

PIARC (World Road Association) Strategic Plan - 2024-2027

TECHNICAL COMMITTEE 3.4 – ENVIRONMENTAL IMPACTS OF ROAD INFRASTRUCTURE AND TRANSPORT

Overview

Various strategies have been developed and implemented in different countries to limit the impact on air pollution of areas with heavy road traffic, including ZEZ/LEZ, on which feedback is beginning to be available. Traffic noise problems also occur along major roads, which generally have high traffic volumes, while recurrent noise is a major health hazard for local residents.

The various air quality and noise mitigation measures are an essential element of environmental sustainability around roads, and therefore need to be studied and improved in both developed and middle-income countries. The problem of noise can also be significant near railway tracks.

The fragmentation of wildlife habitats by road projects poses a threat to animal species. The survival of individuals of these species is jeopardized when they cannot have a sufficiently large territory to feed, reproduce or perform behaviours inherent in their species. In such cases, wildlife crossings are needed to establish a connection between the parts of the habitat on either side of the road. These wildlife crossings must be adapted to be easily used by each target species, according to its own characteristics, whether it is a large or small mammal, a reptile or an amphibian. To design and optimise these facilities, studies are needed to share best practices.

3.4.1 Air pollution mitigation and zero/low emission zones

Purpose: Air pollution problems are often observed near roads in urban areas, where, apart from vehicles, numerous sources of emissions such as factories, offices and residential buildings are concentrated.

In order to reduce this air pollution, various strategies have been developed and implemented in different countries, including the ZEZ/LEZ, for which feedback is available.

The work of this committee will consist of assessing the effectiveness of the various mitigation measures, in particular that of the ZEZ/LEZ.

Preliminary research questions:

- Investigate and assess how road administration implement operational mitigation measures.
- Provide feedback on the experience of the zero/low emission zones and evaluate these measures in the different contexts in which they have been introduced.
- Innovative and sustainable eco-infrastructure solutions for roads and streets could also be a part of this topic.

Importance to roads agencies: This work is important to road agencies/road industry because air pollution is responsible for many deaths and mitigating it is a major challenge for road agencies.

Audience: Road agencies, civil engineers.

Deliverables: Technical report, seminar, terminology and data publication.

Background to TC's work on this topic: The work carried out will be based on the work of the previous 3.4 Committee, its achievements and its various publications, but also on the new elements that have become available in this field since the end of 2023.

Low and lower-middle income countries: LIMICs are particularly vulnerable to this risk, and the need for sustainable development makes this work particularly important for them.

Potential duration: 4 years.

3.4.2 Noise pollution

Purpose: Traffic noise problems occur along main roads which generally have a high volume of traffic, including a number of lorries and heavy-duty trucks, and which have many residential properties in their vicinity. Road traffic noise consists mainly of engine noise, intake air noise, exhaust noise, wind noise and tyre rubbing noise on the road, all of which are considered to be sources of road traffic noise. The problem of noise can also be significant near railway tracks.

Preliminary research questions:

- Evaluate improvements of pavement design, construction and maintenance, and review novel surface treatments to optimize acoustic performance.
- Evaluate possible improvements of railway design, construction and maintenance.
- Maintain the noise data base.
- Study the best practices in decision-making procedures for selecting protection methods and measures.

Importance to roads agencies: This work is important to road agencies/road industry because traffic noise is responsible for damage to the health of local residents and is a major issue for road development projects.

Audience: Road agencies, civil engineers, town planners.

Deliverables: Technical report, case studies, high impact summary, seminar, managed software application (noise database).

Background to TC's work on this topic: The work carried out will be based on the work of the previous 3.4 Committee, its achievements and its various publications, but also on the new elements that have become available in this field since the end of 2023.

Low and lower-middle income countries: LIMICs are particularly vulnerable to this risk, and the need for sustainable development makes this work particularly important for them.

Potential duration: 4 years.

3.4.3 Road and road transport impact on wildlife and biodiversity

Purpose: Wildlife habitats fragmented by road projects pose a threat to animal species. The survival of individuals of these species is jeopardized when they cannot have a sufficiently large territory to feed, reproduce or perform behaviours inherent in their species. In such cases, wildlife crossings are needed to establish a connection between the parts of the habitat on either side of the road. These wildlife crossings must be adapted to be easily used by each target species, according to its own characteristics, whether it is a large or small mammal, a reptile or an amphibian.

Preliminary research questions:

- Innovative and sustainable eco-infrastructure solutions for streets, roads and highways.
- Identify how road projects affect wildlife habitats and their connectivity.

- Evaluate the efficiency of corridor designs and their role in ecological habitat connectivity.

Importance to roads agencies: This work is important to road agencies/road industry because it enables them to understand the impact of road project on wildlife habitats and their connectivity and consider this topic in future projects.

Audience: Road agencies, civil engineers

Deliverables: Technical report, case studies, high impact summary, seminar, managed software application (noise database).

Background to TC's work on this topic: The work carried out will be based on the work of the previous 3.4 Committee, its achievements and its various publications, but also on the new elements that have become available in this field since the end of 2023.

Low and lower-middle income countries: LIMICs are particularly vulnerable to this risk, and the need for sustainable development makes this work particularly important for them.

Potential duration: 4 years.