



# Current status of our work in PIARC TC 4.4 “Tunnels”

**Ingo Kaundinya**

Chair of TC 4.4 “Tunnels”

Announcement webinar of the 4th International Tunneling Forum,  
Polish Road Congress, 02.02.2022

# What is PIARC?

- PIARC is the World Road Association
- We were founded in 1909 as a non-profit, non-political Association
- Our goal is to organise exchange of knowledge on all matters related to roads and road transport
- PIARC has a Consultative Status to Economic and Social Council of United Nations since 1970
- Acknowledged for the quality of its outputs
- The activities of the Association are guided by a Strategic Plan of 4 years



# Structure according to Strategic Plan 2020-2023

Strategic Theme 1 Road Administration	Strategic Theme 2 Mobility	Strategic Theme 3 Safety and Sustainability	Strategic Theme 4 Resilient Infrastructure
TECHNICAL COMMITTEES			
TC 1.1 Performance of Transport Administrations	TC 2.1 Mobility in Urban Areas	TC 3.1 Road Safety	TC 4.1 Pavements
TC 1.2 Planning Road Infrastructure and Transport to Economic and Social Development	TC 2.2 Accessibility and Mobility in Rural Areas	TC 3.2 Winter Service	TC 4.2 Bridges
TC 1.3 Finance and Procurement	TC 2.3 Freight	TC 3.3 Asset Management	TC 4.3 Earthworks
TC 1.4 Climate change and resilience of Road Network	TC 2.4 Road Network Operation/ITS	TC 3.4 Environmental Sustainability in Road Infrastructure and Transport	TC 4.4 Tunnels
TC 1.5 Disaster management			
CROSS-CUTTING COMMITTEES			
Terminology Committee			
Road Statistics Committee			
RESPONSE TEAM			
PIARC Covid-19 Response Team			
TASK FORCES			
TF 1.1 Well-Prepared Projects	TF 2.1 New mobility and its impact on road infrastructure and Transport	TF 3.1 Road Infrastructure and Transport Security	TF 4.1 Road Design Standards
TF 1.2 HDM-4	TF 2.2 Electric Road Systems		

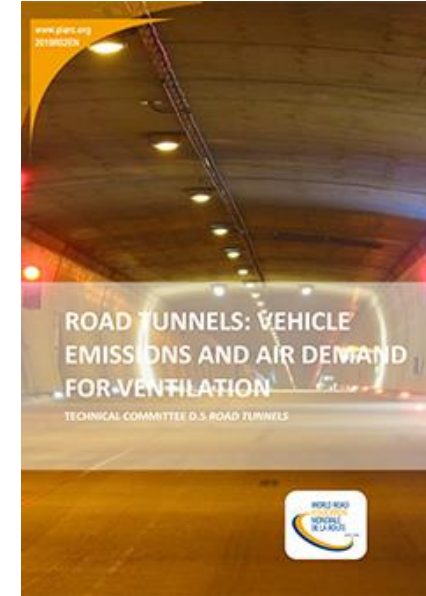
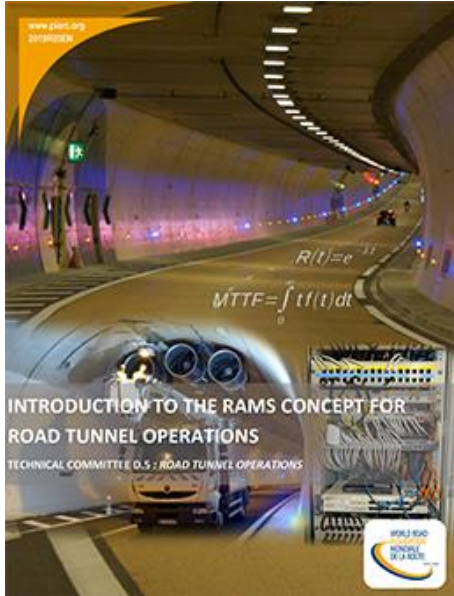
# TC 4.4 Tunnels

- 150 members
- 37 Countries around the world represented
- Work is organized in TC meetings and 7 working groups and task forces





# Highlights of the 2016 – 2019 work cycle



## 5 Technical Reports

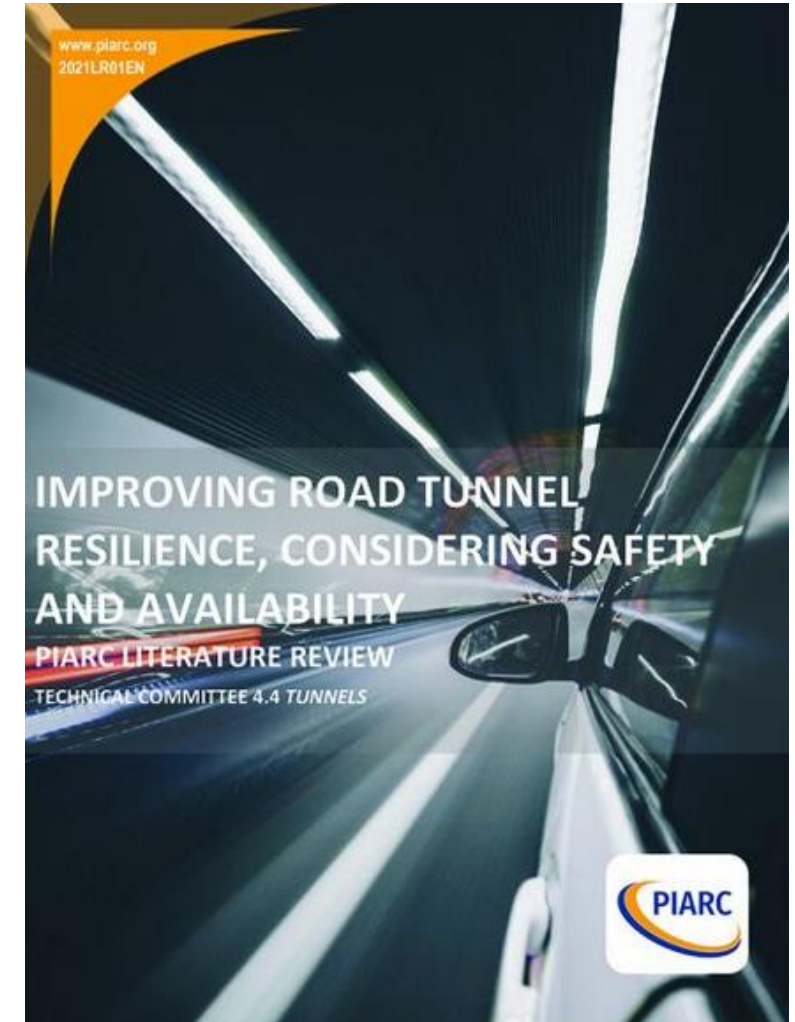
All reports available in EN, FR, ES

Published on PIARC website (<https://www.piarc.org/en/>), free download after registration

# Activities in the current work cycle 2020 - 2023

## 1. Measures for increasing resilience of tunnels

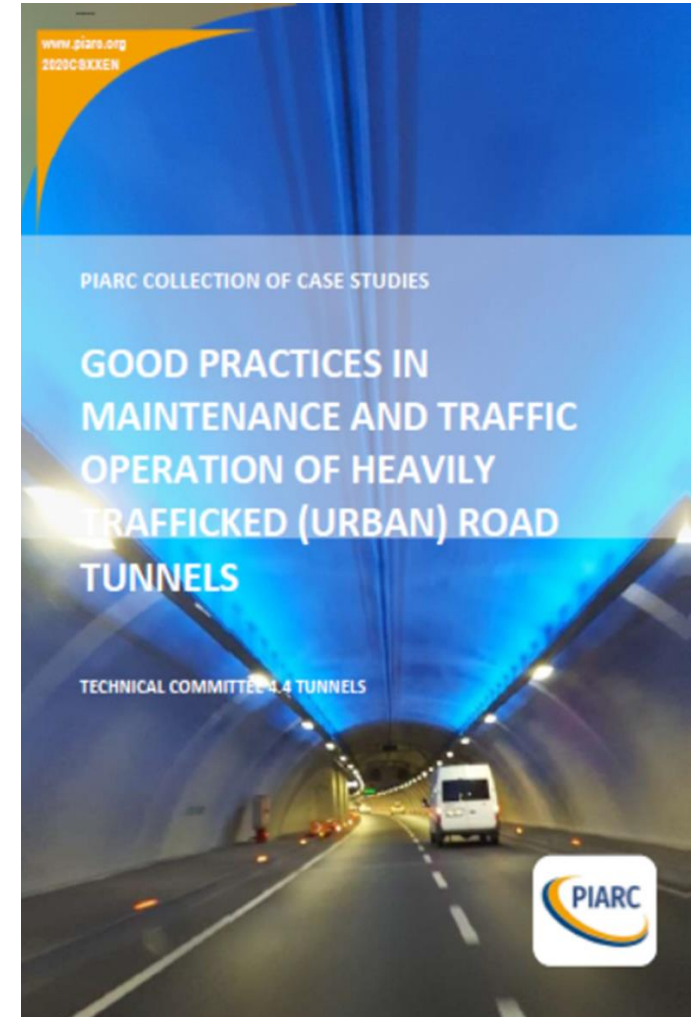
- **Literature Review Report on Tunnel Resilience**  
(published March 2021)
  - More than 100 literature sources were reviewed and the results were synthesized
- **Briefing Note including Collection of Case Studies**  
(to be published soon)
  - 18 case studies collected from 12 countries world-wide
- **Full Technical Report** (March 2023)
  - Containing practical road map to manage and improve resilience;
  - Containing “measure sheets” with assessment of effectiveness and cost-effectiveness of various resilience measures with main focus on recovery



# Activities in the current work cycle 2020 - 2023

## 2. Best practices in management in urban and heavily trafficked tunnels

- **Collection of Case Studies Report** (to be published soon)
  - 11 case studies collected, including
    - Implementation of the "quick responders" concept with different approaches,
    - Measures to organize work and to reduce nuisance to users during the renovation of tunnels,
    - New tools for maintenance and operation.
- **Full Technical Report** (June 2022)
  - By analyzing the results from each the case studies combined with previous work and other resources, the report should point out:
  - Recommendations in the fields of traffic, operation maintenance, equipment, refurbishment strategies





# Activities in the current work cycle 2020 - 2023

## 3. Impact of new propulsion technologies on road tunnel operations and safety

- **Joint Workshop PIARC & ITA Cosuf: Webinar 20./21. October 2021,**
  - successful event with more than 200 participants,
  - report & presentations available [www.ita-cosuf.org](http://www.ita-cosuf.org)
- **Collection of Case Studies Report (March 2022):**
  - results of recent research projects and
  - some limited information about accidents and fires in road tunnels involving NEC vehicles.
- **Full Technical Report (March 2023)**





# Activities in the current work cycle 2020 - 2023

## 4. Intelligent Transportation Systems in tunnels

- **Full Technical Report** (March 2022)
  - Identification of technological advances in ITS and their impact on road tunnel operation and user safety
  - Highlight of the main expectations of the tunnel community regarding these systems
  - Current topics: Platooning, GPS pilot in Stockholm Southern link, UN regulation No. 157 for ALKS (automated lane keeping systems) – SAE Level 3

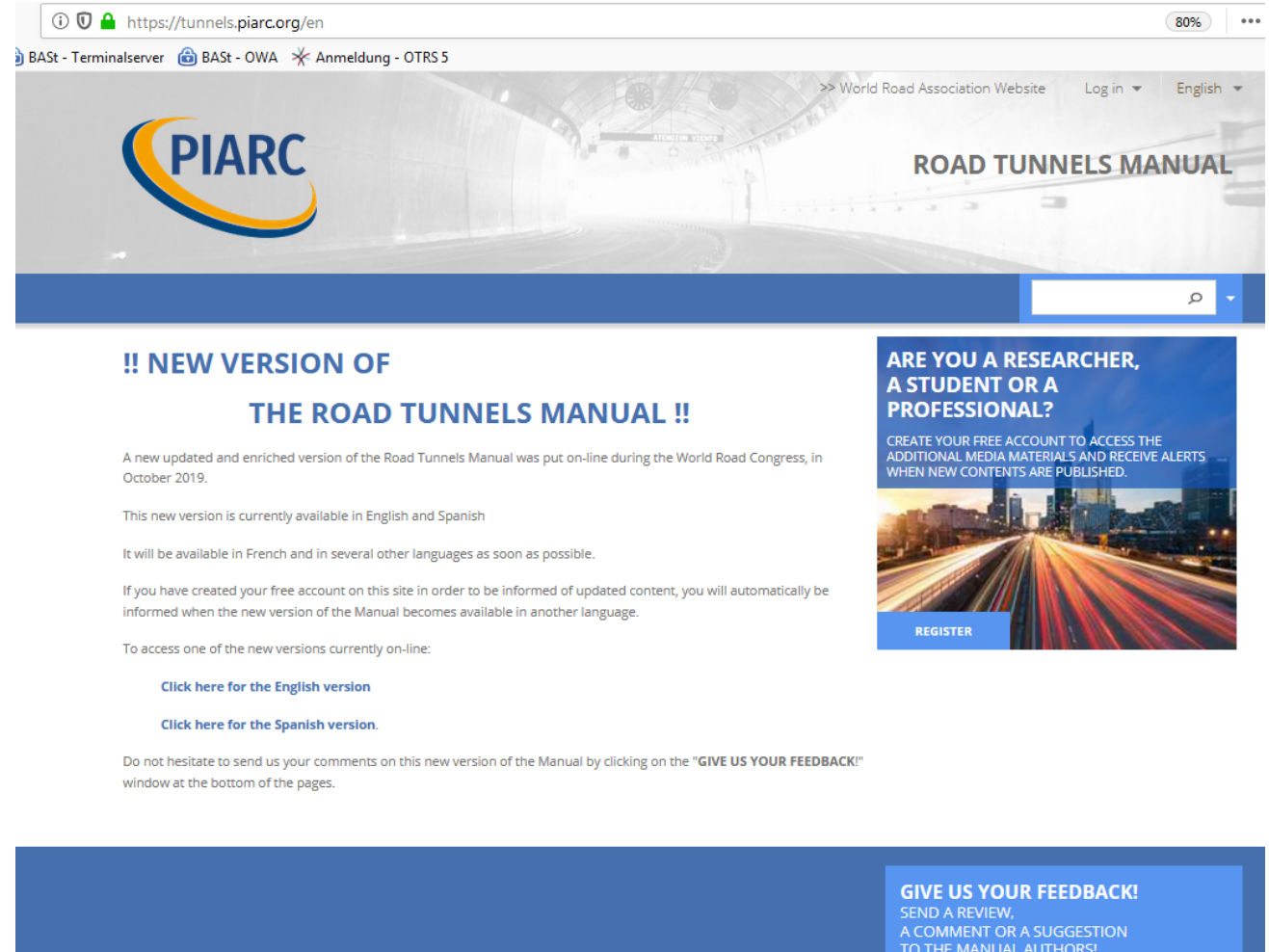


# Activities in the current work cycle 2020 - 2023

## 5. Update of the Tunnels Manual

- Ongoing revision of the Road Tunnels Manual:  
NEW version available (English and Spanish, French to be added soon)
- New pages on civil works in preparation
- Recent content will be added (e.g. hyperlinks to new reports)

<https://tunnels.piarc.org/en>



The screenshot shows the homepage of the PIARC Road Tunnels Manual website. The header features the PIARC logo and the title 'ROAD TUNNELS MANUAL'. Below the header, a large banner reads '!! NEW VERSION OF THE ROAD TUNNELS MANUAL !!'. The main content area contains several paragraphs of text, including a notice about the new version being put online during the World Road Congress in October 2019, and links to the English and Spanish versions. A sidebar on the right asks if the user is a researcher, student, or professional, and offers a free account to access additional media materials and receive alerts. At the bottom, a blue bar encourages users to 'GIVE US YOUR FEEDBACK!' by sending a review, comment, or suggestion to the manual authors.

!! NEW VERSION OF  
THE ROAD TUNNELS MANUAL !!

A new updated and enriched version of the Road Tunnels Manual was put on-line during the World Road Congress, in October 2019.

This new version is currently available in English and Spanish

It will be available in French and in several other languages as soon as possible.

If you have created your free account on this site in order to be informed of updated content, you will automatically be informed when the new version of the Manual becomes available in another language.

To access one of the new versions currently on-line:

[Click here for the English version](#)

[Click here for the Spanish version.](#)

Do not hesitate to send us your comments on this new version of the Manual by clicking on the "GIVE US YOUR FEEDBACK!" window at the bottom of the pages.

ARE YOU A RESEARCHER, A STUDENT OR A PROFESSIONAL?

CREATE YOUR FREE ACCOUNT TO ACCESS THE ADDITIONAL MEDIA MATERIALS AND RECEIVE ALERTS WHEN NEW CONTENTS ARE PUBLISHED.

REGISTER

GIVE US YOUR FEEDBACK!  
SEND A REVIEW,  
A COMMENT OR A SUGGESTION  
TO THE MANUAL AUTHORS!

# Activities in the current work cycle 2020 - 2023

## 6. Support for updating and improving of DG-QRAM Software

- Update phase 2 of the software is in progress
- New Software Version: DG-QRAM license V 4.04 (phase 1) could be ordered at PIARC ([www.piarc.org](http://www.piarc.org)). Discount if you are already a user of the software

Worldwide webinar on the DGQRAM software

**A dangerous goods transport risk assessment tool** that is being upgraded!




DGQRAM (Dangerous Goods Quantitative Risk Assessment Model) is a software developed under the aegis of PIARC (World Road Association). This software can be used to assess the societal risks of transporting dangerous goods through a tunnel or along a given route. It provides quantitative indicators and curves. Results can be aggregated and/or compared between one another and to given criteria. This software is currently used in 26 countries and is in the process of being upgraded.

**23rd June 2021 11:00 – 13:00 UTC**  
07:00 - 09:00 US-DC / 13:00 - 15:00 FRA / 19:00 - 21:00 CN  
20:00 - 22:00 JPN / 21:00 - 23:00 NSW  
Click [here](#) to register


World Road Ass

PIARC CETU



**Transport of Dangerous Goods through road tunnels: Quantitative Risk Assessment Model (v. 4.04)**

Technical Committee D5 Road Tunnel Operations  
World Road Association



PIARC

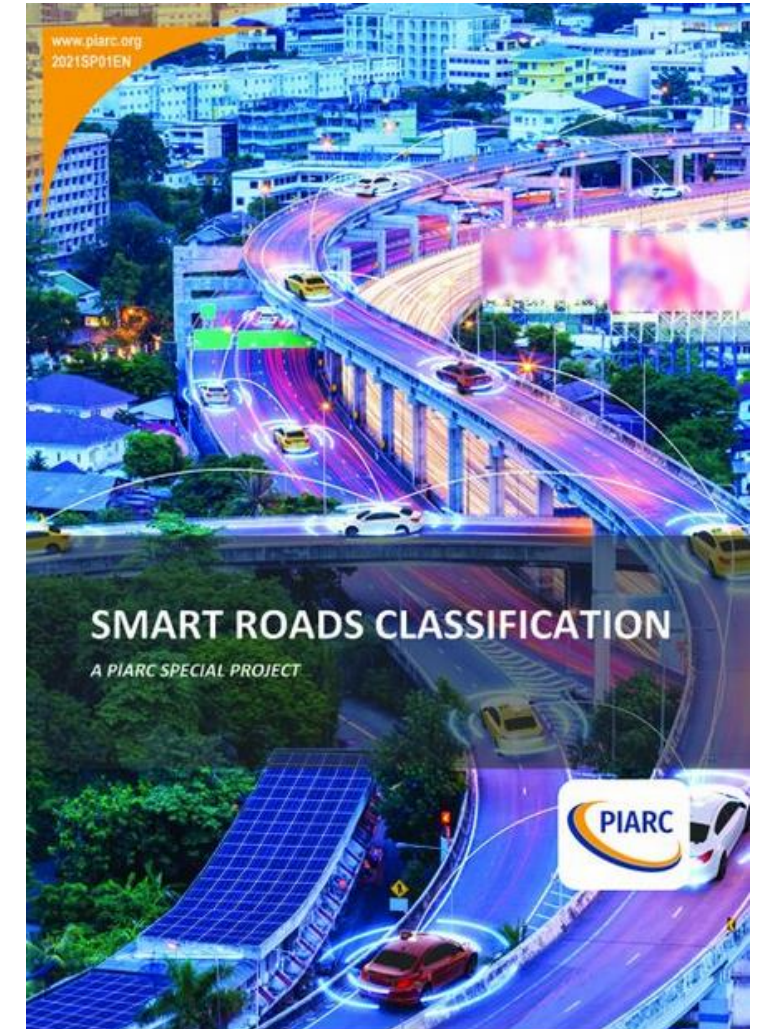
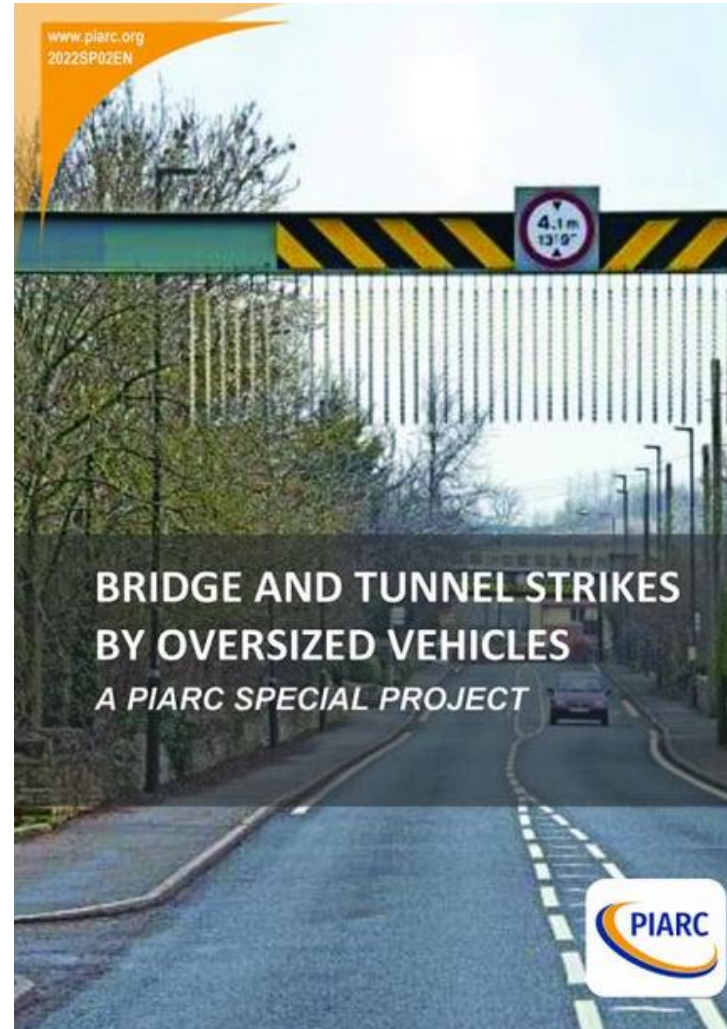
etera • [www.piarc.org](http://www.piarc.org)



# Activities in the current work cycle 2020 - 2023

## 7. PIARC Special Projects 2021

- Supported by TC4.4 members
- Reports available on PIARC website





# Events planned for the work cycle 2020 - 2023

- World Winter Service and Road Resilience Congress  
8-11 February 2022 – Online  
(<https://www.piarc-calgary2022.org/>)



- 2nd PIARC International Conference on Road Tunnel Operations and Safety,  
25-28 October 2022 – Granada (Spain)  
(<https://www.piarc-tunnels-spain2022.org/>)



- 27th World Road Congress  
2-6 October 2023, Prague (Czech Republic)



# Thank you for your attention!



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**[www.piarc.org](http://www.piarc.org)**

