

Exchange  
knowledges and techniques  
on roads and road transportation



# WORLD ROAD ASSOCIATION



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

*IRF Summit 2017*  
*PIARC Special Session on Asset management*

*Claude Van Rooten*  
*President of PIARC*





# What is PIARC?





# What is PIARC

## Addressing members' expectations

- Non-political, non-profit association established in 1909
- Aim: promote international cooperation on issues related to roads and road transport
- Consultative Status on the Economical and Social Council of United Nations
- With its broad membership and geographic diversity, the vision of the World Road Association is to become:

***“The world leader in the exchange of knowledge on roads and road transport policy and practices within the context of integrated, sustainable transport.”***

- **Recognised for the quality of our outputs**





# PIARC's Four key missions

- Be a **leading international forum for analysis and discussion** of the full spectrum of transport issues related to roads and related transport;
  - Identify, develop, and disseminate **best practice** and **give better access to international information**;
  - Consider within its activities the needs of **developing countries and countries in transition** fully; and
  - Design, produce, and promote **efficient tools for decision making** on matters related to roads and related transport.
- 
- The Association mobilizes the expertise of its members
  - Through operations guided by a **4-year Strategic Plan**

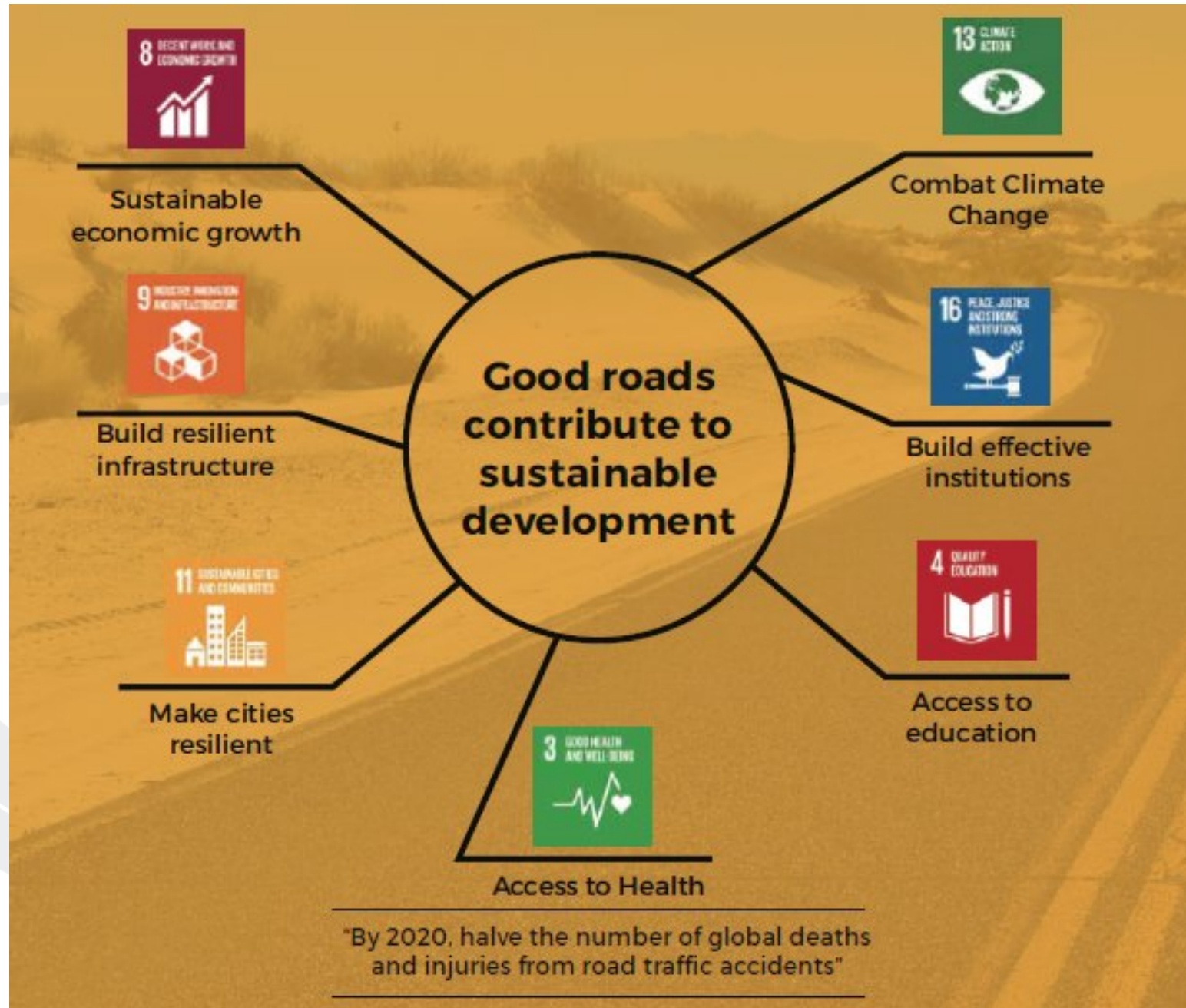




# Extensive membership base

- **121 National governments are members of the Association**
- **Members from a total of 140 countries**
  - **Regional authorities**
  - **Collective members – public or private**
  - **Individual members**
- **More than 1 000 experts are currently mobilised in our working groups**







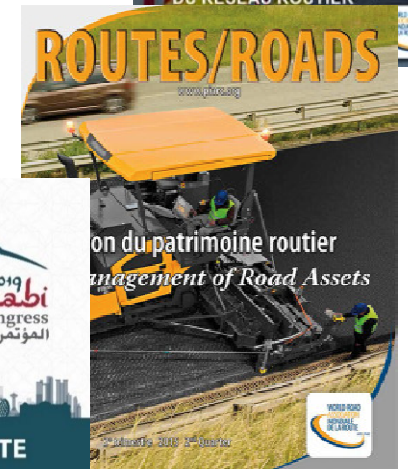
# Knowledge exchange: The core of PIARC

- **PIARC mobilises international road and transport experts through more than 20 groups:**
  - Ad-hoc dialogue among peers
  - Network building
  - Joint work towards commonly-agreed deliverables
- **These deliverables are widely accessible:**
  - Reports
  - Seminars or workshops
  - Online manuals
  - Software and tools
- **PIARC Congresses are world-class focus points for:**
  - Dissemination of these deliverables
  - Further discussions



# PIARC outputs (1/2)

- **Technical committee reports**
  - 40 reports in 2012 – 2015
  - Available free of charge
- **International seminars and workshops**
  - 26 seminars and 7 workshops in 2012-2015
- **The Winter Road and World Road Congresses**
  - Andorra 2014, Gdansk 2018
  - Seoul 2015, Abu Dhabi 2019
- **Routes/Roads** magazine
  - Trilingual quarterly



# PIARC outputs (2/2)

- **Online Road Dictionary**
- **Online manuals:**
  - Road safety web-manual
  - RNO and ITS web-handbook
  - Road Tunnels web-manual
  - ...
- **Snow and Ice databook**
- **Software**
  - HDM-4
  - DG-QRAM



## Low and middle income countries

- One of our key missions is:
  - *Consider within our activities the needs of developing countries and countries in transition fully*
- **This is part of our “DNA”**
- Several processes are implemented:
  - Include possible specific needs of low and middle income countries (LMICs) in the terms of reference of the Association (Strategic Plan)
  - Involve experts from LMICs in the activities of the Technical Committees
  - Organise International PIARC seminars in low and middle income countries (LMICs)
  - Establish regional working groups
- Budget support is available from PIARC





# Executive Committee 2017-2020



## President

**Claude Van ROOTEN** (Belgium)

## Past President

**Oscar de BUEN** (Mexico)

## Vice Presidents

**Cheick Oumar Diallo** (Mali)  
**Shigeru Kikukawa** (Japan)  
**Miguel Ángel Salvia** (Argentina)

## Members

**Ahmed Al Hammadi** (United Arab Emirates), **Christine Bouchet** (France), **Roy Brannen** (United Kingdom), **Oscar Callejo Silva** (Mexico), **Richard Charpentier** (Canada-Québec), **Mārtiņš Dambergs** (Latvia / BRA), **Lena Erixon** (Sweden / NRA), **Mayobanex Escoto** (Dominican Republic), **Diane Gamble** (New Zealand), **Stefan Krause** (Germany), **Bojan Leben** (Slovenia), **Kang-Hoon Lee** (Republic of Korea), **Meor Aziz Bin Osman** (Malaysia), **Monika Milwicz** (Poland), **José Miguel Ortega** (Chile), **Marie-Claude Petit** (Canada), **M<sup>a</sup> del Carmen Picón** (Spain), **Massimo Schintu** (Italy), **Alex Van Niekerk** (South Africa), **Walter Waidelich** (USA), **Dejin Wu** (People's Republic of China), **Friedrich Zotter** (Austria)

## National Committees' Representative

**Saverio Palchetti** (Italy)





# PIARC Strategic Plan



# Our Expert structures

- **Technical Committees**
  - Constituted for the full four years
- **« Task Forces »:**
  - Are allowed more flexibility; 2-year activity cycles; cover new topics and analyze their future relevance for roads; reasonably small groups
- **« Special Projects »:**
  - Outsourced by the SG; development of high-level, short documents that are not within the near-term capacity of the Technical Committees or Task Forces to complete
- **« Regional Task Forces »:**
  - Address topics of particular interest to certain regions, especially those with many developing countries





# Strategic Plan for 2016-2019

- The Association's activities are guided by a **4-year Strategic Plan**
- The new Plan covers the period 2016-2019
- It has been prepared through **an in-depth process** under the leadership of the Strategic Planning Commission – chaired by Jeff Paniati (USA)
- It was **formally approved** by the Association's Council in Seoul in November 2015



# 2016-2019 Themes

- **5 Strategic Themes**
  - **A. Management and Finance**
  - **B. Access and Mobility**
  - **C. Safety**
  - **D. Infrastructure**
  - **E. Climate Change, Environment and Disasters**
- Continuation of several lines of traditional work
- With an elevation of environment-related issues
  
- **18 Technical Committees and 4 Task Forces**
  - Including the Terminology Committee
- **In each case the Strategic Plan establishes functions, topics to be addressed and expected results**



# 2016 – 2019 Strategic plan

| A. Management and finance  | B. Access and mobility  | C. Safety  | D. Infrastructure                             | E. CC-Environment - Disasters                                  |
|--|---|--|---|--|
| A.1 Performance of transport administrations                               | B.1 Road Network Operations / ITS                                   | C.1 National road safety policies and programs         | <b>D.1 Asset management</b><br>D.2 Pavements  | E.1 Adaptation strategies / Resilience                         |
| A.2 Road transport system economics and social development                 | B.2 Winter services<br>B.3 Sustainable multimodality in urban areas | C.2 Design and operations of safer road infrastructure | D.3 Bridges<br>D.4 Rural roads and earthworks | E.2 Environment considerations in road projects and operations |
| A.3 Risk management  | B.4 Freight   |  | D.5 Road tunnels operations                   | E.3 Disaster management  |
| A.1 Innovative financing<br>A.2 Coordinating National and Subnational adm. | B.1 Road design & infrastructure for innovative solutions           | C.1 Infrastructure security                            |   |  |



# Strategic Theme Coordinators and Technical Advisors

| A.<br>Management and finance   | B.<br>Access and mobility  | C.<br>Safety  | D.<br>Infrastructure  | E.<br>CC-Environment - Disasters   |
|--|--|---|---|--|
| <p><b>Coordinator:</b></p> <p><b>Mr Ernesto BARRERA</b></p> <p><b>Technical Advisor:</b></p> <p><b>Mr Woo Chul KIM</b></p> | <p><b>Coordinator:</b></p> <p><b>Mr Shigeru KIKUKAWA</b></p> <p><b>Technical Advisor:</b></p> <p><b>Mr Yuya NAMIKI</b></p> | <p><b>Coordinator:</b></p> <p><b>Mr Jean-François CORTE</b></p> <p><b>Technical Advisor:</b></p> <p><b>Ms Kirsten GRAF LANDMANN</b></p> | <p><b>Coordinator:</b></p> <p><b>Mr Oscar GUTIERREZ</b></p> <p><b>Technical Advisor:</b></p> <p><b>Ms Claudine TREMBLAY</b></p> | <p><b>Coordinator:</b></p> <p><b>Mr Roberto AGUERREBERE</b></p> <p><b>Technical Advisor:</b></p> <p><b>Ms Veronica ARIAS ESPEJEL</b></p> |



# The importance of Road Asset Management



# Why roads?

- Efficient road transport infrastructure underpins development in all countries
- Good road infrastructure promotes social cohesion
- It drives trade, commerce and industry as well as accessibility and mobility to jobs, services and social facilities.



# Enormous needs for roads Worldwide

- Mc Kinsey report of 2013 :
  - *The world needs to invest \$3.3 trillion in economic infrastructure annually through 2030 to keep pace with projected growth*
  - *Roads : 800 billion USD per year (>> rail 300, ports and airports 100 each etc)*
  - *Roads : aggregate spending of 11.4 trillion USD over 2016-2030*
  - *Despite high-level attention and past commitments, investment rates have declined in many parts of the world*



# Need to plan for the long term – “future proof” infrastructure

- Infrastructure investments last 30 years or more
- At the same time, trends evolve
  - Tendency among younger generations towards car sharing and similar. Who knows what will be the demand for transport 20 years from now?
- Climate change is another risk factor
  - See PIARC Framework for example
- Disruption of usage and investment needs
  - Example: Autonomous vehicles - could shift traffic back to cars and change patterns of traffic flow
  - Building technologies can offer opportunities
- **Comprehensive risk analysis is needed**



# Need for maintenance and Asset management strategies

- Still relevant, as even autonomous feel the potholes!
- “Grey debt”: road maintenance is underfunded
- Maintenance operations have to be budgeted for and not forgotten about
- Have to be carefully planned
- **Comprehensive asset management strategies are necessary**
  - Such strategies exist, there are examples to be used.
- **PIARC** has produced several reports on this topic
  - A PIARC Online Manual on Asset Management was published in October 2017



# Need for maintenance and Asset management strategies

- **Road maintenance must be undertaken in a timely manner**
- **Failure to preserve road assets can exact a high price:**
  - Deteriorating facilities, poor service delivery, operating inefficiency, high transport costs and reduced economic competitiveness
- **The sector faces numerous challenges, including:**
  - Imbalance between the rate of deterioration and the level of funding allocated for maintenance of the existing infrastructure
  - Tendency to give priority to new construction
  - Lack of understanding of the importance of good quality, timely maintenance



# Cooperation is needed between public and private

- For example: road markings
  - We hear that they are needed to assist autonomous vehicles
  - What technologies? Standards? What cooperation models?
  - How to fund them? Maintain them?
- New business models need to be developed jointly
  - Identify and share risks & revenues
- Mutual respect is needed too:
  - Some industries can be very vocal and good at promotion
  - With low knowledge or regard for “infrastructure time”
- An interface is needed. It can be done.
  - Look at what is done for road safety
  - Between infrastructure, vehicles, users, legal, services...



# Cooperation between modes of transport

- Multimodality is the truth of today
  - People take their car to the train station and ride a bike to the office, all in the same trip
- Consideration for local conditions are necessary
- A recent PIARC report on multimodal governance concluded “*It is difficult to present structural integration of planning and delivery across transport modes as a superior form of transport governance to that based on various forms of collaboration between modally-focused agencies.*”
- One size does not fit all and place matters





# Cooperation is needed at international level also

- Because:
  - Cars, trucks... cross borders
  - Companies prefer to develop solutions for a wider market
  - 60% of the investment need will be in emerging economies (Mc Kinsey)
- International cooperation is efficient and cost effective
  - Excellent report published by our FHWA colleagues
- **Roads operators and authorities want to be part of the conversation, jointly with the private sector and with other modes of transport**



# PIARC work and products on Road Asset Management





# Many recent PIARC reports (available for free)

- Evolution of the mission and structure of transport administrations - Trends and outcomes of multi-modal governance in the road and transport Sector
- Guide to good practice Performance Frameworks of Road and Transport Administrations
- Good Governance and Anti-Corruption Measures
- Transport strategies for climate change mitigation and adaptation
- Appraisal of sustainability of transport infrastructure plans
- Role of risk assessment in the development of public policies and the decision process
- Land use and safety: Understanding how land use decisions impact safety of the transportation system
- The Role of Engineering in Combatting Driver Distraction and Fatigue Road Safety Risks
- Assessment of budgetary needs and Optimization of maintenance strategies for multiple assets of road network



# PIARC reports on Road Asset Management

## 12 recent Technical Reports

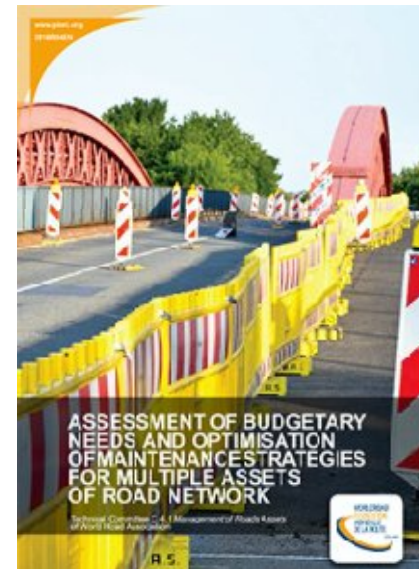
- 2016-2017 publications :



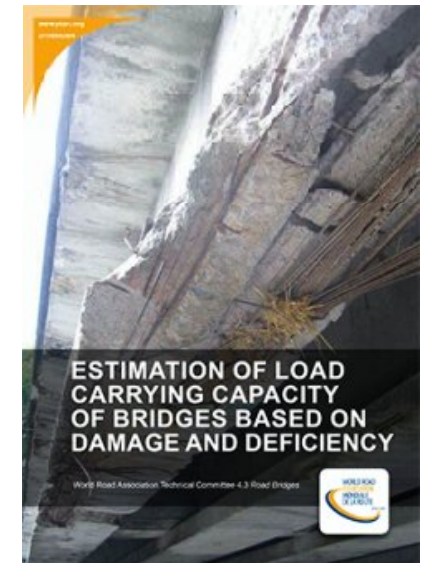
Management of road assets:  
Balancing of environmental and engineering aspects in management of road networks



Preserve your Country's roads to Drive Development



Assessment of budgetary needs and optimisation of maintenance strategies for multiple assets of road network



Estimation of load carrying capacity of bridges based on damage and deficiency





# PIARC current work on Road Asset Management

**A Committee is dedicated to this topic.**

**It covers 4 issues:**

## **D.1.1 Road Asset Management Manual**

*Outputs* : Upgrades to the Web Based Asset Management Manual supported by case studies and practical examples. (Web support version, tools, case studies, forums and communities of practice)

## **D.1.2 Dissemination and education**

*Outputs* : Curriculum recommendations for academia. Training and presentation materials for use of within road transportation agencies

## **D.1.3 Innovative approaches to Asset Management**

*Outputs* : Comprehensive report including an assessment of concepts and methods.

## **D.1.4 HDM-4 support**



# Road Asset Management Manual

- **PIARC has recently launched its fourth online manual, dedicated to asset management.**
- This tool is intended for national and international decision-makers in the road sector, whatever their degree of expertise.
- The manual presents key knowledge and data to help understand the challenges of managing road assets.
- It also provides a wide set of recommendations, covering both available techniques and appropriate strategies at the organizational level.

<https://road-asset.piarc.org/en>



# Road Asset Management Manual

<https://road-asset.piarc.org/en>

- Free of charge
- Available in English
- Contains 15 chapters organised in 4 themes:

- 1- Management
- 2- Data and modelling
- 3- Planning
- 4- Application



- Includes case studies and links to detailed technical material and other references
- Can be downloaded and printed by chapters



# Road Asset Management Manual

<https://road-asset.piarc.org/en>



**ASSET MANAGEMENT MANUAL**  
A GUIDE FOR PRACTITIONERS!

MANAGEMENT DATA AND MODELING PLANNING APPLICATION

TOOLS

## WELCOME TO THE PIARC ASSET MANAGEMENT MANUAL

Road infrastructure asset is the most valuable asset owned by the public sector in most countries and it supports a nation's economy. Traditional management methods will no longer be sufficient to meet 21st century business and political demands.

Asset management is a well-established discipline successfully implemented in several countries, for management of highways as well as other physical asset, addressing demands of a nation's citizens and industry for greater accountability and transparency, more efficient use of funds, greater focus on customer expectations and more sustainable solutions.

**ARE YOU A RESEARCHER,  
A STUDENT OR A  
PROFESSIONAL?**

CREATE YOUR FREE ACCOUNT TO ACCESS THE  
ADDITIONAL MEDIA MATERIALS AND RECEIVE ALERTS  
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# Road Asset Management Manual

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ASSET MANAGEMENT MANUAL  
A GUIDE FOR PRACTITIONERS!

MANAGEMENT DATA AND MODELING **PLANNING** APPLICATION TOOLS

Home // Planning // Financial plan // Making the case for invest

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**PLANNING**

ASSET MANAGEMENT PLAN

FINANCIAL PLAN

WHAT IS A FINANCIAL PLAN?

WHY DEVELOP FINANCIAL PLAN?

TO BUILD THE FINANCIAL PLAN

**» MAKING THE CASE FOR INVEST**

REFERENCES

CASE STUDIES

ASSET VALUATION

PROGRAMMING

### 3.2.4 MAKING THE CASE FOR INVESTMENT THROUGH THE FINANCIAL PLAN

Financial plans are prepared to inform the planning and management of an organization's maintenance responsibilities. Financial plans should also be used to make the case to senior leaders for investment in transportation infrastructure. In order to secure the necessary funding, it is important that a robust business case is made for the investment needs. The case should be supported by including the appropriate transportation infrastructure information described in this guide. In addition, it is suggested that the consequences of underfunding by, say, 10 %, 20 %, and 30 % should be presented in terms of the following:

- Impact on the transportation network, evaluated in terms of traffic disruption, socioeconomic and environmental effects (Lepert 2009 and Weninger 2012), caused by possible restrictions on highway structures, and the potential political repercussions of this,
- Impact on asset performance, evaluated in terms of the likely drop in performance values for condition and safety,
- Economic impact, evaluated in terms of the increase in whole-life costs and vehicle operating costs.

This information helps the decision making process for allocating funds because it considerably strengthens the business case for investment in the maintenance of highway structures.



- **HDM-4 is a software tool used for:**
  - Strategic planning of road investments
  - Roadwork programming
  - Project analysis as well as
  - Research and policy studies
- Distributed by PIARC concessionaire HDMGlobal
- Used on all continents and available in English, French and Spanish at a reasonable price
- **HDM-4 is widely recognized by major stakeholders such as multilateral development agencies**



# Some recent PIARC events

- **PIARC International Seminars on Asset Management**
  - 24-26 May 2017, in Santa Cruz de la Sierra (Bolivia)
  - Late 2018 in Malaysia
- **WCPAM**, the world conference on pavement and asset management
  - Took place in Baveno (Italy) on 12-16 May 2017
- **PPRS 2018**, the world congress on maintenance, modernisation, adaptation of roads and streets for tomorrow's mobility
  - Will take place in Nice (France) on 26-28 March 2018
- **SURF 2018**, the symposium on pavement surface characteristics
  - Will take place in Brisbane (Australia) on 2-4 May 2018



# PIARC CONGRESSES

- **15th International Winter Road Congress**

- Gdansk, Poland
- 20 – 23 February 2018



- **26th World Road Congress**

- Abu Dhabi, United Arab Emirates
- 6 – 10 October 2019



- **16th International Winter Road Congress**

- Calgary, Canada
- February 2022





**Thank you for your attention**

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