Auditing Environmental effects of road traffic

- Air pollution
- CO$_2$ emission
- Traffic noise
Content

• Audit approach
• Air pollution: policy and audit findings
• CO₂ emissions: policy and audit findings
• Conclusions
Audit approach

- Analysis of:
  - EU-regulation, policy goals and measures
  - Ex ante evaluations of policy measures
  - Data on actual emissions (scientific institutes)
  - Emission reduction and costs of specific measures (external specialist)
- Case studies of policy implementation by local authorities
- Period: 1999-2007
Air quality: the problems

- European limit values for dust (pm) and NO$_2$ are exceeded
- Leading to:
  - Harmful effects on human health
  - Ban on building and infrastructure projects
- Road traffic has an important effect on local concentrations
Policy goals and measures

• Goal: comply with EU limit values and solve problems with spatial planning

• National measures for road traffic:
  – Subsidies for latest Euro norms
  – Subsidies for soot / particulate filters

• Local measures:
  – Low emission zones
  – Traffic circulation
  – Low emission public transport
Air quality: findings I

- Large differences in cost effectiveness (€/kg)
- Retrofitting filters in existing vehicles expensive for government
- Measures that focus on new vehicles are more cost effective
- Cost effectiveness had a limited role in policy dev.

<table>
<thead>
<tr>
<th></th>
<th>Users</th>
<th>Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro-4 &amp; 5 trucks (subsidies)</td>
<td>€ 46-77 p/kg</td>
<td>€ 11-18 p/kg</td>
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<tr>
<td>Retrofit filters trucks</td>
<td>€ 48-69 p/kg</td>
<td>€ 154-221 p/kg</td>
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<tr>
<td>Retrofit filters cars</td>
<td>€ 100 p/kg</td>
<td>€ 265 p/kg</td>
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<tr>
<td>Filters new cars</td>
<td>€ 28-43 p/kg</td>
<td>€ 61-92 p/kg</td>
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<tr>
<td>Filters new taxis and vans</td>
<td>€ 58-64 p/kg</td>
<td>€ 20-23 p/kg</td>
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Air quality: findings II

- Objectives not reached within the original timetable
- EC granted extra time to comply with limit values (5 to 6 years)
- Additional measures necessary
- It took 5 years to develop policy
- No attention for health effects below limit values
Fuel efficiency: problem and policy goals

- Climate change by growing emission of greenhouse gasses

- Policy goal 2010:
  - Comply to Kyoto Protocol: 215 Mton CO$_2$
  - Target traffic and transport: 38,7 Mton CO$_2$

- Policy goal 2020:
  - 20 % reduction (EU policy)
  - Target road traffic: 35,0 Mton CO$_2$
Fuel efficiency: policy measures

- **Pricing**
  - Less kilometres

- **Fuel efficient cars**
  - Less fuel

- **Fuel efficient driving**
  - Less CO$_2$

- **Biofuel**
  - Less CO$_2$
### Fuel efficiency: findings I

- Large differences in cost effectiveness (€/tonne)

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<tr>
<th></th>
<th>Users</th>
<th>Government</th>
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<tbody>
<tr>
<td>Biofuel</td>
<td>€ 185</td>
<td>€ 0</td>
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<tr>
<td>Promoting fuel efficient driving</td>
<td>€ -400</td>
<td>€ 420</td>
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<tr>
<td>Tax relief fuel efficient cars</td>
<td>€ -800</td>
<td>€ 650</td>
</tr>
</tbody>
</table>
Fuel efficiency: findings II

- Feasibility of target 2010 uncertain
- Feasibility of target 2020 uncertain, additional measures seem necessary
- Effects of economic crisis uncertain
Fuel efficiency: findings III

- Effectiveness policy 1999-2007 less than expected
  - Plans for pricing not implemented
  - Policy for fuel efficient cars inconsistent
  - EU measures less effective than intended
  - Estimates include measures for which implementation is uncertain

- Biofuel is effective but there is discussion about the environmental effects in the producing countries
Conclusions

• Objectives not reached within original timetable (pm & NO₂)
• Uncertain if objectives will be met in time (CO₂)
• Little attention for uncertainty in prognoses
• Cost effectiveness of measures estimated ex ante but not ex post
• Large differences in cost effectiveness
Thank you for your attention

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