycling/public transport)
5. Inform and involve the people

**2050 scenario:  
with climate & energy policy + MFR-  
measures, WHO PM2.5-guidelines can  
be met almost everywhere**

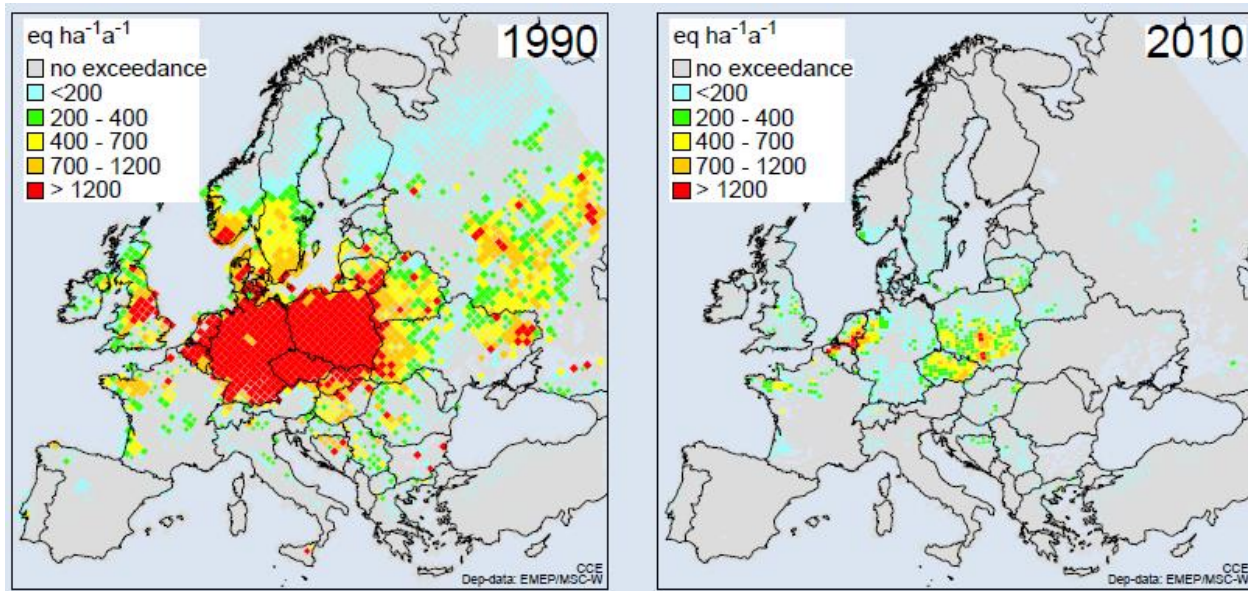
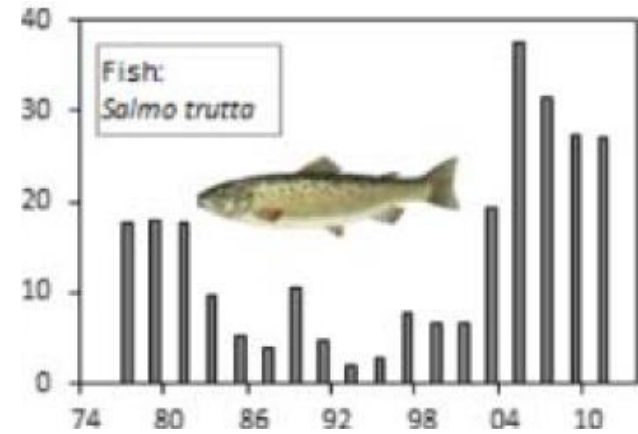
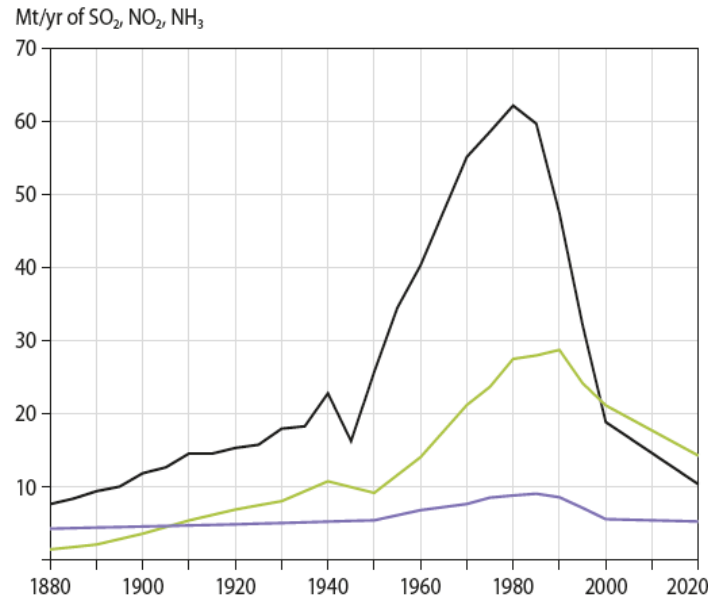
# 4. There is a successful policy arena

Some pollutants seemed easier to reduce than others

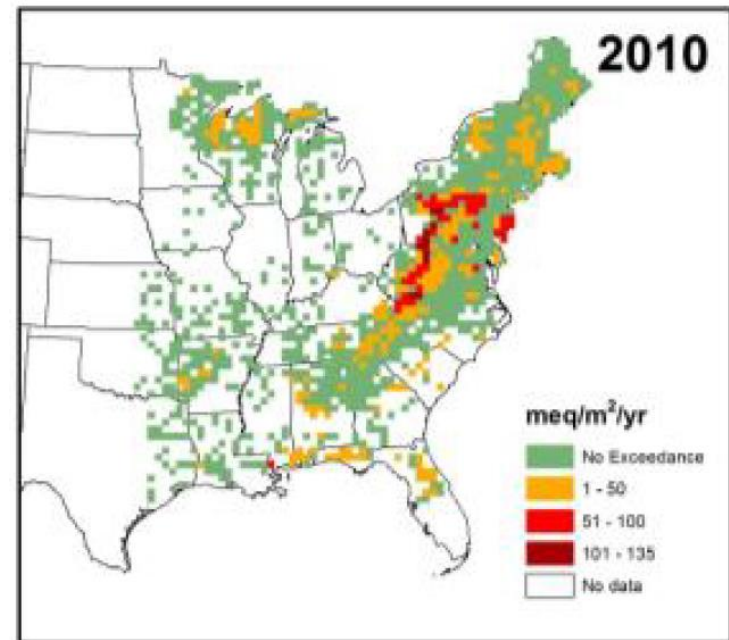
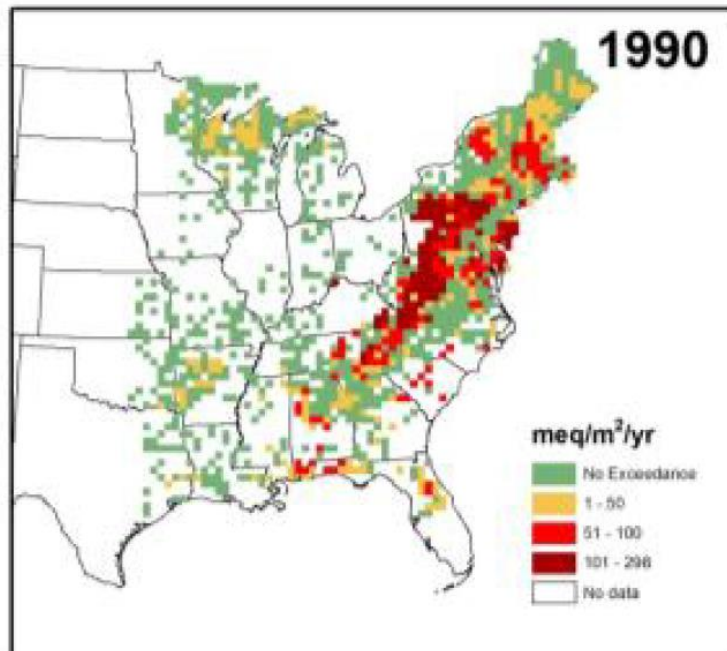


— PM 2.5µm — Sulphur dioxide — Nitrogen oxides — Non-methane volatile organic compounds — Ammonia

# Acidification: large improvements

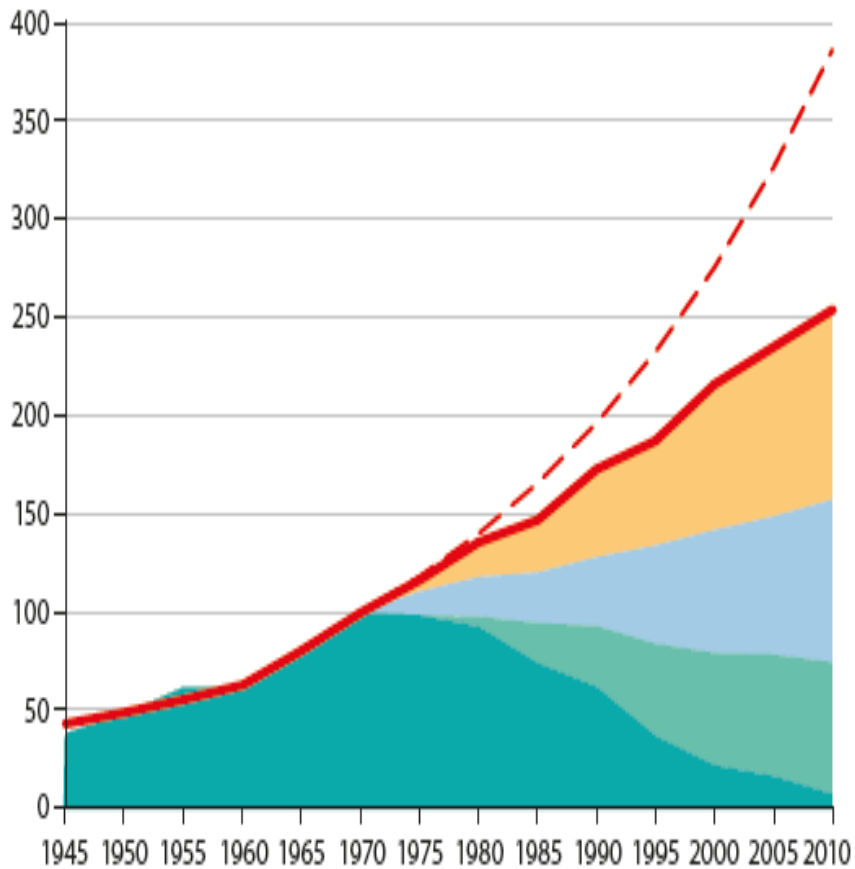


# Exceedance of critical loads for acidification on streams and lakes in the U.S.



# How would the world have looked without abatement policy?

SO2 and GDP relative to 1970, %

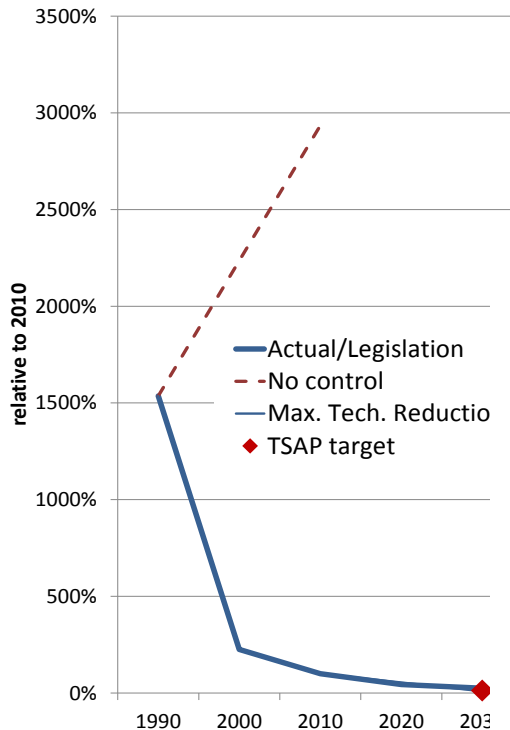


SO2 avoided through

- Energy intensity and efficiency improvements
- Changes in fuel mix
- Actual SO2
- (End-of-pipe) emission controls
- - - Hypothetical GDP (3% growth/yr)
- Actual GDP (constant 2000 Euro)

Rafaj et al , 2014

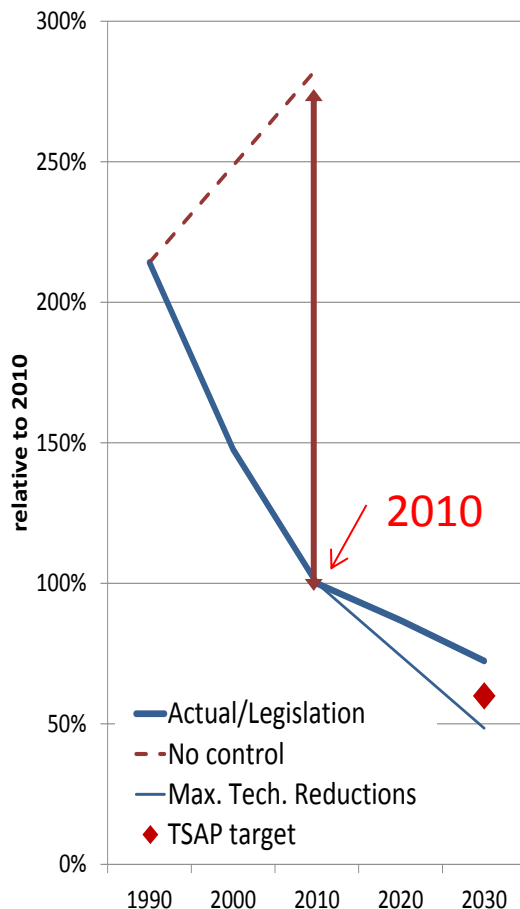
Acidification (excess dep.)



**2010:**  
excess deposition  
30 times lower

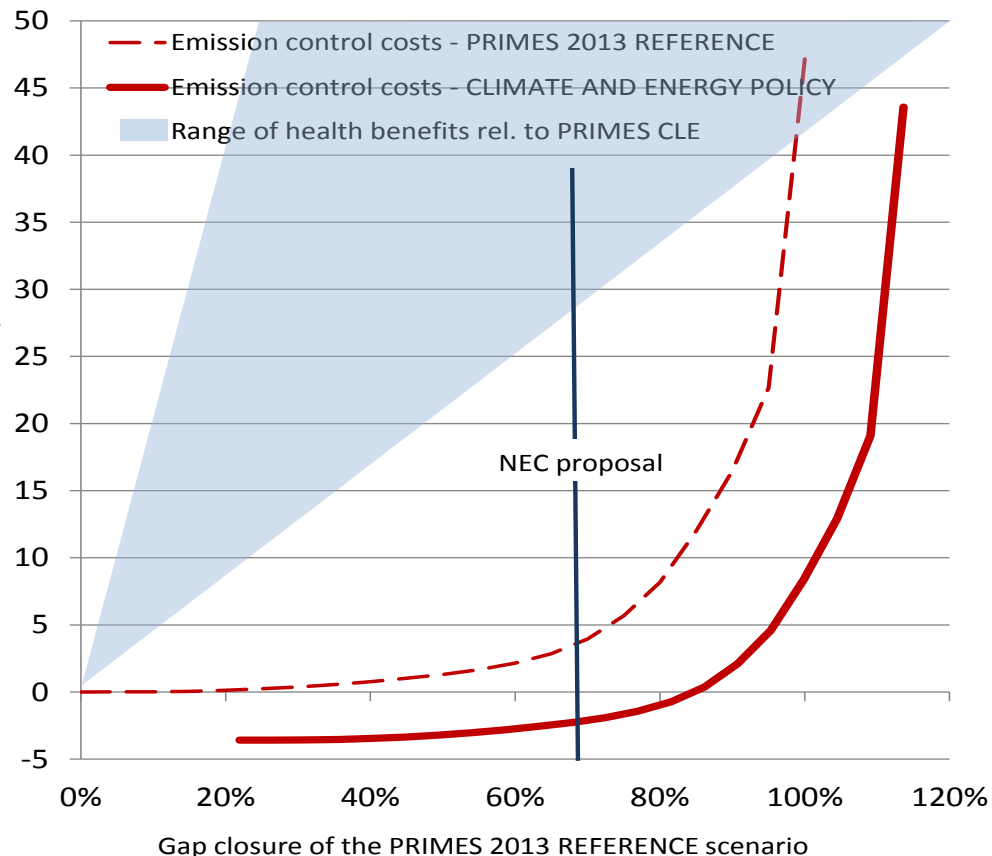
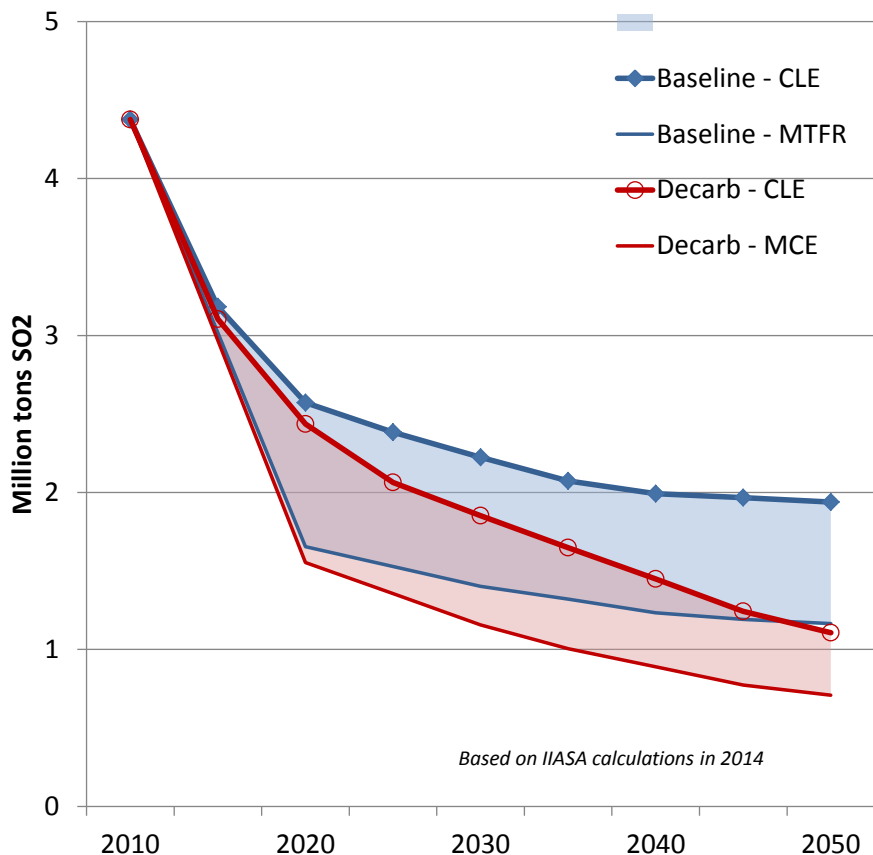
**2010:**  
12 months life expectancy  
~600,000 premature deaths/yr

Population exposure PM2.5



# 5. There are synergies with other policy areas

## i.e. Paris Agreement will contribute to cleaner air

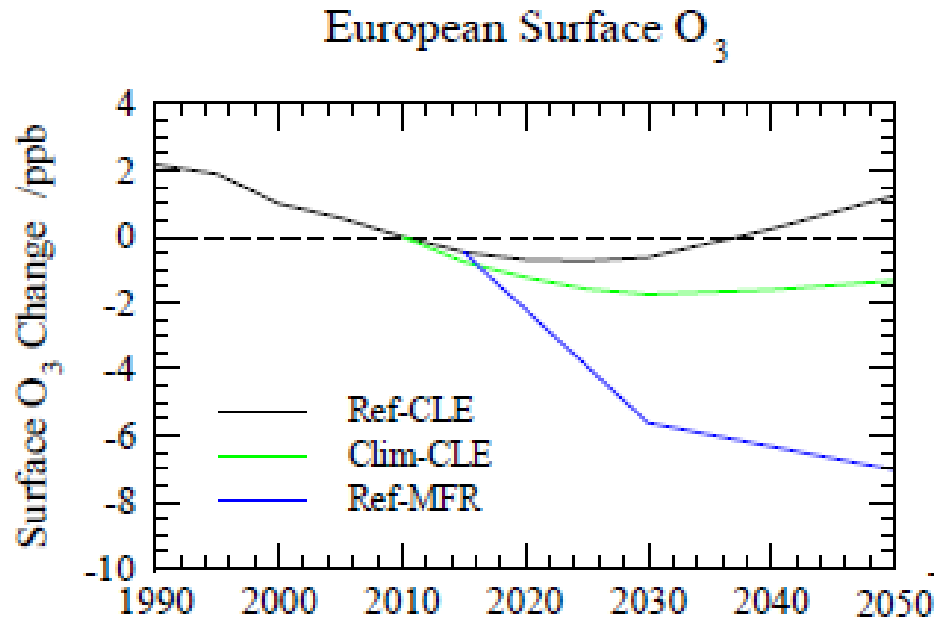


**MTRF equals CLE with climate policy**  
 Climate policy gives 15-20% higher reduction potential for SO<sub>2</sub>, NO<sub>x</sub>, VOC and PM<sub>2.5</sub>

**Substantial lower control costs:**  
 Socio economic effects of most abatement measures are positive:  
 >50% health improvement without net costs



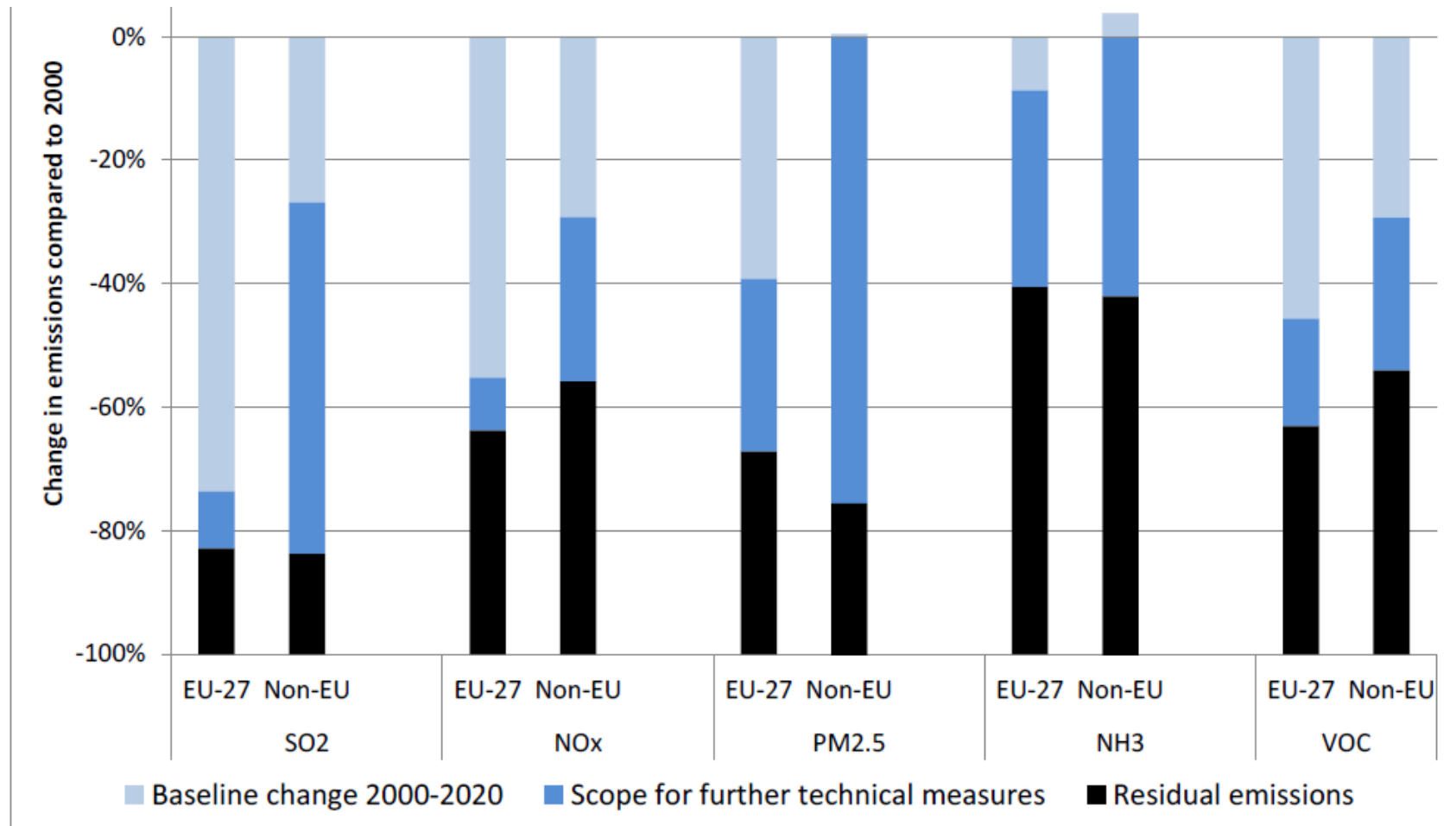
## 6. Ozone requires northern hemispheric cooperation that includes methane abatement



### How to avoid exceedance of 35 ppb ozone levels in Europe?

Current summer average	~ 42 ppb (33-50)
MFR Europe	- 3 ppb
MFR northern hemisphere	- 3 ppb
MFR methane	- 2 ppb

## 7. There is a large reduction potential in EECOA countries for SO<sub>2</sub>, NO<sub>x</sub> and PM<sub>2.5</sub> from power plants & industries



# What is hindering ratification by EECCA–countries?

- Adopting National emission reduction obligations is complicated due to uncertain emission data
- There are health benefits, but at a cost :
  - In EECCA countries average costs per life year gained are half the cost of a life year gained in the EU
  - but such costs as a % of GDP are 4 times higher than in the EU
- However adopting technical annexes would create a level-playing-field for industry within UNECE

# Possible steps forward

1. Improve emission data for EECCA-countries
2. Harmonize monitoring of air pollution policy implementation and effects on health and ecosystems
3. Explore cost-effective northern hemispheric strategies
4. Explore synergies with energy, transport and public health at both local, national and regional scale
5. Explore synergies with agricultural policy, nature protection and public health
6. Explore synergies with sustainable development policies

# 7. Air pollution abatement offers concrete contributions to several SDGs

