Market Barriers to Increased Efficiency in the European Onroad Freight Sector

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Outline

• Background and objective
• Methodology
• Sample selection
• Main results
Background and objective

- EU Transport White Paper 2011
  - Aim to decrease transport emissions by 60% in 2050 relative to 1990
  - HGV emissions contribute to this goal
  - CLIMA working on HGV strategy
- Several studies show that some technical measures have negative net costs (AEA 2011, TIAx 2011)
- Many of these are not universally implemented

What are the barriers to the implementation of fuel efficiency improving technologies in the European road freight transport sector?
Methodology

1. Identify cost-effective technologies
2. Review literature on barriers in HGV sector and other sectors

3. Online survey and in-depth interviews on the implementation of measures
   - Transport companies
   - OEMs: trucks and trailers
   - Shippers
   - 3PLs
   - Financial institutions and leasing companies
Cost-effective technologies

- Cost-effectiveness depends on investment, discount rate, fuel savings, mileage, etc.
- CE Delft MACH model
  - Analyse net costs of different technologies
Cost-effective technologies

- Investments, mileage and fuel savings from TIAX (2011) and AEA (2011)
- Fuel price range EUR 1 - EUR 2
- Discount rates 10% - 16%
- Write down periods 4 - 8 years (long haul), 9 - 19 years (urban delivery)
Survey and interviews

• Four steps
  1. Online survey and interviews (53 questionnaires)
  2. Initial analysis and draft conclusions
  3. In-depth follow up interviews to test draft conclusions (13)
  4. Finalise analysis and conclusions
Survey and interviews

- Contacts from
  - CE Delft’s and TRT’s network
  - IRU
  - Phonebook
- Initial survey (53)
  - 41 transport companies
  - 3 OEMs
  - 6 shippers
  - 3 3PLs
- Follow up interviews (13)
  - 3 transport companies
  - 3 OEMs
  - 3 body builders
  - 3 leasing companies
  - 1 technology supplier
Survey and interviews

- Sample: transport companies
  - 12 countries, good coverage of Europe, relatively more from north-western Europe
  - More large transport companies than small ones
  - More long haul and regional than urban delivery
  - Biased towards transport companies that are environmentally aware
- OEMs
  - Good coverage of major truck manufacturers
  - Small sample of trailer body builders
- Shippers, 3PLs, financial institutions
  - Small sample
Survey and interviews

- Conclusions could be representative of companies that:
  - are probably more aware of the fuel saving options
  - have probably implemented a larger share of fuel-saving options
  - are less affected by the barriers

- Barriers in this sample are likely to apply to most transport companies
- Barriers not found in this sample may still be relevant to other companies or specific market segments
Main Findings

• Commonly held belief that large efficiency improvements result primarily from operational improvements
  • Most transport companies have implemented some operational measures (driver training, tyre pressure, etc)
  • All transport companies in our sample monitor operational fuel efficiency
  • Most OEMs offer packages of fuel-efficiency options which include monitoring systems of operational efficiency

• Commonly held belief that technical improvements are costly (high investment costs, forgone revenues, low benefits)

• Little market pressure to improve fuel-efficiency
Main Findings

- Most transport companies are aware of fuel saving technologies
  - Few think they are cost-effective
  - Lack of information about potential to improve fuel-efficiency

<table>
<thead>
<tr>
<th>Technology</th>
<th>Not aware</th>
<th>Aware</th>
<th>Planned/Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerodynamics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trailer rear end taper</td>
<td>18%</td>
<td>82%</td>
<td>27%</td>
</tr>
<tr>
<td>Boat tail</td>
<td>56%</td>
<td>44%</td>
<td>11%</td>
</tr>
<tr>
<td>Box skirts</td>
<td>13%</td>
<td>67%</td>
<td>11%</td>
</tr>
<tr>
<td>Cab side extension or gap fairings</td>
<td>27%</td>
<td>73%</td>
<td>55%</td>
</tr>
<tr>
<td>Full gap fairing</td>
<td>25%</td>
<td>75%</td>
<td>33%</td>
</tr>
<tr>
<td>Full skirts</td>
<td>30%</td>
<td>70%</td>
<td>10%</td>
</tr>
<tr>
<td>Roof deflector</td>
<td>17%</td>
<td>83%</td>
<td>67%</td>
</tr>
<tr>
<td>Material substitution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light-weighting</td>
<td>18%</td>
<td>82%</td>
<td>45%</td>
</tr>
<tr>
<td>Tires and Wheels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tire Pressure Monitoring System (TPMS)</td>
<td>8%</td>
<td>92%</td>
<td>42%</td>
</tr>
<tr>
<td>Automatic tire inflation on truck or trailer</td>
<td>45%</td>
<td>55%</td>
<td>9%</td>
</tr>
<tr>
<td>Low rolling resistance tires</td>
<td>9%</td>
<td>91%</td>
<td>55%</td>
</tr>
<tr>
<td>Tire management</td>
<td>11%</td>
<td>89%</td>
<td>56%</td>
</tr>
<tr>
<td>Engine efficiency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved diesel engine</td>
<td>8%</td>
<td>92%</td>
<td>83%</td>
</tr>
<tr>
<td>Hybridisation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual-mode hybrid</td>
<td>56%</td>
<td>44%</td>
<td>0%</td>
</tr>
<tr>
<td>Parallel hybrid</td>
<td>67%</td>
<td>33%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed limiters</td>
<td>9%</td>
<td>91%</td>
<td>64%</td>
</tr>
</tbody>
</table>
Main Findings

- Supply of fuel-saving technologies from OEMs is limited
  - Standard trucks are offered without fuel-saving technologies
  - Most OEMs offer packages that include a subset of the available technologies
- Supply of fuel-saving technologies from body builders is very limited
  - No standard offers, only when customers ask for it specifically
Main Findings

- Transport companies are interested in technical options when buying a new truck
  - Are able to evaluate packages, not individual measures
  - Lack of information persists

- Transport companies are not much interested in technical options on trailers
Main findings

- Financial institutions do not take fuel-efficiency into account when deciding on a loan
  - Loans primarily based on financial health of transport company
- Split incentive is not a major issue
  - Unless when acting under an open-book contract, transport companies benefit from having more fuel-efficient HGVs
  - Most companies in our sample did pay attention to operational measures to improve fuel-efficiency
  - Can be relevant for trailers, which are sometimes owned by shippers
Recommendations

- **Lack of information**
  - Joint industry and government effort to raise awareness, especially with regards to trailer options
  - Independent testing of technical measures could improve credibility of fuel saving claims
  - Better understanding of fuel efficiency in relation to operational profiles would allow transport companies to make better informed decisions

- Vehicle labelling could improve market transparency

- For one technology (boat tail) there is a regulatory barrier