Status report to the 79th session of GRBP (February 2024)
Task Force Vehicles’ Sound (TF-VS)

NB: previous name of this TF was TF-SL for Sound Limits
The experts from EC, ETRTO and OICA reported on their studies on sound level limits (GRBP-73-23, GRBP-73-11 and GRBP-73-25, respectively). To coordinate such initiatives, GRBP decided to establish a taskforce (TF) and sought a volunteer among the experts from Contracting Parties to take the leadership of TF, while OICA agreed to act as secretary. GRBP considered that TF should address the sound level limits of UN Regulation No. 51 and, at a later stage, No. 41. To kick-off the TF activities without delay, the Chair pointed out that he could take the lead of TF on a temporary basis, if needed.

### Reminder

- “The experts from EC, ETRTO and OICA reported on their studies on sound level limits (GRBP-73-23, GRBP-73-11 and GRBP-73-25, respectively). To coordinate such initiatives, GRBP decided to establish a taskforce (TF) and sought a volunteer among the experts from Contracting Parties to take the leadership of TF, while OICA agreed to act as secretary. GRBP considered that TF should address the sound level limits of UN Regulation No. 51 and, at a later stage, No. 41. To kick-off the TF activities without delay, the Chair pointed out that he could take the lead of TF on a temporary basis, if needed.”

### Roles

- **Chair:** France
- **Secretariat:** OICA

### TF-VS homepage

[Task Force on Sound Limits (TF SL) - Transport - Vehicle Regulations - UNECE Wiki](#)
### TF Sound Limits / Vehicles‘ Sound: Facts and Figures

Meetings were held in hybrid or virtual depending on the pandemic situation at that time

<table>
<thead>
<tr>
<th>Number of Meetings</th>
<th>Participants (Contracting Parties, NGOs, Guests)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>• <strong>CPs:</strong> China, European Commission, France, Germany, India, Italy, Japan, Spain, Switzerland, The Netherlands, United Kingdom</td>
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<tr>
<td></td>
<td>• <strong>NGO’s:</strong> CLEPA, ETRTO, EUWA, IMMA, ISO, OICA</td>
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<td></td>
<td>• <strong>GUESTS:</strong> Aristotle University, ATEEL, BRUITPARIF, FEDRO, FEV, HS Data analysis &amp; Consultancy, IDIADA, JARI, TNO, Brussels Env., ...</td>
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<tr>
<td>01st TF SL: March 24, 2021 (TFSL-01-07)</td>
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<tr>
<td>02nd TF SL: May 26, 2021 (TFSL-02-12)</td>
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<td>03rd TF SL: July 12-13, 2021 (TFSL-03-08)</td>
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<tr>
<td>04th TF VS: September 13-14, 2021 (TFVS-04-16)</td>
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<tr>
<td>05th TF VS: October 26-27, 2021 (TFVS-05-07)</td>
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<tr>
<td>06th TF VS: December 17, 2021 (TFVS-06-04)</td>
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<td>07th TF VS: February 07, 2022 (TFVS-07-15)</td>
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<td>08th TF VS: April 04, 2022 (TFVS-08-10)</td>
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<tr>
<td>09th TF VS: May 24, 2022 (TFVS-09-08)</td>
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<tr>
<td>10th TF VS: July 12, 2022 (TFVS-10-08)</td>
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<tr>
<td>11th TF VS: September 09, 2022 (TFVS-11-09)</td>
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<tr>
<td>12th TF VS: July 10, 2023 (TFVS-12-08)</td>
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<tr>
<td>13th TF VS: August 29, 2023 (TFVS-13-05)</td>
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<tr>
<td>14th TF VS: November 10, 2023 (TFVS-14-06)</td>
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</table>

~60-70

Participants

Contracting Parties, NGOs, Guests
GUIDELINES OF THIS TASK FORCE:

- During the 01st Session, a subgroup decided to draft a proposal that was approved at the 03rd Session and subsequently updated at the 04th session.
  - Change of the name of this TF from TF-SL (Sound limit) to TF-VS (Vehicle Sound)
- During the 13th session, it was pointed out the necessity to update the Guideline to take into account the future activities of the TFVS. It will be managed during next TFVS occurrences

Need to identify where the noise issues lie e.g. through a cross-matrix to get a reference scenario as close as possible of real life
- Identified a subgroup within the TFVS to define a Cross-matrix. Activities still on-going due to the complexity of the topic for example difficult to gather the required input data.

Impact of AVAS (UN-R138) on Noise Emissions (UN-R51) at low speeds
- Thoughts from some Noise experts related to UN-R138 & UN-R51 matching
- Actions to be defined through the documents related to the UN-R138
  ➔ To be followed with the new TF-QRTV (UN-R138-02)
A lot of studies about vehicles, tyres, roads, methods, enforcement ... has been presented during the 12 sessions of the TF-VS (see UNECE TF-VS Website) with a potential to improve the noise in real life.

The TF agreed to the creation of a subgroup with the aim of preparing a Report in order to provide an overview and a common view of topic discussed from March 2021 to September 2022 and identify the potential for the future.

The full report has been completed, presented during the 12th session of the TF-VS and shared (see link on the right).

- **Volunteers:** CPs with France, The Netherlands, Japan, and NGO with IMMA, OICA, ETRTO, ISO

**EC Report for M/N**

**EC Report for L**

**ATEEL(OICA) Report (GRBP-75-16)**

**GRBP-76-14 ATEEL/OICA Comparison**

**TFVS-11-06 ETRTO comments**

**TFVS-14-05** (Status Report TFVS-12th) [Full Report](#)
TOPICS DISCUSSED DURING TFVS-14 SESSION:

- **(SINTEF)** “Representativity of ISO test track surface based on controlled pass-by and CPX measurements.”
- **(NTSEL)** “Illegal muffler vehicle detection system under development at NTSEL”
- **(ENBF)** “Environmental Sustainability and Durability of Noise Barriers”
- Cross matrix: status of the activities and future development

TOPICS STILL OPEN FOR THE NEXT SESSIONS:

- Update of previous national presentations (EC, Japan, UK, China, Germany, Belgium …) and others (OICA, IMMA, ETRTO …)
- Cross-matrix
- Next steps to be decided
- ...
• Feel free for any comments / suggestions.
• Feel free for contacting our subgroup to get any additional information and/or contribute to the work of our subgroup.

Thank you!
Backup documents
Work done by the sub-group
Extract from the presentation done at the 12th session (TFVS-12-05)

REPORT OF THE 11 TF-VS SESSIONS
TF Sound Limits / Vehicles’ Sound: Facts and Figures

Other Meetings
SUBGROUP on the report of the 11 sessions

01st Subgroup: October 21, 2022
02nd Subgroup: November 04, 2022
03rd Subgroup: November 29, 2022
04th Subgroup: December 14, 2022
05th Subgroup: January 16, 2023
06th Subgroup: January 26, 2023
07th Subgroup: February 15, 2023
08th Subgroup: March 02, 2023
09th Subgroup: March 10, 2023
10th Subgroup: March 29, 2023
11th Subgroup: April 11, 2023
12th Subgroup: April 26, 2023
13th Subgroup: May 16, 2023
14th Subgroup: May 30, 2023
15th Subgroup: June 20, 2023

Volunteers
(Contracting Parties & NGOs)

- CPs:
  - **France**: Serge FICHEUX, Romain BARBEAU,
  - **Japan**: Takehiro ITO, Yoshihiro SHIRAHASHI, Yoshihisa TSUBURAI,
  - **The Netherlands**: Jan Sybren BOERSMA,

- NGO’s:
  - **ETRTO**: Michael STEFFAN,
  - **IMMA**: Edwin BASTIAENSEN, Alex DESPLENTER,
  - **OICA**: Klaus NEUHAUS, Per-Uno STURK, Françoise SILVANI.
GENERAL GUIDELINES OF THE SUB-GROUP

1. **Target**: full report ready by June 2023 to be ready for next TF-VS Session

2. **“Rules”**: Need to remain factual, objective & neutral + take care for having the same ‘level’ of information in each document:
   a) cross-reading of the different documents between the members of our subgroup, and then
   b) getting feedback from the authors of the various TFVS presentations
1. General introduction
2. Executive summary
3. Analysis to identify the general findings/statements for further consideration
4. Identification of the
   ▪ Main messages,
   ▪ Summary &
   ▪ Open issues
   of the 54 documents/presentations

PART 1.

PART 2.
Identification of the general findings & open issues
Executive Summary
General introduction

PART 3.
Analysis distributed by pair between the subgroup experts
5 main key domains identified & defined
Identification of the key points & Classification
31 Key points identified
Grouping by subject/theme & work split between the subgroup experts
Feedback from the authors to be get

PART 4.
54 Documents/presentations
Grouping by subject/theme & distribution of the work between subgroup’s experts
25 subjects/themes → 25 Individual sheets
1. During the 11 sessions of the TF-VS, there were 54 presentations on different topics such as:
   - Road surfaces,
   - Studies on noise emissions of M/N/L vehicles,
   - Test methods,
   - Noise mapping
   - Noise camera/sonar experimentation,
   - Test campaigns,
   - General ideas, studies & considerations,
   - Cross matrix to improve traffic noise scenario and test procedures.

From these 54 presentations, the subgroup decided to combine them as much as possible by subject/theme. This step led to 25 subjects/themes.
2. An ‘individual sheet’ (targeted in 2 pages) was built for each of these 25 subjects/themes to:

- Identify the main messages shared during the different sessions of the TF-VS,
- Make a summary of the presentation(s),
- Add points discussed at the TF-VS,
- Identify the references related to the concerned subject/theme.

→ The result is the Part 4. of this report.

Through this exercise, the subgroup identified several key points.

In the next step, these key points were combined and led to 5 key domains: vehicle, driver, enforcement, immission, tyres/roads.
• For each of the 5 key domains fixed, the subgroup created a sheet to:
  ▪ Define/describe them
  ▪ Identify the general findings/statements explained during the presentations/reports to the TF-VS, and
  ▪ Identify the needs & questions for potential further considerations by the TF-VS.

→ The result is the Part 3 of this report.

NB: These 5 key-domains and their associated sheets have to be considered together, in parallel.

PART 3. Identification & Definition of the main key-domains

▪ “DRIVER” means a person having the care and control of a motor vehicle on the road. He or she operates the vehicle’s controls whether or not the motor vehicle is in motion. The driver is responsible for the safe, daily use of the vehicle including the after-market components in accordance with rules of the road.

▪ “ENFORCEMENT” (in the context of sound) means the activities to ensure vehicles are and remain compliant to the regulations. The applicable regulations are related to bringing-vehicles-into-the-market (type approval, market-surveillance) and to use of vehicles in the jurisdiction (roadworthiness, Periodic Technical Inspection, roadside inspection, sound radar, manipulation).

▪ “IMMISSION” means the sound recorded or predicted at receiver point, caused by the road vehicle fleet in continuous traffic flow or as single vehicle events, however potentially mitigated by abatement measures of various effect and efficiency (social impact and CBA).

▪ “TYRES_ROADS” have a recognized influence on vehicle sound emissions. Different aspects have to be considered as the road surface itself, the tyre rolling sound, the interaction between the tyre and the road, but also the different tools available to classify them (e.g., the tyre labelling) taking into account the performances and impacts of tyres/roads on health, safety and environment.

▪ “VEHICLE” (in the context of sound) means the sound produced by any means of transport resulting from its operation in traffic, including effects from alterations over its lifetime (NB: for tyre, see the other sheet related to tyre/road component).
Five Key-domains

<table>
<thead>
<tr>
<th>Type approval</th>
<th>In use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vehicle</strong></td>
<td></td>
</tr>
<tr>
<td>R41, R51, R9, R63, R28, R138, R165</td>
<td></td>
</tr>
<tr>
<td><strong>Tire</strong></td>
<td></td>
</tr>
<tr>
<td>R117</td>
<td></td>
</tr>
<tr>
<td><strong>Road surface</strong></td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

Driver

- Replacement parts
- Driver behavior
- Maintenance

Market surveillance

Enforcement

PTI, road side check, ...

Immission

Traffic flow, road type etc.

PART 3.

GRBP task

Maybe R.E.3
Five Key-domains

PART 3.

Global regulation

Local rule

Need balance

Maybe R.E.3

GRBP task

Traffic flow, road type etc.

Immission

Market surveillance

Enforcement

PTI, road side check, ...

Driver

Type approval

In use

Vehicle

R41, R51, R9, R63, R28, R138, R165

Replacement parts

Driver behavior

Tire

R117

Road surface

NA

Maintenance
Noise issues in the (urban) environment have to be considered in a holistic way (combination of complementary measures necessary) and are mainly linked to:

- the **manipulation** of vehicles and components
- the **maintenance** of the vehicles
- the **driver behaviour and awareness**
- the **single events**
- the ‘organisation’ of the **vehicle fleet** (traffic flow, vehicles distribution, speed, bumps, ..)
- the **tyres contribution** to the vehicle’s sound emissions and their interaction with
  - the road surfaces which is becoming still more important with electrified vehicles
  - the environmental & safety tyres performances and their inter-dependency
- the **road surfaces** including the road maintenance to maintain their performances regarding the noise
- the **interaction** between the environmental noise and the type-approval tests
- the **sound assessment modelling** tools to estimate sound from road traffic
- the **various usages** of the vehicles – private and commercial
PART 2. Needs & questions for further consideration

- **Education of the drivers** to make them aware of the impact of their driving behaviour
  - information’s display (roadside information, noise information inside the vehicle, ...),
  - prevention campaigns,
  - roadside checks,
  - sanction systems supported for instance by noise sonars/cameras including vehicle license plate detection, speed, acceleration, ...

- **Development of solutions against manipulation of vehicles**
  - better control of aftersales component,
  - periodical technical inspection,
  - market surveillance,
  - detection of illegally modified vehicles, for example by noise cameras
PART 2. Needs & questions for further consideration

- **Arrangement of traffic fleet** to provide more ‘relaxed’ driving conditions and reduce noise by
  - optimizing traffic flow,
  - adding low speed areas,
  - avoiding speed bumps,
  - traffic flow distribution especially for the future with growing electrified vehicle part ...

- Improvement of the **knowledge of vehicles impacts on noise** including
  - Future worldwide automotive electrification including AVAS and impact on environmental noise
  - Data from real life for all categories of vehicles and not only for M1 & N1 categories of vehicles to be considered through test campaigns
PART 2. Needs & questions for further consideration

- Definition of a **cross-matrix** between the traffic noise situations, contributing factors and major complaints

- Update and improvement of the **understanding of the environmental noise in real life** concerning:
  - CBA (Cost-Benefit-Analysis) to assess the potential health benefits of noise reduction to be improved
  - Noise mapping tools including single events
  - Traffic scenarios
PART 2. Needs & questions for further consideration

- Further improve **knowledge of tyres** for:
  - their performances and their inter-dependency regarding noise and other environmental aspects (as particles), and safety (as handling & braking of vehicles)
  - their interaction with the road surfaces
  - their test methods (indoor in addition to outdoor)

- Further research on **low-noise road surfaces** with a focus on their acoustic behaviour, their maintenance with the associated costs, and their safety performances

- Amend the **UN Regulation no.51**
  - after assessment of previous steps and measures
  - to expand the various potential uses of the vehicles (RD-ASEP and its assessment in real life in the future)
SUMMARY of potential for the future

• **Topics for potential future works of GRBP:**
  - Education of the **drivers** and their awareness
  - Development of solutions against **manipulation** of vehicles
  - Arrangement of **traffic fleet**
  - Improvement of the knowledge of **vehicles’ impacts on noise**
  - **Cross-matrix**
  - Improvement & update of the **understanding** of the environmental noise in real life
  - Improvement of the knowledge of **tyres**
  - Further research on low-noise **road surfaces** and their maintenance
  - Future for UN-R51-03.

• **Main messages**
  - Limited possibilities in further sound reduction on TA
  - Improve relevance of TA test for in use (RD-ASEP) for both vehicles & tyres
  - Tyre/road noise and technology challenge
  - Other measures to reduce immission (speed reduction, road surface, ...)
  - Driver awareness
  - Contribution of enforcement
Next steps for the TF-VS?

• Work on the cross matrix,
• Follow-up of the different studies in progress everywhere
• Potential actions/opportunities and prioritization:
  • Experience (forum) to be continued to share various information linked to noise topics for as much as possible promote worldwide harmonization,
  • Consider the needs and questions highlighted in the report for potential future work of the TF-VS.

Agreed for consideration? How to consider them?

Full report to be made as “GRBP Document for Ref.”?