

C1.1 FINANCING ROAD SYSTEM ECONOMICS ISSUES AND STRATEGIES

Members: 31 (27 countries)
Corresponding members: 12 - Associate members: 3

- **ROAD SYSTEM ECONOMICS WITHIN AN INTEGRATED TRANSPORT SYSTEM**
 - 1) Identify economic evaluation methods for (i) roads with inter-modal effects, and (ii) projects in multi-modal systems.
 - 2) Issue recommendations for the economic evaluation of multi-modal transport systems.
- **ROAD PROJECT EVALUATION FRAMEWORK**
 - 1) Define the quantification methods for social and external costs for the purpose of project evaluation.
 - 2) Identify best practices for road project evaluation methods:
 - that cover the various aspects of the project process, and
 - that fully capture the diversity of road benefits and take into account regional characteristics and social development needs.
 - 3) Consider the issue of ex-post evaluation.
- **EFFECTS OF ROAD PRICING ON THE SOCIO-ECONOMY**
 - 1) Develop a statement on the issue of equity between user classes, transport modes, and users versus non-users.
 - 2) Undertake an assessment of charging instruments in road transport with regards to impacts and equity considerations.
 - 3) Undertake a review of current practice in selected countries - focusing on the definition of equity, and pricing schemes used to achieve it.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- Road Pricing, Financing, Regulation and Equity (Cancún, Mexico, 11-13 April 2005)
- *(Technical Seminar)*
The Evaluation of Road Projects (Tokyo, Japan, 10 April 2007)

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 325: "A dynamic traffic model for the economic analysis of congestion"
- N° 327: "Road Pricing, Financing, Regulation, and Equity: a Summary of the PIARC Seminar in Cancun, Mexico"
- N° 334: "Current Practice in the Appraisal of Roads within a Multi-modal Planning System"
- N° 335: "Benefit Incidence Table for London Congestion Pricing"

TECHNICAL COMMITTEE REPORTS

- Recommendations for Users in the Application of Multi-modal Appraisal Systems
- Pricing as one tool for funding and regulation with equity in mind
- The Use of Monetary Values for Socio/Environmental Impacts of Road Projects



C1.2 FINANCING ROAD SYSTEM INVESTMENT ISSUES AND STRATEGIES

Members: 31 (25 countries)
Corresponding members: 9 - Associate members: 6

• EXPLORATION OF FINANCIAL PROCUREMENT STRATEGIES

- 1) Investigate historical and innovative financial procurement methods employed in various countries (types of taxes, earmarked funds, etc.).
- 2) Analyze forms of user charges (including road tolls) through a review of objectives, revenue potential and allocation methods.
- 3) Identify sufficiency and viability of sources of financing and trends for the future.

• COST MANAGEMENT FOR LONG-TERM INVESTMENT

- 1) Examine cost estimate and management methodologies for long term road infrastructure investment.
- 2) Investigate cost management methods based on appropriate appraisal methods of road assets.
- 3) Examine strategies for allocation of funding for new development and maintenance projects.

• PUBLIC PRIVATE PARTNERSHIPS FOR ROADS AND ROAD TRANSPORT ADMINISTRATION

- 1) Examine the effectiveness of public private partnerships (PPPs) as a funding procurement measure.
- 2) Identify elements of legal and institutional framework to enable PPPs.
- 3) Examine public sector interests in PPPs and regulatory mechanisms to protect the public sector.

PRODUCTIONS

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 327: "Public Private Partnership Road Contracts in Spain, A new Focus?"
- N° 332: "An overview of PIARC studies on financing road system investments"
- N° 332: "Public and private investment in the road network in the United States"
- N° 332: "A contractor's perspective on the impact of new contract forms"

TECHNICAL COMMITTEE REPORT

- Transportation Infrastructure Financing for Sustainable Development

PIARC INTERNATIONAL SEMINARS

- Road Pricing, Financing, Regulation and Equity (Cancún, Mexico, 11-13 April 2005)
- Sustainable Road Financing & Investment in cooperation with ARMFA, AGEPAR, ASANRA and SSTAP (Arusha, Tanzania, 16-20 April 2007)

C1.3

Members: 42 (34 countries)

Corresponding members: 10 - Associate members: 6

PERFORMANCE OF ROAD ADMINISTRATIONS ISSUES AND STRATEGIES

• GOVERNANCE AND STRUCTURE OF ROAD ADMINISTRATORS

- 1) Recommendations according to the various development of the road systems.
- 2) Best practices to meet the diversified needs of road users and stake holders.
- 3) Best practices for eliminating corruption.

• DEVELOPMENT OF HUMAN RESOURCE SKILLS

- 1) Recommendations on the need of competences necessary for future challenges.
- 2) Recommendations and best practices on new ideas and innovations in the field of education and training.

• APPLICATIONS OF PERFORMANCE INDICATORS OF THE ROAD SYSTEM

- 1) Best practices to improve the transparency and efficiency of administration through the application of performance indicators.
- 2) Categorization of performance indicators as they are actually used.
- 3) Best practices for policy evaluation and the application of the results for integration into new projects.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- Good Governance, Institutional Integrity, and Human Resources Management for Road Administrations in conjunction with GDDKiA (Poland) (Warsaw, Poland, 20-22 October 2005).
- Institutional capacity building, Human Resources Management and Good Governance with the participation of the Beninese PIARC National Committee and the AGEPAR-Committee Benin (Cotonou, Benin, 21-23 March 2007)

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 334: "From strategic planning to everyday practice - Customer orientation in Nordic Road Administrations"
- N° 330: "Good governance, institutional integrity and human resources management for road administrations"
- N° 330: "Fighting corruption in developing countries"
- N° 331: "The way we recruit and train road engineers - Latvia"
- N° 331: "Organization and structure of road administrations"
- N° 331: "Fighting corruption in the road sector: an illustration of the issues in India"

TECHNICAL COMMITTEE REPORTS

- Good Governance and Integrity
- The application of Performance Indicators
- Human Resource Management

C1.4 MANAGEMENT OF NETWORK OPERATIONS

ISSUES AND STRATEGIES

Members: 33 (26 countries)
Corresponding members: 14 - Associate members: 5

• NEW IDEAS FOR NETWORK - WIDE OPERATIONS

Collect case studies on methods for network-wide operations covering technical and operational innovations, noting organizations that are in charge of the implementation and coordination with stakeholders.

• INFORMATION MANAGEMENT AND THE PUBLIC INTEREST

- 1) Investigate and evaluate different approaches to the capture and use of data and information related to the operation of the road network (and important intermodal links).
- 2) Identify methods to establish information systems related to internal and external user needs and the development of value-added information services.

• APPROPRIATE USE OF ITS FOR AN INTEGRATED TRANSPORT SYSTEM

- 1) Identify policies and good practice for automated traffic control and automatic enforcement, and road pricing.
- 2) Keep a watching brief on the emerging role of ITS on intermodal management and road safety (eSafety)
- 3) Review economic evaluation methods, costs, benefits and performance indicators of for ITS and services.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- Intelligent Transport Systems in Road Network Operations
(Kuala Lumpur, Malaysia, 14-16 August 2006)
- Road Network Operation Management (ITS) and Road Safety
(Santiago, Chile, 11-13 April 2007)



PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 328 SPECIAL ITS ISSUE (September 2005)
 - "PIARC Road Network Operations Handbook"
 - "Traffic Management in Wales"
 - "Intelligent Transport Systems make progress around the Developing World"
 - "Understanding each other in Intelligent Transport Systems: An introduction to ITS terminology"
 - "e-Transport: Smart Solutions for New World Economies"
 - "The Development of a National Road Traffic Information Policy in France"
 - "System for measuring speed on road sections"

TECHNICAL COMMITTEE REPORTS

- PIARC Intelligent Transport Systems Handbook PIARC ITS Handbook, 2nd Edition
 - English: ISBN2-84060-174-5 available from **Route2Market Ltd**, Horizon House, Azalea Drive, Swanley, Kent BR8 8JR, United Kingdom
 - French: ISBN 2-84060-188-5 available from PIARC Secretariat, Paris
 - Web site (on-line version) <http://www.itshandbook.org/>
- PIARC Network Operations Handbook, 2007 edition, on CD-ROM, augmented with reference documents and case studies.



C2.1 SUSTAINABLE DEVELOPMENT AND ROAD TRANSPORT

ISSUES AND STRATEGIES

Members: 31 (26 countries)

Corresponding members: 13 - Associate members: 3

- **CONCRETE APPLICATION OF POLICIES, SUCH AS THOSE DEVELOPED IN THE KYOTO PROTOCOL AND RIO CONFERENCE, TO ROAD TRANSPORT**
 - 1) How have the concepts of sustainable development been applied in the transport policies of different countries?
 - 2) Decision-making for sustainable development in the road sector.
- **FUNDING LEVELS NEED TO BE IDENTIFIED TO INFORM FUTURE PLANNING AND UNDERSTANDING OF THE COMMITMENT TO ENVIRONMENTAL MITIGATION**
 - 1) Corporate social responsibility (CSR) in the road sector.
 - 2) Focused funding.
- **MITIGATION OF ENVIRONMENTAL IMPACTS OF ROAD TRANSPORT**
 - 1) Soil and water pollution.
 - 2) The priorities of environmental mitigation.
 - 3) Social and community impact assessment.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- International Seminar on Sustainable Roads (Monterrey, Mexico, 8-12 May 2006)
- Surface water, underground water and soil protection along roads and motorways (Krzyzowa, Poland, 17-19 November 2004)

OTHERS

Participation of Committee members in:

- GDDKIA Poznan seminar on the influence of transport infrastructure on nature, (September 2006).
- 3rd China Road Sustainable Development Congress, (November 2006)
- first IRF Roads and the Environment Conference, (February 2007).

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 325: "Evaluating environmental management"
- N° 333: "Social impact assessment in Finland, bypass of the city of Hamina"
- N° 333: "Corporate social responsibility and the road sector; the background"

TECHNICAL COMMITTEE REPORTS

- Survey of Focused Funding of Environmental Mitigation
- How to apply the concepts of sustainable development to transport?
- Social and environmental approaches to sustainable transport infrastructures
- Corporate Social Responsibility and the Road Sector

C2.2 INTERURBAN ROADS AND INTEGRATED INTERURBAN TRANSPORT ISSUES AND STRATEGIES

Members: 38 (31 countries)

Corresponding members: 13 - Associate members: 4

- **SUSTAINABLE ROAD TRANSPORT AS A FACTOR IN ECONOMIC AND SOCIAL DEVELOPMENT: DESIGN OF INTERURBAN ROADS FOR THE 21ST CENTURY**

How to develop new design concepts of interurban roads, taking into account changing demand and environmental/social objectives. (Guidelines for decision makers, based on case studies).

- **INTERACTION BETWEEN THE DEVELOPMENT OF ROAD AND INTEGRATED TRANSPORT AND REGIONAL LAND USE PLANNING**

New policies and practices for a better integration of road transport in regional planning : planning process, land use regulation, access management (based on case studies).

- **INTEGRATION AND INTEROPERABILITY OF DIFFERENT TRANSPORT MODES IN THE INTERURBAN NETWORK, TO SUPPORT SUSTAINABLE MOBILITY**

New developments on intermodality policies and facilities, based on case studies (Freight and passenger transports).

PRODUCTIONS

PIARC INTERNATIONAL SEMINAR

- Sustainable Roads 2006, in cooperation with TC 2.1 and supported by AMIVTAC Mexico (Monterrey, Mexico, 8-12 May 2006)

PUBLICATIONS

TECHNICAL COMMITTEE REPORT

- Sustainable Interurban Roads for tomorrow



C2.3 URBAN AREAS AND INTEGRATED URBAN TRANSPORT ISSUES AND STRATEGIES

Members: 37 (29 countries)
Corresponding members: 14 - Associate members: 2

• URBAN CONGESTION

Investigate the causes of urban road congestion and suggest recommendations to mitigate the problems.

• LARGE (MEGA) CITIES REPRESENT PARTICULAR PROBLEMS FOR SUSTAINABLE MOBILITY THAT NEED TO BE IDENTIFIED

Assess those aspects of sustainability and mobility (not found in typical urban situations) by agreeing on a definition of a large (mega) city and then comparing examples of large cities in countries at different stages of development.

• HUMAN POWERED MOBILITY

Understand reasons for using different modalities, identify social and economical and safety barriers, describe tools that can be used to increase the use of human powered modes.

PRODUCTIONS

PUBLICATIONS

PAPER IN ROUTES/ROADS

- N° 331: "Parking Supply Standards using a "Matrix" Approach: Analysis of its potential and applicability"

TECHNICAL COMMITTEE REPORTS

- Congestion in Urban Areas
- Sustainable Transport in Megacities
- Human powered Transport



OTHERS

WORKSHOPS

- February 2007, Office of the Governor of the Region of Great Casablanca, Morocco
Presentation and discussion of the "Urban Mobility Plan of Casablanca"
- May 2007, Slovak University of Technology, Bratislava, Slovakia
Presentation of the results of TC2.3 and local contributions.

C2.4 FREIGHT TRANSPORT AND INTERMODALITY

Members: 27 (22 countries)

Corresponding members: 10 - Associate members: 4

ISSUES AND STRATEGIES

- **THE RESPONSE OF ROAD ADMINISTRATIONS TO THE DEVELOPMENT OF FREIGHT LOGISTICS OVER TIME AND THE INCREASE IN ROAD FREIGHT TRANSPORT WITHIN COUNTRIES AND ACROSS COUNTRIES**
 - 1) Review how countries at different stages of development have dealt with increased freight traffic.
 - 2) Consider examples of how freight logistics has changed and developed and what the key aspects are for the future for countries at different stages of development.
- **ACCOMMODATION OF THE INCREASE IN FREIGHT MOVEMENTS ON ROAD NETWORKS AND THE WIDER TRANSPORT INFRASTRUCTURE**
 - 1) Review the solutions envisaged as alternatives to freight movement by road.
 - 2) Analyse how inter modal terminals have facilitated improvements in freight capacity.
- **MITIGATION OF NEGATIVE IMPACTS OF INCREASED MOVEMENT OF FREIGHT**
 - 1) Investigate the present and possible innovations in goods vehicles within 20-30 years and their potential impacts.
 - 2) Review in social and environmental effect of cases where modal shift and better integration of modes with regard to the movement of freight have been applied.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- Flows and Bottlenecks in Land Transportation, in cooperation with the PIARC National Committee of Burkina Faso (Ouagadougou, Burkina Faso, 13-15 June 2005)
- Freight Transport in Landlocked Developing and In-transition Countries (Ulaanbaatar, Mongolia, September, 2006)

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 327: "Emerging problems, potential answers offered by logistical platforms"
- N° 335: "The Safety Assessment of the Goods Vehicle Traffic"

TECHNICAL COMMITTEE REPORTS

- A Preliminary Discussion Paper on Evolution of freight logistics
- Freight transport and intermodality: Measures promoting alternatives to the road and intermodal terminals
- Mitigation of Negative Impacts of Increased Movement of Freight
- A Preliminary Discussion Paper on Guidance for the developing countries to building a sustainable freight transport system

C2.5 RURAL ROADS AND ACCESSIBILITY ISSUES AND STRATEGIES

Members: 23 (31 countries)
Corresponding members: 13 - Associate members: 2

- **LOW VOLUME RURAL ROADS HAVE PARTICULAR ISSUES THAT AFFECT THEIR CONTRIBUTION TO ACCESSIBILITY AND MOBILITY IN RURAL AREAS**
Review how the social and economic functions of low volume roads for rural communities are being appraised and what indicators are used to assess the transport needs.
- **THE DESIGN AND MANAGEMENT OF LOW VOLUME RURAL ROADS MUST REFLECT SPECIFIC LOCAL NEEDS TO ENSURE THAT PROVISION FOR MOBILITY IS APPROPRIATE AND FIT FOR PURPOSE**
 - 1) Assess special requirements for the design of rural roads, considering issues such as safety and non-motorized modes by reviewing specific guidance and developing new ideas.
 - 2) Consider how the long-term management of rural roads should be undertaken to safeguard access, taking account of funding and maintenance plans.
- **REDUCTION OF THE DIFFICULTIES IN FUNDING OR DELIVERING TRANSPORT PROJECTS IN RURAL AREAS, PARTICULARLY IN DEVELOPING COUNTRIES OR COUNTRIES IN TRANSITION**
 - 1) Consider the key issues affecting the funding of transport projects in remote/rural areas, from both internal resources and external funding agencies.
 - 2) Consider the wider governance issues related to the provision and maintenance of transport in rural areas.

PRODUCTIONS

Photo: Paul Starkey



Photo: Paul Starkey

PIARC INTERNATIONAL SEMINARS

- Sustainable maintenance of rural roads (Arusha, Tanzania, 14-17 March 2005)
- Sustainable Access and Local Resource Solutions in cooperation with Ministry of Rural Development Cambodia (Siem Reap, Cambodia, 28-30 November 2005)
- Maintenance of Rural Roads - Stakes and Perspectives in cooperation with the International Commission of Agricultural Engineering (CIGR) and the Association Marocaine Permanente des Congrès de la Route (Rabat, Morocco, 20-21 April 2006)

C3.1 ROAD SAFETY

Members: 59 (34 countries)

Corresponding members: 11 - Associate members: 5

ISSUES AND STRATEGIES

• MAKE COST-EFFECTIVE ROAD-SAFETY INVESTMENTS AND IMPROVE ROAD DESIGN CONCEPTS IN RELATION TO ROAD SAFETY

The PIARC Road Safety Inspection and Audit Guidelines (both manuals) of best practice provide descriptions of successful methodologies, checklists for different types of existing roads, different design phases and examples of inspection and audit reports. A companion catalogue of cost-effective road safety investments assists for road safety inspectors and auditors.

• TAKE ADVANTAGE OF INTELLIGENT VEHICLES AND INFRASTRUCTURE TECHNOLOGIES TO IMPROVE ROAD SAFETY

The PIARC Road Safety Vehicle and Infrastructure Technology Matrix of best practice will describe successful technologies including safety benefits, human factor and legal aspects.

• TAKE INTO CONSIDERATION HUMAN BEHAVIORS

The PIARC Human Factors Guideline provides recommendations for road design and operation to adapt road systems and their surroundings to the abilities and limitations of the road users.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- Beijing International Road Safety Seminar, co-sponsored by the Chinese Ministry of Communication (Beijing, China, October 2005)
- Human Factors in Traffic Engineering, co-sponsored by CEDR (Conference of European Directors) (Vienna, Austria, April 2006)
- Developing Expertise in Road Safety Engineering, co-sponsored by AGEPAR (Association des Gestionnaires et Partenaires Africains des Routes and GRSP. (Lome, Togo, October 2006)
- Road Network Operations Management (ITS) and Road Safety Seminar” co-sponsored by the Chilean Highway Directorate (Santiago, Chile, April 2007)

OTHERS

TC3.1 exchanged views and cooperated on work plans with a number of international agencies including OECD-ECMT, World Health Organization (UN Road Safety Collaboration), Global Road Safety Partnership, Transportation Research Board USA, IRTAD (International Road Traffic and Accident Database), SSAPT World Bank and GRSP.

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 335: “Take advantage of infrastructure technologies and intelligent vehicles to improve road safety”
- N° 335: “Accident data and traffic safety”

TECHNICAL COMMITTEE REPORTS

- Guidelines on Road Safety Audits
- Guidelines on Road Safety Inspections
- Catalogue on Cost-Effective Road Safety Investments
- Report on ITS Measures and their Safety Benefits
- Guideline for Road Engineers About Accident Investigations
- Guideline on Human Factors in Road Design and Operation

C3.2 RISK MANAGEMENT FOR ROADS

ISSUES AND STRATEGIES

Members: 21 (17 countries)

Corresponding members: - Associate members:

• INTRODUCE RISK MANAGEMENT TECHNIQUES IN THE ROAD SECTOR

The focus will be on a risk management (RM) toolbox and a framework for Integrated RM. The principles and techniques will be common to all RM applications. The Group will provide examples of the use of RM from an organizational standpoint.

• INTRODUCE RISK MANAGEMENT FOR MEGA-PROJECTS

A study on risk management (RM) applied for mega-projects will be conducted clarifying what will be considered for these projects. The Group will provide an improved use of RM on mega-projects and RM toolbox, including the definition of mega-projects, risk assessment of natural and technological hazards.

• IMPROVE HIGHWAYS SYSTEMS SECURITY

Security risks/vulnerability assessment and the application of RM principles to the reduction of risks for highway systems will be studied to develop a RM toolbox and vulnerability assessment model for critical transportation infrastructures.

PRODUCTIONS

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 329: "The repercussions of Katarina in Quebec"
- N° 329: "Quantitative risk estimation of road slope disaster"
- N° 329: "Risk management on mega projects an example of an operational risk analysis"

TECHNICAL COMMITTEE REPORT

- Towards Development of A Risk Management Approach

PIARC INTERNATIONAL SEMINARS

- Risk Management for Roads (Ha Noi, Viet Nam, 26-28 April 2006)
- Risk Management for Roads (Cartagena, Colombia, 3-4 May 2007)

C3.3 ROAD TUNNELS OPERATION ISSUES AND STRATEGIES

Members: 37 (26 countries)
Corresponding members: 11 - Associate members: 8

• TUNNEL OPERATION

- 1) Improve behaviour of operating staff.
- 2) Analyse operation of urban tunnels with high traffic.

• MANAGEMENT OF TUNNEL SAFETY

- 1) Investigate an integrated approach to road tunnel safety.
- 2) Study the application of risk analysis.
- 3) Promote and follow-up policy on dangerous goods in tunnels.
- 4) Investigate tools to apply safety principles and responsibilities.

• HUMAN FACTORS FOR TUNNEL SAFETY

- 1) Better understand user behaviour in tunnels.
- 2) Improve user behaviour.
- 3) Improve emergency team's behaviour.

• DETECTION, COMMUNICATION, EVACUATION

- 1) Study international harmonization of safety facilities and signage.
- 2) Review improved means to detect incidents, alert and guide users.

• VENTILATION AND FIRE CONTROL

- 1) Investigate pollution inside tunnels and at portals.
- 2) Study operation strategies for tunnel ventilation.
- 3) Assess fixed fire-fighting systems.
- 4) Review design fire size data.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- Operation and Safety of New and Existing Road Tunnels (San Juan, Argentina, 29-31 March 2006)
- Road Tunnel Operations Management and Safety (Chongqing, China, 18-20 October 2006)

OTHERS

- Quantitative Risk Assessment (QRA) model: developed under the joint OECD/PIARC research project on Transport of Dangerous Goods through Road Tunnels.
- European research projects: collaboration with FIT, UPTUN and SafeT.
- Committee on Operational Safety of Underground Facilities (COSUF): Participation with the ITA in furthering the work of the European research projects.

PIARC WORKSHOPS

- Road Tunnel Safety and Air Quality (Sydney, Australia, 26-27 May 2005)
- Road Tunnel Operation (Tokyo, Japan, 7-8 June 2007)

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- Special edition N° 324: "Fire Safety in Tunnels"
- N° 329: "Quantitative Risk Assessment Model for Dangerous Goods Transport through Road Tunnels"
- N° 334: "Effects of Pavements on Fires in Road Tunnels"

TECHNICAL COMMITTEE REPORTS

- Traffic incident management systems used in road tunnels (2004)
- Cross section design of bi-directional road tunnels (2004)
- Road tunnels: Vehicle emissions and air demand for ventilation (2004)
- Good practice for the operation and maintenance of road tunnels (2005)
- Systems and equipment for fire and smoke control in road tunnels (2007)
- Guide for organizing, recruiting and training road tunnel operating staff
- Integrated approach to road tunnel safety
- Risk analysis for road tunnels
- Human factors and road tunnel safety regarding users
- Direction signing on a route incorporating tunnels
- Road Tunnels: A guide to optimising the air quality impact upon the environment
- Road Tunnels: An assessment of fixed fire fighting systems
- Recommendations to owners and operators of urban tunnels
- Tools for road tunnel safety management
- Management of the operator - emergency teams interface in road tunnels
- Lay-bys and emergency stations in road tunnels
- Road Tunnels: Operation strategies for ventilation

C3.4 WINTER MAINTENANCE ISSUES AND STRATEGIES

Members: 36 (25 countries)

Corresponding members: 5 - Associate members: 3

- **IMPROVE WINTER MAINTENANCE AND OPERATIONAL INFORMATION SYSTEMS**
 - 1) Optimize the decision making process and the use of decision aid tools (eg. Road Weather Information Systems 'RWIS' and Maintenance Decision Support Systems 'MDSS').
 - 2) Promote the sharing of pertinent winter operations data (eg. RWIS data etc.) across jurisdictions.
- **PROVIDE SUSTAINABLE WINTER MAINTENANCE**
 - 1) Analysis of public and private sector roles in the delivery of optimal winter road maintenance services.
 - 2) Update the review of winter road maintenance practices around the world. Include the context and extent of customer orientation in the conduct of winter road maintenance operations.
 - 3) Explore sustainability of winter road maintenance practices with particular focus on balancing environmental impacts with mobility and safety considerations.
- **SHARE WINTER MAINTENANCE KNOWLEDGE**
 - 1) Prepare the scientific programme for PIARC's XIIth International Winter Road Congress held in 2006 in Turin-Sestriere.
 - 2) Assist developing countries and countries in transition with their winter maintenance programmes.

PRODUCTIONS

PIARC INTERNATIONAL SEMINAR

- Safe and Efficient Winter Maintenance Practices
(Riga, Latvia, 22 September 2005)

PIARC CONGRESS

- PIARC XIIth International Winter Road Congress
(Turin-Sestriere, Italy, 27-30 March 2006)

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 325: "Technical programme for the XIIth International Winter Road Congress".
- N° 331: "Highlights of the XIIth International Winter Road Congress"

TECHNICAL COMMITTEE REPORTS

- PIARC - Proceedings of XIIth International Winter Road Congress - Turin-Sestriere 2006
- PIARC - Snow and Ice Databook - Edition 2006
- Roadway Maintenance Support Systems and Information Exchange
- Report of a survey on winter maintenance contracts
- Customer Orientation in the Winter Maintenance
- Guideline on Human Factors in Road Design and Operation



C4.1 MANAGEMENT OF ROAD INFRASTRUCTURE ASSETS

ISSUES AND STRATEGIES

Members: 51 (38 countries)
Corresponding members: 13 - Associate members: 5

• PROMOTING ASSET MANAGEMENT METHODS

- 1) Give practical topics to permit the implementation of Asset Management for roads.
- 2) Describe differing levels of implementation within country type (developing, in transition, developed) and within road management administrations.
- 3) Describe issues with development and/or integration of management systems.
- 4) Discuss obtaining political acceptance by displaying outcomes to decision maker.

• PROVIDING INTEGRATION OF CONDITION INDICATORS FOR ROAD ASSETS AS A WHOLE

- 1) Definition of indicators related to level of services, with: Classification, Description, and Qualification.
- 2) Discussion of efficiency, accuracy, objective-oriented.
- 3) Give Advice on use.

• TAKING INTO ACCOUNT EXPECTATIONS OF USERS AND RESIDENTS

- 1) Give a description of problem, with various contexts.
- 2) Provide some principle of solution, on basis of several generic models and case studies.
- 3) Discuss the various situations and solutions.

PRODUCTIONS

PIARC INTERNATIONAL SEMINAR

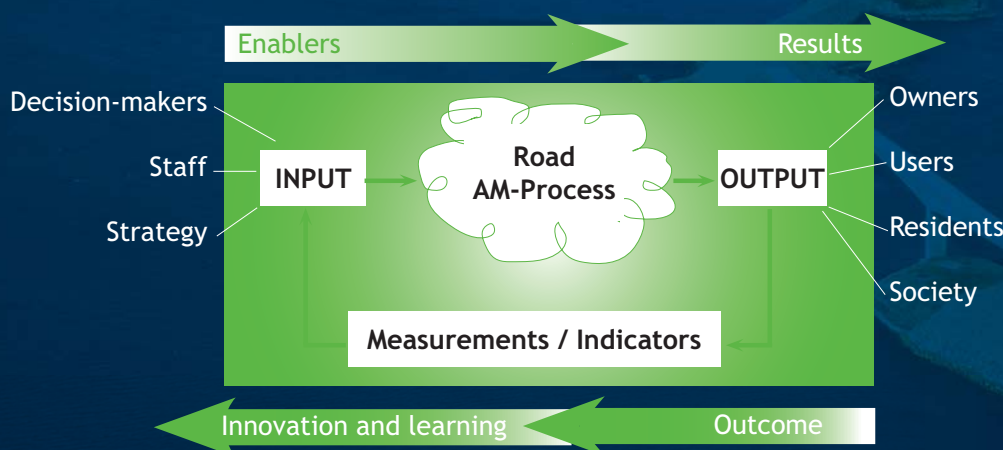
- International Seminar on Roads Asset Management (Penjab, India, March 2008)

PUBLICATIONS

TECHNICAL COMMITTEE REPORTS

- Integration of Performance Indicators
- Asset Management Practice

Road Asset Management in Business Excellence Context



C4.2 ROAD / VEHICLE INTERACTION ISSUES AND STRATEGIES

Members: 52 (39 countries)
Corresponding members: 8 - Associate members: 14

• HAVING A 20 TO 30-YEAR VISION OF DEVELOPMENTS IN VEHICLE AND ROAD PAVEMENT CHARACTERISTICS

Identify if and how the evolution in the traffic characteristics (traffic volumes and mixes, speed, loading) can be tackled in pavement design and management.

• REDUCING ROAD NOISE

Establish state of the art traffic noise reduction technologies as a source, identify research needs and recommend new promising global noise reduction strategies.

• IMPROVING THE DESCRIPTION OF PAVEMENT SURFACE CHARACTERISTICS

- 1) Establish rules in order to improve repeatability and bias of the texture, skid resistance, cracks and evenness measurement methods.
- 2) Inventory of the methods to characterize and to record surface distresses on unpaved roads, and of the appropriate survey equipment.
- 3) Review current practices and future trends in terms of surface condition measurements for the acceptance of road works.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- Monitoring and Managing Paved and Unpaved Roads (Bamako, Mali, 21-24 February 2006)
- 5th Symposium on Pavement Surface Characteristics (Toronto, Canada, 6-10 June 2004)

OTHERS

- Road Traffic noise emission, Recent developments and future prospects, SIIV, Palermo, 12-14/09/2007.

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 326: "Review of UK skid resistance Policy"
- N° 330: "Use of PIARC test tyres for the characterization of skid resistance"
- N° 334: "PIARC test tyres representativity"
- In 2008: "Guidance on managing skid resistance and evenness"
- In 2008: "Survey of methods of monitoring unpaved roads"

TECHNICAL COMMITTEE REPORTS

- Specification for a standard test tyre for friction coefficient measurement of a pavement surface: smooth and ribbed test tyres (2 Reports)
- Inventory of monitoring techniques for loading, speed, stress in motion, vehicle counts
- Evaluating the performance of Automated Pavement Cracking Equipments
- Performance-based Surface Condition Indicators for acceptance of Roads Works and Transportation Asset Management Activities

C4.3 ROAD PAVEMENTS

Members: 53 (37 countries)
Corresponding members: 19 - Associate members: 8

ISSUES AND STRATEGIES

• SELECTING ADEQUATE PAVEMENT TYPES AND ROAD TECHNIQUES

Produce a document giving guidelines about design, construction and maintenance of Long Life Pavements (LLP). This document will be mainly based on the analysis of success stories.

• MAINTAINING PAVEMENTS

Furthering the emerging and use of recycling techniques for pavement construction and maintenance by examining the obstacles to implementation and how to overcome them.

• MINIMIZING THE IMPACT OF ROAD WORKS ON THE AREAS CROSSED

Identify mitigation techniques for potential impacts of pavement construction/maintenance activity on road users and adjacent land use.

PRODUCTIONS

PIARC INTERNATIONAL SEMINARS

- Urban Pavement
(Krakow, Poland, 21-22 September 2005)
- Road Pavement Maintenance
(Havana, Cuba, 18-20 April 2007)
- Use of cement in pavement rehabilitation, in cooperation with FICEM
(Guatemala City, Guatemala, 23-24 April 2007)

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- N° 330: "Use of reclaimed asphalt in road bases of low volume roads."
- N° 330: "Full depth reclamation of pavement in Québec"
- N° 334: "Focus on Urban Pavements"

TECHNICAL COMMITTEE REPORTS

- Impact of Road Construction and Maintenance Activities on Road Users and the Adjacent Land Use
- Long-Life Pavements, Success Stories and Lessons Learned
- Review of the Growth and Development of Recycling in Pavement Construction



C4.4 ROAD BRIDGES AND RELATED STRUCTURES

ISSUES AND STRATEGIES

Members: 50 (34 countries)

Corresponding members: 12 - Associate members: 2

• DESIGN AND CONSTRUCTION FOR DURABILITY

Pool the experience of the members of Committee in respect to current developments in design and construction philosophy in identifying and responding to durability problems, in so far as new works are concerned.

• INCREASE OF DURABILITY AND LIFETIME OF EXISTING BRIDGES

- 1) Present an inventory or a library of examples on how to increase the durability or lifetime of existing bridges and bridge components with the intention of minimizing the agency's costs and/or traffic restrictions.
- 2) Comparing traditional solutions with innovative methods for solving a problem in a bridge.

• APPROACHES TO COST-EFFECTIVE BRIDGE MANAGEMENT

- 1) Document the systematic processes used by some of the member countries of PIARC to assess and prioritize bridge management.
- 2) Analysis of the necessary basic input data for the procedure.
- 3) Highlighting those criteria considered more relevant for prioritization.

PRODUCTIONS

PUBLICATIONS

TECHNICAL COMMITTEE REPORTS

- Improvement of durability in design and construction
- Increase of durability and lifetime of existing bridges
- Approaches to cost effective management of bridges

C4.5 ROAD PAVEMENTS

ISSUES AND STRATEGIES

Members: 36 (28 countries)

Corresponding members: 15 - Associate members: 5

• PROMOTING OPTIMAL USE OF LOCAL MATERIALS

- 1) Identify new technologies for the treatment of soils for road applications.
- 2) Identify new developments in the use of local materials and industrial by-products.
- 3) Investigate how to ensure good integration of road infrastructures into the landscape.

• HAVING INDICATORS REPRESENTATIVE OF THE CONDITION OF GEOTECHNICAL STRUCTURES FOR ROAD ASSET MANAGEMENT

Investigate indicators used to describe the condition of geotechnical structures.

• ANTICIPATING THE IMPACT OF CLIMATE CHANGES

Identify the impacts of climate change predicted for the 21st century and the consequences to be drawn for the design or rehabilitation of geotechnical structures.

PRODUCTIONS

PIARC INTERNATIONAL SEMINAR

- Adapting road earthworks to the local environment (Iasi, Rumania, 31 May - 2 June 2007)

OTHERS

WORKSHOPS

- Use of industrial by-products and local materials in earthworks (Tsukuba, Japan, May 2005)
- Workshop between members of the committee and members of the Mexican Association of roads, (Mexico City, Mexico, March 2006)

PUBLICATIONS

PAPERS IN ROUTES/ROADS

- To be published: "Integration of road embankments in the landscape: a look back and a few examples in France".
- N° 335: "Geotechnical Asset Management - A case study of practice in the Highways Agency".

TECHNICAL COMMITTEE REPORTS

- Promoting the optimal use of local materials
- Having indicators representative of the condition of geotechnical structures for road assets management
- Anticipating the effects of climatic changes

TERMINOLOGY COMMITTEE

ISSUES AND STRATEGIES

Members: 12 (11 countries)
 Corresponding members: 7 + 18 (1 per technical Committee)
 Associate members: 1

• UPDATING PIARC DICTIONARIES

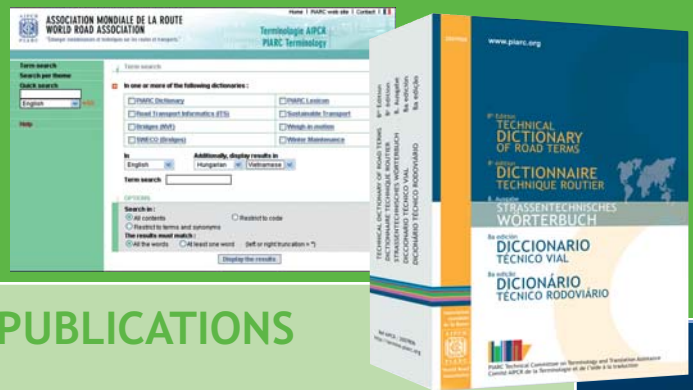
- 1) Ensure active support from the network of correspondents from other PIARC Committees.
- 2) Develop and test a software of multilingual dictionaries on the Internet.
- 3) Promote the inclusion of specialized glossaries in PIARC publications.

• ENCOURAGING THE CREATION OF TRANSLATION MEMORY BASES

- 1) Ensure the electronic backup, by (and for) PIARC, of bilingual documents aligned following the CD-ROUTE operating mode or any other alignment tool.
- 2) Investigate text alignment softwares available on the market.

• ADJUSTING TRANSLATION SOFTWARES TO THE ROAD FIELD

Investigate the upgrading of one or several translation softwares through the integration of PIARC dictionaries.



PRODUCTIONS

PUBLICATIONS

PAPER IN ROUTES/ROADS

- N° 327: "On-line Consultation of multilingual technical Dictionaries of Road Terms"

TECHNNICAL COMMITTEE REPORT

- PIARC Technical Dictionary of Road Terms, 8th Edition 2007 (English - French - German - Spanish - Portuguese)



OTHERS

- Permanently updated multi-lingual road related dictionaries on Internet:

<http://termino.piarc.org>

- PIARC Technical dictionary of road terms

Available languages (May 2007): Chinese, Danish, Dutch, English, Finnish, French, German, Hungarian, Icelandic, Italian, Japanese, Norwegian, Portuguese, Russian, Serbian, Spanish, Swedish and Vietnamese.