

World Road Association (PIARC)
Technical Committee E.2 – Environment Considerations
in Road Projects and Operations

Abu Dhabi, United Arab Emirates 6-10 October 2019



Strategic Theme E: Climate Change, Environment and Disasters

The goal of Strategic Theme E is to ‘increase resiliency and protect investments in transportation infrastructure from impacts of climate change events while lessening the impact of road transportation on the environment’. This Strategic Theme consists of three Technical Committees (TCs).

Technical Committee E.2 ‘Environment Considerations in Road Projects and Operations’

TC E.2 ‘Environment Considerations in Road Projects and Operations’ has an emphasis on road transport-related air quality and noise mitigation matters.

Overview

The eighth and final meeting of the outgoing PIARC Technical Committee TC E.2 was held on 6-10 October 2019 in Abu Dhabi, United Arab Emirates.

Austroads are represented on the TC by Helen Murphy - Chair (Helen is Principal Advisor - Major Transport Projects, Department of Environment, Land, Water and Planning, Victoria) and Rob Hannaby - English Speaking Secretary (Rob is Lead Advisor – Environment at NZ Transport Agency).

Additional Australia and NZ representatives on the TC include:

- **Air Quality** - Frank Fleer (Helix Environmental, Victoria) and Andrew Mattes (NSW Roads and Maritime Services)
- **Noise** - James McIntosh (Victorian Department of Transport), Stephen Chiles (Chiles Ltd, NZ) and Marc Buret (EPA Victoria)

The meeting provided an opportunity to close out the committee’s four-year cycle and to present completed work programme during a parallel session at the four-yearly [PIARC World Road Congress](#).

The TC also had a handover meeting with the incoming Chair, Eric Dimnet from France, of the new Technical Committee 2.4 ‘Environmental Sustainability in Road Infrastructure and Transport’ and discussed the work programme planned for the next PIARC cycle 2020-2023.

The Congress not only provided an opportunity to showcase the work of the TC, it also provided a forum for other transport and environment practitioners from a number of countries to present topical papers within the broader context an international road transport knowledge sharing event attended by well over 3000 delegates.



PIARC Strategic Theme E Leaders and Technical Committee 2.4 Members 2016-19

World Road Congress 2019 in Abu Dhabi, UAE

Air Quality Best Practice Guide

The air quality working group, which was led by Stephen Thomson from Transport Scotland, presented the culmination of work of four-years:

- [Best Practice Guide to Air Quality in Relation to Road Operations](#)

The guide covers a broad range of road traffic-related air quality matters, including public health effects, impact assessment, stakeholder and public engagement and air quality management measures available to road agencies. It also includes a 22 short case studies that are intended to be practical and useful for a wide variety of audiences.

Rob Hannaby presented an overview of the guide, noting that:

- *"This is the first comprehensive guidance that PIARC has produced on all aspects of construction and operation of roads and air quality."*
- *"It provides a huge amount of practical guidance based on the technical committee's significant knowledge and numerous years of experience".*

Noise Best Practice Guide, Website and Policy / Criteria Database

The noise working group, which was led by Jakob Fryd from the Danish Road Directorate, presented the culmination of work of four-years which includes:

- [Road Traffic Noise Web Page](#) (including a link to road traffic sound files)
- [Traffic Noise Best Practice Guide](#)
- [Road Noise dB Policies and Criteria database](#)

The web page brings together a range of material developed by PIARC relating to road traffic noise, including; previous reports on pavement acoustics; a link to sound files that allow road agencies to explain to communities what different levels of road traffic sound like before a road is built or improved as well as the outputs of TC 2.4.

The best practice guide provides advice across a wide range of topics on road traffic noise, including a comprehensive chapter on noise mitigation options available to road agencies as well as around 30 international case studies that provide practical examples of the work that road agencies and others have undertaken to address the impact of road traffic noise.

The database allows users to access international information about how road traffic noise policies and criteria vary across the world using a map interface.

Jakob Fryd presented an overview of the guide and also demonstrated how the noise web page could be used to access the road traffic sound files as well as the policies and criteria database.

World Road Congress 2019 – Environment Parallel Session

The Congress program included a parallel session exploring the field of 'Environmental Considerations in Road Projects and Operations'. In addition to papers explaining the work of the TC over the last four years, other papers were presented on the following topics:

- Development of Traffic Noise Management and Multifunctional Eco-Friendly Noise Reduction in Korea
- PIARC Dictionary-Environmental Terminology
- Improving the Health of Local Communities Using Congestion Charging – The Case of Bergen
- Environmental and Architectural Requirements in Design-Build Contractors for Road Construction
- Creating Biodiversity and Improving the Landscape by Building a Freeway Interchange at the Heart of the City of Quebec, Canada
- Observatory of Wildlife Mobility and Mortality on Roads in Mexico
- Consistency of Geometric Layout and Reduction of Emissions on Roads

Field Visit – Masdar City, Abu Dhabi

A range of technical visits were available to delegates attending the World Road Congress. Members of the TC chose to visit Masdar City in Abu Dhabi. Masdar City is a commercial enterprise with a sustainability focus run by the Government owned Mubadala Development Company and describes itself as follows:

'Established in 2006, Masdar, or Abu Dhabi Future Energy Company, is a global leader in renewable energy and sustainable urban development. Masdar means 'source' in Arabic. Our mandate is to help maintain the leadership of the United Arab Emirates (UAE) in the global energy sector, while supporting the diversification of both its economy and energy sources for the benefit of future generations'.

Of particular interest were the following:

- The electric on demand 'Personal Rapid Transit' system
- Masdar City's global investment and leadership in solar and wind energy – including in the south Pacific



PIARC Technical Committee 2.4 2016-19 - Recommendations

Reflecting on the last four years, TC 2.4 has made the following recommendations to PIARC. These were presented to the incoming Chair, Eric Dimnet of France, following a handover meeting attended by TC members at the Congress. Eric will lead TC 2.4 during the next PIARC cycle 2020-2023 up to the World Road Congress 2023 in Prague, Czech Republic.

Air Quality

- Enable a more integrated approach to assess the social and environmental impacts of air pollution in order to understand and value the broad community benefit of addressing localised roadside impacts.
- Explore and document the linkages between air quality and climate change, summarising policies that can benefit both environmental issues as well as those that can benefit one issue but have an adverse impact on the other, e.g. fuel-efficient diesel vehicles might reduce greenhouse gas emissions but increase harmful particles.
- Facilitate and co-ordinate road-related air quality research between jurisdictions to enable a more consistent, cohesive and collaborative approach and to avoid funds being spent in areas where research has already established limited benefits. Such co-ordination of effort would also support greater capacity building and dissemination of information.
- Continue to evaluate evidence linking the emission of particles from vehicles, in particular ultrafine particles, with observed health impacts.
- Continue to examine validation data for low cost sensors, especially related to roadside monitoring.

Noise

- Support further collaboration across planning, transport and environmental agencies on traffic noise.
- Enable road agencies share their understanding and knowledge, for example by creating tools and resources such as the PIARC Road Noise dB Policies and Criteria [database](#).

Environmental Sustainability Work Programme 2020-23

In addition to discussing the above recommendations, the TC spent time with the new chair exploring and clarifying the intent of the PIARC Strategic Plan for 2020-23 as it relates to environmental sustainability. Membership of the next TC was also discussed. Representation from Austroads members is still to be confirmed.

PIARC have approved the following focus for TC 2.4 over the next four years:

- Air Quality – Real-time evaluation of pollution and low-cost air quality sensors assessment
 - Use of real-time data to manage vehicle emissions
- Noise – Mitigation
 - Consideration of how pavement design, construction and maintenance impacts acoustic performance. (The expectation is that TC 2.4 will work collaboratively with the TC 4.1 Pavements)
 - Update and maintain PIARC Road Noise dB Policies and Criteria [database](#)
- Ecology – Road and road transport impact in wildlife habitats and their interconnections
 - Develop a best practice guide and case studies

Helen Murphy: TC E.2 Chair

Principal Advisor - Major Transport Projects, Department of Environment, Land, Water and Planning, Victoria

Rob Hannaby: TC E.2 English Speaking Secretary

Lead Advisor - Environment, New Zealand Transport Agency