11th Concawe symposium
23-24 February, 2015

Impact Assessment of the Clean Air Policy Package

Unit C3, Industrial Emissions and Air
DG Environment, European Commission

Main elements of the Package

- Communication on the new European Clean Air Programme ("Strategy")
- Proposal for a revised Directive on National Emission Reduction Commitments ("NEC")
- Proposal for a Directive on controlling emissions from Medium Combustion Plants ("MCP")
- Proposal for a Council Decision on ratification of the Gothenburg Protocol amendment ("GPRI")
- Accompanying Impact Assessment ("IA")

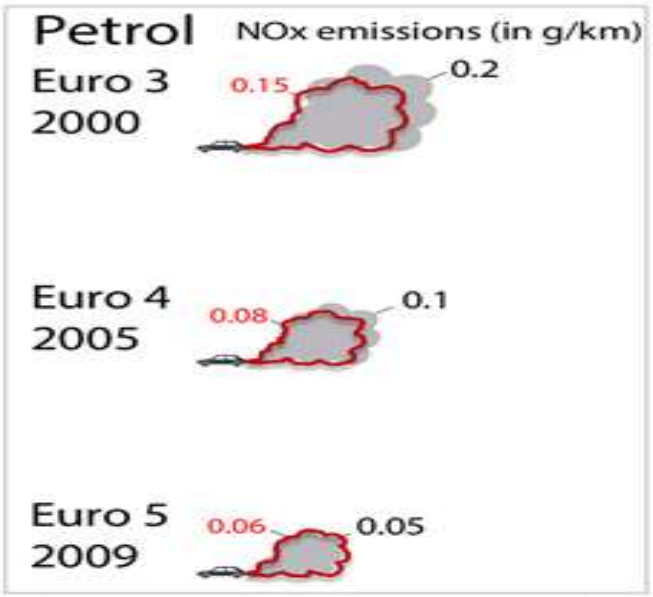
Objective 1: Ensuring compliance by 2020

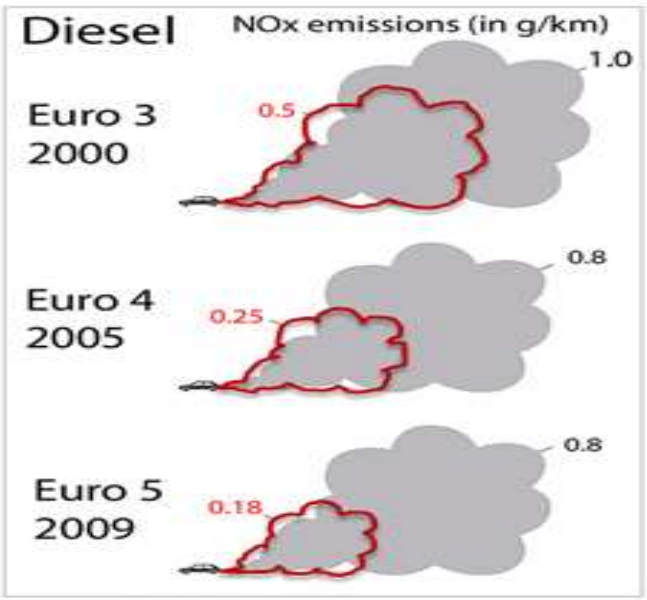
Key compliance obstacles pre-2020 (and solutions)

- **Transport**
  - Euro 6 (2014 implementing acts)
- **Small and medium scale combustion**
  - Ecodesign Directive (< 1MW)
  - Targeted fuels switching programmes –PL, CZ, SK, BG
- **Background pollution** (within MS, intra-EU, global)
  - Implementation of existing legislation (IED, Marine Fuels,…)
  - Implementation of National Emission Reduction Commitments for 2020 (GP)
- **Governance**
  - Coordination of AQ and emissions policy, capacity for assessment and management

Key compliance obstacles pre-2020 (and solutions)

The problem: diesel car "Real World Emissions"





The solution (Regulation 715/2007, CARS 2020)

- Real Driving Emissions of Euro 6 recorded and communicated as from mandatory Euro 6 dates
- No later than Sept 2017, RDE compliance with limit values should be the basis of type approval (with robust not-to-exceed limits)
- Committee vote on new test procedure ~~late 2014~~ March 2015

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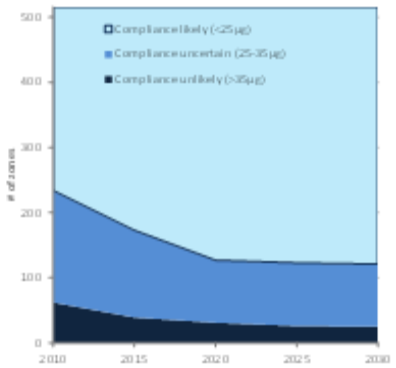
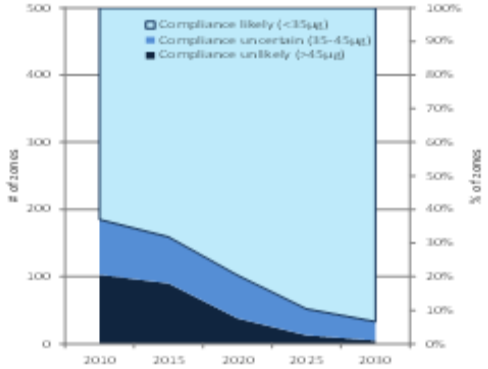
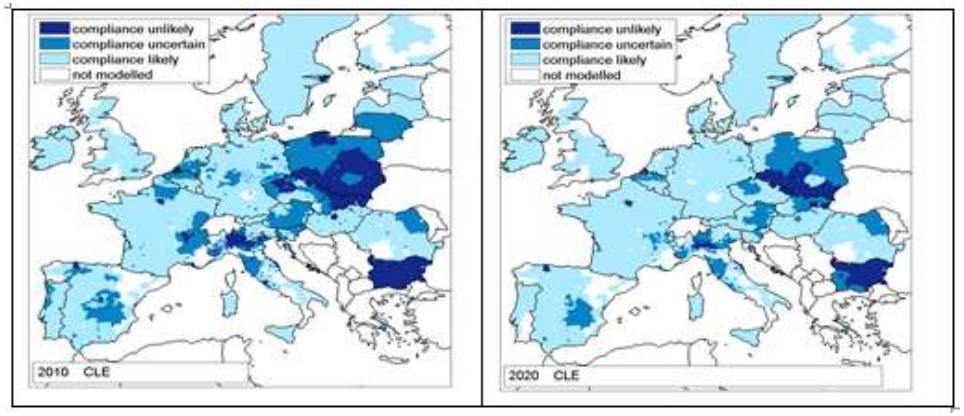
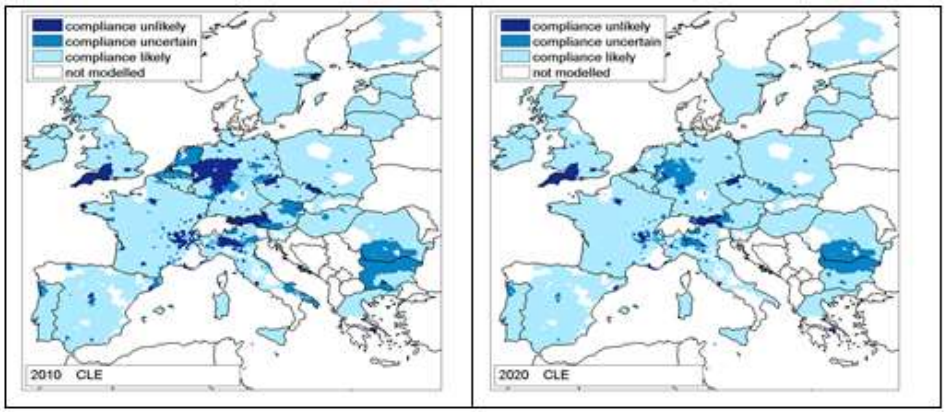
How Will the Problem Evolve?

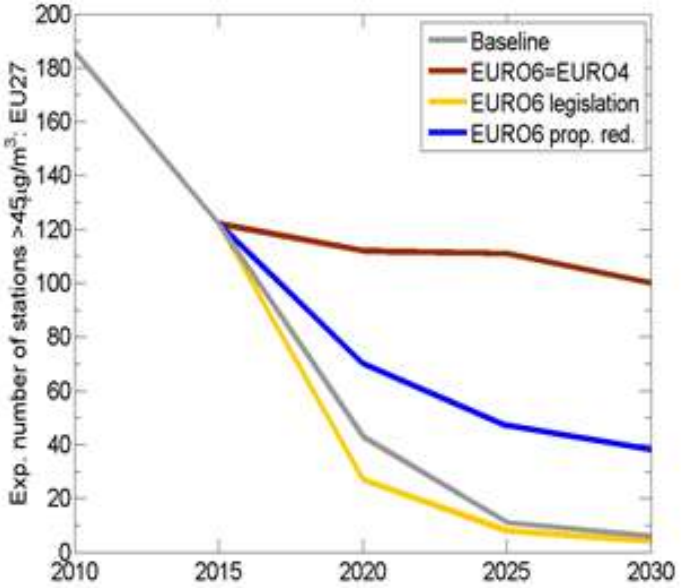








Compliance Prospects



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Objective 2: Impact reduction beyond 2020

The post-2020 part of the Package

- Main analysis: Integrated Assessment Model GAINS (IIASA)
- Focuses on the reduction of persisting health impacts
- Looks at most cost-effective way to reach the objectives
- Translated in emission reduction commitments in the updated NECD proposal

Post 2020: Persisting problems even after full implementation of existing legislation

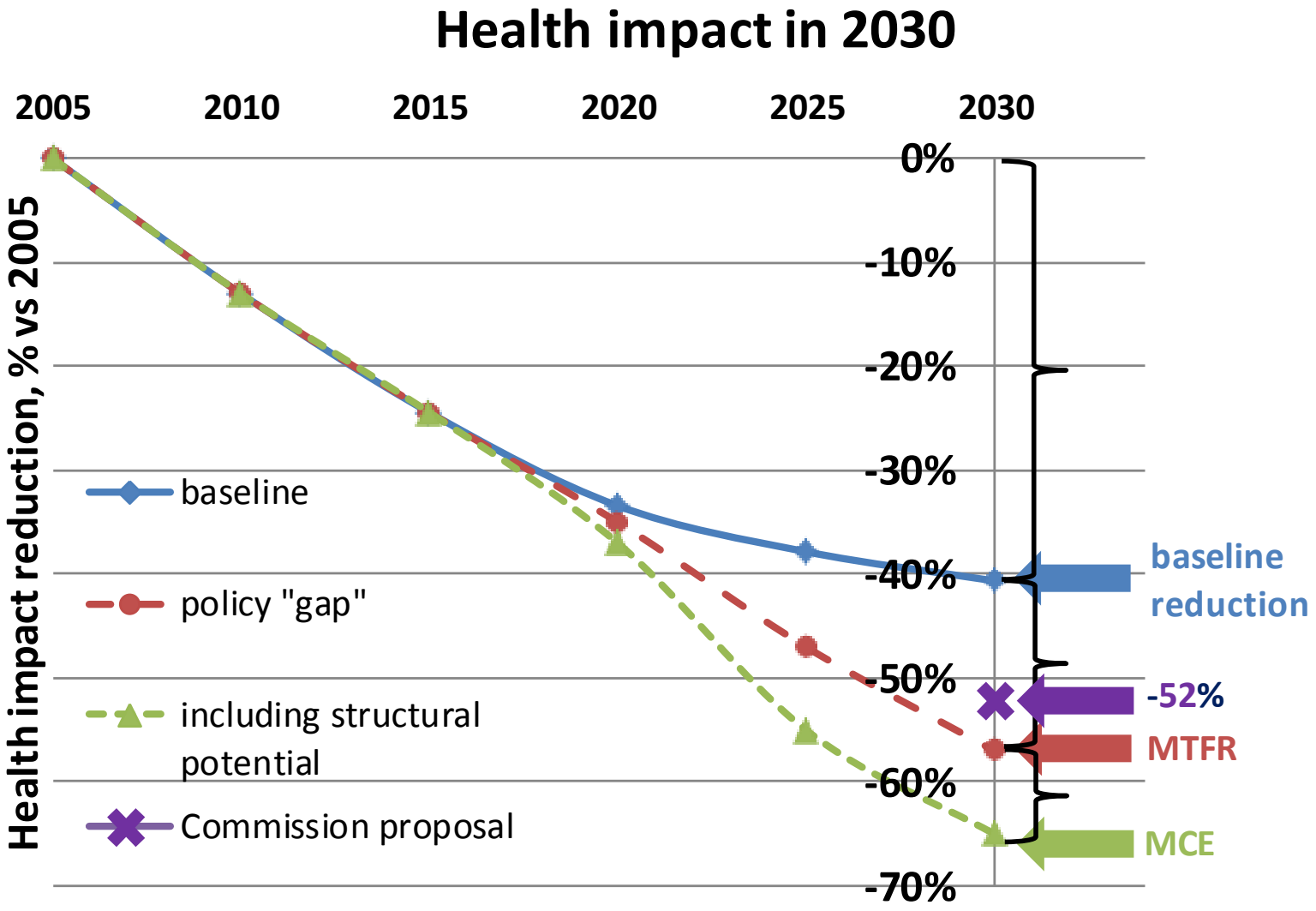
Health & Environment Headline Indicators	2010	2020	2025	2030
Premature deaths from PM and ozone exposure	406.000	340.000	330.000	327.000
Percentage area with excess eutrophication	62	55	53	52

External costs –low estimate (€ billion)	330	243	224	212
External costs –high estimate (€ billion)	940	775	749	740

The GAINS suite of models

- Brings together entire chain of drivers/impacts:
  - Economic drivers
  - Activities (energy and other)
  - Technologies (including abatement measures)
  - Emission levels
  - Emission reductions (cost effectiveness analysis)
  - Atmospheric Transport/Chemistry
  - Concentrations/ Depositions/ Exposure
  - Impacts (Health, Ecosystems)
  - Cost-benefit analysis
  - Socio-economic modelling (GEM-E3 CGE model)

The gap-closure concept



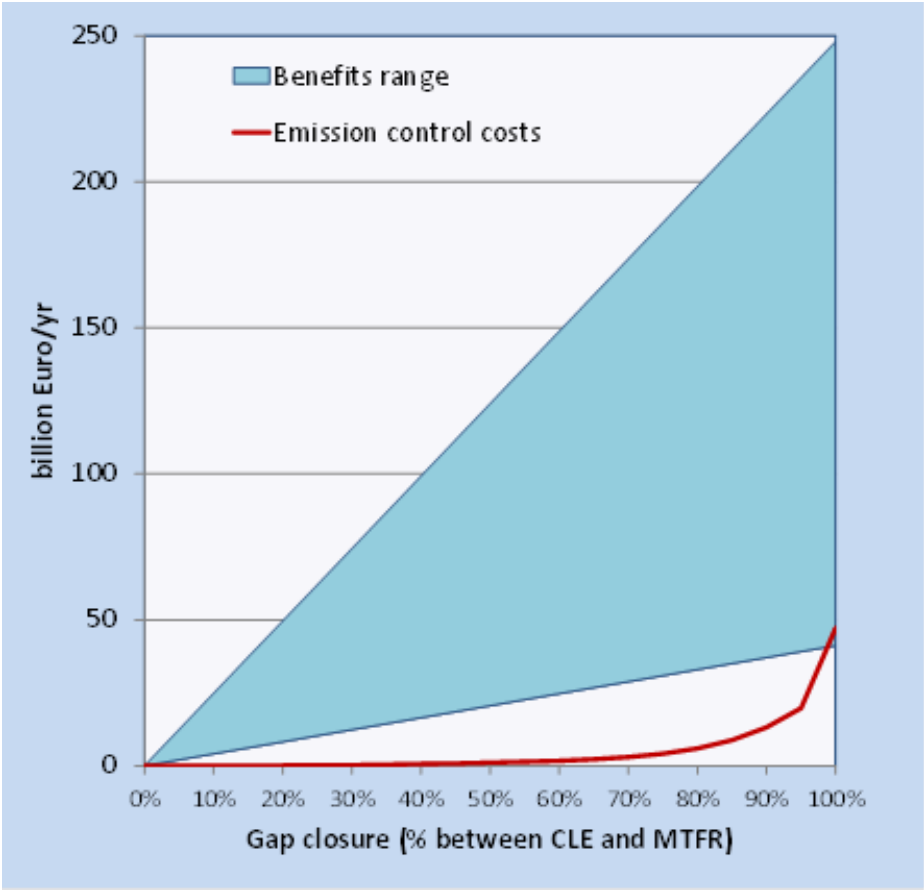
Main gap closure options

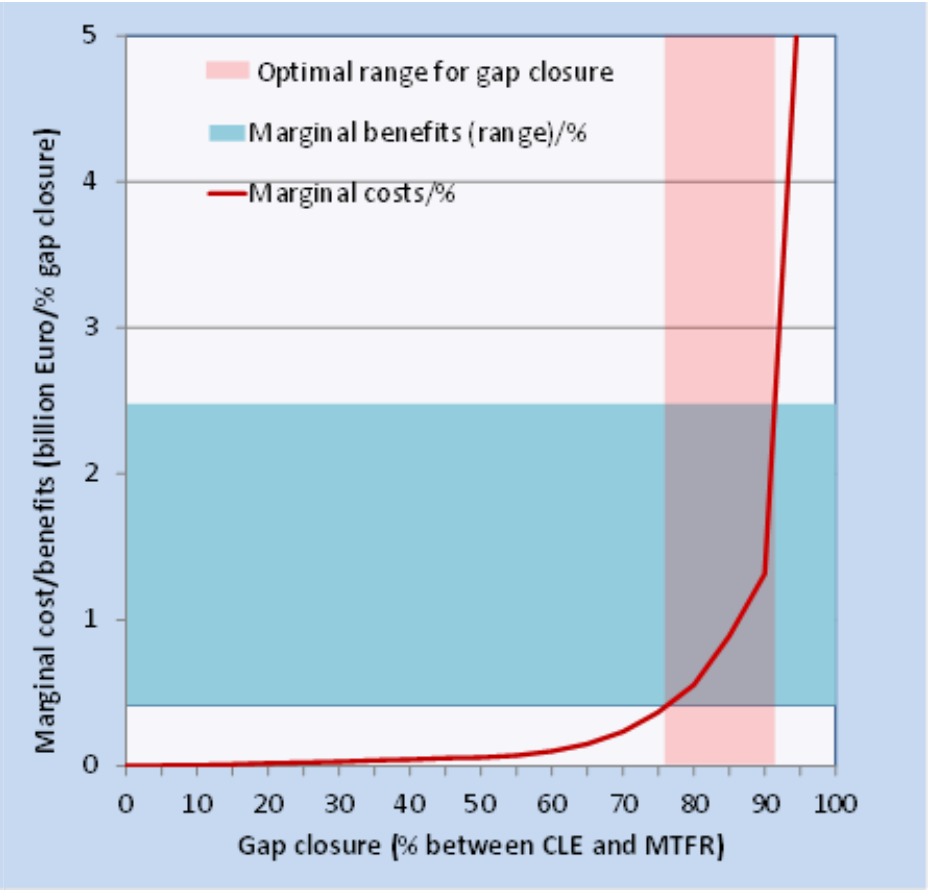
	2005	CLE	B1	B2	B3	MTFR
		Gap closure				
		0%	25%	50%	75%	100%
SO_2	8172	2446	2188	1903	1693	1589
		-70%	*-73%*	*-77%*	*-79%*	*-81%*
NO_x	11538	4616	4535	4484	4096	3527
		-60%	*-61%*	*-61%*	*-64%*	*-69%*
PM2.5	1647	1266	1059	963	847	693
		-23%	*-36%*	*-42%*	*-49%*	*-58%*
NH_3	3928	3658	3390	3122	2767	2566
		-7%	*-14%*	*-21%*	*-30%*	*-35%*
VOC	9259	5604	5322	5157	4648	3308
		-39%	*-43%*	*-44%*	*-50%*	*-64%*
Costs			218	1197	4622	47091
% of GDP			*0.002%*	*0.008%*	*0.032%*	*0.324%*

Economic rationale for societally optimal outcome

- Maximisation of net societal benefits occurs when marginal benefits equal marginal costs
- Most conservative approach taken on valuation of benefits:
  - Only considering mortality external costs
  - Lowest end of mortality valuation range

Total and marginal cost benefit outlook





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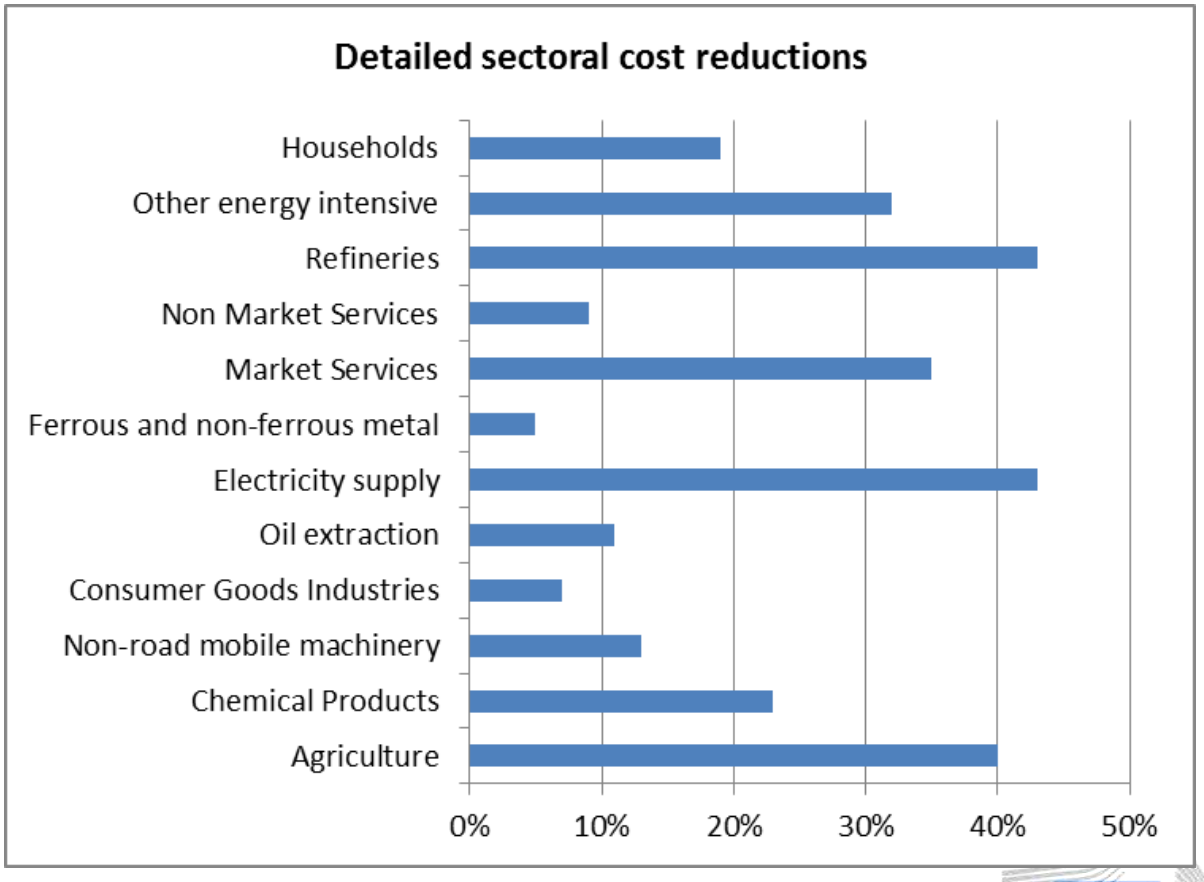
Non-health benefits

- Health impact reduction requires drop of secondary aerosol concentrations
- This drives substantial ecosystem co-benefits

		CLE	B1	B2	B3	MTFR
	2005	Gap closure				
		0%	25%	50%	75%	100%
YOLLs	358	222	207	192	178	163
		-38%	*-42%*	*-46%*	*-50%*	*-55%*
Ozone	24614	17794	17517	17318	16566	15009
		-28%	*-29%*	*-30%*	*-33%*	*-39%*
Eutro.	1148	885	851	814	747	685
		-23%	*-26%*	*-29%*	*-35%*	*-40%*
Acidif.	161	47	37	31	24	20
		-71%	*-77%*	*-81%*	*-85%*	*-87%*

Implications of adjustment to 70% and 2030

- Cost reduced from €4,6bn to €3,3bn
- Sectorial cost reductions:



Summary

External cost benefits (health only): €40 -140bn/year

Direct cost savings: €2,8bn/year

- 2/3 on higher productivity of the workforce
- 1/3 on Lower healthcare costs, higher crop yields, less damage to buildings

Implementation costs: € 3,3bn per year

- Down to 2,1bn if 2030 climate and energy package is implemented
- Positive overall impact on GDP: + €1,2bn
- Positive overall impact on employment: +100,000 FTE

= Costs 12-40 times lower than benefits

= Costs about equal to direct economic cost savings

International comparison

Air Quality Standards (µg/m3)	PM10	PM2,5
EU	40	25
China	40	-
Japan	-	15
USA	-	12
WHO	20	10

present

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Recent update in analysis

Consultations in March-July 2014, involving all MS, IIASA + COM

Key objective was to look in depth in 2005 discrepancies

4 main reasons identified:

1. Changes in national 2005 inventories between 2012 and 2014
2. Different coverage of sources
3. GAINS uses harmonised methods
4. Differences between national and Eurostat official statistics

This has consequences also for 2030 projections,

And changes in the wedge between CLE and MTFR are reflected also by cost-optimal emission reduction targets.

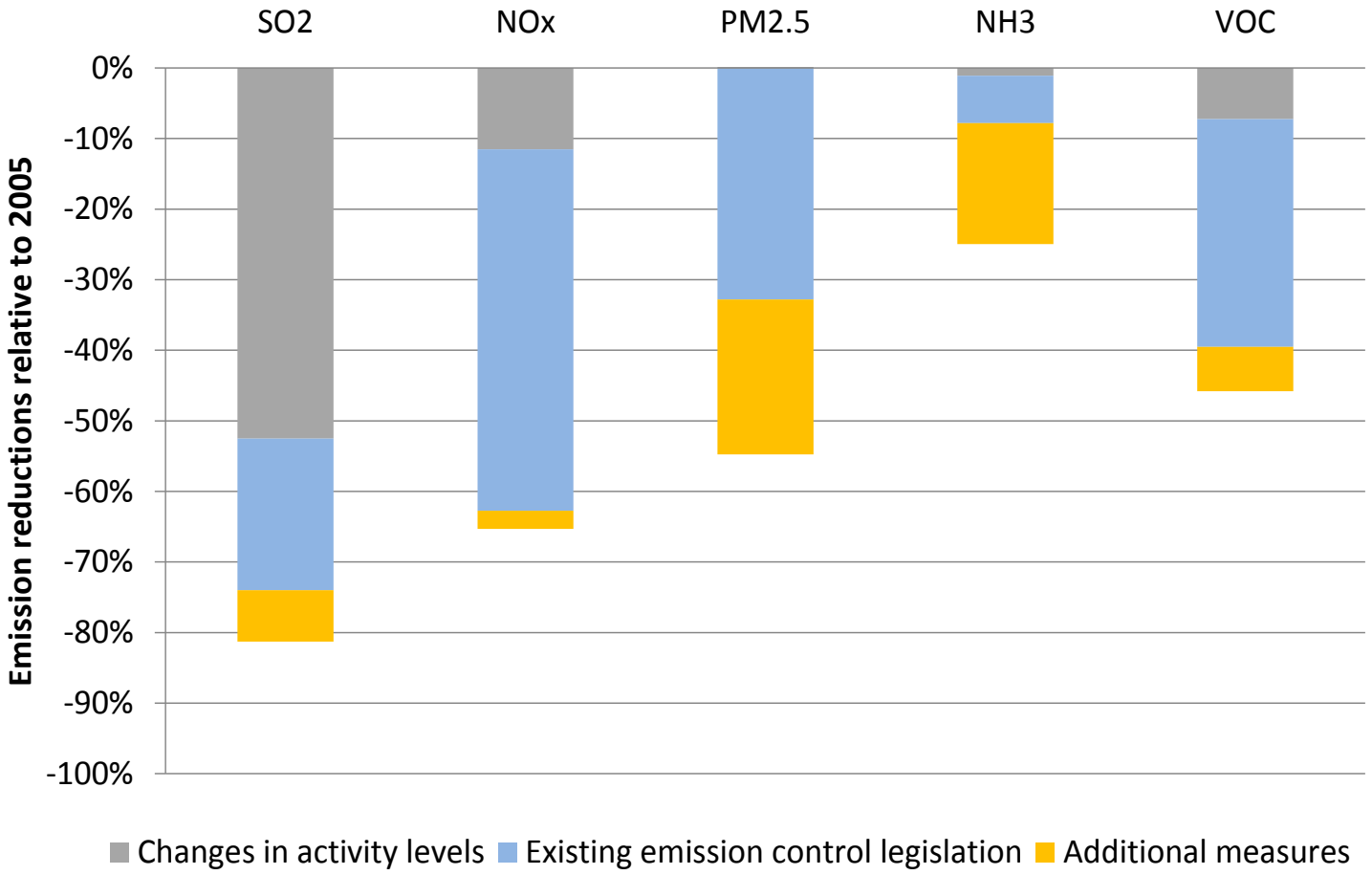
Updated emission reductions

In terms of reductions vs 2005 levels, the corresponding cost-effective targets per pollutant are different because baseline emission reductions have changed in relative terms.

EU28	2030 COM 2013			2030 WPE 2014		
	CLE	67%GC	Additional	CLE	67%GC	Additional
PMeq	-49%	-63%	-14%	-50%	-63%	-13%
SO_2	-73%	-81%	-8%	-74%	-81%	-7%
NOx	-65%	-69%	-4%	-63%	-65%	-2%
NH_3	-7%	-27%	-20%	-8%	-25%	-17%
VOC	-41%	-50%	-9%	-40%	-46%	-6%
PM2.5	-27%	-51%	-24%	-32%	-54%	-22%

Larger PM reductions driven by the baseline soften all other requirements; Additional policy cost is overall lower (€2,2bn vs 3,3bn).

Indicative reductions per Sector



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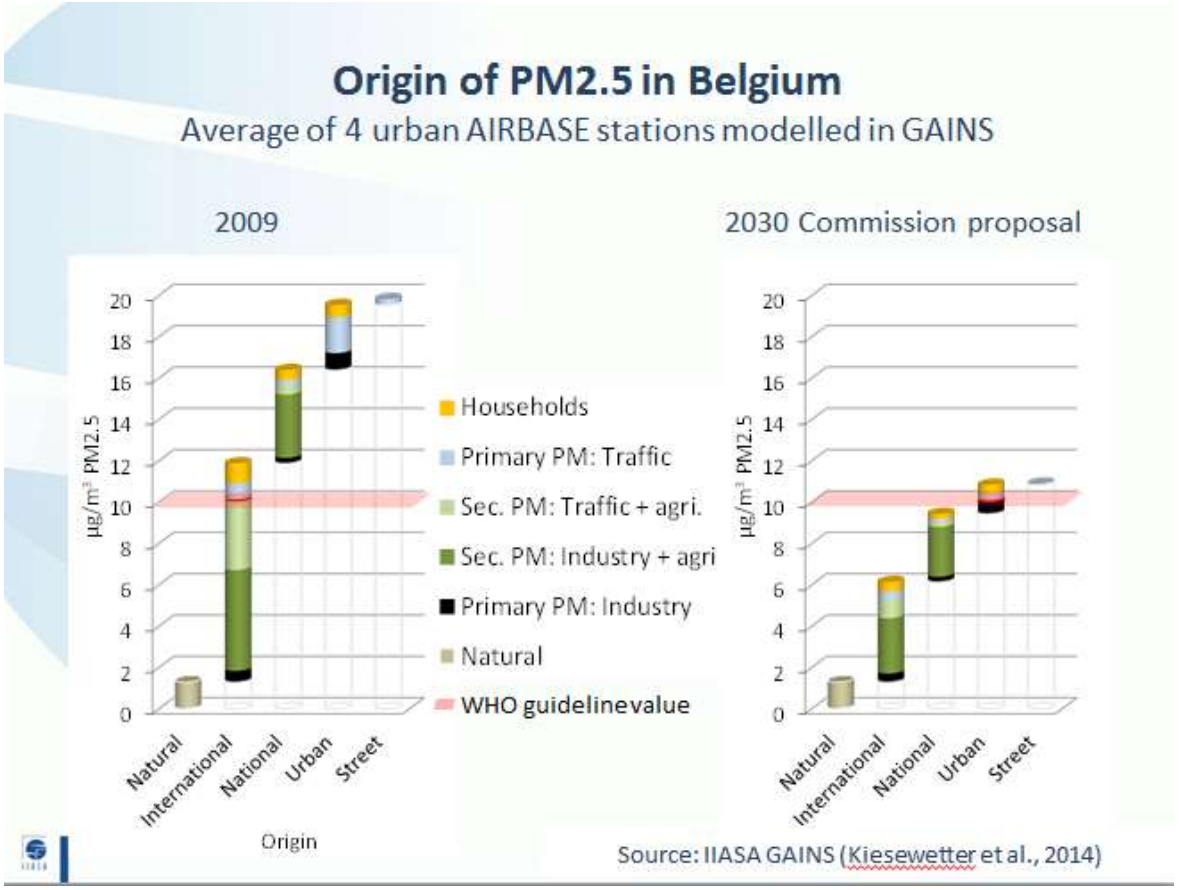
Impact on PM concentrations



More information

TSAP Reports

#11: final policy scenarios of the Commission proposal

#12: Urban PM2,5 levels in 2009 and 2030

#13-14: Further consultations with Member States and revised

#15: a possible flexible implementation mechanism for the NECD

#16: re-optimised emission reduction objectives following most recent statistical update

http://ec.europa.eu/environment/air/review_air_policy.htm

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