

Strategic Theme A: Management and Finance

Goal

The goal of this Strategic Theme is to encourage the development of policies and strategies that result in transport administrations that perform well, measure performance, and incorporate innovative financing mechanisms to meet the ever changing needs of the road transportation community. It is intended to provide examples of good governance, performance management, evaluation methods, and showcase the efforts of transport administrations that consider and manage risk and incorporate knowledge transfer strategies between agencies operating at different levels of government.

Overview

The Strategic Theme for Management and Finance will include three (3) Technical Committees and two (2) Task Forces. Strategic Theme A brings together matters related to the policies and strategies that transport administrations develop and enact.

Funding limitations and competition for resources require that road administrations implement practices and tools to measure performance in support of investment and policy decisions. Measuring performance of road administrations reflects such new structures and increased stakeholder influence and media scrutiny increase the importance of good governance and effective anti-corruption measures remain of paramount importance. **Technical Committee A.1 (Performance of Transport Administrations)** will develop guidance on these issues based on the experience of member countries at different stages of development.

Investment in roads can create substantial social and economic benefits and improvements to quality of life. Incorporating these benefits into the appraisal process is of great assistance to decision-makers in setting priorities for limited available resources. **Technical Committee A.2 (Road Transport System Economics and Social Development)** will investigate new developments in this arena alongside methods of ex-post project monitoring that will capture how results are used.

Risk assessment and management is fundamental to the undertakings of transport organizations. **Technical Committee A.3 (Risk Management)** will focus on the role of risk assessment and allocation at both the organizational and project-based levels.

As funding sources have not always kept pace with investment needs, road organizations have sought ways to identify innovative finance tools to facilitate project delivery. Tolls, user fees, and other project-based revenue sources, in combination with new finance mechanisms, can substantially increase governments' ability to deliver road projects. These issues are to be studied in **Task Force A1 (Innovative Financing)**.

In many countries, effective management of the road network depends on a coordinated effort between national and local organizations. Active partnerships can be a conduit to deliver training and information that may not have otherwise be accessible to the full community of practitioners. **Task Force A.2 (Coordination between National and Sub-National authorities)** will look at successful practices at countries in different development stages.

Technical Committees:

- A.1 Performance of Transport Administrations
- A.2 Road Transport System Economics and Social Development
- A.3 Risk Management

Task Forces:

- TF A.1 Innovative Financing
- TF A.2 Coordination between National and Sub-National authorities

TC A.1 Performance of Transport Administrations

Issue A.1.1 Framework on measuring effectiveness and efficiency of transport administrations	
<i>Strategies</i>	<i>Outputs</i>
Define concepts and measures used in establishing a strategic approach to achieving performance goals including the use of information collected to make investment and policy decisions.	Report and recommendations based on case studies, where appropriate, adopted by countries at different development stages illustrating established framework.
Issue A.1.2 Evaluating the transformation of transport administrations	
<i>Strategies</i>	<i>Outputs</i>
Review of major changes undergone in the transportation administrations and benefits and challenges associated with implementation of these including: review of management of multi-modal transportation systems and assessment of the impact of client-based approach	Report and case studies, where appropriate, adopted by countries at different development stages illustrating the evolution, listing benefits, and enumerating challenges and how these were addressed.
Issue A.1.3 Good governance and anti-corruption and response measures	
<i>Strategies</i>	<i>Outputs</i>
Continue the work performed over the last two cycles and investigate the implementation of anti-corruption and response measures in road organizations in relation to: <ul style="list-style-type: none"> - Internal controls (prevention)/institutional constructs - Reaction to problems - Audit practices 	Report based on case studies and workshop presentations and discussions; Link to external organizations that have looked at the issues.

Development of content alongside the formal outputs to foster visibility and the sharing of the group's work throughout the cycle.

TC A.2 – Road Transport System Economics and Social Development

Issue A.2.1 Project evaluation methods	
Strategies	Outputs
Investigate travel time savings by focusing on reliability as an evaluation method. Investigate the broader impact of road investments in developing countries with a focus on employment effects.	State-of-the-practice report on the methodologies, complemented by case studies from a range of member countries.
Issue A.2.2 Ex-post evaluation of projects	
Strategies	Outputs
Investigate and document how ex-post evaluations are conducted after completion of a road project (new projects and rehabilitation) and how results of the evaluations are used.	State-of-the-practice report on the methodologies, complemented by case studies from a range of member countries.
Issue A.2.3 Special Project on capturing the contributions of road transportation	
Strategies	Outputs
Craft the terms of reference needed for a request for proposal on a Special Project to identify, investigate and capture the contributions of road transportation towards sustainability and economic development to support decision-makers, including the assessment and management of socioeconomic externalities such as changes in demographics. Once a proposal is selected, manage the project and serve as liaison with the General Secretariat for final delivery and dissemination.	Terms of reference to support a Call for Proposals on a Special Project.

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TC A.3 – Risk Management

Issue A.3.1 Evaluation of organizational approaches to risk	
<i>Strategies</i>	<i>Outputs</i>
Identify, investigate and document evaluation of non-conventional and innovative methods and tools used in successful non-project risk management practices. (Risk management supports alignment between strategy and organization, helps allocate risks to the organizations best able to manage them, and facilitates sound decision-making and accountability at all levels of the organizations.)	Report based on benchmarking and case studies, where appropriate.
Issue A.3.2 Strategic management of project related risks	
<i>Strategies</i>	<i>Outputs</i>
Investigate how risks are reassessed and managed at different stages of projects from planning to operation; risks associated with ageing infrastructure; non-traditional management techniques.	Report and case studies, where appropriate.

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TF A.1 – Task Force on Innovative Financing

Issue TF A.1 Understanding transportation project finance tools to facilitate project delivery	
<i>Strategies</i>	<i>Outputs</i>
Identify, review, and evaluate the range of alternatives available for road funding and financing models under determined set of conditions for countries (including tolling; Public-Private-Partnerships, use of credit assistance tools/bonds). Consider the impact in funding due to reductions in fuel consumption.	Guidance and recommendations document indicating conditions for favoring use of particular project finance alternatives, complemented by case studies highlighting successful and unsuccessful practices. Workshop/seminar.

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TF A.2 – Task Force on Coordination between national and sub-national authorities

Issue TF A.1	
Cooperation strategies between national and local road agencies	
<i>Strategies</i>	<i>Outputs</i>
Evaluate cooperation and knowledge transfer strategies between national and local road agencies for different economies, government systems, and transportation networks.	Report and case studies, where appropriate, adopted by countries at different development stages illustrating successful practices.

Development of content alongside the formal outputs to foster visibility and the sharing of the group's work throughout its tenure.

Strategic Theme B: Access and Mobility

Goal

The goal of this Strategic Theme is to encourage the improvement of access and mobility provided to the traveling public and industry through efficient road network operation and integration with other transport modes.

Overview

The Strategic Theme for Access and Mobility will include four (4) Technical Committees and one Task Force. Strategic Theme B recognizes that road authorities provide a service to the community and industry, acknowledging these groups as customers. At the heart of this issue is the need to provide predictable services and to ensure that the resilience of the network is at an appropriate level.

Obtaining maximum benefit from existing network infrastructure is a priority for many member countries. Improvements to capacity, reliability, safety, energy saving and the use of new traffic technologies and cost-effective applications are particularly important whether achieved by interfacing with other modes and/or the use of intelligent transportation systems (ITS). **Technical Committee B.1 (Road Network Operations/Intelligent Transportation Systems)** will examine these issues providing updates to the ITS/Road Network Operation Manual developed in the 2011-2015 cycle and supporting dissemination and implementation support strategies. It will also examine the issue of Big Data and its applications to road transport.

Road networks are particularly vulnerable to the adverse effects of winter weather. Maintaining acceptable levels of service in a constrained financial environment can be particularly challenging. Issues such as sustainability and the impact to the environment of wide-spread treatments and practices are to be considered. **Technical Committee B.2 (Winter Service)** will study these issues in addition to actively preparing the technical program for the 2018 Winter Road Congress.

Technical Committee B.3 (Sustainable Multimodality in Urban Areas) will compare strategies of urban mobility, identifying transport policies and strategies from developed and developing countries to improve travel choices and accessibility in the context of the acute demands imposed by urban conditions.

Effective and efficient freight transport is an essential contributor to every economy. **Technical Committee B.4** (Freight) will examine issues surrounding multi-modal and road cargo transport and will review practices related to energy-efficient movement of freight.

The use of technology in road operations presents both challenges and opportunities. **Task Force B.1** (Road Design and Infrastructure for Innovative Transport Solutions) will identify major considerations in the development and deployment of technology enabling Vehicle-to-Infrastructure and Vehicle-to-Vehicle Communication.

Technical Committees:

- B.1 Road Network Operations/Intelligent Transportation Systems
- B.2 Winter Service
- B.3 Sustainable Multimodality in Urban Areas
- B.4 Freight

Task Force:

TF B.1 Road Design and Infrastructure for Innovative Transport Solutions

TC B.1 Road Network Operations/Intelligent Transportation Systems

Issue B.1.1 Maintenance and improvement of the ITS/RNO Manual.	
<i>Strategies</i>	<i>Outputs</i>
Investigate successful approaches and analyze the factors contributing to their success e.g. improved capacity, more reliable journey times, energy saving, safety and minimizing greenhouse gas emissions. Particular attention should be given to use of new traffic technologies, solutions considering interfaces with other modes, and organizational/governance issues.	Best practice report. Upgraded web-version of the ITS/RNO Handbook. Workshops and training materials to support dissemination and implementation strategies.
Issue B.1.2 Low cost ITS application	
<i>Strategies</i>	<i>Outputs</i>
Investigate and document the use of smart phones and other cost-effective technologies in support of road network operations. Illustrate examples of ITS tailored to meet the needs of low and middle income countries.	Report and case studies to be included in the ITS/RNO Handbook
Issue B.1.3 Big Data in road transport	
<i>Strategies</i>	<i>Outputs</i>
Define the concept of Big Data as relevant to the road transportation community, investigate applications, and document examples of how countries are considering and treating issues such as: applicable regulations, property/ownership of the data; data security; and privacy concerns.	Report and case studies collecting examples of applications; disseminate knowledge

Development of content alongside the formal outputs to foster visibility and the sharing of the group's work throughout the cycle.

Consultation with the predecessor Technical Committee and development of onward planning for the next cycle are expected from this TC.

TC B.2 – Winter Service

Issue B.2.1 Transportation management during winter events	
<i>Strategies</i>	<i>Outputs</i>
Identify and document best practices on winter service management and road user information systems that mitigate the effects of winter events on performance of the system and add to network resiliency.	<p>Case studies-based report on successful practices taking into account potential input from TC E.2.</p> <p>Training materials and presentations to support dissemination and implementation.</p> <p>Action plan for promoting these practices through implementation focus activities and events.</p>
Issue B.2.2 De-icing salt and brines treatments, interventions and best practices	
<i>Strategies</i>	<i>Outputs</i>
Investigate and document best practices associated with the use of technology in de-icing treatments, including mitigation the impacts on the environment.	Guidance report.
Issue B.2.3 Updates to the Snow and Ice Data Book	
<i>Strategies</i>	<i>Outputs</i>
To establish the Snow and Ice Data Book as a current resource for knowledge transfer globally.	<p>Updated version of the Data Book</p> <p>Inclusion of an interactive format to facilitate use by members.</p>
Issue B.2.4 Preparation of the 2018 Winter Road Congress	
<i>Strategies</i>	<i>Outputs</i>
Identify the priority themes and prepare the scientific program for the Congress taking into consideration the concerns and possible contributions from other Technical Committees.	<p>Definition of the technical programme incorporating session(s) on the various criteria of winter operations for decision makers and acceptable levels of service.</p> <p>Production of the proceedings.</p>

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TC B.3 – Sustainable Multimodality in Urban Regions

Issue B.3.1	
Multimodal urban transportation policies and strategies	
<i>Strategies</i>	<i>Outputs</i>
Compare efficiency of different multimodal urban transportation policies and strategies considering mobility needs, social objectives and characteristics of transport modes.	Report presenting case studies and recommendations drawn from good practices for developed and developing countries.
Issue B.3.2	
Road-based mobility solutions including multimodal interchanges and new road mobility	
<i>Strategies</i>	<i>Outputs</i>
Investigate and document in a qualitative and quantitative manner solutions such as: car/bike sharing, carpooling, electro-mobility, public transport increase.	Report presenting case studies and recommendations drawn from good practices.
Issue B.3.3	
Land use and urban development	
<i>Strategies</i>	<i>Outputs</i>
Study the impact of land use integrated with urban transport system development in urban centers and suburban areas, considering urbanization trends.	Report presenting case studies and recommendations drawn from good practices.

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TC B.4 – Freight

Issue B.4.1	
National policies for multi-modal freight transport and logistics	
<i>Strategies</i>	<i>Outputs</i>
Investigate and document countries' national policies for freight transport and logistics, including best practices in evidence-based freight transport policy-making and evaluation for initiatives.	Report presenting case studies and recommendations drawn from good practices.
Issue B.4.2	
Truck- traffic on highways	
<i>Strategies</i>	<i>Outputs</i>
Identify best practices (access management, traffic regulations, monitoring, compliance, enforcement)	Report presenting case studies and recommendations drawn from good practices.
Issue B.4.3	
Good practices on energy-efficient freight transport	
<i>Strategies</i>	<i>Outputs</i>
Good practices on energy-efficient freight transport (technical, operational, logistics, regulatory, and infrastructure)	Report presenting case studies and recommendations drawn from good practices

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TF B.1 Road Design and Infrastructure for Innovative Transport Solutions

Issue TF B1.1	
Challenges and opportunities for road design and operations	
<i>Strategies</i>	<i>Outputs</i>
Identify major considerations in the development and deployment of Vehicle-to-Infrastructure (V2I) and Vehicle-to-Vehicle (V2V) communication in road design and operations.	Report outlining key topics being explored and with references to other organizations.

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Strategic Theme C: Safety

Goal

The goal of this Strategic Theme is to improve the safety and efficiency of road transport, including the movement of people and goods on the network, while effectively and widely promulgating knowledge of all aspects of road safety and encouraging implementation of positive practices.

Overview

Roads play a fundamental part in providing safe access to education, welfare, leisure and employment opportunities. The Association's Declaration of Support for the UN Decade of Action on Road Safety, signed in 2011, reflects the commitment to promoting improvements to road safety. The time and resources allocated to the production of a state-of-the-art Road Safety Manual is a tangible demonstration of the Association's focus on improving road safety.

Technical Committee C.1 (National Road Safety Policies and Programs) will examine the policies and strategies underpinning safety investment decision making, strategies used to apply systematic road safety improvements to routes and networks. This work will be incorporated into the Road Safety Manual. This group will also pursue efforts to disseminate and support the application of measures recommended in the Road Safety Manual.

Technical Committee C.2 (Design and Operations of Safer Road Infrastructure) will focus on issues pertinent to vulnerable road users, driver distraction and fatigue, and how human factors should be considered in road design and operations. The work will be incorporated into the Road Safety Manual and also lead to Road Safety Audit guidelines take into account conditions in low and middle income countries.

Task Force TF C1 (Infrastructure Security) will forge links with relevant sectors to assemble knowledge pertaining to transportation security issues and their contribution to system resiliency.

Technical Committees:

- C.1 National Road Safety Policies and Programs
- C.2 Design and Operations of Safer Road Infrastructure

Task Forces

- TF C.1 Infrastructure Security

TC C.1 – National Road Safety Policies and Programs

Issue C.1.1 Road Safety Manual	
<i>Strategies</i>	<i>Outputs</i>
Updates to Road Safety Manual including support to training development and dissemination strategies	Upgraded version of the RSM web resource. Develop training and implementation strategies
Issue C.1.2 National Road Safety policies evolution	
<i>Strategies</i>	<i>Outputs</i>
Investigate the implementation of National Road policies and their evolution. Attention shall be paid to the implementation of the “Safe system approach” and its adoption in low and middle income countries. The TC will build on the output of the OECD project group working on this issue.	Technical report and main findings to be incorporated in the Road Safety Manual.

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Consultation with the predecessor Technical Committee and development of onward planning for the next cycle are expected from this TC.

TC C.2 –Design and Operation of Safer Road Infrastructure

Issue C.2.1 Vulnerable road users	
<i>Strategies</i>	<i>Outputs</i>
Investigate and develop current materials related to pedestrian, cyclist, and motorcycle safety as well as road safety issues relevant to the elderly	Materials for inclusion in the Road Safety Manual. Development of training and presentation materials consistent with Road Safety Manual promotion strategies.
Issue C.2.2 Human factors and design	
<i>Strategies</i>	<i>Outputs</i>
Complete development of case studies and successful strategies and practices related to consideration of human factors in road design and operations including driver distraction and fatigue.	Input for updating of the Road Safety Manual
Issue C.2.3 Setting speed limits	
<i>Strategies</i>	<i>Outputs</i>
Joint collaboration with WHO, automobile industry, UN Economic Commission for Europe, and the World Bank to update guidance.	Input for updating of the Road Safety Manual Presentation materials appropriate for informing members.
Issue C.2.4 Catalogue of design safety problems and potential countermeasures for LMIC	
<i>Strategies</i>	<i>Outputs</i>
Catalogue of design safety problems and potential countermeasures for LMIC	Input for updating of the Road Safety Manual
Issue C.2.5 Road Safety Audit guidelines	
<i>Strategies</i>	<i>Outputs</i>
Review Global Road Safety Audit Guidelines - including consideration for low and middle income countries to be included in any future revisions	Amended or amplified RSA guidelines containing points appropriate for consideration in Low and Middle Income Countries.

Development of content alongside the formal outputs to foster visibility and the sharing of the group's work throughout the cycle.

TF C.1 – Infrastructure Security Task Force

Issue TF C.1 Road security and resiliency	
<i>Strategies</i>	<i>Outputs</i>
To develop information that raises member awareness about security issues and their contribution to system resiliency.	Limited distribution products addressing topics such as criticality and vulnerability assessment and the role of security in road system management.

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Strategic Theme D: Infrastructure

Goal

The goal of this Strategic Theme is to improve the quality and efficiency of road infrastructure through the effective management of assets in accordance with user expectations and government requirements.

Overview

While new technological, social, and environmental developments are expanding the sphere of interest for road authorities, management of road infrastructure remains their core business. The need for more efficient and effective use of budgets requires constant balancing of funds to road assets in terms of construction and maintenance.

Assessing the budget level needed to provide optimal maintenance for road infrastructure and balancing the needs of multiple assets with budgetary constraints is an important part of the work of road administrations. This is reflected in the work of **Technical Committee D.1 (Asset Management)**, which will also examine the issue of balancing these important engineering needs by upgrading a Web-based Asset Management Manual to support road administrations in the implementation of road asset management programs.

Technical Committee D.2 (Pavements) will investigate environmentally-friendly and sustainable paving solutions and materials. Non-destructive pavement monitoring and testing techniques will also be an area of study.

Complying with new codes and standards require thorough bridge design and inspection practices. **Technical Committee D.3 (Bridges)** will study these practices, will review repair and rehabilitation strategies, and will assess evaluation models to help determine reliability and safety.

In the field of rural roads and earthworks, **Technical Committee D.4 (Rural Roads and Earthworks)** will investigate road administrations response to adverse conditions as a result of climate change activities while considering the use of local, marginal, and secondary materials in rural and unpaved roads.

The successful past work of the Association in the area of road tunnel operations will be built upon by **Technical Committee D.5 (Road Tunnels Operations)**. It will study how sustainable road tunnel operations can be ensured, develop an improved understanding of safety management in the light of accidents and fires, and expand study of underground road networks. Much of the work will be incorporated into an updated Road Tunnels Manual.

Technical Committees:

- D.1 Asset Management
- D.2 Pavements
- D.3 Bridges
- D.4 Rural Roads and Earthworks
- D.5 Road Tunnels Operations

TC D.1 Asset Management

Issue D.1.1 Road Asset Management Manual	
<i>Strategies</i>	<i>Outputs</i>
Produce a comprehensive tool guide to support road administrations in the implementation of road asset management programs, including assessment of proper network maintenance.	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)
Issue D.1.2 Dissemination and education	
<i>Strategies</i>	<i>Outputs</i>
Introduction of Asset Management in tertiary educational programs, training for post-graduate engineers. Special treatment for LMIC countries and regional singularities.	Curriculum recommendations for academia. Training and presentation materials for use of within road transportation agencies
Issue D.1.3 Innovative approaches to Asset Management	
<i>Strategies</i>	<i>Outputs</i>
Identify innovative approaches to maintenance management and life cycle management road administrations.	Comprehensive report including an assessment of concepts and methods.
Issue D.1.4 HDM-4 support	
<i>Strategies</i>	<i>Outputs</i>
HDM-4 support (oversight of upgrades that are determined by advisory group)	

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Consultation with the predecessor Technical Committee and development of onward planning for the next cycle are expected from this TC.

TC D.2 – Pavements

Issue D.2.1 Green paving solutions and sustainable pavement materials	
<i>Strategies</i>	<i>Outputs</i>
Investigate the challenges and incentives used in different countries to encourage the use of methods and materials that minimize the use of natural resources, reduce energy consumption and emissions, and improve safety (recycling, low temperature mixes/warm-mix asphalt, new binders/aggregates).	State of practice report and recommendations on the use of green solutions, challenges faced and incentives implemented to encourage use by member countries.
Issue D.2.2 Low cost pavements systems	
<i>Strategies</i>	<i>Outputs</i>
Evaluate available technologies and practices for better sustainability and management of pavements.	Report on best practices that can be applied in all countries, with special consideration of low and middle income countries.
Issue D.2.3 Non-destructive pavement monitoring and testing techniques	
<i>Strategies</i>	<i>Outputs</i>
Review use of technology such as laser, image processing and others in pavement monitoring and evaluation techniques	Symposium SURF 2017 and state of the art report on road condition monitoring and road/vehicle interaction.

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TC D.3 – Bridges

Issue D.3.1	
Bridge design for inspection and maintenance	
<i>Strategies</i>	<i>Outputs</i>
Undertake an evaluation and analysis of inspection and maintenance practices developed to meet new codes and standards. Review of practices to include practical examples and case studies of successful and failed practices.	Report reviewing good and poor practices and proposal of general recommendations and guidance.
Issue D.3.2	
Technical and economic considerations of bridge rehabilitation methods	
<i>Strategies</i>	<i>Outputs</i>
Consideration and review of rehabilitation strategies (from no rehabilitation to major rehabilitation or rebuilding). Include factors such as: bridge life span; remaining life, residual value, replacement cost, rehabilitation cost, replacement costs.	Report with review and analysis of the experience of different countries. Compendium of best practices.
Issue D.3.3	
Inspections and damage assessment techniques	
<i>Strategies</i>	<i>Outputs</i>
Conduct a review of assessment techniques and evaluation models used to determining the reliability and safety of bridges.	Report on the impact and outcomes of several damage assessment techniques and evaluation models.

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TC D.4 – Rural Roads and Earthworks

Issue D.4.1 Exposure of roads to climate change	
<i>Strategies</i>	<i>Outputs</i>
Investigate and document simulation and modelling tools and techniques to support road administrations in managing and responding to adverse conditions as a result of climate change (e.g., drainage and storm water management).	Report of best practices on before/after strategies, and guidance.
Investigate and document local practices and techniques for “all-weather” service (dry season, rainy season)	Report of best practices. Report of best practices and recommendations.
Issue D.4.2 Local materials, practices and techniques	
<i>Strategies</i>	<i>Outputs</i>
Investigate and document construction and maintenance practices and techniques incorporating the use of marginal and secondary materials, including stabilization.	Review of practices using marginal and secondary materials in rural or in industrial areas.
Disseminate work on use of local materials produced in previous cycles.	Seminar/Workshop incorporating Technical Committees’ past products
Issue D.4.3 Management of earthworks	
<i>Strategies</i>	<i>Outputs</i>
Collect information and conduct analysis of best practices in earthworks management with a focus on systematic approaches that could be incorporated into broader road networks asset management to support the decision making process.	Guidance report on how to develop and implement Earthwork Management Systems considering the tools for those systems: inventory, assessment and aids to decision making. To include updates to the Asset Management Manual in consultation with TC D1.1 charged with the development of the web-based Asset management manual to ensure consistency in content and format.

Development of content alongside the formal outputs to foster visibility and the sharing of the group’s work throughout the cycle.

TC D.5 – Road Tunnel Operations

Issue D.5.1 Road Tunnels Manual	
<i>Strategies</i>	<i>Outputs</i>
To maintain and disseminate current information regarding sustainable road tunnel operations.	<p>Updates to the web-based Road Tunnels Manual.</p> <p>Development of relevant training and presentation material</p> <p>Terminology activities.</p>
Issue D.5.2 Sustainable road tunnel operations	
<i>Strategies</i>	<i>Outputs</i>
To maintain and disseminate current information regarding sustainable operation of tunnels system and equipment including anti-fire safety, lighting, and ventilation equipment	Report on case studies and recommendations.
Issue D.5.3 Integrated road tunnel safety	
<i>Strategies</i>	<i>Outputs</i>
<p>To maintain and disseminate current information regarding designing tunnels for effective, efficient, and safe operation.</p> <p>To oversee the project of up-grade of the QRAM model in liaison with the General Secretariat</p>	<p>Report on case studies and recommendations.</p> <p>Upgraded version of the QRAM software.</p>
Issue D.5.4 Large underground and interconnected infrastructure	
<i>Strategies</i>	<i>Outputs</i>
To maintain and disseminate current information regarding optimization of operational and safety strategies for large underground and interconnected infrastructure	Report on case studies and recommendations.
Issue D.5.5 Persons with reduced mobility in the tunnel environment	
<i>Strategies</i>	<i>Outputs</i>
To maintain and disseminate current information regarding persons with reduced mobility in the tunnel environment	Report on case studies and recommendations.
Issue D.5.6 Road tunnel emissions	
<i>Strategies</i>	<i>Outputs</i>
Update road tunnel emissions guidelines.	Updated version of the PIARC guidelines.

Development of content alongside the formal outputs to foster visibility and the sharing of the group's work throughout the cycle.

Consultation with the predecessor Technical Committee and development of onward planning for the next cycle are expected from this TC.

Strategic Theme E: Climate Change, Environment and Disasters

Goal

The goal of this Strategic Theme 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.

Overview

After careful consideration and based on strong responses from First Delegates, the Association is elevating the treatment of Climate Change and Environmental issues to the Strategic Theme level. The creation of this new Strategic Theme offers an opportunity to increase the visibility of the Association's work related to climate change and thus demonstrate its responsiveness to an issue of significant interest to the global transportation community.

Dealing with transport strategies for climate change adaptation to increase resiliency of road infrastructure are issues to be studied in **Technical Committee E.1 (Adaptation Strategies/Resiliency)**.

The environmental impacts from transportation require that road organizations commit to reducing pollution by identifying effective reduction strategies and alternative mitigation policies and measures. **Technical Committees E.2 (Environment Considerations in Road Projects and Operations)** will address these issues.

Technical Committee E.3 (Disaster Management) will study and disseminate information to support road administrations response to and recovery from large scale natural disasters, the consequences of which are significant.

Technical Committees:

- E.1 Adaptation Strategies/Resiliency
- E.2 Environment Considerations in Road Projects and Operations
- E.3 Disaster Management

TC E.1 Adaptation Strategies/Resiliency

Issue E.1.1 Adaptation strategies to increase resiliency	
<i>Strategies</i>	<i>Outputs</i>
To investigate and disseminate information about current adaptation strategies to increase the resiliency of road infrastructure.	Report based on case studies
Issue E.1.2 Climate Change Adaptation Framework	
<i>Strategies</i>	<i>Outputs</i>
Refinement of the Climate Change Adaptation Framework (based on the Special Project developed in the 2011-2015 cycle) and follow-up of its implementation.	Report based on case studies

Development of content alongside the formal outputs to foster visibility and the sharing of the group's work throughout the cycle.

TC E.2 Environment Considerations in Road Projects and Operations

Issue E.3.1 Air quality	
Strategies	Outputs
Identify approaches and methodologies applied in selected countries to conduct air quality analyses.	State- of- the- art report and recommendations.
Investigate how road administrations and other authorities monitor air quality and how information is used in road traffic management.	
Issue E.3.2 Noise mitigation	
Strategies	Outputs
Evaluate and document traffic noise impacts; examination of potential mitigation measures; reasonable and feasible noise mitigation measures, including regulations and guidance setting noise levels.	Report on successful practices with case studies.
Issue E.3.3 Mitigation policies and measures	
Strategies	Outputs
Undertake the evaluation and analysis of other mitigation policies and measures such as: photocatalytic pavements, carbonation of concrete pavements, urban heat island effect	State- of- the- art report and recommendations.

Development of content alongside the formal outputs to foster visibility and the sharing of the group's work throughout the cycle.

TC E.3 Disaster Management

Issue E.2.1 Disaster Management Manual	
<i>Strategies</i>	<i>Outputs</i>
To maintain and disseminate information related to road administration response strategies for natural disasters.	Update of the Disaster Management Manual elaborated by TC 1.5 (Risk Management) in current cycle.
Study and document practices to ensure a quick and safe recovery from major disasters.	Report on case studies and recommendations.

Development of content alongside the formal outputs to foster visibility and the sharing of the group's work throughout the cycle.

Committee on Terminology

Issue T.1 Updating the World Road Association Dictionaries	
<i>Strategies</i>	<i>Outputs</i>
Update the existing version of the web-based dictionary in each of the current languages, including ongoing upgrading of the French and English dictionaries.	Upgrade the terminology section of the World Road Association website
Increase the number of languages of translation of the dictionary in liaison with World Road Association member countries.	