Submitted by the experts of OICA

ACEA European Automobile Manufacturers Association

Informal Document **GRB-69-25-Rev.1**
69th GRB, January 22-25, 2019
Agenda item 14

ACEA Tyre Performance Study

Rationales and Background Information

69TH SESSION OF GRB, JANUARY 22-25, 2019

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KEY FIGURES ABOUT THE INDUSTRY

13.3 million Europeans work in the automotive sector

3.4 million jobs in automotive manufacturing

€413 billion in tax revenues (EU15)

€53.8 billion in R&D spending, largest private investor

€90.3 billion positive net trade contribution

NOISE – A CHALLENGE FOR SOCIETY

Some Headlines:

A new report was presented by WHO on 10 October 2018 in Basel

Brussels, 30.3.2017
COM(2017) 151 final

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

On the Implementation of the Environmental Noise Directive in accordance with Article 11 of Directive 2002/49/EC

BOX 1.
Effects of environmental noise in Europe

In the EU, more than 100 million citizens are affected by noise levels above 55 dB Lden (a threshold at which negative effects on human health can be observed).

Road traffic is the mo... source for such noise, followed by noise from railways, airports ar... environmental noise

This means that ... and around 6 mil... hospital admissions and 10...

Source: European Commission (2017).

This exposure data implies[1] that 14,1 million adults are severely annoyed by environmental noise, 5,9 million adults are highly sleep disturbed, 69 000 hospital admissions and 15 900 cases of premature mortality occur annually, due to environmental noise .

- 70 000 hospital admissions
- 16 000 premature deaths

NOISE – A CHALLENGE FOR SOCIETY

Noise in Europe conference - 24 April 2017

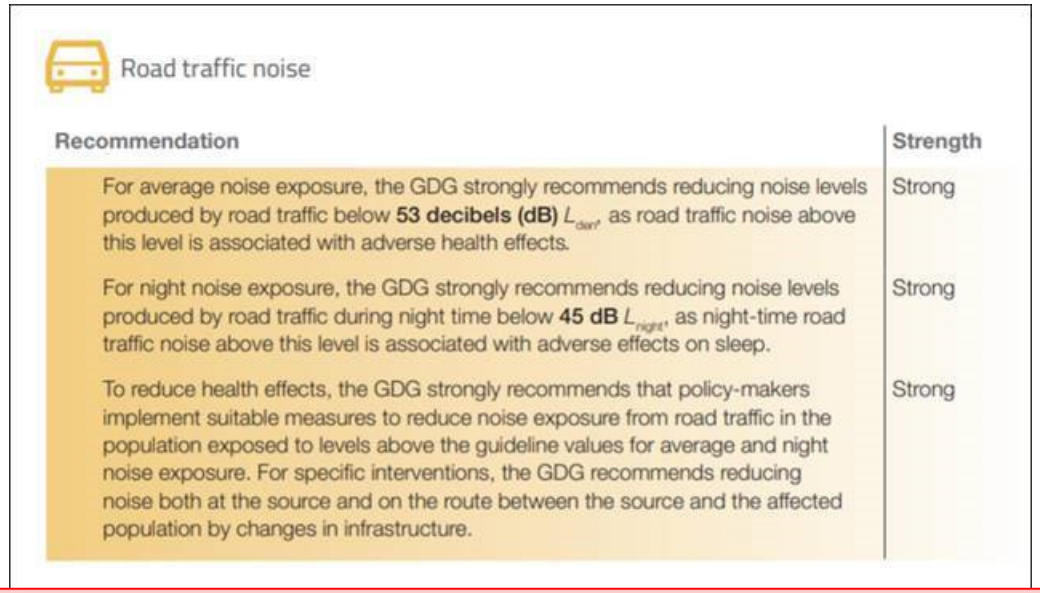
Among the main statements, discussion points and conclusions:

- Seeing the numerous health effects of noise and the significant health costs of 50-100 billion Euros per year, more EU action has been claimed, which would include a better implementation of Environmental Noise Directive.
- …….
- More stringent noise standards introduced at international and EU level should be supported, but also balanced against other measures, such as road surfaces and, around airports, appropriate urban planning.
- Regulating noise at source was seen as key.
- Further tightening of the sound limit values has to consider also the impact on safety.
- A new road quality initiative would help to ensure quieter traffic.
- Guidance on choosing the right noise reduction measures would be very useful.

NOISE – A CHALLENGE FOR SOCIETY

New WHO noise guidelines for Europe released on 10 October 2018 "strongly" recommend more severe noise limits :

- The new values for the night level change from the 2009 interim target of Lnight,outside value of 55 dB to the new strong recommendation of 45 dB, so 10 dB lower.



Road traffic noise

Recommendation	Strength
For average noise exposure, the GDG strongly recommends reducing noise levels produced by road traffic below **53 decibels (dB)** L_{den}, as road traffic noise above this level is associated with adverse health effects.	Strong
For night noise exposure, the GDG strongly recommends reducing noise levels produced by road traffic during night time below **45 dB** L_{night}, as night-time road traffic noise above this level is associated with adverse effects on sleep.	Strong
To reduce health effects, the GDG strongly recommends that policy-makers implement suitable measures to reduce noise exposure from road traffic in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions, the GDG recommends reducing noise both at the source and on the route between the source and the affected population by changes in infrastructure.	Strong

Link:
http://www.euro.who.int/en/media-centre/sections/press-releases/2018/press-information-note-on-the-launch-of-the-who-environmental-noise-guidelines-for-the-european-region

NB These „strong" recommendations are based mainly on „moderate quality evidence "extracted from selected existing litterature, without any new basic research evidence. The approach has been questioned, eg in the aviation sector:
"A Systematic Review of the Basis for WHO's New Recommendation for Limiting Aircraft Noise Annoyance" by Truls Gjestland in *Int. J. Environ. Res. Public Health* **2018**, *15*(12), 2717; https://doi.org/10.3390/ijerph15122717, which reveals severe methodological flaws.

NOISE – NEW LIMITS TARGETED

Stricter limit values demanded also at UN ECE

Stricter limits on tyres regarding

- Rolling Sound
- Rolling Resistance
- Wet Grip

are requested by Member States, eg the Netherlands, to the European Union and the UN ECE Working Party on Noise (GRB) (see ECE/TRANS/WP.29/GRB/2019/3)

NOISE – NEW LIMITS DISCUSSED

Stricter limit values on tyres in two steps

Rolling Resistance (UN Regulation No.117)				
Tyre Type	Current limit values (kg/ton)	Suggestion Stage 3	Suggestion Stage 4	Total reduction Stage 2 to Stage 4
C1	≤ 10.5	- 1.5 kg/ton	- 1.0 kg/ton	- 2.5 kg/ton
C2	≤ 9.0	- 1.0 kg/ton	- 1.0 kg/ton	- 2.0 kg/ton
C3	≤ 6.5	- 0.5 kg/ton	- 0.5 kg/ton	- 1.0 kg/ton

Wet Grip Index (UN Regulation No.117)				
Tyre Type	Current limit values (G)	Suggestion Stage 3	Suggestion Stage 4	Total reduction Stage 1 to Stage 4
C1	≥ 1.1 (1.0; 0.9)	+ 0.35	+ 0.15	+ 0.5
C2	≥ 0.95 (0.85)	+ 0.30	+ 0.10	+ 0.4
C3	≥ 0.80 (0.65)	+ 0.30	+ 0.10	+ 0.4

Rolling Sound (UN Regulation No.117)				
Tyre Type	Current limit values (dB(A))	Suggestion Stage 3	Suggestion Stage 4	Total reduction Stage 2 to Stage 4
C1A - E	70 - 74	- 1 dB(A)	- 2 dB(A)	- 3 dB(A)
C2	72 - 74	- 1 dB(A)	- 1 dB(A)	- 2 dB(A)
C3	73 - 77	- 2 dB(A)	- 2 dB(A)	- 4 dB(A)

ECE/TRANS/WP.29/GRB/2019/3

NOISE LIMITS BASED ON EVIDENCE

Stricter limit values for noise should be based on evidence

We acknowledge that

The European Commission launched a Call for Tender according to Article 11 (Revision Clause) of Regulation (EU) No. 540/2014

- **Ref: EC No 688/PP/2018/FC – Call for Tender**
- **Work package 7: Noise emissions**

- Assessment of sound level limits of light duty vehicles. This includes, amongst others, a survey of the state-of-the-art sound emission level values and their technical verification, as well as corresponding drafting proposals as input to future legislative texts. The study might address specifically the rolling noise of tyres, this being considered the most important factor contributing to vehicles' sound emission even from vehicle speed of 40 km/h.

ACEA questions an approach based only on literature studies, especially if this is done by a selective evaluation of papers.

ACEA strongly recommends that the survey should be done according to sound statistical methodology and in an unbiased way.

ACEA: A PROPORTIONATED APPROACH

Why is a study needed?

Stricter limit values are focusing only on the 3 labelled performance parameters, i.e.:

- Rolling Sound (coast-by) ← Health Protection
- Rolling Resistance ← Environmental Protection (CO_2 emission reduction)
- Wet Grip ← Safety (braking distance, handling)

while affecting also

- Longitudinal & Lateral Aquaplaning
- Rolling Sound (during acceleration)
- Dry Grip
- Snow Performance
- Dry Handling
- Wear Life

?

Is it possible to optimize for rolling sound without compromising other parameters essential for vehicle safety and CO_2 reduction?

→ A Tyre Performance Study is needed and has been commissioned by ACEA

TYRE PERFORMANCE STUDY

Targets for Tyre Performance Study

This study has the aim to find out if lowering the rolling sound limit affects other parameters essential for vehicle regarding safety and CO_2 reduction

This study will investigate in a first step tyres of Class C1

- Tyre type: Normal tyre
- Tyre dimension: 205/55 R16
- Tyre specification: 16 different tyre models
- Tyre manufacturer: 11 different brands

TYRE PERFORMANCE STUDY

Targets for Tyre Performance Study

- **This study will investigate the following tyre performance parameter:**
  - Rolling sound measured at 50 km/h, 70 km/h and 90 km/h according to UN Regulation No.117
  - Coast-by sound according to UN Regulation No.51.03
  - Sound under acceleration according to UN Regulation No.51.03
  - Wet Grip according to UN Regulation No.117
  - Rolling resistance according to UN Regulation No.117
  - Dry grip according to UN Regulation No.13H
  - Longitudinal aquaplaning according to VDA test procedure E08-VDA
  - Lateral aquaplaning according to VDA test procedure E05-VDA
  - Dry handling according to a test procedure proposed by ETRTO

TYRE PERFORMANCE STUDY

Summary and timeline of the study

- **This study is needed:**
  - To **demonstrate** the interaction between tyre performance parameters
  - To **find out** if there is no negative interaction between the parameters (see FEHRL study by TRL in 2006 and others)
  - To **provide** the European institutions (EP, Commission, Council), the UNECE Working Party on Noise and Tyres (GRBP) and the public the necessary information regarding the reasonable tyre rolling sound reduction possible without compromising the other performance parameters essential for vehicle safety and CO_2 reduction

- **This study will start in February 2019, in order to be able to present the results of this study at the 70th session of GRBP in September 2019 as a contribution to the discussion regarding GRBP's main subject for its future work (see GRB-69-03)**

THANK YOU FOR YOUR ATTENTION

European Automobile Manufacturers Association

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