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## Next EU actions to tackle environmental noise

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In its recently adopted Environment Action Programme to 2020, the EU has envisaged to significantly decrease noise pollution. The Environmental Noise Directive (2002/49/EC) (END) requires to assess the exposure to harmful noise levels and adopt action plans to tackle this problem. Recently, common noise assessment methods for the calculation of environmental noise have been introduced and soon, thanks to the new Guidelines on Environmental Noise by the World Health Organisation, common methods to assess the health burden will as well be introduced in the European legislation. This will imply that in the European Union a single and very detailed picture of the environmental noise burden will be consistently made up, allowing for European actions to reduce noise at source to be efficiently assessed and therefore selected. Existing legislation on road, railway and air vehicles could then be amended as necessary. Indeed, the European Union may further enhance noise limits for road vehicles and their tyres, railway vehicles, and aircrafts. But complementary actions are as well considered, such as labelling of road surfaces and tyres, funding the retrofitting of railway freight vehicles and pushing for new technologies in aviation. Noise is in competition with other policies and priorities, but has developed a solid picture. Citizens' and political awareness has risen in recent times, and the European Commission started linking competent authorities with citizens and stakeholders to select appropriate combinations of the local and international measures to be adopted. Options for a consistent EU noise policy are being considered, like noise reduction targets as proposed by stakeholders and Member States.

## 1 Introduction

According to the findings of the European Environment Agency's 'Noise in Europe 2014' report [1], noise pollution continues to constitute a major environmental health problem in Europe, which impacts the European economies. With more than 136 million people in Europe exposed to levels of noise pollution above the threshold where negative health effects can occur, noise pollution puts a burden on the limited resources of health care systems across the Union. The health effects caused by exposure to noise also generate the loss of productivity of workers whose sleep is disturbed or health affected. Moreover, recent research indicates that the number of sources of noise pollution is on the rise (i.e. increases in road traffic [2] and aircraft movements [3]). This data shows that action on noise continues to be relevant and may be increasingly necessary in the future.

## 2 Noise in context

It can be claimed that it's easy to declare noise a significant threat to public health, while in reality many other public health issues exist and can be of larger relevance. To check if indeed noise deserves attention or if it's just the last of the health determinants, it is worth confronting it with the other common health stressors.

The WHO, in 2011 [4], established that in the western Europe 1,6 million DALYs (Disability Adjusted Life Years) were lost each year due to environmental noise. The latest scientific evidence [5, 6, 7, 8] shows that those estimates were sensibly lower than what can be calculated nowadays. Even taking the old low estimate, while comparing to air quality from all sources, this causes 3,8 million DALYs a year [9]. Also, road traffic accidents in all European Region (from Russian Federation to Portugal) was estimated to cause 3,7 million DALYs [10]. Effects of bad water and sanitation lead to irrelevant numbers. Therefore one can easily conclude that beyond any doubt noise is a relevant public health determinant, definitely at the top of the list. According to the World Health Organisation (WHO), noise pollution leads to a disease burden that is second only to air pollution among the environment-related causes in Europe. One might add that in the case of the road transport, it is roughly producing the same effects as bad air emissions, and in the case of railway and aviation is beyond doubt the most serious health issue, clearly much more relevant than, for instance, railway safety or aviation safety.

Scientific evidence shows that prolonged exposure to high levels of noise pollution can lead to serious health effects in areas controlled by the human endocrine system and by the brain, such as cardiovascular diseases, sleep disturbance and annoyance (a feeling of discomfort affecting general well-being). Environment-related pressures and risks to health and well-being are also at the heart of citizens' preoccupations [11], and the Union has a role to play in safeguarding its citizens from such pressures and risks, also making the Union's cities more sustainable. The goal to reduce the number of people harmfully affected by environmental noise has been set in the 7th Environment Action Programme [12]. For this, innovative solutions are needed and will contribute to the achievement of the European Commission's general priority No. 1: A New Boost for Jobs, Growth and Investment.

### **3 The Environmental Noise Directive**

At EU level, the Environmental Noise Directive (2002/49/EC) (END) [13] relating to the assessment and management of environmental noise is the key legislative instrument for protecting citizens from excessive noise pollution caused by road, rail and airport traffic, as well as by large industrial installations. Its purpose is twofold: (1) to define a common approach intended to avoid, prevent or reduce the harmful effects of environmental noise and (2) to provide a basis for developing measures to reduce noise emitted by the major sources. The Environmental Noise Directive (2002/49/EC) (END) requires to assess the exposure to harmful noise levels and adopt action plans to tackle this problem. The Directive aims not only at assessing exposure to different noise levels, but as well to understand the burden on health. Common noise assessment methods for the calculation of environmental noise have been introduced.

### **4 The set of common methods for noise and health assessments**

The common noise assessment methods to calculate noise levels were adopted in 2015 through a revision of Annex II of the Directive. The revised Annex II with the common methods will be mandatory for all Member States by 31 December 2018. The adoption of the common noise assessment methods was a major step forward, and it is now up to the Member States to use these methods in their noise mapping. However, it is noted that the process of developing and agreeing on these methods was lengthy, which led to them being adopted 13 years after the Directive's adoption. This had knock-on effects on the effectiveness of the first objective, since Member States used several different noise mapping methods in the interim period and full comparability of noise maps will not be achieved before the fourth round of noise mapping. Nonetheless, the comparability was already significantly improved compared to the period before the Directive's introduction, when extremely fragmented and unreliable data meant that no EU-level assessments were possible. Following the Directive's implementation, even considering the issues with comparability and completeness of reporting, the EU now have at least a broad picture of noise pollution and its effects, as shown by the EEA's Noise in Europe 2014 report. Such a report would not have been possible without the END. Subject to verification, a revision of Annex II based on MS experience might be proposed in 2020, to include the refinements that, thanks to the period of testing of the methods, could become available.

And soon, thanks to the new Guidelines on Environmental Noise by the World Health Organisation (WHO), common methods to assess the health burden will as well be introduced in the European legislation. The WHO has performed a thorough review of the worldwide scientific evidence on health effects of environmental noise and these results may form the basis of the new piece of EU legislation (the Annex III) that would allow obtaining a thorough picture of the health burden in a given situation. This will imply that in the European Union a single and very detailed picture of the

environmental noise burden will be consistently made up, allowing for European actions to reduce noise at source to be efficiently assessed and therefore selected.

## **5 Ongoing activities and strategy to reduce road noise**

The Commission is in charge of a set of relevant EU Directives and Regulations in the road sector aimed to reduce road noise, including international standards, mainly from the UN-ECE (United Nations-Economic Commission for Europe), to which EU legislation aligns. This legislation addresses the type of vehicle, namely passenger and goods, tractors, scooters and motorbikes.

The Commission has planned to assess the possibility to further reduce noise limits, in the context of a possible revision of Regulation 540/2014 [2]. This is the regulation specifically setting noise limits for new vehicles being produced. The Commission is working at international level to enhance the Additional Sound Emissions Provisions (ASEP) to measure sound emission under conditions closer to the real driving conditions. This is a voluntary test to show vehicle performance in close to reality driving conditions.

Concerning the tyres, while UN-ECE requirements are applicable also to the EU, the Commission is revising the tyres labelling regulation [14]. The tyres labelling is part of an integrated approach (demand/supply sides) to reduce fuel consumption and emissions/noise in road transport. It is directed at demand side and complementing the type-approval legislation on tyres which addresses the supply side by means of minimum requirements. The mandatory tyres legislation is cutting off the bad tyres, while the labelling aims at promoting better tyres. As general observation though, further tightening of the sound limit values have to consider also the impact on safety. Recent studies performed in the context of the revision of the tyre labelling regulation show that noise is nevertheless by far more important than safety when it comes to tyres, mainly as a consequence that a good tyre will only allow avoiding an accident in around 1% of the cases, being other factors much more relevant.

## **6 Ongoing activities and strategy to reduce rail freight noise**

The Commission is evaluating of the NDTAC (Noise Differentiated Track Access Charges) Regulation [15], which will be performed during 2018. This Regulation, on the top of the noise limits on railway wagons, facilitates the modernisation of the railway fleet by allowing introducing differentiated charges that incentivise the use of low noise wagons, and therefore the retrofitting of old ones with new braking technologies. Moreover, at EU level, the Connecting Europe Facility (CEF) offered the possibility to fund up to 20% of the retrofitting of noisy wagons with silent brake blocks in 2014.

The Commission is currently considering the possibility of having a new rail freight noise call under the current CEF in 2019.

Furthermore, an option of increasing the funding rate under the forthcoming CEF2 after 2020 is being considered. As regards the Technical Specifications for Interoperability on Noise (TSI Noise [16]), adopted in 2005 and setting specific noise limit values applicable to rolling stock introduced after the entry into force of the TSI Noise, they are being revised to include a definition of quieter routes, where only retrofitted wagons could possibly run in after the appropriate entry into force.

## **7 Ongoing activities and strategy to reduce aircraft noise**

There are currently three main areas of work in the aviation sector relevant to noise: the implementation of Regulation 598/2014 [17] on balanced approach; supersonic flights and drones. As regards Regulation 598/2014, which is in force since June 2016, the Commission is now building up a list of competent authorities as well a centralised database of aircraft noise. The Commission is also assessing the number of 'operating restrictions' likely to be in place at this time as well as the way the "balanced approach" regulation has been applied so far. On the supersonic flights, the Commission notes that while international standards are under development, the European vision is that supersonic airplanes must not be noisier than subsonic and so they must meet current and future noise standards for subsonic aeroplanes. Public acceptability issue is a key element.

## **8 Discussion on the future EU Environment Noise Policy**

The European Commission presented the results of the evaluation and the discussions in the recent Noise in Europe event (24 April 2017) as a basis of the further open debate with the stakeholders. Summary of the conference is available online at:

[https://ec.europa.eu/info/events/noise-europe-2017-apr-24\\_en](https://ec.europa.eu/info/events/noise-europe-2017-apr-24_en)

The main elements for discussion with stakeholders were:

- to possibly raise the ambition of the Directive (e.g. introduction of concrete targets at EU level);
- to broaden the scope of the Directive beyond transport and industry sources (e.g. include more roads, rails and airports, think about wind turbines);
- to lower the thresholds for noise mapping, currently excluding significant sources of noise (i.e. below 55 Lden and 50 Lnight);
- to further clarify some definitions (such as "Quiet Areas", "Agglomerations", "Harmful effects").

As a follow up, it then expanded the Noise Expert Group to broaden the discussion including stakeholders, citizens and linking those that work on local action plans with those that are involved in the development of at source legislation. Consensus was expressed by the participants regarding the evaluation and the implementation findings as presented by the Commission in the respective reports [18].

All stakeholders and Member States were then invited to present their views and ideas including on the points above, which they did and are summarised below.

### **8.1 Limits or targets**

There was a general support both from stakeholders and Member States to set progressive targets, as they are the drivers of change, like for air pollution. These targets should be periodically revised. Targets should be set having in mind what is technologically feasible, according to Member States. Limit values exist at national level. Strict EU limits are advisable for some (such as representatives of citizens and few Member States), while not suggested by others (such as a set of Member States and representatives of industry organisations), under the reasoning that this decision should be taken at local level. It was also suggested that limits, if and when set, should mirror WHO recommended levels to protect humans' health. Citizens claimed harmonised, enforceable rules for all, with clear limits in line with WHO's recommendations, and a reflection on restriction of night flights and night trains. Citizens' and political awareness has risen in recent times, and the European Commission started linking competent authorities with citizens and stakeholders to select appropriate combinations of the local and international measures to be adopted.

### **8.2 Link with at source legislation**

Participants suggested preparing an EU plan for reducing noise, consisting of progressively lowering limits for at source legislation. A set of Member States specifically asked for better at source legislation. The reduction of limits should be triggered by EU targets and promote technically feasible solutions. Legislation at source should be built having in mind the polluters' pays principle.

### **8.3 Implementation of action plans**

Stakeholders and Member States agreed that action plans interventions should be better implemented, especially as regards concrete actions which are sometimes missing. Actions should also focus on the most cost-effective interventions. Public consultation should actually take place and be effective.

### **8.4 Role of urban planning**

Urban planning and energy should be integrated in the policies as urban planning is a cost efficient noise mitigation measure. The Directive should set a special protection depending on use of land, specifically concerning schools and hospital. Concerning quiet areas, a choice should be made between reducing noise in urban areas by moving it to quiet

areas and protecting quiet areas themselves. Few Member States supported this. 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.

## **9 Final remarks on future actions in the general noise policy handling**

The evaluation and implementation assessment of the Directive have demonstrated several areas where activities are needed to reduce noise impacting citizens' health in the Union, to better achieve the objectives of the Environmental Noise Directive and thereby moving closer to WHO recommended values. While overall 2018-2019 will be years for a joint reflection on the future of noise policy, specific and possible future initiatives are being considered.

(1) The delay in the implementation of the Directive has been highlighted in the EU Environmental Implementation Review. This review also stressed that Member States are responsible for closing the implementation gaps. To support this, the Commission will not only continue to improving implementation by targeted enforcement actions, but also provide scientifically sound guidance to Member States, in particular regarding the assessment of harmful effects with the help of dose effect relationships. The Commission will also work with Member States to improve the system used to collect and report data to the EU.

(2) As complications in the implementation of the Directive arise mostly from the manner in which Member States have implemented the Directive under subsidiarity, the Commission invited Member States to reconsider their implementation arrangements, including the designation of quiet areas.

(3) EU noise-at-source legislation remains the most cost effective mean to address noise [19]. With the improved implementation of the Directive, resulting in a complete database on noise exposure in the Union, it will be possible to better inform policy options for noise reduction measures in the area of transport. The Commission is committed to make full use of this in the future when deciding about revising the legal instruments mentioned above.

(4) The evaluation of the Environmental Noise Directive has identified only a limited number of issues in the Directive itself, such as the limited scope of the Directive (to have a common approach to avoid, prevent or reduce harmful effects of noise rather than reduce adverse health effects of environmental noise), some minor clarifications in some definitions, as well as the need to adjust the Directive to recent regulatory developments that have taken place at EU level since the Directive was adopted (e.g. Lisbon Treaty). In addition, new scientific evidence suggests that harmful health effects can occur at lower levels than those so far addressed by the Directive, which the Commission has to consider according to Article 11(4) of the Directive. The Commission will therefore engage in a dialogue with stakeholders to assess how these issues can best be addressed without unnecessarily reducing the flexibility of Member States to define their own levels of ambition or choice of approaches.

(5) Exposure to excessive noise can also be addressed via urban planning policy, as suggested in the 7th Environmental Action Programme. While competence in this area lies with the Member States, the Commission will stimulate and encourage activities to mitigate excessive noise in urban areas, for example by facilitating the exchange of good practices, as well as supporting research and innovation in this field.

(6) The evaluation shows that measures to directly addressing noise have high initial cost and long periods to recover the financial investment. However, they are highly efficient when comparing their costs to the societal benefit. Member States are therefore encouraged to implement noise mitigation measures in the context of their action plans under the Directive, leveraging also private investments where possible.

(7) In certain cases, Member States could use targeted EU co-financing such as from the Cohesion Fund and the European Regional Development Fund to support the implementation of noise-mitigating measures where they are part of an overarching effort to improve the urban environment or to develop and improve environmentally-friendly (including low-noise) transport systems. Support is also available from the Connecting Europe Facility.

(8) The long-term health implications of excessive transport noise on human health are insufficiently understood, leading to noise reduction measures not being given priority and, when necessary, budget. Therefore, Member States should raise the awareness of citizens and local and regional policy makers on such negative impacts.

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