

TECHNICAL COMMITTEE 2.3 – FREIGHT

2.3.1. Best practices, monitoring and regulation to reduce overloading and associated infrastructure damage on road networks

Strategies / Objectives

- Investigate and assess the regulation compliance using WIM and direct enforcement (incl. overload control, speeding control, vehicle fitness control, etc.).
- Study the potential and implementation of Performance Based Standards for heavy vehicles (regarding fleet/vehicle/loading control, safety compliance, driver condition, rollover stability, etc.).
- Identify and improve heavy vehicle inspection and certification; including purposes, processes and facilities (incl. inspection centers).
- Study the potential and implementation of Intelligent Access Programme (IAP) and Smart Infrastructure Access Policies (SIAP) for vehicle/infrastructure/service provider, using connected vehicles and smart infrastructure.
- Pay special attention to LMICs and identify their challenges and potential applications.
- Encourage coordination with other TCs and TFs, such as *T.C.2.4 – Road Network Operation/ITS and T.C.4.1 – Pavements, and with HVTT Forum and ISWIM, T.F.3.1 – Road Infrastructure and Transport Security, and T.F.2.2 – Electric Road Systems.*

This Technical Committee will focus on all type of territories (urban and rural). It will also examine the best practices, monitoring and regulation to reduce overloading and associated pavement damage on road networks.

Overloaded trucks, poor vehicle conditions, driver fatigue and speeding remain a big challenge in road freight transport, especially also in LMIC's. These issues can cause severe safety problems and substantial damage to the road infrastructure. Overloading leads also to unfair competition between transport modes and transport companies.

In Europe about 8 to 15% of the trucks are overloaded. Most overloads are between 5 and 10%, some go up to 20-25%. In LMIC's the share of overloaded trucks is expected to be much higher and also the share of overloads.

Different approaches have been implemented or are under development to improve the regulation compliance using WIM and direct enforcement (e.g. in France, the Netherlands), performance based standards (e.g. in Australia, South Africa), advanced heavy vehicle inspection centers (e.g. in Switzerland and other countries) and Intelligent Access Programme and the Smart Infrastructure Access Programme (e.g. in Australia). Especially in high income countries more advanced approaches using new technologies have been implemented and or are in a testing phase. From these approaches positive impacts are expected regarding the compliance with regulation, to increase road safety and to prevent damages to the infrastructure. Also a reduction in fuel consumption and emissions can be expected.

It is therefore necessary to make a survey and collect case studies on good practices and current developments using traditional and advanced approaches in different countries. Successful approaches and experiences will be presented and discussed in a seminar in a LMIC. The results of the survey and the case studies will be integrated in a full report available at the end of the cycle.

This contribution from PIARC will be relevant and useful for the public sector and the industry.

The topic could be addressed at the ITS conference or a workshop in HIC.

In this Cycle, a full report based on the collection of case studies is expected to be completed.

Outputs	Expected Deadlines
<ul style="list-style-type: none"> • Collection of case studies 	<ul style="list-style-type: none"> • June 2021
<ul style="list-style-type: none"> • Full report 	<ul style="list-style-type: none"> • December 2022

2.3.2. Greening of freight transport

Strategies / Objectives
<ul style="list-style-type: none"> • Investigate infrastructure and vehicle related solutions for zero emission freight transport (electrification, hydrogen, etc.) Investigate further strategies and measures (technical incl. alternative fuels, logistics, infrastructural, regulatory, demand related, business behaviour, etc.) in order to reduce the greenhouse gas emissions and other pollutant emissions of road freight transport and the use of fossil energy. • Take into account Works carried out by Special Project – Electric Road Systems. • Provide recommendations regarding suitable framework conditions, support and implementation of strategies. • Encourage coordination with other TCs and TFs, such as <i>T.C. 1.2 – Planning Road Infrastructure and Transport to Economic and Social Development</i>, <i>T.C.1.4 – Climate change and resilience of road networks</i>, <i>T.F.2.1 – New mobility and its impact on Road Infrastructure and Transport</i>, <i>T.F.B.2 Automated vehicles</i>, <i>T.C.3.4 – Environmental Sustainability in Road Infrastructure and Transport</i>, <i>T.F.3.1 – Road Infrastructure and Transport Security</i>, and <i>T.F.2.2 – Electric Road Systems</i>.

Transport contributes today to about one quarter of energy-related global GHG emissions and about one fifth of energy use. The share of road freight transport is increasing and at the same time road freight transport is heavily depending on fossil fuel. The requirements for fossil independency and other emissions will be tightened. The need to reduce greenhouse gas emissions is still a dominant issue in the debate over how the transport system should be further developed. There are increased demands from various stakeholders that the climate impact from the transport system should be reduced and fossil fuels phased out. Also, pollution and noise are important issues, especially in urban areas. Tougher policy instruments are seen as a precondition, but it is hard to get political consensus. Especially for freight transport, new solutions need to be tested quickly and come into effect. In many parts of the world, different types of electrical road systems are now being tested, with continuous charging of electricity. There are of course other types of solutions and they are constantly evolving. The hydrogen is also a potential solution for freight vehicles which should be more analyzed, both on the vehicle and infrastructure sides. Also multimodality should be further addressed.

To reduce greenhouse gas emission will remain a huge challenge mid and longer term. Strategies and measures reducing the greenhouse gas emissions of road freight transport should be further investigated. This will include technical, logistics, infrastructural, regulatory, etc. measures.

The topic of electric roads should be further investigated also taking into account the results of the ERS related special project.

It is therefore necessary to collect case studies and to provide good practice fact sheets on promising approaches which support the greening of road freight transport. Successful approaches and experiences will be presented and discussed in a seminar in a LMIC.

Based on the case studies and a good practice fact sheets a briefing note is developed containing a synthesis on the actual status of investigation of approaches contributing to greening freight transport. Because still some technologies are in development stage the briefing note can provide guidance at the right stage of the development to assist the public sector in preparing suitable framework conditions.

Outputs	Expected Deadlines
<ul style="list-style-type: none"> • Collection of case studies 	<ul style="list-style-type: none"> • December 2021
<ul style="list-style-type: none"> • Briefing note 	<ul style="list-style-type: none"> • June 2022

2.3.3. Application of emerging technologies on freight transport and logistics

Strategies / Objectives

- Investigate and document latest developments in platooning and partly and fully automated driving in freight transport.
- Investigate and document other technology trends and their impact on logistics and freight transport and the potential for the management of transport systems (Internet of things, 3D-Printing, tube logistics, share economy logistics, big data, robotic & automation, drones, etc.).
- Identify institutional and regulatory issues, potential impacts regarding efficiency, quality, safety and environment.
- Provide findings and recommendations regarding suitable framework conditions and implementation strategies.
- Encourage coordination with other TCs and TFs, such as *T.C. 1.2 – Planning Road Infrastructure and Transport to Economic and Social Development*, *T.C. 2.4 – Road Network Operation/ITS*, *T.F. 2.1 – New mobility and its impact on Road Infrastructure and Transport* and *T.F.B.2 – Automated vehicles – challenges and opportunities for road operators and authorities*, *T.F.3.1 – Road Infrastructure and Transport Security*, and *T.F.2.2 – Electric Road Systems*.

Technology trends as internet of things, 3D-Printing, big data, self-driving-vehicles, cloud logistics and robotics create new ways in doing logistics business and in managing the (freight) transport system. Higher degrees of automation in logistics and freight transport will lead to new types of decision support and services. Digitalization and automation will also have a substantial potential to increase the productivity, reliability and flexibility of logistics and transport services. But it also needs control by society to ensure that the use of the new technology contributes to the objectives of the transport policy. To realize this potential and to ensure the contribution to transport policy objectives several important questions have to be answered, especially regarding

- the impact of digitalization and automation on logistics and supply chains (incl. the trucking industry)
- the impact of digitalization and automation on freight traffic and traffic management on roads and combinations with other modes
- the benefits of digitalization for road and multimodal freight transport and road traffic management of public infrastructure and finally
- the necessary technological, organizational and legal framework conditions for implementation.

The application of new technologies is still at the beginning. Some countries started field trials regarding platooning or other application of big data. The topic needs exploration especially regarding the potential applications and impacts and suitable framework conditions for implementation. In addition, the role of the public sector has to be clarified.

So, firstly it is necessary to make a review of the work carried out so far by different organizations, and to collect and analyze different technologies and applications.

Based on them a briefing note is developed containing a synthesis on the actual status of investigation of new technologies in freight transport including interim results and remaining value for the private sector that wants to cooperate and applicate new technologies in freight transport. Because still many technologies are in development stage the briefing note can provide guidance at the right stage of the development to assist the public sector in preparing suitable framework conditions.

For the technologies which are more mature in application (e.g. platooning, partly automated driving) a full report will be provided.

This contribution from PIARC will be relevant and useful for the public sector and the industry.

The topic could be addressed at the ITS conference or a workshop in HIC.

In this Cycle, a full report. is expected to be completed. Prior thereto, a literature review and fact sheets could be released.

Outputs	Expected Deadlines
<ul style="list-style-type: none">Literature review and fact sheets	<ul style="list-style-type: none">March 2022
<ul style="list-style-type: none">Full report	<ul style="list-style-type: none">December 2022