
2. EXECUTIVE SUMMARY

BACKGROUND

The approach as proposed by the subgroup and described above (in Part 1 of this report) has been presented at GRBP-77 in February 2023 ([GRBP-77-25](#)) and supported by the GRBP experts.

KEY POINTS

- From the work to combine and summarize the presentations of the first 11 sessions of the TF-VS (see *PART 4. to this report*), 5 key domains (see *PART 3. to this report*) with a potential high impact on noise perception especially in urban area have been identified:
 - **“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).

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

- For each of these key domains (see *PART 3. to this report*), have been identified:
 - the general findings/statements, and
 - the needs & questions for further consideration.

GENERAL FINDINGS:

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
 - o the road surfaces which are becoming still more important with electrified vehicles
 - o 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

NEEDS & QUESTIONS FOR FURTHER CONSIDERATION:

- ***Education of the drivers*** to make them aware of the impact of their driving behaviour
 - o information's display (roadside information, noise information inside the vehicle, ...),
 - o prevention campaigns,
 - o roadside checks,
 - o sanction systems supported for instance by noise sonars/cameras including vehicle license plate detection, speed, acceleration, ...
- Development of ***solutions against manipulation of vehicles***
 - o better control of aftersales component,
 - o periodical technical inspection,
 - o market surveillance,
 - o detection of illegally modified vehicles, for example by noise cameras
- ***Arrangement of traffic fleet*** to provide more 'relaxed' driving conditions and reduce noise by
 - o optimizing traffic flow,
 - o adding low speed areas,
 - o avoiding speed bumps,
 - o traffic flow distribution especially for the future with growing electrified vehicle part...
- Improvement of the ***knowledge of vehicles impacts on noise*** including
 - o Future worldwide automotive electrification including AVAS and impact on environmental noise
 - o Data from real life for all categories of vehicles and not only for M1 & N1 categories of vehicles to be considered through test campaigns
- 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
- 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)

For future studies, it would be recommended to differentiate simulated scenarios that are based on gathered data and those that are based on assumptions to avoid misinterpretations by readers trying to assess and to qualify the reported benefits for traffic noise.

PROPOSAL FOR NEXT STEPS OF THE TF-VS

According to the work done through this report, the following points have to be continued through the TF-VS:

- Work on the cross matrix,
- Follow-up of the different studies in progress already presented to the group, for instance:
 - Ongoing studies related to noise mapping (UK, Japan, France, Brussels Env., ...),
 - NEMO project, Belgium (roads or tyres label ...), German presentation on NORESS,
 - ...
- 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 above through this report for potential future work of the TF-VS, especially about the following topics without prioritization:**
 - **Education of the drivers**
 - **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.**