Netherlands Environmental Assessment Agency

Flexible Air Quality
What are the potential benefits?

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Background

- Idea to introduce flexibility into air quality regulation is gaining ground
  - Entec study NOx and SO2 trading
  - EU
  - Kelly

- Old idea already applied in practice for a long time:
  - US CAA since 1995
  - Dutch NOx trading scheme

Flexibility? No Way!

- Initial Public Perception of Trading in US: *Commodification of the Environment*

- Media reactions to first SO_2 allowance trades in USA in 1992
  - :"What's next, the L.A. Police Department trying to buy civil rights credits in Wisconsin?" (quote from A.P. wire story)
  - "Why applaud a deal that lets companies buy pollution rights? *People will die."* (op. ed. in USA Today)

Objectives

- Analyze potential gains for EU air quality emission trading using (global) CGE model Worldscan allowing for interaction with (global and/or 'local') climate policy

- Key issue: how to set proper air quality targets and reach flexibility without sacrificing local air quality restrictions (too much)?

- Key question: is it worth the effort?

Objectives

- Current approach:
  - NEC limits on NOx, SO2, NH3, NMVOC
  - IPPC regulation of sources (BATNEEC); euro norms
  - Local Air quality standards
  - Deposition standards
  - No gas swaps possible under NEC???
  - Top down cost effective standard setting country level
  - No ‘bottom-up’ international (source) trading

- Focus on gas swaps *between* countries

Focus on Gas swaps *between* countries

- NEC 2010 inflexible gas swaps between countries and over time

- ‘New NEC 2020’ based on TAF I:
  - Allows for flexibility between countries for 1 or more gases
  - Trades use weighted country specific exchange factors
  - Weight factor based on “equal impact factor”
  - Same approach can be applied within a country based on SRM grid matrix of the EMEP model

Methodology

- WorldScan
  - CGE-model => accounts for feedbacks
    - *energy (carbon) prices*
    - *macro/sectoral location and growth*
    - *final demand (electricity, transport)*
    - *Different 'abatement' options (emission; input; output)*
  - 17 regions: Annex I, BRIC, ROW
  - 21 sectors
  - CO_2 policies => fuel switch, energy saving
  - CH_4, N_2O, SO_2, NO_x emissions (energy & other)

Methodology

- Baseline without EU C&E package
  - based on WEO 2009 (post crises)
- Data sources
  - Annex I, China, India:
    - *energy and emissions based on GAINS databases*
  - other regions:
    - *OECD Env. Outlook (w/wo crisis)*
- ETS share related to share NEC ceiling

Simulations policy

- Variants
  - I: EU -20% CO_2 ETS reduction and NEC 2010
  - II: CAFE for each country (EU-cie proposal)
  - III: full flexibility; no penalty
  - IV (future): full flexibility with penalty

- Results:
  - 2020, EU27, changes relative to baseline

SO_2 case

Country	EU impact factor	EU+transboundary transport correction
AT	3,0	3,0
BE	1,2	1,2
BG	13,4	11,3
CY	427,8	41,8
CZ	1,2	1,2
DE	1,3	1,3
DK	2,2	2,2
EE	9,2	8,5
ES	10,5	8,7
FI	9,3	8,8
FR	2,6	2,6
GB	2,1	2,1
GR	16,8	11,9
HU	3,3	3,2
IE	3,3	3,3
IT	14,9	13,2
LT	1,8	1,8
LU	1,5	1,4
LV	5,5	5,3
MT	39,9	29,2
NL	**1,0**	**1,0**
PL	1,4	1,3
PT	4,9	2,8
RO	7,7	7,0
SE	3,3	3,3
SI	5,5	5,3
SK	2,6	2,5

Conclusions

- Potential gains are considerable??
- Leakage mainly related to climate policy, not air quality
- Only rough indication of cost (only in terms of higher levels of emissions at source)

- PM Renewables

Conclusions

- Future plans:
  - Calculate loss in terms of environmental quality using GAINS
  - Implementation Variant IV