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1.http://ec.europa.eu/environment/noise/directive.htm

2.QUIetening the Environment for a Sustainable Surface Transport (QUIESST) is supported by the European Commission under the Seventh Framework Programme. See: www.quiesst.eu

European Commission

Science for Environment Policy

New tool to assess sustainability of transport noise reduction devices

A new method of assessing the sustainability of noise reduction devices (NRDs) used in transport infrastructure, such as noise barriers or absorptive claddings, is presented in a recent study. The new set of specially designed sustainability criteria allows NRDs to be easily and accurately evaluated, its developers suggest.

Noise reduction is a key part of the European Commission's Environmental Noise Directive[1]; however the sustainability of transport must account for every aspect of the system, including accompanying infrastructure, such as NRDs. However, despite the fact that many NRD projects are often conducted at large scales, and can have substantial impacts on the environment, methods to accurately assess the sustainability of different devices are lacking.

In this study, conducted under the EU QUIESST project[2], researchers developed a tool for policymakers and industry professionals to aid decision-making and help evaluate the sustainability of different NRD options.

The researchers first defined 'sustainability' as encompassing social, economic and environmental concerns, and also included a 'technical' aspect, relating to the performance of engineering projects, such as NRDs. The sustainability of an NRD over its life cycle will therefore include diverse factors such as access or land property issues (social); construction and maintenance costs (economic); obstruction of animal movements (environmental) and material selection (technical).

They then employed a 'Top-Down-Bottom-Up' approach to identify appropriate sustainability indicators for NRDs. The initial 'Top-Down' process involved reviewing existing indicators, frameworks and tools used to assess sustainability. From this review, a set of 22 primary criteria which were potentially suitable for assessment of NRDs were selected. These included: land use, social acceptance and life cycle cost.

The suitability of these proposed sustainability criteria was then evaluated using a 'Bottom-Up' process. This consisted of surveys, group workshops and interviews with stakeholders involved in NRDs at every stage of the life cycle, such as staff in road and rail authorities, manufacturers and researchers across Europe. The results of these were used to rank and rate each criterion.

The results showed that stakeholders were in general agreement over the importance of the criteria selected; 93% were ranked as 'important' or 'very important' in surveys. The researchers do note that the set of criteria drawn up for this study is not definitive; however, new criteria could easily be added by users in the future and assessed using the same approach.

The researchers also examined multi-criteria decision making tools which identify the best NRD options once the primary criteria have been selected. From this, the study concludes that although reliability and accuracy are key, there are other considerations to be taken into account, for example, the results must be easy to use and interpret, and the software must be easily available for stakeholders.