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WORLD ROAD ASSOCIATION

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Overweight vehicles impacts on road infrastructure and safety

CALL FOR PROPOSALS

Deadline for submission of proposals: January 24, 2020

1 PURPOSE AND STRATEGIC SIGNIFICANCE

1.1 Introduction

PIARC - World Road Association has established a Special Projects mechanism to enable it to respond outside the usual four years Technical Committee cycle to emerging issues and priorities identified by its members. This paper is a Call for Proposals to conduct the “Overweight vehicles impacts on road infrastructure and safety” Special Project.

1.2 Preliminary definition of weight limits and overweight vehicles

Countries around the world have set weight limits for vehicles using the road network. The main objectives of these limits are to preserve the road infrastructure and to ensure the road safety characteristics of the vehicle.

The weight limits are set for the whole vehicle but also for each wheel, axle and/or axle group of the vehicle. Additional rules apply to single bodies of a combination, such as tractor, trailer or semi-trailer. Total weight, axle loads and spacing of the vehicle is crucial for road structures such as bridges and others, while axle and axle group loads are crucial for pavements. Both characteristics, as well as load balance and stowage are important for road safety.

Despite the weight limits set by the authorities, a certain number of vehicles exceed these limits creating overweight vehicles which can damage or collapse the road infrastructure and cause a road safety danger.

For the context of this project “overweight vehicles” are defined as those that exceed the legal limits of Gross Vehicles Weight (GVW) or axle/axle group load. We will also include high capacity vehicles (HCVs) operated above the legal limits with a permit but which have left the restricted itinerary where they were allowed.

1.3 Purpose of the project

The purpose of this project is to offer to road administrations and decision makers a clear image of the impact of overweight vehicles on the road infrastructure (material and economic impacts) and road safety, and to propose some mitigation or enforcement tools and policy to ensure better compliance between the heavy vehicles and the regulations.

The project should offer:

- A) A quick overview of weight limits around the world and their trend along time, without entering in the detail of the special cases of authorized overweight vehicles.
- B) An overview of overweight vehicles existence and use frequency around the world, if possible, by category of road network and type of vehicles.
- C) Understanding of overweight vehicles impacts on road infrastructure both from a technical / structural perspective and from an economic perspective. Understanding of overweight vehicles impacts on road safety. Quick understanding of freight business to use overweight vehicles.
- D) Compilation of best practices and policies (and unsuccessful ones) to tackle the detection and enforcement against overweight vehicles: technological ones (weigh in motion and others), prosecution (fines, immobilization of cargo, etc.), change of behavior of drivers and

freight industry (education, etc.).

1.4 Out of the scope

Some elements are linked to the aim of this project and they can be mentioned or acknowledged but they do not constitute the scope of this project:

- Standardization of vehicles weights and dimensions.
- Authorization process for legal overweight vehicles.
- High capacity vehicles (over 44 tons) advantages and challenges.
- Importance of road maintenance.
- Unpredicted road infrastructure failures.
- Engineering / structural solutions to limit the impact of overweight vehicles.

2 METHODOLOGY AND APPROACH

2.1 Overview and compilation of the state of the art, including the identification and analysis of case studies, implemented projects and scientific approaches.

1. First, the study should provide a short general overview of what are the weight limits for vehicles, wheels if any, axles and axle groups around the world, explaining the general concept of those limits.
2. Secondly, the study should provide a short overview of how many, and if possible which categories, overweight vehicles are estimated in different regions of the world, and which type of overweighing, based on:
 - Literature review.
 - Survey produced for the report and disseminated in PIARC network and eventually other international networks.
3. Brief description of business models and reasons pushing drivers and freight companies to run overweight vehicles, and adverse economic impact of overloading on fair competition.
4. Analysis of the impacts of weight limits and overweight vehicles, at least under the following three aspects:
 - Engineering /structural aspects: damage, reduced service life, including different aspects for asphalt and concrete pavements, and unpaved roads (impacts on other pavement types would be and additional asset for the proposal), and impact on risk of brittle failure (collapse) or fatigue of road bridges.
 - Economic aspects: risks and costs of using infrastructure damaged by overweight vehicles, costs of infrastructure repairs, ...
 - Road Safety aspects: diminished road safety characteristics of overweight vehicles (stopping distance, stability, crash energy...), accidents produced by overweight vehicles,

...

5. Detailed overview of practices and policies around the world to tackle the problem of overweight vehicles (including successful and unsuccessful ones). Covering at least the following aspects:
 - Technology and process to detect overweight vehicles, including WIM solutions (road based or on-board), permitting and enforcement.
 - Enforcement practices (with/without human action, i.e. preselection or direct enforcement) and policies including prosecution measures (fines, loss of reputation, immobilization of cargo...).
 - Efforts to change of behavior of freight companies and drivers.

It is essential that the study focuses on the needs of PIARC members both in High Income Countries (HIC) and Low Middle Income Countries (LMIC) as it should enable them to understand the impacts of weight limits and overweight vehicles, as well as process, technologies, policies and practices to tackle overweight vehicles challenges.

2.2 Business model from Road Administration and freight industry perspective.

The report should be able to identify the importance of tackling overweight vehicles for the business model of road administrations but also provide major principles of freight industry business model to allow the identification of most efficient actions of enforcement or incentive to comply with the regulation in force. For example, in some countries, freight companies after making a cost benefit analysis might decide to run overweight vehicles despite the economic risk of having fines.

The study should also analyze stakeholders around this issue (police, customs, ports authorities, freight supply chain...) and best practices to coordinate with them to tackle the problem of overweight vehicles.

2.3 Recommendations and conclusions

Based on the information collected, the understanding of impacts of weight limits and overweight vehicles, and the business models of road administrations and freight industry, the study should provide recommendation on the best practices and policies depending for different socio-economic regions.

The study should also provide some conclusions on the subject and recommendations to PIARC regarding the future assessment of this issue.

2.4 Approach

Proposals in response to this Call should use the template "Answer to the Call for Proposals for the Overweight vehicles impacts on road infrastructure and safety Special Project". The answer should include a description of the approach to be taken to collect, compile and analyze the information

being requested. The proposal should answer the following questions about the tenderer's approach:

1. How will the study collect international information regarding weight limits, overweight vehicles and the impact of overweight vehicles?
2. How will the study collect world-wide successful and unsuccessful practices, policies and case studies regarding weight limits and overweight vehicles?
3. How will the study identify the impact of overweight vehicles on pavements (different types), bridges and structures, road safety?
4. How will the study analyze the information collected and how recommendations and conclusions will be formulated?
5. How will the study be structured in order to ensure a clear presentation and to show the challenges and opportunities of overweight vehicles?
6. How the study will analyze a business model from road administration and freight industry perspectives?
7. How the study will take into account LMIC reality to provide specific recommendations to them regarding weight limits and overweight vehicles?
8. What will be the study milestones in terms of deliverables? What will be the approach for monitoring the progress and to include the inputs from the Project Oversight Team (POT)? It is recommended to organize monthly videoconference, and to share with the POT regularly intermediate deliverables asking for feedback.
9. How the management of the project will be organized including quality assurance and quality control without taking significant resources from the project.

2.5 Options

The proposal can be structured as a core proposal plus additional options. The bid would then include a core proposal within the proposed budget, and then some options which would be described in detail as well as priced.

If the bid is selected, PIARC would place the order for the core proposal and maybe as well for some of the options. This would be done at PIARC's discretion.

In any case, the core proposal has to answer all the expectations which are presented in this call for proposals document.

2.6 Key areas: global perspective and LMIC

Please describe the key areas for consideration in the framework:

1. What will be the study's means of collecting information from different areas of road administration, academia and relevant industry with a global perspective including successful and unsuccessful case studies?
2. LMIC represent an important share of PIARC membership and it is crucial that their needs, opportunities and challenges are addressed within PIARC activities. How will case studies from LMIC be gathered and how their needs will be taken into account? How some of the findings of the project will be identified as particularly suitable for LMIC?

3 FINAL DELIVERABLES

The final deliverables will comprise:

1. A **report** presenting the state of the art regarding impacts of overweight vehicles.

The general structure of the report should be as follows (adjustments with the agreement of the POT are acceptable):

Executive Summary

1. Introduction: project background, objectives and scope.
2. Methodology and approach.
3. Description of weight limits for vehicle, wheel, axle and axle group and their principles.
4. Overview of overweight vehicles (description, traffic estimates, reasons of their existence).
5. Impacts of overweight vehicles (engineering, economic and safety).
6. Business models for road administrations and freight industry, including description of all stakeholders.
7. Technologies, practices and policies to tackle overweight vehicles challenges.
8. Recommendations, for road administrations, LMIC and PIARC.
9. References
10. Appendices

- Taking into consideration the LMIC in the study: each chapter of the report should make reference to LMIC when relevant. A chapter inside the report's conclusions with possible **specific recommendations for LMIC** should also be considered.

- The specific recommendations for road administrations and road operators are a key element of the report. They should be relevant for high decision makers and operators.

- The specific recommendations for PIARC could include recommendations to liaise with specific stakeholders, take part in existing conferences and/or create a new technical committee / task force on the subject.

2. Presentation material to present the results of the Special Project at PIARC Council meeting on 20th, 21st or 22nd October 2020 in Dakar, Senegal (final date will be defined first semester 2020). Selected tender will also be invited to join the meeting physically or via videoconference. The retained option should be specified in the proposal.
3. Voluntary contribution to the Session on the Special Projects inside the World Road Congress in Prague October 2 – 6 October 2023. Retained consultant will be invited to join the Session (participation is optional) and to provide inputs to the Session program. This contribution will be requested after finalizing the project and out of the project budget, so it is provided as information.

The final products will be submitted in electronic form in English.

The report will be owned by PIARC and it will acknowledge the contribution of the external consultant.

The report will use the Word template provided by PIARC.

PIARC will ensure translation into French and Spanish. In addition, they will make it available free of

charge in PIARC's Virtual Library to ensure a large world outreach for the report.

4 KEY DATES

The proposal should also include a proposed draft of a work schedule. The schedule should identify dates or timeframes for accomplishing major milestones in the project. The work schedule will include monthly videoconference meetings and dates or timeframe for an interim product or products that allows adequate time for review and feedback prior to the final deliverable. The schedule must be completed, and final report should be delivered by September 16th, 2020, so PIARC can proceed to translation and dissemination of document in advance to participants to PIARC Council meeting and the World Road Congress.

These are some of the milestone to be included in the offer:

1st half of February: Kick-off videoconference meeting.

Intermediate milestones to be proposed by the tenderer.

16th of September 2020: Finalization of the report in English.

1st of October 2020: Finalization of Council presentation.

16th of October 2020, Presentation at PIARC Council meeting.

2-6th of October 2023, Voluntary presentation at the 27th World Road Congress.

5 PROPOSED BUDGET

Please provide a general budget for the project. The funding requested from PIARC should not exceed 42,500 Euros all taxes included. The budget should include a general itemization of the costs of the major work elements of the project and provisional schedule of invoicing

Since a timing delivery of the outputs is at the essence of the Special Projects mechanism, late penalties could be applied if the external consultant fails to deliver the outputs in the proposed milestones. The framework to apply these penalties will be agreed with the tender before signing the purchase order based on the milestones scheduled included in the tender's proposal.

6 PROPOSED EXPERTS AND INTERNATIONAL NETWORK

The proposal should also include a description of the relevant expertise that qualifies the contractor to undertake the project. Specifically:

1. Please describe any past or current work projects that relate to the subject of this proposal.
2. Please also identify the person or persons who will be working on this project, describing their roles and estimated contribution to the project, and providing information on their backgrounds, experience and expertise.
3. Please provide information about any other international network, other than PIARC, from which tender could receive inputs.

7 PROJECT OVERSIGHT AND PROPOSALS EVALUATION

The project will be overseen by a project evaluation and steering committee called “Project Oversight Team” (POT) to select the preferred tender and assist in the development of the project. These experts will be drawn from PIARC membership and will include representatives from Technical Committees 2.3 Freight Transport, 3.3 Asset Management, 4.1 Pavements and 4.2 Bridges, some PIARC member countries and PIARC General Secretariat.

The POT will assess proposals and select the preferred tender on the basis of its assessment of:

- a) Technical approach and methodology (up to 50 points): how well tenders address the project objectives and deliverables and how effective and resilient is the proposed approach and methodology including collecting case studies internationally and addressing the needs of different PIARC member countries, such as LMIC;
- b) Proposed work plan including intermediate milestones (up to 15 points).
- c) Value for money offered by the tenderer (up to 20 points): including additional contributions leveraged by the proposal; and the time offered by different contributors of the tender’s team.
- d) Experience of the proposed team on the holistic vision of the road sector, on the overweight vehicles issues, and the international experience and network of the proposed team (up to 15 points)

The POT will oversee progress of the Project, including participating in periodic calls, reviewing interim and final products. The POT will also provide any relevant information from the PIARC work to the selected tenderer (e.g., information obtained from surveys) for use in the project. In addition to review and oversight by the POT, input may also be sought from the other members of Technical Committees and the PIARC Executive Committee and Strategic Planning Commission.

8 PROPOSAL SUBMISSION

Proposals should include the elements identified in this Call for Proposals.

Answers should use the Word template “Answer to the Call for Proposals for the Road Related Data and how to use it PIARC Special Project”.

Proposals should be submitted electronically in English to PIARC General Secretariat at:

info@piarc.org

no later than:

January 24 , 2020

For any questions, please send E-mail to info@piarc.org