

FAMOS - Factors Moderating people's Subjective reactions to road noise

CEDR Programme: Call 2018, Noise and Nuisance

Project Duration: 01.12.2019 – 30.11.2021

Partners: FORCE Technology (Coordinator, Denmark); SINTEF (Norway); LÄRMKONTOR (Germany)

Project Introduction

FAMOS responds to the questions of CEDR Noise and Nuisance Call 2018: Psycho-Acoustics: Improved Understanding of People's Subjective Reactions to Road Noise. WHO has estimated that about 1.2 million healthy life-years are lost annually in Europe due to road traffic noise. About half of these can be related to the subjective element: annoyance. This is a huge challenge for the National Road Administrations.

Analyses of results from noise surveys reveal that only about 1/3 of the variance in the annoyance response is caused by the noise level itself, whereas the other 2/3 are determined by so-called non-acoustic factors. This means that the annoyance response can be altered within wide limits without doing any changes to the actual noise level. So, when road administrations have used all the technically feasible and economically possible measures, the noise impact can still be reduced by making changes in the non-acoustic factors known to moderate the annoyance response.

FAMOS will use scientific methods to find, extract and analyse data from existing annoyance surveys and turn the results into models formulated for practical use with illustrative examples. The project will quantify how different factors modify people's subjective reactions to road traffic noise.

Reports from previous surveys will be systematically analysed in order to describe the different annoyance moderators, and the effect of these moderators will be expressed in equivalent subjective decibel changes. As an example: The existence of moderator X will change the annoyance response in the same way as a reduction of Y dB in the noise level. The most promising findings will be tested experimentally. The main deliverable from the FAMOS project will be a toolbox in the guidebook, that is based on a better understanding of people's subjective assessment and reactions to noise. A guidebook with practical applications that road owners can use to reduce the negative impact from road traffic noise, when actual reduction of the noise level is no longer feasible.

In the future, the regulatory system may consider formulating the limits for noise in terms of the percentage of highly annoyed as seen in the WHO guidelines. If so, the handling of the non-acoustic moderators will be a measure in line with noise mitigation measures, as intended in this project proposal. Until then, reduction of the perceived annoyance is a goal that will benefit the noise exposed population. The advantages for the road administrations will be fewer complaints, fewer lawsuits, less bad media coverage, better relations to the neighbours to the roads and better acceptance for new road projects.

Project Work Packages:

- 0) Project management
- 1) Moderator search and qualification
- 2) Analyzing data and hypothesis testing
- 3) Modelling
- 4) Guidelines, report and dissemination