

## The Materiality of Noise Barriers: Sustainability Approach

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**Abstract :** Various interventions are applied in cities with the aim to improve living and acoustic environmental conditions. Noise is one of the most influential and critical factors in the environment that has an effect on the QOL (quality of life) and urban environment. It ranks second among environmental pollution issues according to EEAA. Traffic noise is a major source of noise. Noise barriers are one of the physical techniques in landscape design used to reduce the impact of noise pollution in urban areas. Roadways noise pollution can be best controlled by a noise barrier. The aim of this paper is to consider all facets of sustainability when designing a comfortable acoustic environment in roadways, through different strategies related to planning and the design process. The study focuses on the relation between the design of noise barriers as a landscape noise mitigation installation and their materiality in so far as it influences the sustainability of the open space and the acceptability of users. According to previous studies, design of noise barrier mainly depends on cost as a decisive factor. This study asserts that environmental and socioeconomic costs associated are equally important. Hence, the paper presents a strategy for sustainable soundscape design. It builds a framework focusing on materiality considering the environmental and socioeconomic impact of noise barriers shaping urban open space around the road ways, and the different academic and market positions on noise barrier types and materials. Finally, it concludes with a matrix of the relation between the noise barrier design consideration and the three pillars of sustainability (social, economic and environmental).

**Keywords :** traffic noise level, acoustic sustainability, noise barrier, noise reduction, noise control, acoustical level

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