



EC proposal on UNR 138: Informal document GRBP- 80-06

GRBP meeting

18 September 2024

UNR 138: a safety regulation with an environmental dimension

- EVs are quieter than ICE vehicles at lower speed (where the dominant source of noise is the engine)
 - that creates a new safety issue and justifies the emission of an additional artificial sound: the AVAS sound
 - the emission of this AVAS sound raises the sound level to which road users are exposed and has a direct impact on the environment
 - it is therefore necessary to provide the best possible framework for this additional emission and to strike the right balance between security and environmental objectives
- EC resulting position on UNR 138
 - limit the emission of AVAS to what is strictly necessary for safety
 - corollary: prohibit unnecessary noise

Noise: an environmental issue in Europe (and elsewhere?)

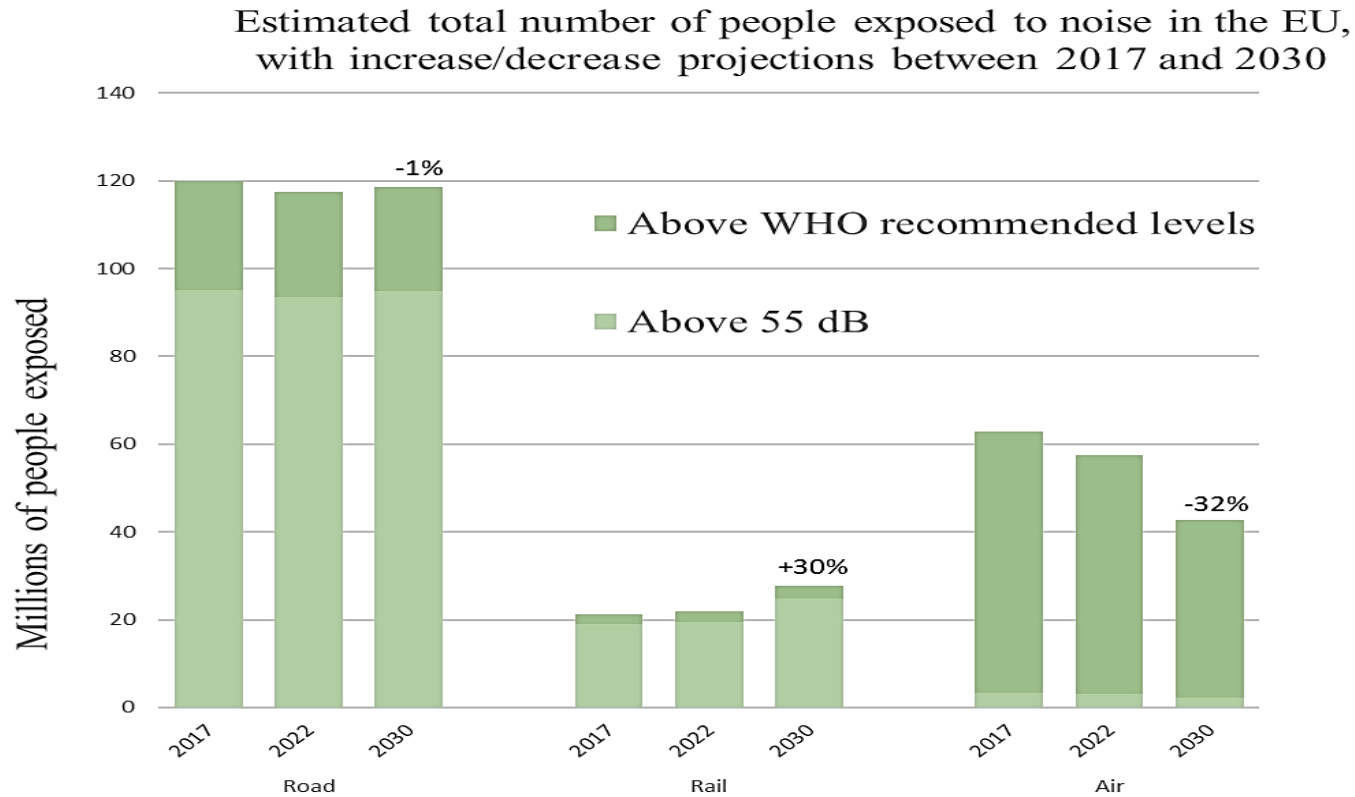
- Report from the Commission to the European Parliament and the Council on the implementation of the environmental noise directive 2002/49/EC (March 2023)
 - noise is the second most important environmental disease factor in the EU (after air pollution)
 - prolonged exposure to high levels of noise pollution can have a serious health impact (including high blood pressure, cardiovascular disease and premature mortality) and significantly affect physical health, mental health and well-being (including chronic disturbance, stress and/or annoyance)
 - 20% of EU's population live in areas where noise levels harm health.
 - **much more effort is needed to address noise from road transport, which is still the biggest noise pollutant.**
- Health effects (WHO methods, 2017 data)

	Highly annoyed	Highly sleep disturbed	Cases of ischaemic heart disease	Premature deaths
Road traffic	14 400 000	3 700 000	33 600	8 900
Rail traffic	3 100 000	1 600 000	5 600	1 500
Air traffic	900 000	200 000	2 000	200

- EU target

The 2021 zero pollution action plan sets a specific target of reducing by 30% by 2030 the number of people chronically disturbed by transport noise in respect to 2017

Trend: noise exposure has remained rather stable over the last 20 years



A combination of strong actions is needed to reverse the trend: access and speed restrictions, local action plans, reception limits, low emission zones, green procurement...

Main consequences of the EC position on UNR 138

- AVAS shall be mandatory
- AVAS shall be limited to the speeds at which an EV is too quiet to ensure safety
- The level of sound issued shall be strictly framed

EC proposal on UNR 138

- only mandatory AVAS is proposed with the exception of vehicle in standstill with the gear selector in forward (justification: only case in which the potential gain for safety compared to the potential cost for the environment remains unclear, temporary derogation to the mandatory principle)
- Based on the experience from the World Blind Union (confirmed by a study by the German insurer association GDV) EC proposes to increase the maximum speed level for mandatory AVAS from 20 km/h (according to the 02 series of amendments to UNR 138) to 30 km/h.

The sensitive fixation of the AVAS sound pressure levels

- Main options to limit the AVAS sound pressure levels
 - direct limitation: the regulation directly focuses on the AVAS sound
 - fixation of specific levels for the AVAS sound
 - fixation of a sound level range for the AVAS sound
 - indirect limitation: the regulation focuses on the level of the noise emitted by the whole vehicle equipped with an AVAS
- EC proposal
 - focus on the sound emitted by the whole vehicle
 - this is the sound heard by vulnerable road users (safety dimension)
 - this is the sound to which road users and people living nearby are exposed (environmental dimension)
 - fix the minimum and maximum sound levels to reconcile the safety and environmental objectives
 - minimum sound levels based on safety needs
 - maximum sound levels
 - not too high to preserve the environment
 - not too low for the industry to be able to comply easily

EC proposal: not a burden for the industry

Vehicle speed (km/h)	Minimum overall SPL (dB(A))	Maximum overall SPL (dB(A))	Extreme case	Minimum AVAS SPL (dB(A))	Maximum AVAS SPL (dB(A))	Resulting AVAS sound range (dB(A))	$\frac{P_{AVAS_max}}{P_{AVAS_min}}$
Standstill	40	60		40	60	20	100
0<v<10	48	64	Quietest vehicle	48	64	16	40
			Loudest vehicle	39	64	25	316
10	53	64	Quietest vehicle	53	64	11	13
			Loudest vehicle	44	64	20	100
10<v<20	53	67	Quietest vehicle	53	67	14	25
			Loudest vehicle	44	67	23	200
20	56	67	Quietest vehicle	56	67	11	13
			Loudest vehicle	47	67	20	100
20<v<30	56	71	Quietest vehicle	56	71	15	32
			Loudest vehicle	47	71	24	251
30	58	71	Quietest vehicle	58	71	13	20
			Loudest vehicle	49	71	22	158

« Quietest vehicle »: vehicle whose sound without AVAS is very low (40 dB)

« Loudest vehicle »: vehicle whose sound without AVAS is close to the minimum overall sound pressure level or SPL (from 48 dB to 58 dB depending on the speed range)

PAVAS_min: pressure corresponding to the minimum AVAS SPL

PAVAS_max: pressure corresponding to the maximum AVAS SPL

7 <https://www.youtube.com/watch?v=qWtnp89OIU4> (sound difference between 69 dB(A) and 56 dB(A))

EC proposal on UNR 138 – other proposed changes and clarifications

- Alignment of the min and max sound pressure levels of table 2b (for reverse driving) with the min and max sound pressure levels of table 2a (for forward driving). Justification: the risk is the same from a vulnerable road user point of view.
- Clarifications:
 - regarding the test methods: methods (A) and (C) to measure the whole vehicle sound, methods (B) and (D) to measure the AVAS sound
 - regarding the roles of Technical services (3.3.) and Type Approval Authorities (6.1. and 6.12.)
 - Introduction of new sub-paragraphs in §6 to clarify the need for an AVAS (6.2.), the mandatory and optional emissions of an AVAS sound (6.3.), the prohibition of defeat devices (6.7.), the acoustic characteristics of the AVAS sound (6.12.) and the acoustic characteristics of the sound emitted by the whole vehicle equipped with an AVAS (6.13.)
- Diverse rephrasings and corrections of typos.

EC proposal: an improvement compared to the 02 series of amendments

Improvement in terms of safety

- Mandatory AVAS sound
- AVAS sound up to 30 km/h
- Increase in the minimum sound levels at low speed
 - +3 dB up to 20 km/h in forward
 - +1 dB up to 10 km/h in reverse
 - +6 dB between 10 and 20 km/h in reverse
 - +9 dB at 20 km/h in reverse

Improvement in terms of environmental noise

- Prohibition of AVAS sound beyond 30 km/h
- Decrease in the maximum sound levels in standstill (- 9 dB)
- Decrease in the maximum sound levels in both forward and reverse
 - -11 dB up to 10 km/h included
 - -8 dB between 10 km/h and 20 km/h included
 - -4 dB between 20 km/h and 30 km/h included

EC proposal on UNR 138: Next steps

- Discussion in GRBP (September 2024 session)
- End of September and October 2024:
 - document open to comments and improvements
 - discussions
 - adaptation of the annexes
- November 2024: incorporation of the comments/improvements and finalization of the working document to be submitted to next GRBP (February 2025 session), deadline for submission: 25 November 2024
- Identified possible improvements
 - For safety
 - find a solution for the vehicle in standstill with the gear selector in forward (make AVAS mandatory or prohibit it)
 - standardization of the AVAS sound to ensure it is a meaningful sound
 - For the environment
 - decrease the AVAS sound maximum levels

Thank you.