Markus Amann (IIASA) based on input from Ger Klaassen and Andre Zuber (EC)

State of play of the revision of the EU NEC Directive
State of play

- DG-ENV has started Inter-Service consultations
- Commission’s agreement planned for July 2008
- No further stakeholder involvement before publication of final Commission’s proposal
- Once agreed, NEC6 report and scenario details on GAINS internet will be released
Assumptions on economic drivers for NEC optimization

- Economic development and energy policy as in PRIMES Nov 2007 baseline

- Energy projection (developed with PRIMES) is compliant with Climate and Energy package.
  - Flexible instruments to cut-off domestic measures at €30/t CO$_2$
  - Assuming trading of renewable energy permits among Member States
  - Results in -12% CO$_2$ in 2020 in the EU-27

- National projections of agricultural activities as used before
Primary energy consumption in EU-27
2000 and projections for 2020
CO₂ emissions of the energy projections assumed for NEC analysis
Starting point for the optimization

• **Current policy case** includes:
  - Current legislation (CLE) as before +
  - Euro-VI proposal +
  - IPPC proposal +
  - Compliance with 2010 NECs in 2020

• **Environmental objectives of TSAP** as developed in CAFE:
  - Relative changes of impact indicators between 2000 and 2020 as stipulated by TSAP
  - Revert to CAFE methodologies for impact indicators, i.e., for eutrophication grid-average deposition of eutrophication instead of ecosystem-specific deposition
  - But 5-yrs meteorologies, EU-27, 2020 boundary conditions
# TSAP objectives and NEC targets

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>2000 EU-27</th>
<th>TSAP objective for EU-25</th>
<th>NEC target for EU-27</th>
</tr>
</thead>
<tbody>
<tr>
<td>YOLLs</td>
<td>Million years</td>
<td>215.6</td>
<td>-47%</td>
<td>114.3</td>
</tr>
<tr>
<td>Eutrophication</td>
<td>1000 km²</td>
<td>831.4</td>
<td>-43%</td>
<td>473.9</td>
</tr>
<tr>
<td>Acidification</td>
<td>1000 km²</td>
<td>259.4</td>
<td>-74%</td>
<td>67.4</td>
</tr>
<tr>
<td>Ozone</td>
<td></td>
<td>20295</td>
<td>-10%</td>
<td>18265</td>
</tr>
</tbody>
</table>
Costs for achieving the NEC environmental targets based on the Climate and Energy Package

- Health impacts from PM
- Acidification
- Eutrophication
- Ozone
- Simultaneous optimization for all targets
Environmental improvements and emission reductions, central case, EU-27, 2020

**Environmental improvements**
- Years of life lost from PM2.5
- Ecosystems area not protected against eutrophication
- Forest area not protected against acidification
- Cases of premature deaths from ozone

**Emission reductions**
- SO2
- NOx
- PM2.5
- NH3
- VOC

Impact reductions relative to 2000
- Reduced by Current policy
- Additional reductions

Emission reductions relative to 2000
- Emissions reduced by Current policy
- Additional reductions
Emission control costs for additional measures on per-capita basis (€/person/yr)
GDP/capita
2000 and 2020

1000 Euros/person/yr

Austria, Belgium, Bulgaria, Cyprus, Czech Rep., Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, UK, EU-27

2020

2000
Air pollution control costs 2020 on top of current policy

Costs as % of GDP per Member State

[Graph showing costs as % of GDP for various Member States]
Trade-off between efficiency and equity
Increase in total costs if GDP-related costs in each MS limited

Costs as % of GDP per Member State

Costs for EU-27
Trade-off between efficiency and equity
Increase in total costs if GDP-related costs in each MS limited

Costs as % of GDP per Member State

Costs for EU-27

Emission control costs (million €/yr)
Trade-off between efficiency and equity
Increase in total costs if GDP-related costs in each MS limited

Costs as % of GDP per Member State

Costs for EU-27
Sensitivity cases

1. Without Climate and Energy Package (i.e., for PRIMES 2007 baseline)
2. Without trading of renewable energy
3. With full implementation of Nitrates Directive
4. For alternative health impact hypothesis (primary PM only)
5. For higher environmental ambition level (as suggested by European Parliament)
EU-27 emissions of the sensitivity cases relative to 2000

- TSAP central case
- No C&E package
- No renewables trade
- With Nitrates Directive
- Health impacts only primary PM
- European Parliament
Sensitivity 1: Without C&E package
Change in emissions vs. central case
Sensitivity 2: Without trade in renewables
Change in emissions vs. central case

Remaining emissions in central case (% of 2000)

Remaining emissions in sensitivity case (% of 2000)

SO2
NOx
PM2.5
NH3
Sensitivity 3: Without trade in renewables
Change in emissions vs. central case

Remaining emissions in central case (% of 2000)

Remaining emissions in sensitivity case (% of 2000)

SO2, NOx, PM2.5, NH3
Sensitivity 4: No health impacts from sec. PM
Change in emissions vs. central case

Remaining emissions in central case (% of 2000)

Remaining emissions in sensitivity case (% of 2000)

SO2  NOx  PM2.5  NH3
SO$_2$ reductions for the central and the sensitivity cases

- Range for emission reductions (CP-MRR)
- TSAP central case
- Without C&E
- Without RES trade
- With ND
- PPM only
NO\textsubscript{x} reductions for the central and the sensitivity cases
PM2.5 reductions for the central and the sensitivity cases

![Graph showing PM2.5 reductions for various EU countries.](image)
NH₃ reductions for the central and the sensitivity cases
Conclusions

• While final decision on NECs not yet taken within the Commission, NEC proposal will be coherent with Climate and Energy package

• Proposed emission reductions are in safe distance to MRR

• Sensitivity cases suggest robustness against (reasonable) changes in major exogenous policy assumptions

• Full documentation will be released after publication of the final Commission proposal