



Netherlands Environmental Assessment Agency

Co-impacts of climate measures on air pollutants in the Netherlands

Opportunities and risks within the NEC revision

Pieter Hammingh, Koen Smekens, Arjan Plomp, et al.,

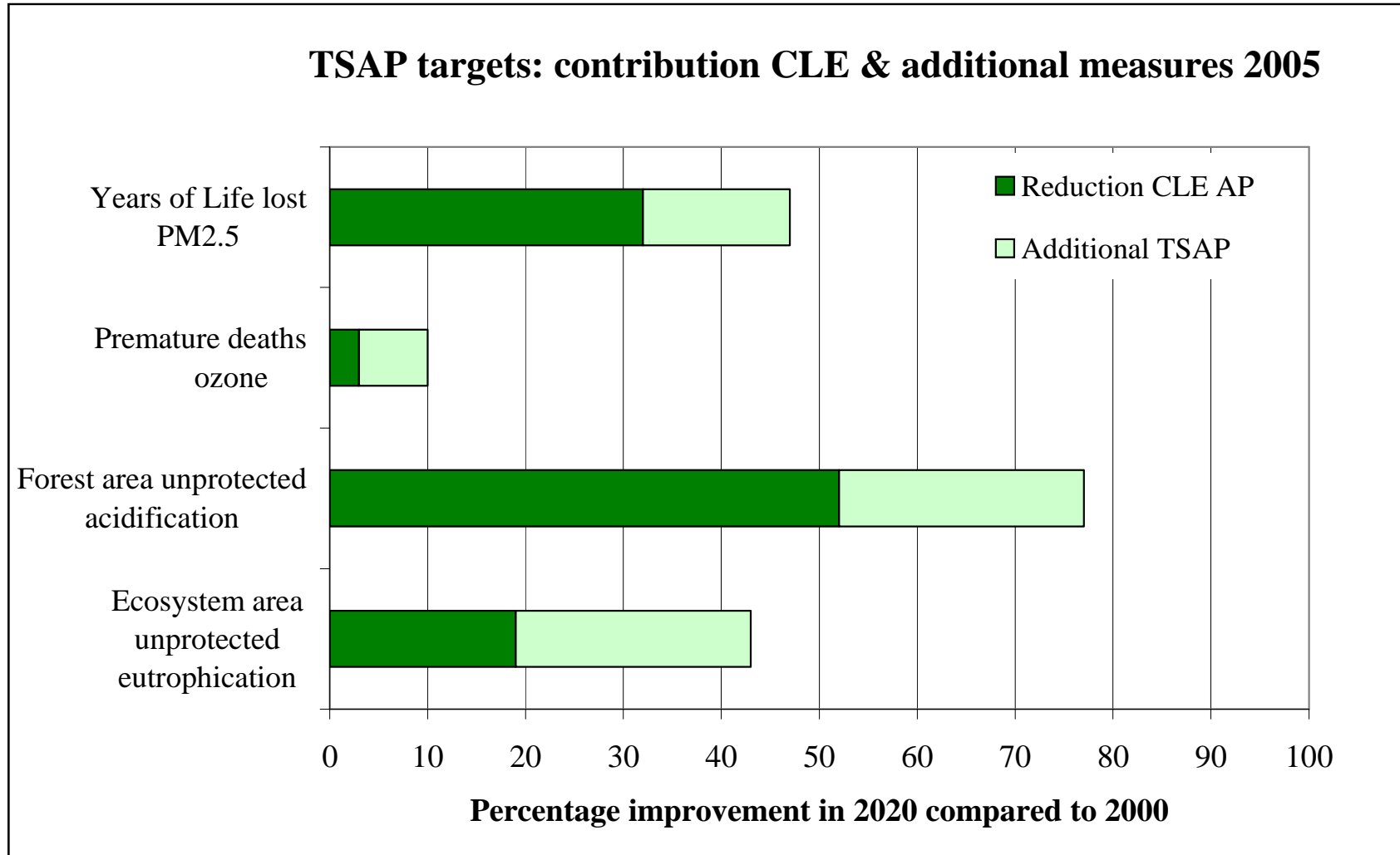


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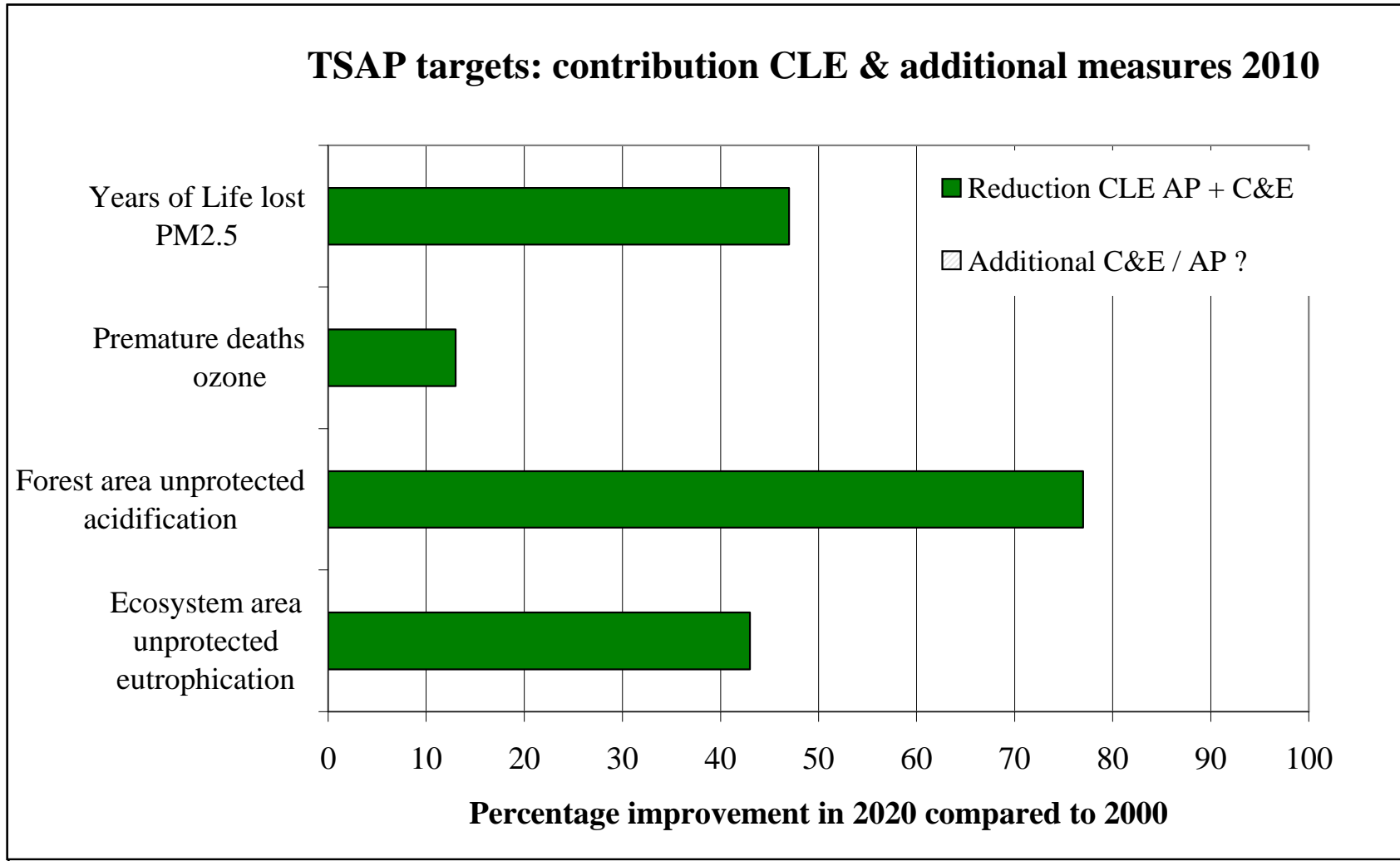
Content

- The revisions: Gothenburg & NECD
- NEC & climate policies
- BOLK: a second opinion
- Co-impacts on Dutch air pollutants
- Optimizing opportunities & preventing risks

What are the targets of the NEC revision?



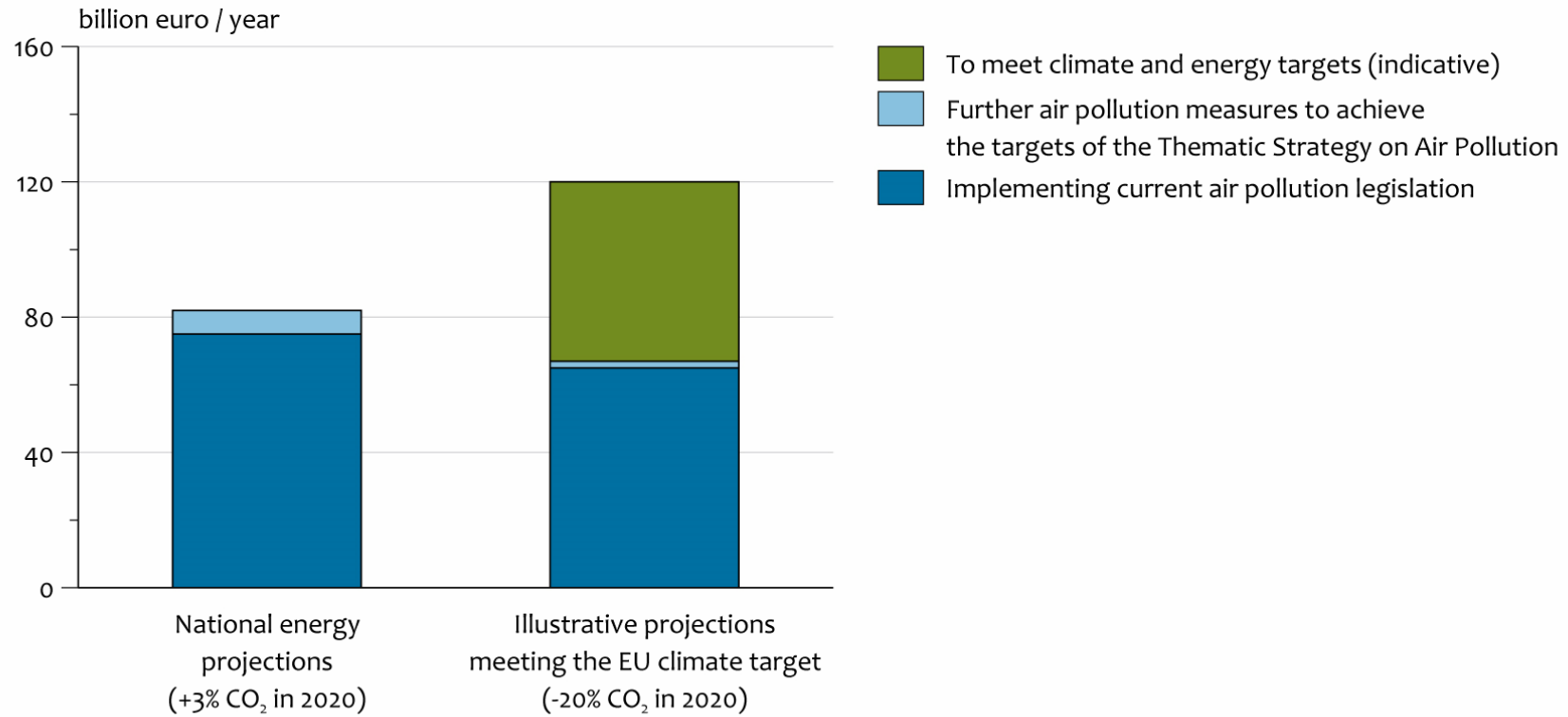
What are the targets of the NEC revision?



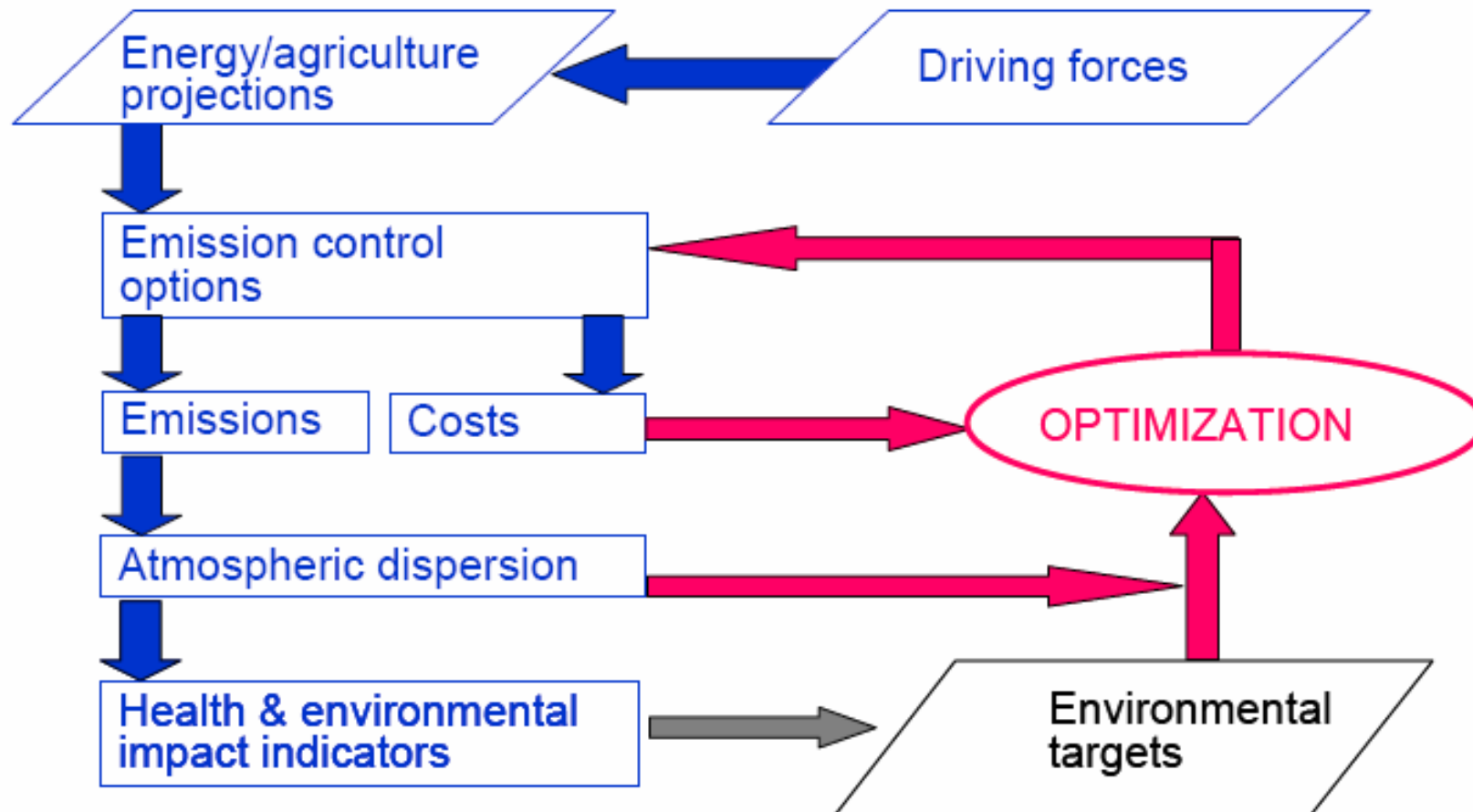
Why combine CC&AP policies?



Air pollution and greenhouse gas emissions mitigation costs, 2020



GAINS: the central model of the NEC revision



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

Baselines in the NEC revision & climate policies

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- Climate & energy policies assumed in baselines for GHG & NEC
- 2005 Thematic Strategy on Air Pollution → CAFE baseline
(GDP 2.3%, CO₂ 20€/ton)
- 2008 EC NEC 'proposal' → Primes '07 baseline
(GDP 2.1%, CO₂: 22 €/ton, RES:8%, biofuels 8%)
- 2009 Gothenburg Revision → Primes '09 baseline
(GDP 1.4%, CO₂ 19 €/ton, RES 11%, biofuels 9%)

Importance of co-impacts for Dutch NEC 2020

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Pollutant (Kiloton)	NEC 2010	Dutch baseline 2020 from '09	GAINS-Primes baselines 2020: '07/'09	Indications for ceilings for 2020 (?)
SO₂	50	48	45 / 33	44 / 33
NO_x	260	199	178 / 166	177 / 166
NH₃	128	129	129 / 130	≤ 126
PM_{2.5}	-	15	18 / 16	≤ 16
VOC	185	165	161 / 156	≤ 161

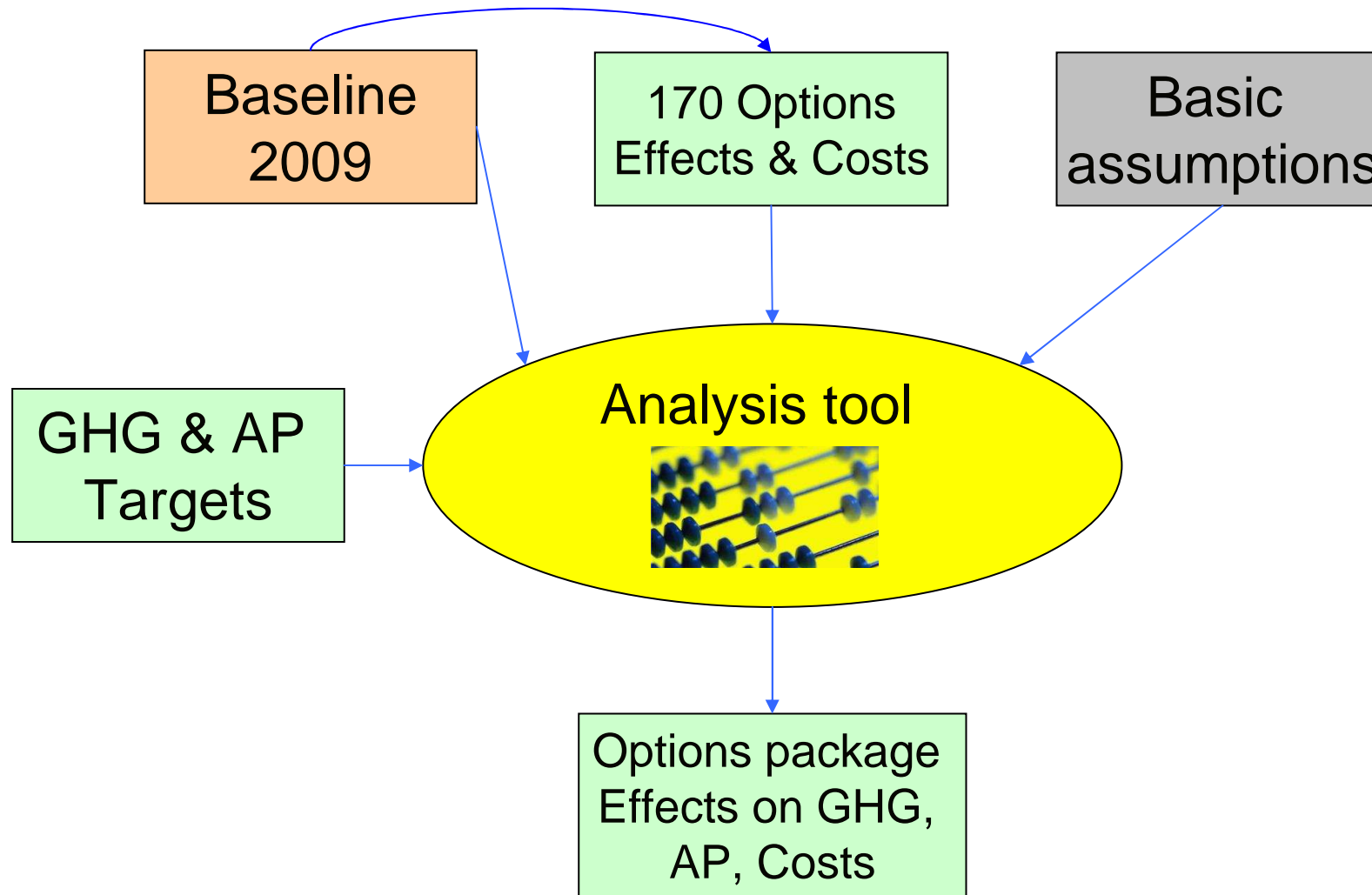
GHG	Kyoto 200	254	205/175	EU/NL targets 173/150
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BOLK: a second opinion for co-impacts



- Dutch Research Programme on Air and Climate (BOLK)
- Focus on co-impacts Dutch climate programme & in-depth studies on co-impacts biomass, biofuels, LCA, CCS
- Input for the Dutch Government in the NEC revisions
- Input to climate and air pollution policy makers
- Results available via the BOLK website in English

Methodology: Options Document & Analysis Tool



Update of the Options Document

- BOLK updated 10 CCS, 7 biomass, 3 biofuel options!

Option	CO ₂ reduction (Mt)	Costs (€/ton)	Co-impacts AP (Kt)
CCS new coal power plant	12	35	-4.5 SO ₂ +2.9 NH ₃ +1.7 NO _x
Biogas from manure digestion	3.2	189	-7.4Mt CH ₄ (CO ₂ -eq) +4.4 NO _x +2.0 NMVOC +0.3 SO ₂ +0.1 PM ₁₀
2 nd generation biofuel mix	0.5	481	-0.2 kton NO _x +0.1 kton SO ₂

Translate Dutch climate programme into options

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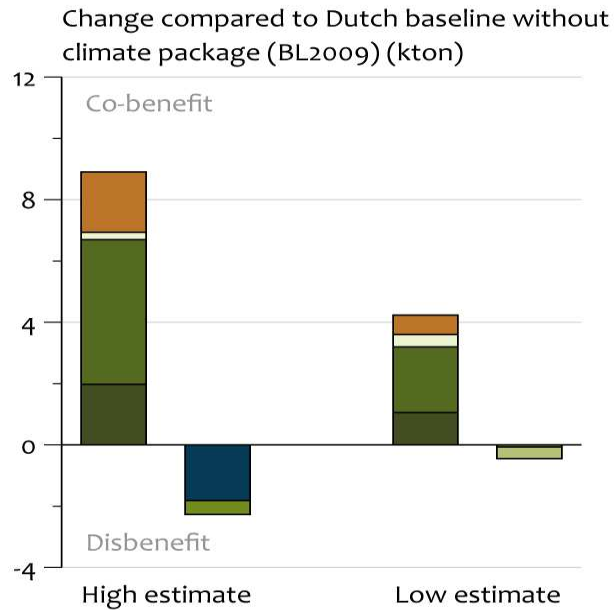
- GHG reductions of the Dutch Climate programme 'Clean and Efficient' in 2020;

Sectors	GHG reduction (Mt) uncertainty range	
	Low	High
Energy	1.0	10.0
Industry and Refineries	0.0	1.6
Transport	6.5	13.4
Residential	3.5	5.8
Commercial, Trade, Services	1.2	2.3
Agriculture	0.1	1.7
Non CO2 GHG	0.8	1.5
Export of electricity	-1.0	0.0
Total	13.1	36.3

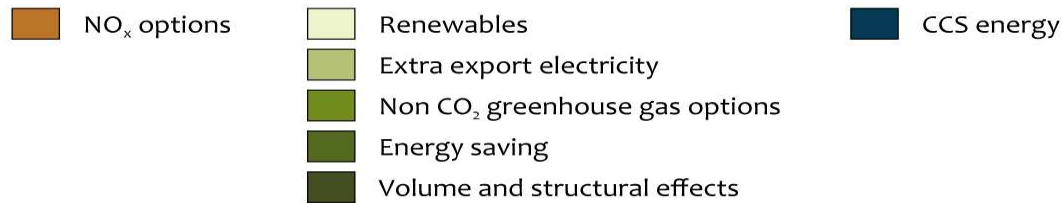
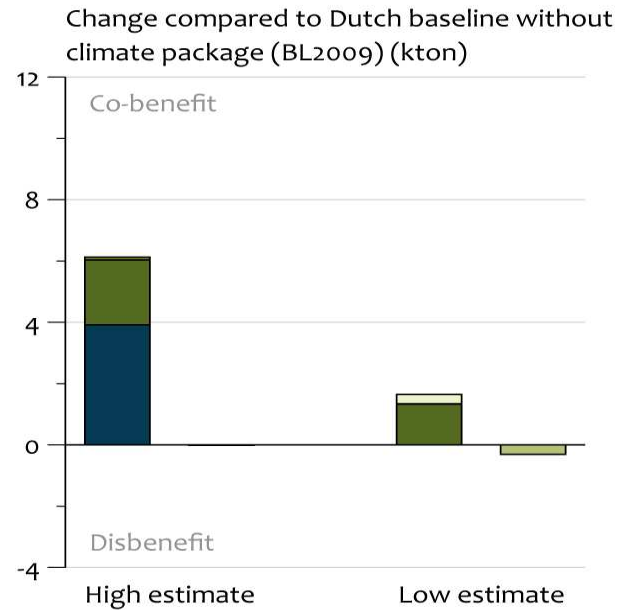
Co-impacts Dutch climate programme

Co-impacts on air pollutants by Dutch climate package, 2020

NO_x

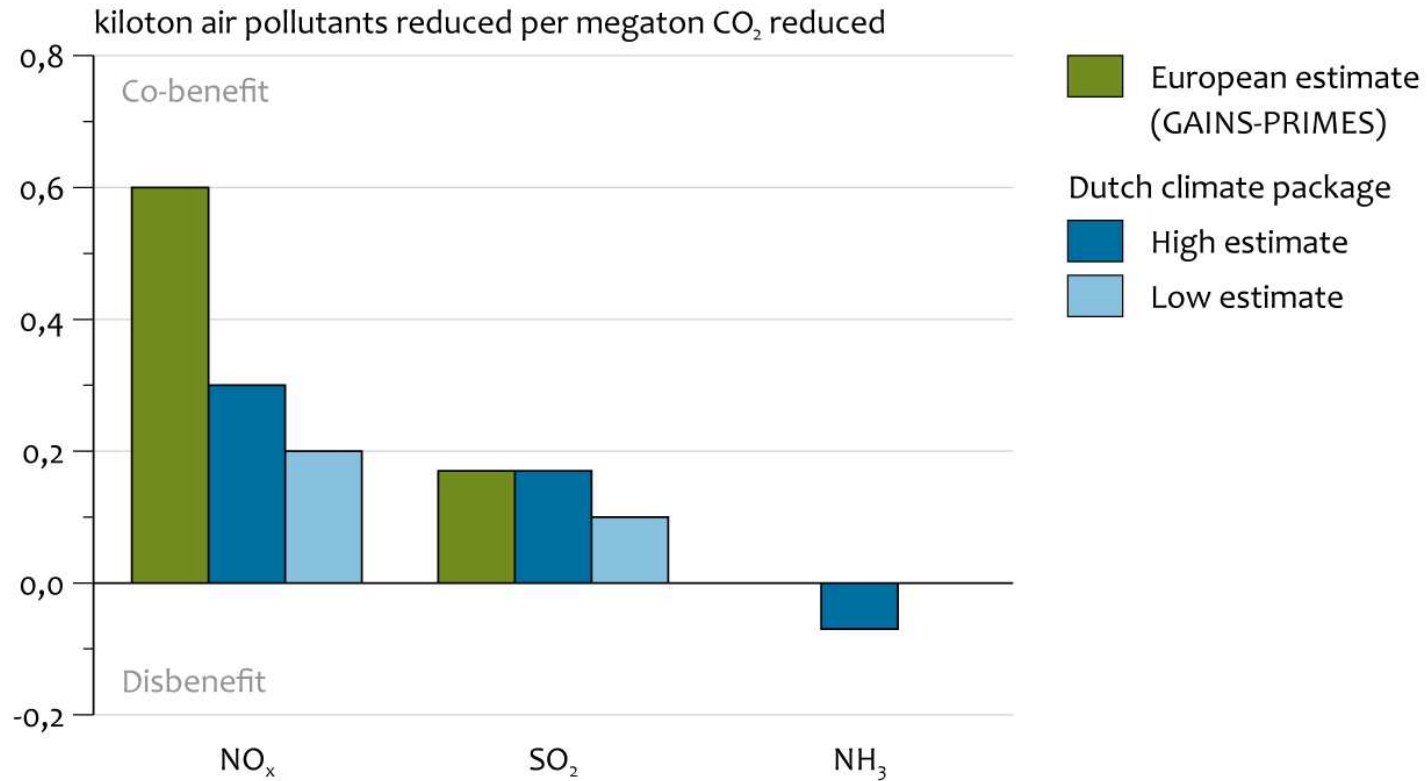


SO₂



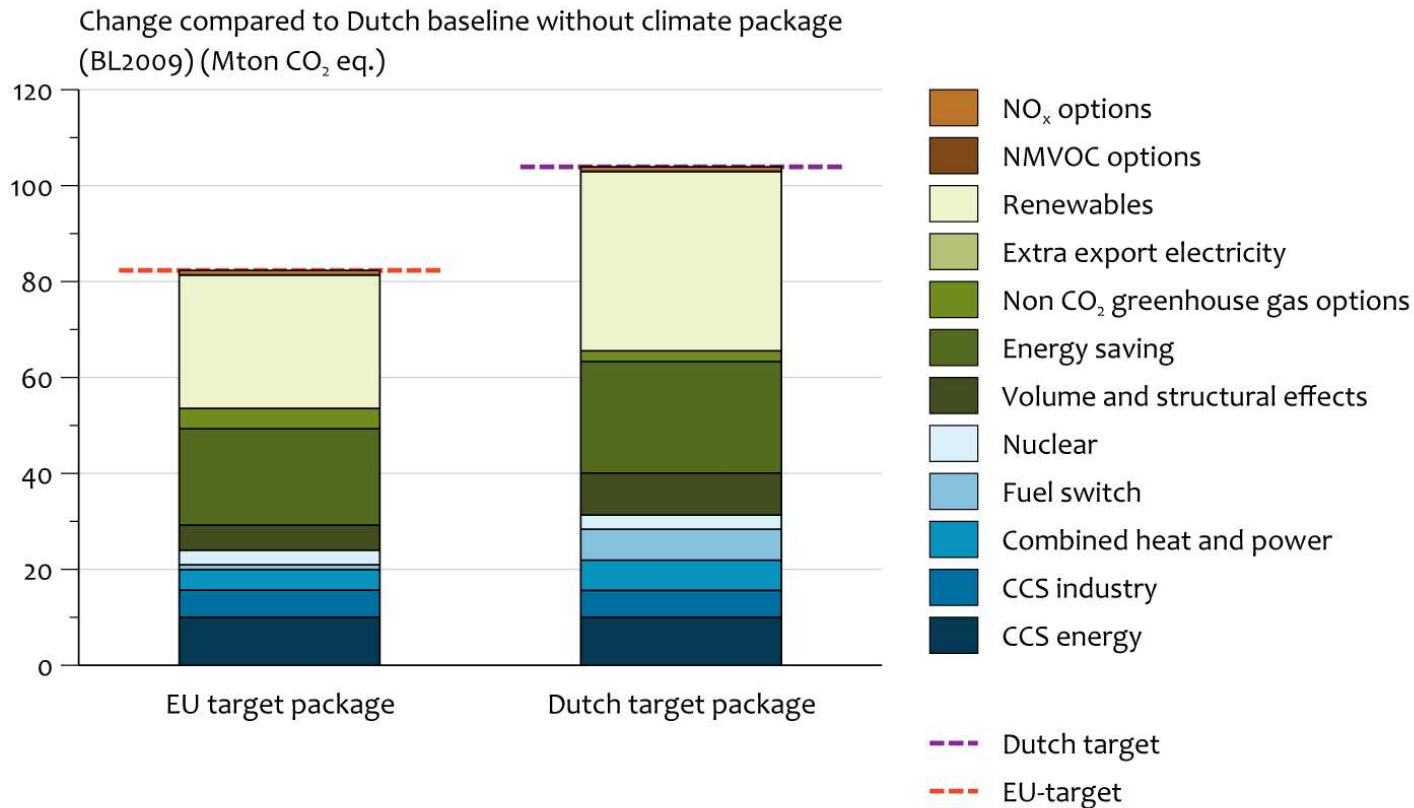
Co-impacts: Dutch vs European estimates

Co-impact ratios on air pollutants by European and Dutch estimates, 2020



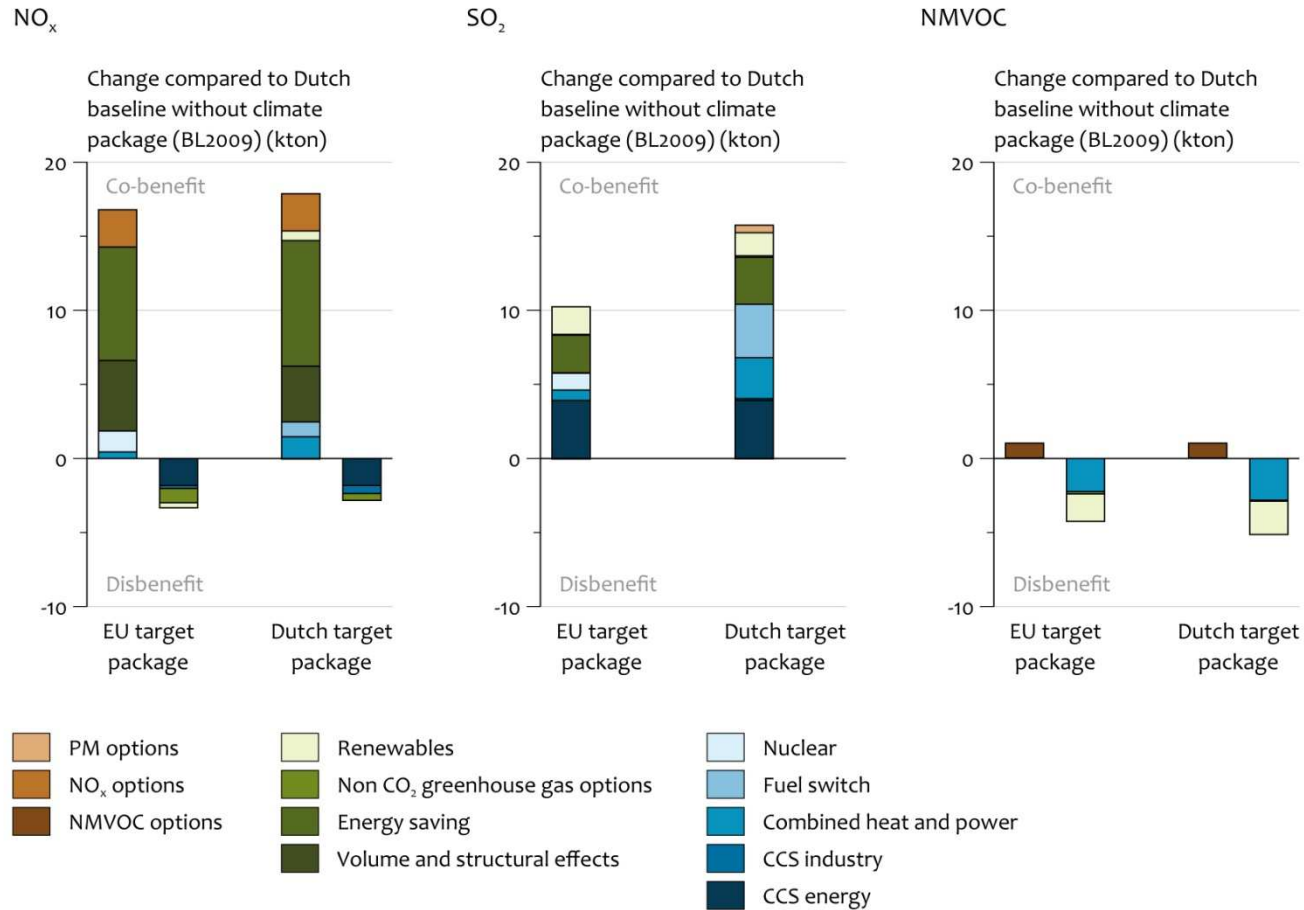
GHG Target packages: EU and NL

Reduction of greenhouse gas emissions to achieve targets, 2020



Co-impacts from Target packages

Co-impacts on air pollutants by Dutch climate package, 2020



Dutch baselines including co-impacts

Pollutant (Kiloton)	Dutch baselines 2020			Indications for ceilings for 2020 (?)
	No C&E	NL C&E	NL GHG targets	
SO₂	48	42-47	32-37	33-44
NO_x	199	192-195	184	166-177
NH₃	129	129-132	129-132	≤ 126
PM_{2.5}	15	15	15	≤ 16
VOC	165	165	169	≤161

Conclusions

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- Net co-benefits SO_2 and NO_x can be substantial, but have their uncertainties;
- Uncertainties: no final national climate programs yet, ETS/CDM, CCS, export electricity, economic growth, methodologies;
- If climate policies do not deliver, larger risk for non-attainability of a low SO_2 ceiling;
- Disbenefits: NO_x (CCS/biomass/CHP), NH_3 (CCS/biomass), NMVOC (biomass/CHP);

Recommendations

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- Climate policy makers: take into account co-impacts on air pollutants from: small-medium scale bio energy, wood stoves, CHP, CCS, biofuels, LCA;
- An update of the BOLK analysis with a post-crisis baseline and options document;
- Workshop recommendation: since climate policies do not guarantee less air polluting emissions, setting more stringent national emission ceilings remain a key tool on the way to a better air quality.

More opportunities, less risks?

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BOLK reports on LCA, biofuels, biomass and CO₂ capture and storage available at:

<http://www.pbl.nl/en/>

search for BOLK

or contact pieter.hammingh@pbl.nl

