



International Institute for
Applied Systems Analysis
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science for global insight

Beyond present air pollution and climate change policies

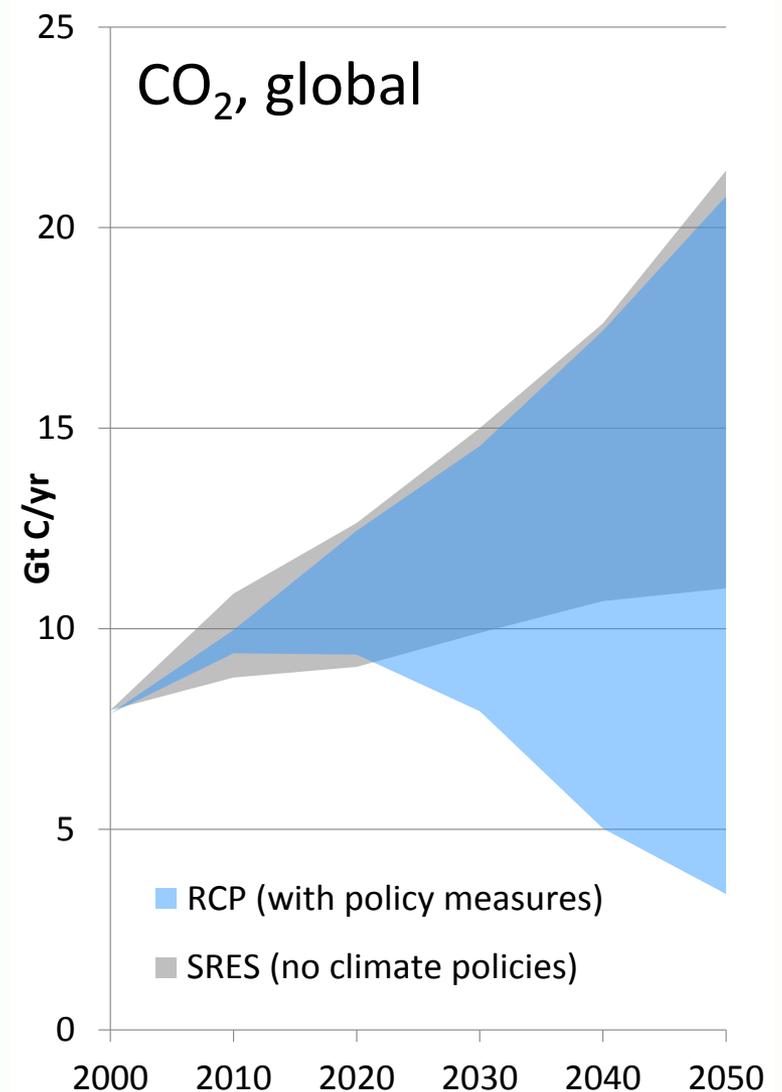
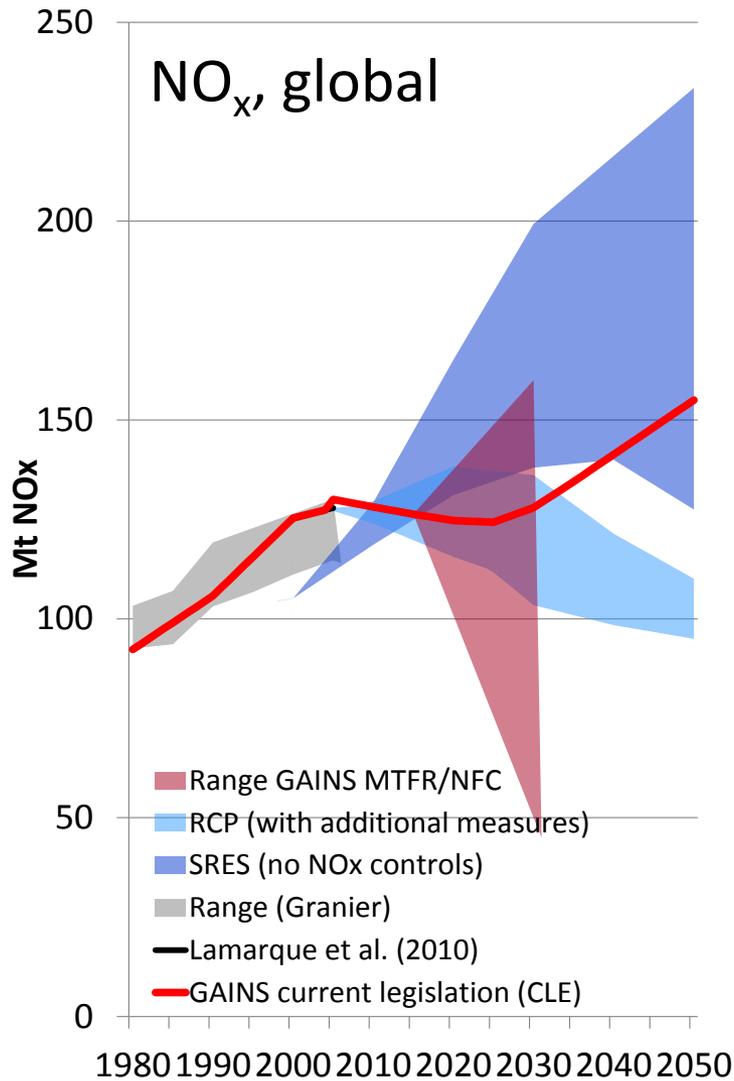
Saltjöbaden V Conference
Gothenburg, June 24-26, 2013

Markus Amann



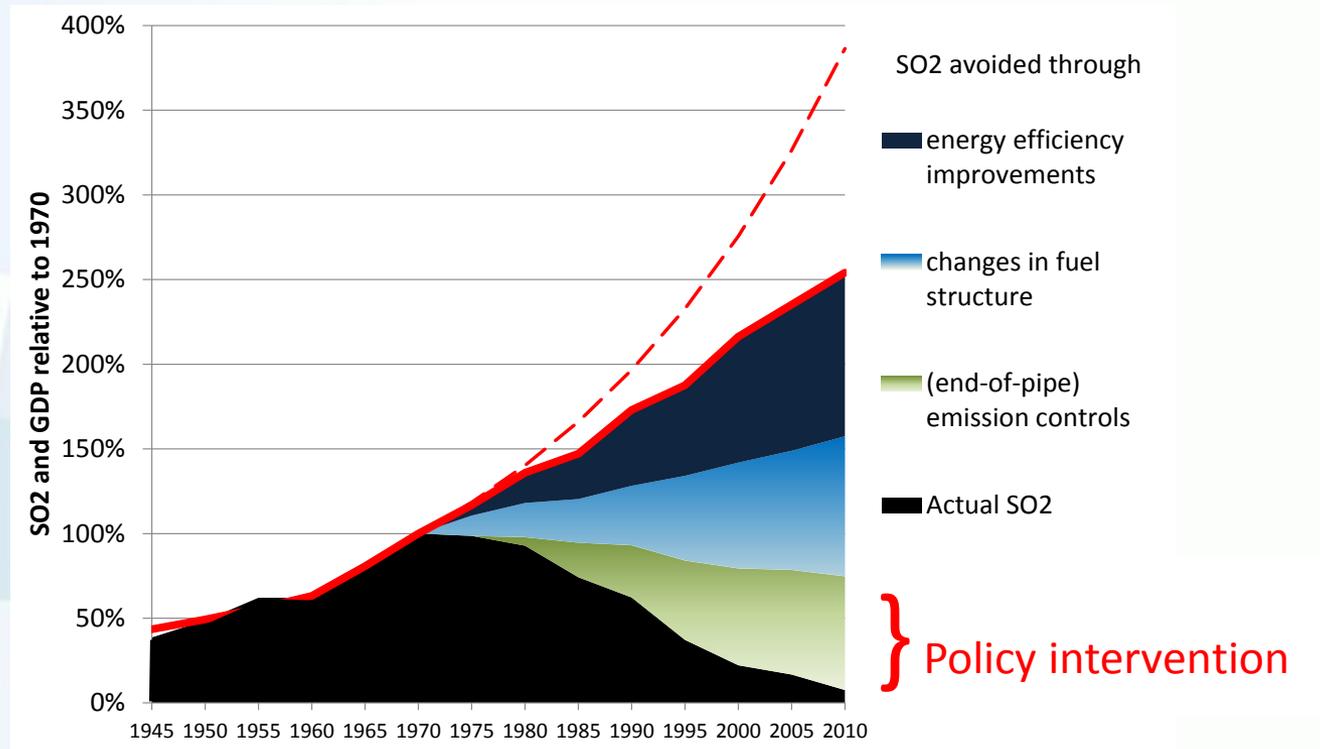
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Future emissions – and impacts - will be determined by further policy interventions



SO₂ emissions

Factors leading to the decline



Source: IIASA
<http://gains.iiasa.ac.at>

Science – policy - public - politics: Arguments in the past

	Science	Public opinion
Threats	<ul style="list-style-type: none"> • Acidification of lakes and soils • Excess of critical loads for forests and eutrophication • O₃ damage to health and plants • Health damage from PM 	<ul style="list-style-type: none"> • Disappearance of fish • Forest die-back • Ozone alerts • Exceedance of AQ standards
Costs	<ul style="list-style-type: none"> • Benefits vs costs at societal level • Cost-effectiveness 	<ul style="list-style-type: none"> • Costs to industry and consumers • Trade-off with development
	Policy (for societal welfare)	Politics (maximizing votes)

Science – policy - public - politics: Current and future arguments

	Science	Public opinion
Threats	<ul style="list-style-type: none"> • New evidence about health effects at low levels • Threat to biodiversity • Climate change 	?
Costs	<ul style="list-style-type: none"> • Contribution to long-term sustainability • Many measures pay for themselves in the long run and enhance development 	<ul style="list-style-type: none"> • Additional expenditures in an economic crisis and austerity policies • Focus on short-term profits • Expected gains from stock market taken as reference for projects
	Policy (for societal welfare)	Politics (maximizing votes)

Bridging time scales: Theories – opportunities - instruments

	Policy issues	Field of theory	Mitigation rationale	Opportunities	Policy instruments
Short-term	Implementation of current policies	Behavioral & organizational	Move closer to 'best practice frontier'	Smarter choices	Standards (emissions, AQ limit values)
Medium-term	Mid-term air and climate strategies	Welfare & neo-classical economics, optimization	Make best trade-offs along the frontier	Substitute cleaner production and products	Markets, ETS, pricing, taxes, NECs
Long-term	Climate, long-term air targets	Evolutionary and institutional	Evolve the frontier	Innovation and infrastructure	Public-led investments

Some examples and opportunities for bridging the scales

The integrative perspective on air pollution and climate has produced some successful (but embryonic) examples:

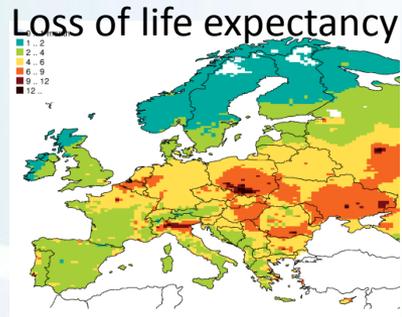
- Highlighting local and near-term co-benefits of climate mitigation measures
- Win-win measures for short-lived climate pollutants (CCAC)
- Linking local exceedance of AQ limit values with local and international sources

Opportunities:

- New forum for coordinating action at different scales (TSAP revision)?
- Extension of LRTAP?
- Optimizing the interplay of different policy instruments?

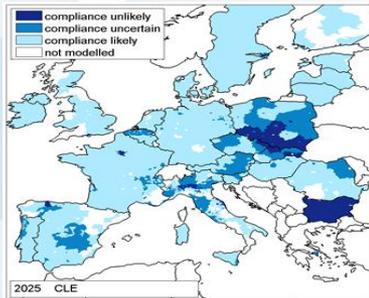
The remaining air quality problems in the EU will be primarily related to PM and NH₃

TSAP baseline 2025



- The TSAP baseline still envisages ~5 months shortening of statistical life expectancy after 2020

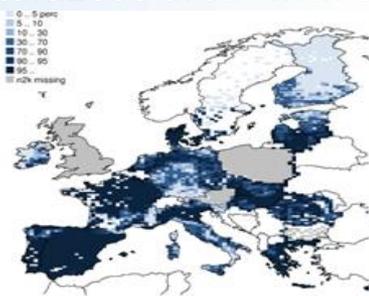
Violation of PM10 limit values



- Compliance problems with PM10 will persist in some New Member States due to residential heating with solid fuels (coal, wood)

- In 62% (420,000 km²) of Natura2000 areas, biodiversity will remain threatened by excessive nitrogen deposition

% of Natura2000 areas with excess N



- Priority for further measures for small combustion sources, i.a., in the residential sector, and for mass animal husbandry

Conclusions

- The future protection of air quality and climate will critically depend on additional policies
- Air pollution will not vanish as a mere side-effect of climate and development policies
- In the EU, the focus for further emission reductions must shift to residential heating and mass animal husbandry
- To serve the welfare of societies, there is an urgent need for science to
 - demonstrate and communicate benefits of additional measures to the public in tangible terms,
 - develop mechanisms and instruments that link the long time scales of the air and climate problems with those of today's decision making.