

REDUCING THE IMPACTS OF ROAD TRANSPORT ON THE ENVIRONMENT

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TECHNICAL COMMITTEE A.1 PRESERVING THE ENVIRONMENT

INTRODUCTORY REPORT

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EXECUTIVE SUMMARY

Technical Committee A.1 (TC A.1) has examined the challenging topic of reducing the impacts of road transport on the environment. This issue is an integral part of the global quest for sustainable mobility. It is relevant to all transport decision makers.

The question of how to reduce the adverse impacts of transport on the natural environment affects all countries and is one of the complex and pressing issues currently facing decision makers. How it is answered will influence both the shape of the transport systems and the health of the environments that future generations inherit. Addressing this challenge spans all methods of intervention, from global policy to national regulations and local plans. It also involves many different parties, including governments, community groups, private companies and individuals.

The Congress session hosted by TC A.1 will share the findings and discuss the implications of the Committee's recent enquiries and analysis on three issues. Information has been drawn from around the world and case studies will be used to demonstrate key points. Presentations will be offered on:

- Climate change: reducing carbon emissions from road transport and adapting road transport systems to the impacts of climate change;
- Environmental monitoring: monitoring the impacts of road transport on the environment and mitigating adverse impacts.
- Alternative energy: generating and using alternative energy sources within road transport infrastructure - potential opportunities and limitations.

Committee presentations will be complemented by international guest speakers (details to be confirmed). Discussion will be facilitated at the end of each presentation to test the findings, debate implications and identify key issues for transport decision makers in developed and developing countries.

COMMITTEE MEMBERS WHO CONTRIBUTED TO THE REPORT

Simon Price, United Kingdom
Lisa Rossiter, New Zealand
Michael Savonis , USA
Marguerite Trocme , Switzerland

1. INTRODUCTION TO CONGRESS SESSION HOSTED BY TC A.1

1.1. Overview

This report aims to set the scene for the discussion that will occur at the Congress session hosted by TC A.1. It outlines the key issues the Committee has been focused on, so the audience is aware of the topics that will be covered and can consider questions or perspectives to bring to the session. This report follows the order of the Congress session, namely discussion on the two established issues (climate change and environmental monitoring), followed by the emerging issue of alternative energy sources and use.

This report does not set out the comprehensive findings or recommendations of the Committee. Those can be found in the Committee's Activity Report.

1.2. Climate change mitigation and adaptation

Climate change is one of the most serious issues facing the world today. There is compelling scientific evidence that the global climate is changing and that the primary cause is the release of greenhouse gases resulting from human activity, including transport.

Many governments are putting in place legislative and policy frameworks at national and sub-national levels to address climate change. The Committee has concentrated on examining the measures being developed and applied specifically in relation to road transport. While transport is a key economic driver it is also a significant and growing contributor to global greenhouse gas emissions:

- 10% of all anthropogenic emissions come from road based transport
- 23% of world carbon dioxide (CO₂) emissions derive from fossil fuel combustion – with road based transport accounting for 17.1% of the 23%.

Emissions of CO₂ from road transport are predominantly (approximately 95%) generated by motor vehicles using the road network. In comparison, emissions related to the construction, maintenance and operation of transport networks are relatively small.

Given the significance of this issue, the purpose of the Committee's enquiry is to examine different countries' plans, policies and initiatives for mitigating the impacts of roads and road transport on the climate and adapting road transport systems to climate change. The enquiry has covered both supply and demand side measures for climate change mitigation and adaptation, and both will be covered in the Congress session.

The supply side measures focus on how the building, maintaining and operating of road infrastructure can be undertaken in ways that minimise greenhouse gas emissions and future-proof the assets against the effects of climate change. Illustrative examples from a range of countries will be provided, including USA, UK, Germany and Japan and the common themes identified.

The demand side measures focus on the range of policy measures in place or being developed to manage demand for road transport. These include fiscal and behavioural demand management measures, as well as vehicle technology policy measures. Case studies will be discussed to illustrate these measures, including congestion pricing, parking charges and fuel taxes.

The analysis of climate change impacts on transport and potential strategies for adaptation are still in early stages of development. Further experience of most countries is dynamic and rapidly changing. Further the inclusion of adaptation measures to improve resiliency is entirely case specific and dependent on both the nature and extent of climate change impacts experienced at the local level. With this in mind, the report focuses on the extent to which countries have begun the process of considering adaptive measures in the planning and project development of transport systems.

The Congress session will give an overview of the impact of different measures in different contexts, taking into account cost effectiveness information where this is available. It will also provide a high level assessment of the 'current state of play' at an aggregated international level and assess any likely changes to this based on planned activity over the next five years. Conclusions will be offered for initiatives, or packages of initiatives that can be pursued to reduce the impact of road transport on climate change and also to ensure road transport systems are resilient to the likely changes resulting from climate change.

1.3. Environmental monitoring

Understanding the environmental impacts of roads is an important part of a sustainable approach to transport infrastructure. Constructing, operating and maintaining roads affect a wide range of environmental issues such as nature, landscape development, water and air quality and noise propagation. Unless carefully managed, these effects can be negative and harmful. Monitoring the environmental impacts of road transport is therefore essential for the identification of issues, tracking of trends, implementing appropriate mitigation actions and assessing the effectiveness of such actions.

This enquiry has focused on clarifying what is encompassed in the term 'environmental monitoring' and identifying best practices from a wide range of countries in order to draw recommendations that can be applied to new and existing road infrastructure. Specific issues covered include: air and climate, noise, hazardous substances and major accidents, waste management, soil, water resources, biodiversity and landscape. The environmental indicators currently in use at national and international levels will be explained and recommendations for how and when to monitor effectively will be presented.

This part of the Committee's presentation will include case studies from countries such as Switzerland, France and Portugal. It will be apparent that environmental monitoring is an integral part of a sustainable transport network and that its contribution to improved environmental outcomes can be significant if it is done effectively and efficiently.

1.4. Alternative energy

The emerging issue of the generation and use of alternative energy within road transport infrastructure systems has been considered by the Committee and will form part of the discussion during the Congress session on reducing the environmental impacts of transport. In contrast to an established topic such as environmental monitoring outlined above, alternative energy in road infrastructure is relatively new. It appears to be an area of great potential, offering multiple environmental and economic benefits, yet in many cases it is too early to accurately identify the long term environmental, social and economic implications.

The Committee has undertaken investigations and identified a range of innovative case studies that will be presented during the Congress session. These include photovoltaic collection of energy, wind and water micro generation of energy on roadsides and the thermal collection of energy using pavement methods. Observations can be drawn from the case studies about what is known, and what is not yet known, in terms of the effectiveness and efficiency of these innovations. However, recommendations cannot yet be made because further application of these technologies is required over longer time periods in order to understand fully the opportunities and implications of generating and using alternative energy in road infrastructure.

Congress delegates will be invited to share their knowledge and experience with the Committee in this emerging area, and this will lead to a collective increase in knowledge and understanding.

BIBLIOGRAPHICAL REFERENCES

Nil

DRAFT CONCLUSIONS

The Congress session entitled “Reducing the impacts of Road Transport on the Environment” will inform delegates about the latest international policy and practice on two complex but established issues, namely climate change responses and environmental monitoring. The session will challenge delegates to debate what more can be done to improve and expedite outcomes in these important areas.

Finally, the Congress session will cover the Committee’s insights into the emerging area of the intersection between alternative energy sources and the operation of transport networks from an infrastructure perspective. Delegates will be invited to contribute relevant experiences, and to make observations about the opportunities and limitations of the innovative approaches which are emerging.