Study on sound level limits of M- and N-category vehicles

On behalf of the European Commission
Subject and aim of the study

To study the sound level limits of M- and N-category vehicles and investigate on such limits update

Background

• M- and N-category vehicles constitute a big part of the European fleet; as a result, they contribute significantly to the overall sound emissions

• Consequently, sound emission limits are legislated and need to represent the state of the art sound emission levels

• There is legal obligation of the Commission for a detailed study on sound level limits by 1 July 2021 and submit, as appropriate, a legislative proposal – Regulation (EU) No 540/2014

Objectives

• Investigate the current sound emission levels of M- and N-category vehicles

• Propose possible new (improved) sound level limits for the next phases of the Regulation (EU) No 540/2014 in the coming years

• Overall: protect the environment and human health and contribute in the reduction of the so-called ‘noise pollution’ and real-world traffic noise
Task overview and interaction

Consultation: Potential limits Costs, need and priorities
- 1. Estimate of sound level limits for all M- and N-category vehicles
  - Completed
- 2. Verification of vehicles’ sound level limits
  - On-going
- 3. Noise source ranking
  - On-going
- 4. Cost-benefit analysis
  - On-going
- 5. Validation tests
  - On-going
- 6. Proposal for limit values and reporting
  - On-going

Potential other limits and evolution
- Scenario definitions
- Env. Noise model
- Costs and benefits estimation
- Roads and fleets

Consultation details:
- Type test databases
- Current limits 540/2014 661/2009
- Compliance and margins Room for lower limits
- New test data from test matrix
- Engine/tyre contributions
- B/C ratio per scenario Potential new limits
- Feasibility
## Time plan

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- **Completed tasks**
- **Time elapsed**
- **Remaining time for each task**

The final report is expected by the end of June 2021
Estimate of sound level limits for all M- and N-category vehicles (Task 1)

**Description**

- **Feedback gathering** procedure with questionnaire to stakeholders
- **Literature review** to explore the current state-of-the-art sound emissions control technology

**Main findings**

- **Sound limits**: There seems to be some potential for reduction, with the exception of some vehicle types
- **Testing conditions**: Better coverage of operation conditions is considered to be required for thorough sound emissions control
- **Technology**: Potential reductions will require advancements in both vehicle and tyre technology
- **Additional measures**: Regulation enforcement is a recurring item that goes beyond current regulation but is known to provide sound benefits
Vehicle testing

Description

Vehicle testing includes CoP tests, ASEP and extended ASEP range testing

Current status

- **M1, M2 and N1** vehicle testing for **Task 2** has been **concluded**
- **33/47 of the planned measurements** for **Task 3** and **Task 5** have been **completed**
- **Additional testing beyond the agreed test matrix is planned** (e.g. testing under an extended ASEP range), that will be beneficial for the study’s final outcome
- **Preliminary test results** are currently being analyzed
Cost-benefit analysis (CBA) (1/2)

**CBA Topics**

- Environmental model and input data
- CBA procedure, costs and benefits
- Description and motivation of scenarios
- Input from consultation, type test databases and new test results
- Scenario analysis and CBA results
Cost-benefit analysis (CBA) (2/2)

Description

Several scenarios in order to assess the economic feasibility of potentially modified sound level limits

Current status

• Proposed scenarios for CBA (2020-2045)

<table>
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<tr>
<th>Scenario</th>
<th>Remark</th>
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<tr>
<td>0. Baseline</td>
<td>Vehicle and tyre limits as foreseen in Reg. (EU) 540/214 and 2016/1350 stage 2</td>
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<td>1. Available limit space</td>
<td>Use available limit space in Lurban and LWOT for all vehicles</td>
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<td>2. Targeted limit tightening</td>
<td>Available limit space + tighter limits for cars and lorries/trucks/buses</td>
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<td>3. Same as 2 but with cap at 75 dB(A)</td>
<td>Encouraging electric lorries, trucks and buses</td>
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<td>4. Add restriction on LWOT</td>
<td>Encouraging electric cars and reducing engine noise, lower urban noise</td>
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<td>5. Expand ASEP range and tighter ASEP limits</td>
<td>Excluding noisier operation modes</td>
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<td>6. Tighter tyre limits than stage 2</td>
<td>Limiting rolling noise</td>
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