



Is it Possible to Decrease Noise Emissions from Road Traffic?

Swedish researchers have recently analysed the potential for decreasing noise emissions from road traffic in Europe. The report concludes that the technical potential exists to reduce the emissions substantially and highlights the need for further political action as well as research on road surfaces, and quieter tyres and vehicles.

Noise can cause several adverse effects in the exposed population including sleep disturbance, speech interference, and general annoyance. Long-term exposure to high environmental noise can also result in cardiovascular problems. It has been estimated that more than 100 million Europeans are exposed to outdoor equivalent levels above 65 dB from road traffic, a level that scientists and health experts consider to be unacceptable. For many years, a common goal in a number of European countries has been an equivalent outdoor level of the order of 55 dB for dwellings. Measures to protect the environment have mainly been taken on the immission side (reduction of noise exposure) through town and traffic planning, barriers and building design. However, even with optimal use of such measures, the emissions are 10 dB too high to enable an environment reasonably free from the adverse effects of noise. A severe obstacle for effective noise emission control is that the emitted noise comes from several sources and the responsibility for these sources is shared between several parties: the vehicle manufacturer, the tyre manufacturer and the road owner.

A study by Swedish researchers has investigated the technical potential to decrease noise emission from road traffic. To this end, the researchers investigated the main sources of road traffic noise: the contribution from the propulsion noise (engine, exhaust system, auxiliary equipment and power transmission) and the contribution from the rolling noise (the interaction between tyre and road). Data on the separate contributions to traffic noise from rolling and propulsion in Sweden and Germany were used to investigate the effects of independent reductions of these noise sources. The study also gives an overview of the present policy situation, the technological problem and the technological options. Finally, it also identifies the areas where further research is needed.

The results suggest emission reductions of 5 dB(A) from rolling and propulsion can be achieved by using technology already available today. In order to achieve 10 dB(A), further research and development is needed on tyres and road surfaces. The study proposes a number of measures and actions to reduce road traffic noise including:

- Key local players could demand guarantees for the acoustic properties of road surfaces.
- An acoustic classification system could be developed and implemented for vehicles, for tyres and for road surfaces. This should be done on an international level and taking into consideration different climatic conditions.
- Regarding studded tyres, it is important to analyse in more detail the health effects of the studs through the increase in particles and noise. If they cannot be banned, it would be desirable to develop quiet road surfaces for this case too.
- The top speed limits of vehicles should be discussed and reduced. Among other benefits, i.e. increased safety, better energy efficiency, lower CO₂ emissions, limiting the driving speed to an agreed speed, e.g. 130 km/h, would make it much easier to design low noise tyres. This would have a major influence on car design, and such speed limits should therefore be discussed with all the relevant parties.
- Economic instruments could be developed in order to promote the demand for quieter products. Economic instruments and incentives could also be in the form of noise emissions quotas. They should be set in such a way that they promote the development of quieter vehicles, tyres and roads.

The authors also argue that for some Nordic countries (e.g. Sweden) an important obstacle against major progress towards quieter traffic is the use of studded tyres as they limit the ability to gain full advantage from quieter tyres and to use the quieter road surfaces that have been developed so far.

Overall, this study suggests that the technical potential exists to decrease noise emissions from road traffic. The authors highlight that further research and political actions are needed and that the coordination between the three parties (vehicle manufacturers, tyre manufacturers and road owners) has to be improved.

Source: W. Kropp et al. (2007) "Reduction potential of road traffic noise", Applied Acoustics Chalmers University of Technology. Available at: <http://www.iva.se/templates/page.aspx?id=4354>

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