



# REVIEW OF THE ENVIRONMENTAL NOISE POLICY IN THE EU

Marco Paviotti<sup>1\*</sup>

<sup>1</sup> European Commission, Avenue d'Auderghem 19 – 1040 Brussels, Belgium

## ABSTRACT

Data from noise maps show that the large number of people suffering serious health effects due to noise from transports has remained rather stable over the past 20 years. In 2022, the European Commission published the first outlook report pointing out that the target established in the Zero Pollution Action Plan to reduce by 2030 the number of people chronically disturbed by transport noise by 30%, compared to 2017, will not be achieved unless additional measures are taken. The report further explains that a substantial set of additional measures taken at local level could reduce the people disturbed by transport noise by 19% by 2030. This article will present how the European Commission assessed the noise problem, its trends, and the actual legal and policy framework. It will review how the noise was managed by means of action plans and national activities in the past years. This was the basis of the considerations that led to the Sustainable and Smart Mobility Strategy and the Zero Pollution Action Plan, two programs on how the Commission would tackle to problem. The article also reviews how the EU framework of laws, funds and research projects supported the noise policy in the past.

**Keywords:** *environmental, legislation, policy, health.*

## 1. INTRODUCTION

At the EU level, Directive 2002/49/EC on the assessment and management of environmental noise (further referred to as ‘the Directive’) [1] is the key legislative instrument for protecting people’s health and well-being from excessive noise pollution caused by road, rail and airport traffic, and

\*Corresponding author: [marco.paviotti@ec.europa.eu](mailto:marco.paviotti@ec.europa.eu)

**Copyright:** ©2023 Marco Paviotti. This is an open-access article distributed under the terms of the Creative Commons Attribution 3.0 Unported License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

large industrial installations. It does this by (1) setting a common approach in order to avoid, prevent and reduce the harmful effects of environmental noise and (2) providing a basis for developing measures to reduce noise emitted by the major sources. Overall, it is the EU’s legal instrument for linking assessment and actions at the local and global levels.

The European Environment Agency (EEA) has indicated that 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, such as a high level of sleep disturbance, stress and/or annoyance). 20% of the EU’s population - one in five people of all age groups - live in areas where noise levels harm health [2].

In this context, the European Commission delivered a whole analysis of the noise policy in its recent report to the European Parliament and the Council of March 2023 [3]. Most information in this article comes from that report.

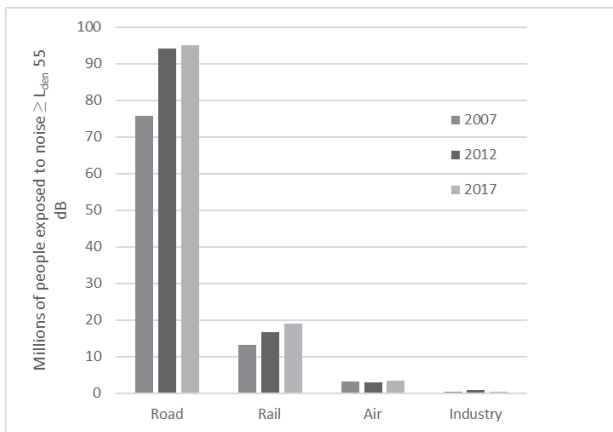
## 2. NOISE EXPOSURE OUTLOOK

### 2.1 European Environment Agency outlook

The EEA has used data reported under the Directive to assess exposure to noise in the EU Member States, covering 443 agglomerations (where roads, railways, airports and industrial installations are considered), as well as 61 major airports, 422 000 km of major roads and 39 000 km of major railways outside agglomerations. A specific methodology was used to complete gaps in data reporting by the Member States (see [4]). The results of this assessment are presented in Figure 1.

A study commissioned by the Commission, on top of this, assessed how many of the EU’s 447 million people are potentially exposed to harmful noise levels above the maximum recommended by the WHO of  $L_{den}=53$  dB for

roads,  $L_{den}=54$  dB for railways and  $L_{den}=45$  dB for aviation. It found this to be the case for 167 million citizens in relation to road noise; 36 million in relation to railway noise; and 15 million in relation to aircraft noise. The number of people officially reported to the EEA as being exposed above the Directive's thresholds of  $L_{den} 55$  is presented in Figure 1 below.



**Figure 1.** The figure presents a subset of exposure above  $L_{den}=55$  dB in the 27 EU Member States in 2007, 2012 and 2017, for railways, roads, airports and industry, as required by the Directive for the three mentioned years, by combining data for locations inside and outside agglomerations, and based on data submitted to the Commission by 1 January 2021.

## 2.2 The Zero Pollution Action Plan

Under the European Green Deal, in the year 2021 the EU has committed itself to achieving a zero pollution ambition for a toxic-free environment, a commitment to take actions towards a clean environment [5]. One of the targets set therein concerns noise, notably to reduce the number of people chronically disturbed by transport noise by 30% within the year 2030, and respect to the health effects recorded in 2017.

To achieve such target, the Commission committed itself to:

- better focusing on tackling noise at source – in line with the findings of the 2016 evaluation of the Environmental Noise Directive, notably by securing proper implementation and, where appropriate, by improving the EU's noise-related regulatory framework on road vehicles and their tyres, railways, aircraft – accompanied by parallel action at the global level, and

- assessing the need to set noise reduction targets at the EU level in the Environmental Noise Directive.

## 2.3 Zero Pollution outlook

In a further step of the analyses, the European Commission prepared a report [6] on the performance of the entirety of the noise policy context affecting the achievement of targets set in the Zero Pollution Action Plan. According to this report, for noise pollution it seems unlikely at this stage (updated at Spring 2023) that such Zero Pollution noise target will be achieved. Current estimates show that the number will not decline by more than 19% by 2030, unless a substantial set of additional measures is taken at national, regional and local level, and unless reinforced EU action across all relevant transport sectors leads to a significant further reduction in noise pollution. The distance to target can be further reduced if Member States strengthen their measures. This would amongst others include stricter noise regulations and enforcement for transport, e.g. improving vehicles and their operations and significantly reducing road traffic and speed limits in cities. The latter is already envisaged by many cities as part of their climate and air quality measures.

## 3. CAN WE FINALLY ACHIEVE A 30% REDUCTION?

### 3.1 How the target was initially assessed

Before posing the question on how the target can be reached, it is necessary to clarify that the Zero Pollution Action Plan target was the result of the analyses performed during the PHENOMENA project [7]. The study found that the maximum technically feasible noise reduction between 2017 (the date of the last analysis) and the relatively close date of 2030 is approximately 45%. The Directive is making a significant contribution to that potential reduction because it acts as framework legislation to link EU and national legislation and could coordinate the implementation of measures – thus enhancing their results and ultimately making the investments in these measures effective. Yet, the Directive does not prescribe which priority measures should be considered, so the implemented measures might in some instances remain ineffective (for example, smooth wheels of new freight wagons over non-smooth rails do not reduce noise as much as they could on well-maintained rails). This and similar inefficiencies hamper the achievement of meaningful reductions of health effects.

### 3.2 Conditions against

The European Environment Agency coordinated some scientists in independently assessing the potential future trends [8]. They assumed that there would be no significant change in trends as no concrete new measure is foreseen, and looking at trends over a baseline scenario, they could only assume the solutions chosen and their rate of implementation would remain the same as till now. Thus, on one side 'classical' solutions, the noise barriers, would by their nature offer a very marginal contribution on overall exposure numbers, even if they are locally very effective. On the other side, the foreseen upcoming electrification leading to roughly 25% of the vehicle fleet being either fully electric or hybrid would induce no change, because since the noise from road vehicles mainly comes from tyres, except for speeds below 30km/h for cars and 50km/h for trucks and busses, the electric vehicles are as noisy as combustion engine ones in all real life situations relevant for noise exposure. More globally effective solutions, the low noise road surfaces (and mostly low noise asphalts) would be prognosed to get a very slight uptake, thus not changing the overall picture either.

Another substantially negative contribution would come from the steep increase in railway traffic and the combined absence of new railway reduction measures, thus leading to a steep increase in exposure around railways.

Aviation and other sources would have instead a marginal contribution on the overall numbers as calculated by the EEA.

### 3.3 Conditions in favour

Because the contribution of tyres would be significant and immediate, only if the tyres' fleet would be set to be a quiet one a substantial improvement would be possible. Indeed tyres are substituted after few years anyway, and have a potential of few decibels. As they would be effective everywhere, the overall benefit would be substantial.

The other two substantial measure leading to major changes in exposure of people to noise being a broad uptake of the low speed areas (typically down from 50 km/h to 30 km/h) and the doubling of the pace at which new low noise road surfaces would be used.

On railways, the measures that could be already implemented in the next few years include the use of low noise rail pads and the grinding of rails, and on aviation the improved landing and take off procedures as well as shaping appropriate night curfews by balancing interests from the airlines and from the citizens.

## 4. EFFECTS OF PAST AND FUTURE ACTIONS

### 4.1 The EU framework supporting the uptake of actions

The Report on the implementation of the Directive [3] presents a detailed assessment of the achievements of each major EU legislative instrument, most of them setting limit on transport vehicles (e.g.: cars, freight wagons, airplanes). The reader is invited to look at that report for more information. When it comes to other drivers for the change in noise levels, funding schemes supported the reduction of noise, for instance like the Connecting Europe Facility scheme. Other actions included the adoption of criteria for collecting money in green transport related projects (so called: 'taxonomy criteria') thus preparing the ground for measures to encourage the quieter road and aircraft vehicles to enter the market.

### 4.2 The role of the action plans

The Directive imposes to draft noise action plans every five years. In the PHENOMENA study [6] the consultants assessed in depth 100 action plans statistically representative of different situations occurring in the European Union, and concluded that for instance for roads, the action plans privilege road surface as solution, noise barriers, sound proofing and quiet areas. Cost-benefit analyses are becoming more frequent in assessing the best measures, still the effect of the action plans is limited, and this is likely due to the nonbinding role of action plans and the planned measures. Reading the study final report one will find many more in depth analyses, also on railway and airport solutions.

### 4.3 The Sustainable and Smart Mobility Strategy

The Sustainable and Smart Mobility Strategy [9] and the eighth environment action programme further confirm the need to reduce noise, which mainly comes from transport. In that sense, the strategy already contains a list of points of action to be taken on tyres, airport charges and promoting rail.

## 5. CONCLUSIONS

The European Commission set up a legislative framework complementing the national one to induce a concrete shift towards lower noise levels from transport, thus reducing the number of people chronically disturbed by transport noise. Thanks to recent studies, assessing all solutions existing and all legislation and drivers, including financial ones, that

would push these existing solutions to be implemented, the Commission assessed and proposed a target to be reached, together with a roadmap of how to get there. The Commission will continue working towards that target in the coming years.

## 6. REFERENCES

- [1] Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise (OJ L 189, 18.7.2002, p. 12), (last consolidated version of 29 July 2021), 2021.
- [2] European Environment Agency, Healthy environment, healthy lives: how the environment influences health and well-being in Europe, EEA Report No 21/2019, 2019.
- [3] 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, COM/2023/139 final, 2023.
- [4] Eionet Report - ETC/ATNI 2021/6 Noise indicators under the Environmental Noise Directive 2021. Methodology for estimating missing data, July 2021.
- [5] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Pathway to a Healthy Planet for All, EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil', COM(2021) 400 final, 2021.
- [6] Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, First zero pollution monitoring and outlook 'Pathway to a Healthy Planet for All, EU Action Plan', COM(2022) 674 final, 2022.
- [7] European Commission, Directorate-General for Environment, Kantor, E., Klebba, M., Richer, C. et al., Assessment of potential health benefits of noise abatement measures in the EU: Phenomena project, Publications Office, <https://data.europa.eu/doi/10.2779/24566>, 2021.
- [8] European Environment Agency, 'Outlook to 2030 — Can the number of people affected by transport noise be cut by 30%?', <https://www.eea.europa.eu/publications/outlook-to-2030/outlook-to-2030-can-the>, 2022, last accessed May 2023.
- [9] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Sustainable and Smart Mobility Strategy – putting European transport on track for the future, COM(2020) 789 final, 2020.