



**XXIVth WORLD
ROAD CONGRESS**
Mexico City 2011

WHERE ARE WE? WHAT DO WE NEED?

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WHERE ARE WE?

- Major Alpine tunnel fires occurred a decade ago
- Highlighted key safety issues and the need for improvements to tunnel design and operation
- Led to major research and development activities
- New and updated regulations and standards have been introduced
- PIARC has focused on the development of updated guidance



TOPICS ADDRESSED BY PIARC

- Broad range of topics have been covered, for example:
 - Integrated approach to road tunnel safety
 - Risk analysis for road tunnels
 - Vehicle emissions, air demand and ventilation
 - Systems and equipment for fire and smoke control
 - Human factors concerning users
 - Organising recruiting & training staff
- First version of the on-line Road Tunnels Manual has been launched



KEY ISSUES FOR NEXT CYCLE

- Sustainable road tunnel operations
- Integrated road tunnel safety
- Underground road networks
- Knowledge sharing on tunnel operations and safety



ISSUE 3.3.1 – SUSTAINABLE ROAD TUNNEL OPERATIONS

- Recommendations and case studies on sustainable road tunnel operations
 - including cost, environmental and other issues to consider during design, installation and maintenance
- Best practice for life cycle analysis, both for new and existing tunnels



ISSUE 3.3.2 – INTEGRATED ROAD TUNNEL SAFETY

- Best practice for fixed fire fighting systems (FFFS) in road tunnels
- Best practice on measures to support persons with reduced mobility
- Feedback from experience on tunnel safety (including statistics and analyses on real accidents) as a basis for risk management
- Recommendations on real-time communications with users



ISSUE 3.3.3 – UNDERGROUND ROAD NETWORKS

- Case studies and recommendations on urban underground road networks with interchanges and multimodal concerns from the point of view of operations and safety



ISSUE 3.3.4 – KNOWLEDGE SHARING ON TUNNEL OPERATIONS AND SAFETY

- Further developments towards a fully-integrated online Road Tunnels Manual
- Training courses and training material on road tunnel operations and safety
 - In cooperation with the International Tunnelling and Underground Space Association (ITA / AITES)



SUMMARY OF PROPOSED TOPICS

- Issue 3.3.1 – Sustainable road tunnel operations
 - Recommendations and case studies
 - Life cycle analysis
- Issue 3.3.2 – Integrated road tunnel safety
 - Fixed fire fighting systems
 - Persons with reduced mobility
 - Feedback from experience, as basis for risk management
 - Real-time communications with users
- Issue 3.3.3 – Underground road networks
 - Case studies and recommendations
- Issue 3.3.4 – Knowledge sharing
 - Road Tunnels Manual
 - Training courses

