

Status report to the 80th session of GRBP (September 2024)

Task Force Vehicles' Sound
(TF-VS)

NB: previous name of this TF was TF-SL for Sound Limits

TF Vehicles' Sound: Key Points

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



15

Number of Meetings

01 st TF SL: March 24, 2021 (TFSL-01-07)	08 th TF VS: April 04, 2022 (TFVS-08-10)
02 nd TF SL: May 26, 2021 (TFSL-02-12)	09 th TF VS: May 24, 2022 (TFVS-09-08)
03 rd TF SL: July 12-13, 2021 (TFSL-03-08)	10 th TF VS: July 12, 2022 (TFVS-10-08)
04 th TF VS: September 13-14, 2021 (TFVS-04-16)	11 th TF VS: September 09, 2022 (TFVS-11-09)
05 th TF VS: October 26-27, 2021 (TFVS-05-07)	12 th TF VS: July 10, 2023 (TFVS-12-08)
06 th TF VS: December 17, 2021 (TFVS-06-04)	13 th TF VS: August 29, 2023 (TFVS-13-05)
07 th TF VS: February 07, 2022 (TFVS-07-15)	14 th TF VS: November 10, 2023 (TFVS-14-06)
	15th TF VS: June 03, 2024 (TFVS-15-09)



~60-70

Participants
(Contracting Parties, NGOs, Guests)

-
- **CPs:**
China, European Commission, France, Germany, India, Italy, Japan, Spain, Switzerland, The Netherlands, United Kingdom
 - **NGO's:**
CLEPA, ETRTO, EUWA, IMMA, ISO, OICA
 - **GUESTS:**
Aristotle University, ATEEL, BRUITPARIF, FEDRO, FEV, HS Data analysis & Consultancy, IDIADA, JARI, TNO, Brussels Env., ...

TF VS – MAIN WORKS DONE & ONGOING

(1/5)

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.

On going

Informal document

GRBP-74-03 Rev.1

GRBP-74-03 Rev 02 (Work in progress)

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.

On going

TFVS-02-07 TFVS-06-03 TFVS-08-06

TFVS-04-14 TFVS-06-05 TFVS-09-06

TFVS-05-06 TFVS-07-05 TFVS-12-06

TFVS-07-08 TFVS-07-13

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)

On going with the UN TF-QRTV

TFVS-04-12

TF-QRTV (UN-R138-02)

TF VS – MAIN WORKS DONE & ONGOING

(2/5)

TOPICS DISCUSSED DURING TFVS-15 SESSION:

1. **(OICA)** “Regulation 51-03. Impact of Supplement 7 on the measurement uncertainties”
2. **(OICA)** “Proposal for a Document for Reference: measurement uncertainties when testing in UN Regulations under the purview of the Working Party on Noise and Tyres”
3. **(ETRTO)** "Measurement uncertainties reduction in rolling sound emission test method in R117 - ETRTO Status update"
4. **(ENBF)** “Low noise pavement – Life Cycle Assessment (LCA) and Life Cycle Costing (LCC)”
5. **(SINTEF)** “Final results of the ELANORE project and proposals for improvement of the tyre labelling for noise”
6. **(UK - DfT)** “UK noise camera Research”



TFVS-15-09 (Status report)

Done

TF VS – MAIN WORKS DONE & ONGOING

(3/5)

MAIN OUTPUT OF TOPICS DISCUSSED DURING TFVS-15 SESSION:

1. (OICA) “Regulation 51-03. Impact of Supplement 7 on the measurement uncertainties”

The correction method introduced in Supplement 7 has improved the accuracy of measurements in Annex 3 of the UN R51.03. Future studies should focus on the impact of the **tyre torque effect**.

2. (OICA) “Proposal for a Document for Reference: measurement uncertainties when testing in UN Regulations under the purview of the Working Party on Noise and Tyres”

The aim is to enhance transparency on Measurement Uncertainties (MU) incorporated within measurement procedures during type approval, conformity of production, and other measurement-related activities.

Done
TFVS-15-09
(Status report)

3. (ETRTO) "Measurement uncertainties reduction in rolling sound emission test method in R117 - ETRTO Status update"

An overview of the activity on measurement uncertainties reduction has been shared. The following next steps have been outlined: (1) to start a **dedicated subgroup** of the TF-VS to focus on noise test track correction; (2) to prepare a **WD for next 2025** with focus on upgraded outdoor test method in R117 and its measurement uncertainty is expected

TF VS – MAIN WORKS DONE & ONGOING

(4/5)

MAIN OUTPUT OF TOPICS DISCUSSED DURING TFVS-15 SESSION:

4. (ENBF) “Low noise pavement – Life Cycle Assessment (LCA) and Life Cycle Costing (LCC)”

This study presents the results of a Life Cycle Assessment (LCA) and Life Cycle Costing (LCC) analysis of Low Noise Asphalt. The research result indicates that the use of *ad hoc* pavement, although it might be more expensive, offers significant long-term economic benefits and mitigating noise-related impacts such as health problems.

5. (SINTEF) “Final results of the ELANORE project and proposals for improvement of the tyre labelling for noise”

The purpose of this presentation is to share the primary conclusions and recommendations of the ELANORE Project (EU tyre Labelling system for NOise and rolling REsistance) concerning noise labelling procedures. The report identified short and log terms recommendations. The detailed reports and findings are within the TFVS Report.

Done

TFVS-15-09
(Status report)

6. (UK - DfT) “UK noise camera Research”

Noise camera technology has been assessed to determine its effectiveness in automatically detecting vehicles that are excessively noisy. Key aspects of the project include (1) defining Excessively Noisy Vehicles; (2) Identifying and testing suitable technology for noise detection; (3) Conducting real-world tests.

The main output of the studies recommended a specific noise threshold (i.e. **95 dB LAFmax at 7.5 meters**) for enforcement against excessively noisy cars and motorcycles.

TF VS – MAIN WORKS DONE & ONGOING

(5/5)

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
- **(SINTEF)** “Noise emission levels of electric and ICE vehicles on real roads in person” (TBC)
- **(ENBF)** “Noise Radar Results – Genève” (TBC)
- Next steps to be decided
- ...

On going

To be continued

The NEXT 16th Session is scheduled for October 28th, 2024
Hybrid – Barlin (TBC)

TBD

- 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

TF VS – MAIN WORKS DONE & ONGOING

Done

EC study on sound level limits of M, N, L-cat. Veh. → Analysis & comparison between the different studies :

- A lot of different points have been discussed and highlighted (for details see [UNECE TF-VS Website](#)) → work to be continued

[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](#)

[\(OICA\) Comparison of EMISIA and ATEEL study](#)

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

Done

[TFVS-14-05](#) (Status Report TFVS-12th)

[Full Report](#)

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	11 th Subgroup: April 11, 2023
02nd Subgroup: November 04, 2022	12 th Subgroup: April 26, 2023
03rd Subgroup: November 29, 2022	13 th Subgroup: May 16, 2023
04th Subgroup: December 14, 2022	14 th Subgroup: May 30, 2023
05th Subgroup: January 16, 2023	15 th Subgroup: June 20, 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	



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

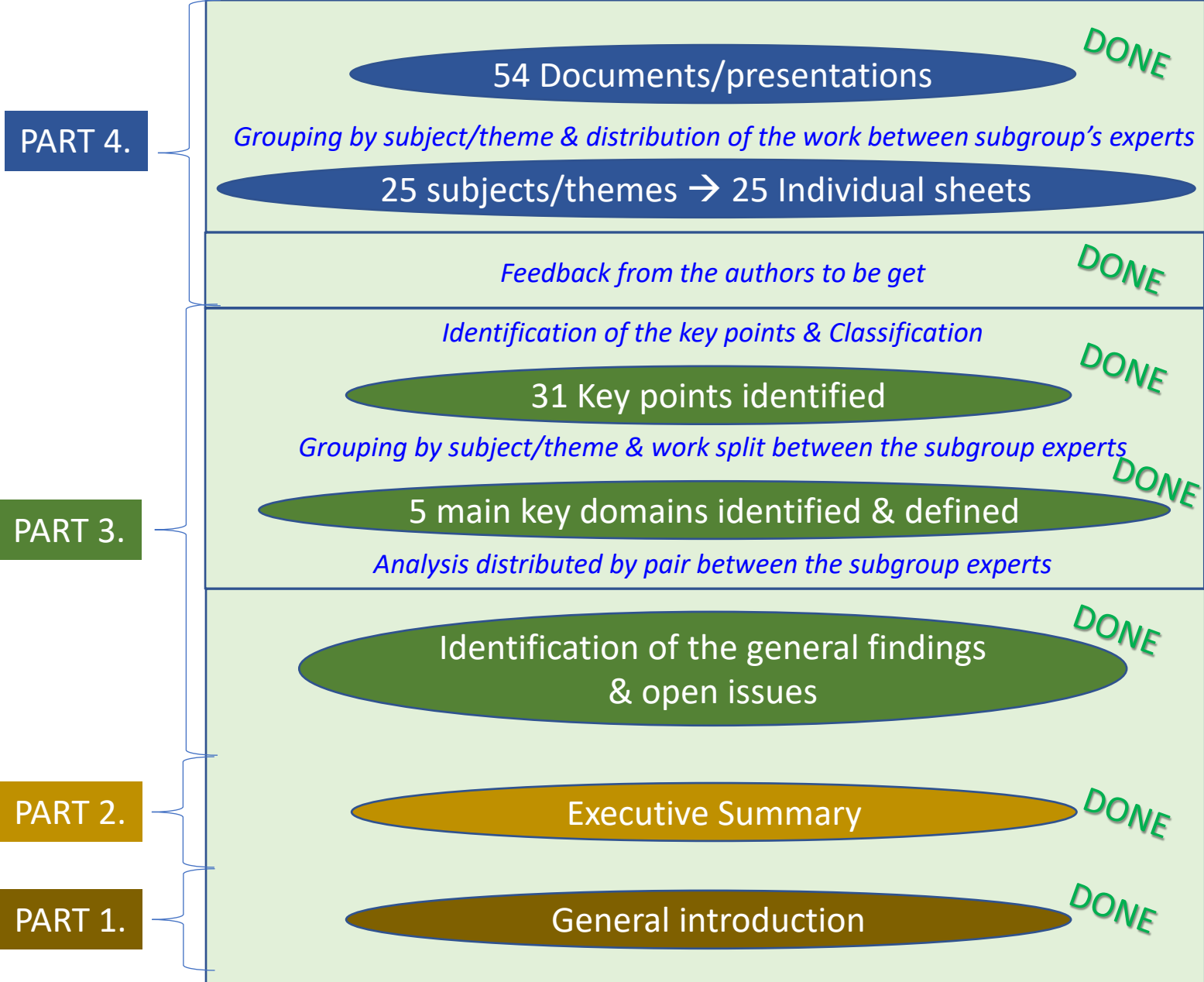
2. **“Rules”:**

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

STRUCTURE OF THE REPORT & APPROACH

- 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 issuesof the 54 documents/ presentations

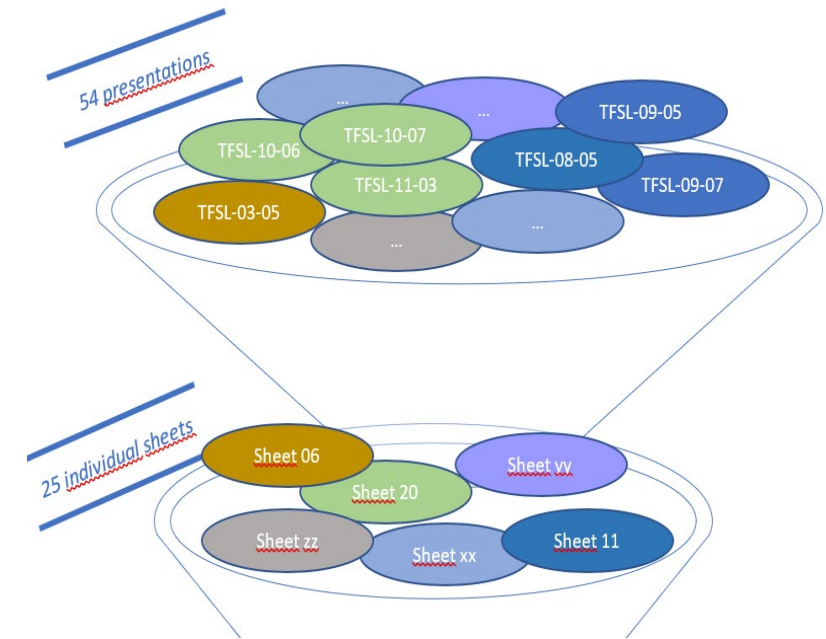


PART 4. 'Individual sheets » x 25

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.



PART 4. 'Individual sheets » x 25

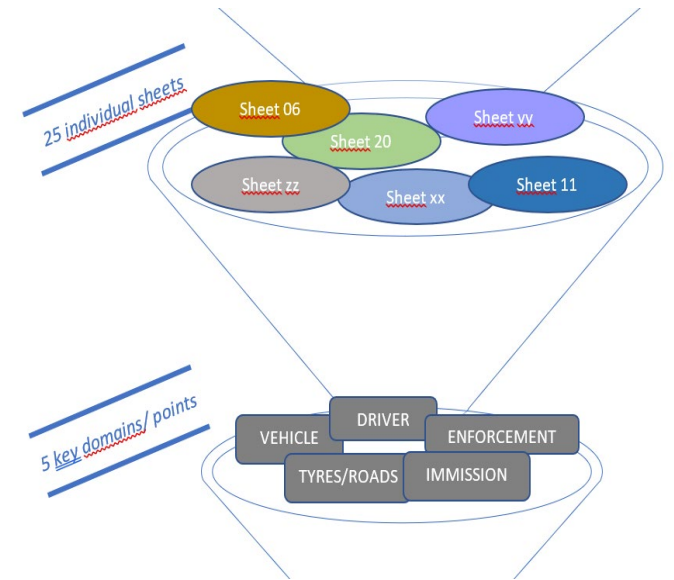
2. An 'individual sheet' (targeted in 2 pages) was built for each of these 25 subjects/ themes to:

- 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.



PART 3.

Identification & Definition of the main key-domains

- 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.

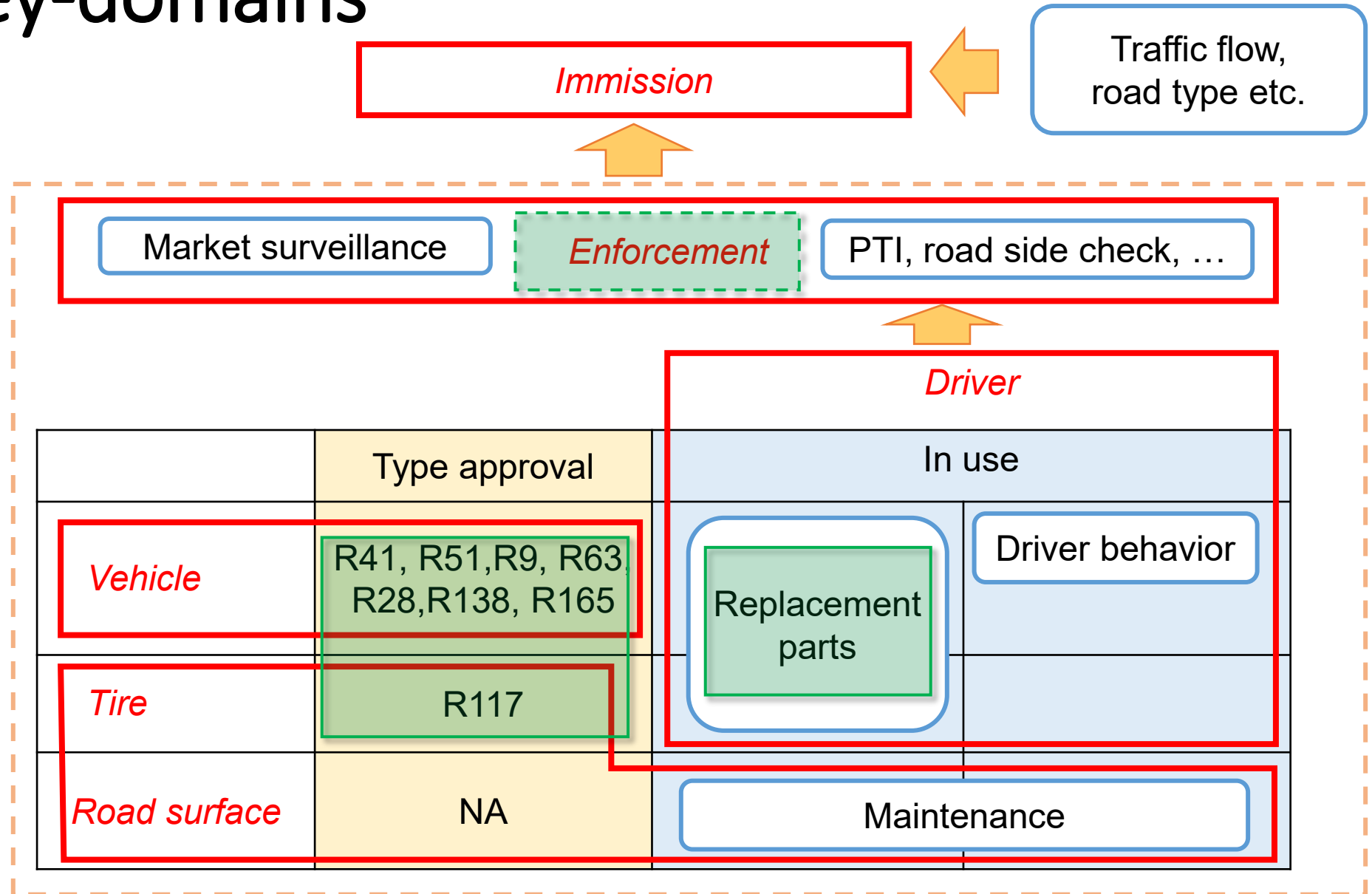
- **“DRIVER”** means a person having the care and control of a motor vehicle on the road. He or she operates the vehicle's controls whether or not the motor vehicle is in motion. The driver is responsible for the safe, daily use of the vehicle including the after-market components in accordance with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

PART 3.

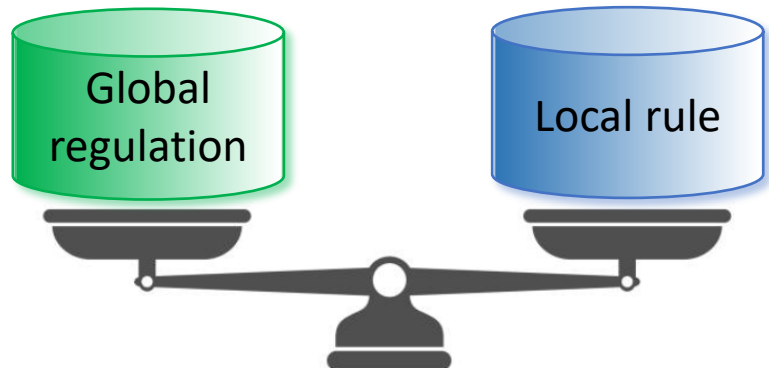
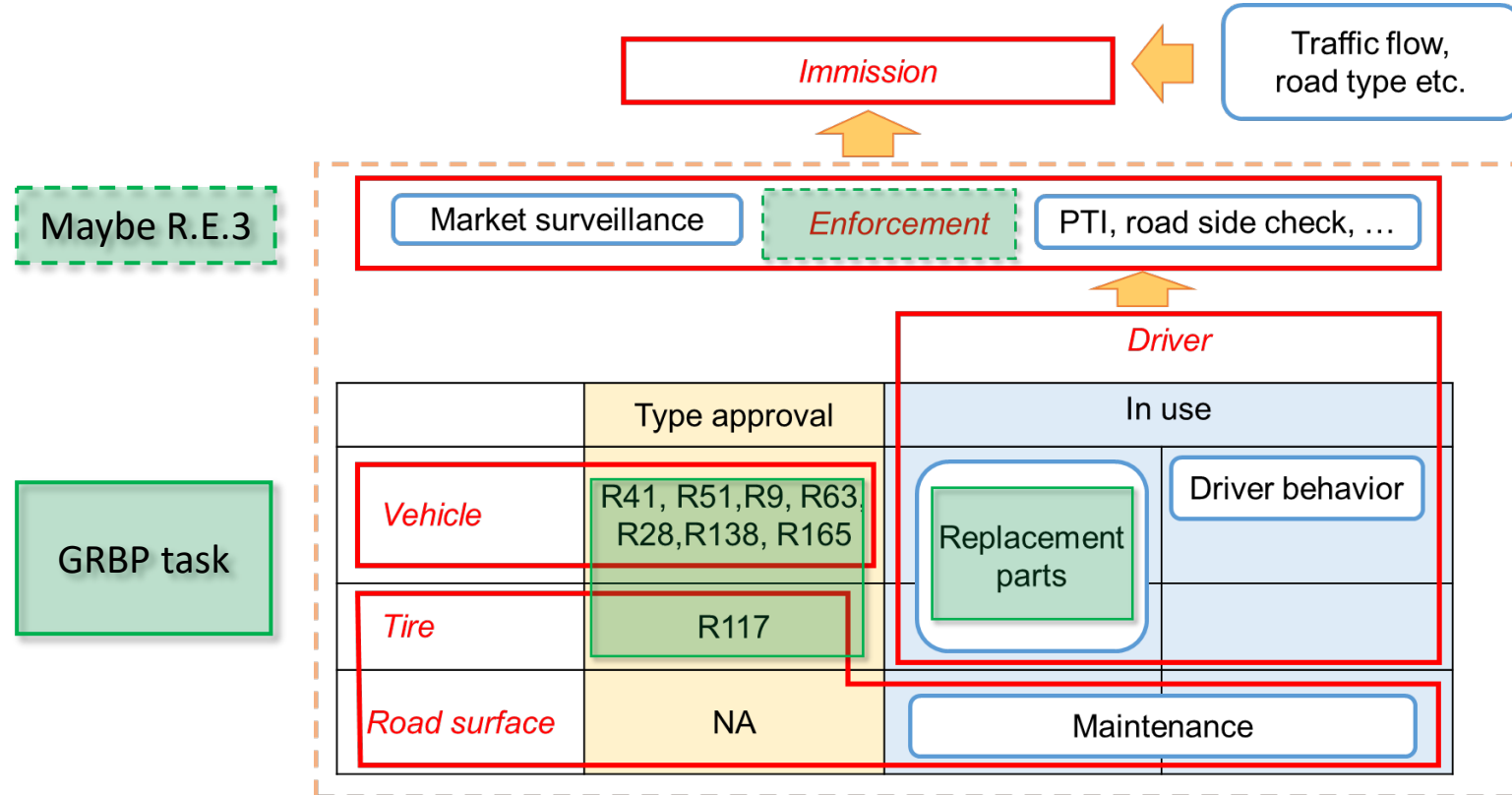
Maybe R.E.3

GRBP task



Five Key-domains

PART 3.



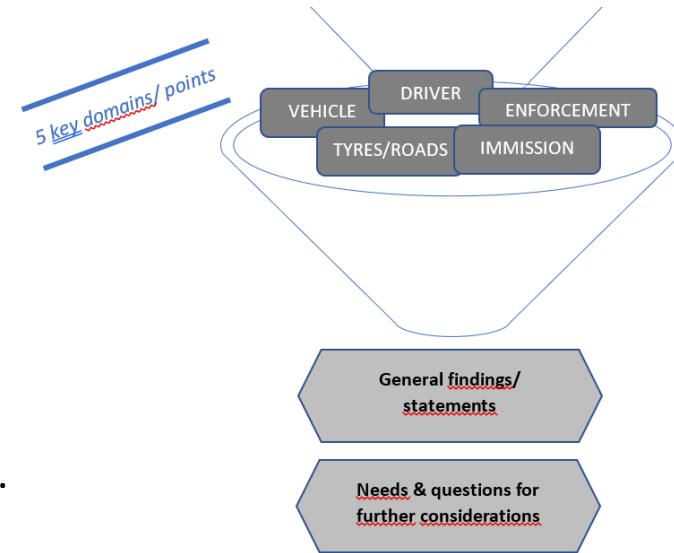
Need balance

PART 2.

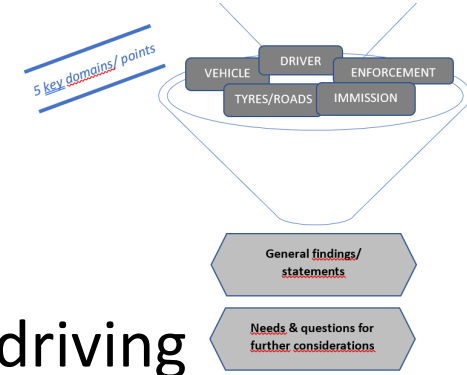
General findings from the 5 Key-domains

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

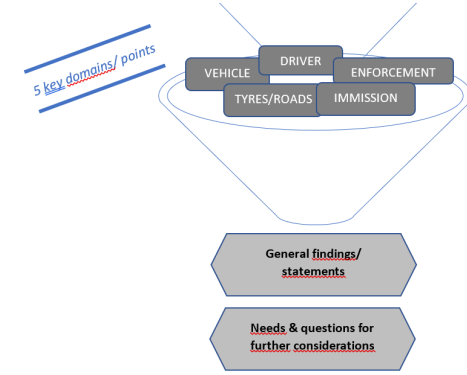


Needs & questions for further consideration



- **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

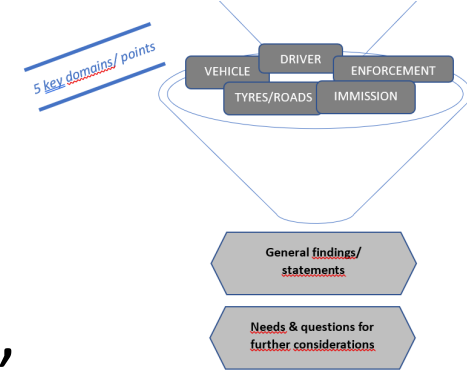
Needs & questions for further consideration



- **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

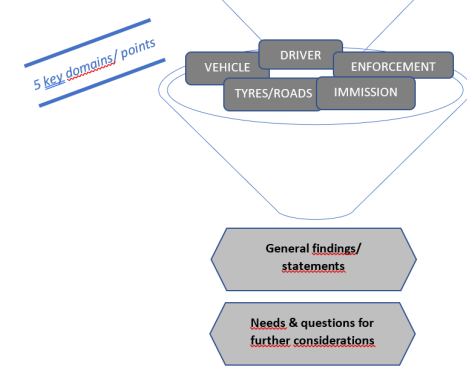
PART 2.

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

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.”?