Road Safety and Traffic Management

Road Safety Knowledge Exchange in Low and Middle Income Countries

Host – Symposium Sponsor

International Partners

National Supporters

Road Safety Knowledge Exchange in LMICs

George Yannis

Professor
Department of Transportation Planning and Engineering
National Technical University of Athens

Together with: Julia Roussou (NTUA) and Isabela Erdelean (AIT)

PIARC Global Road Safety Knowledge Exchange project

Spreading Road Safety Knowledge to Low- and Middle-Income Countries

Global Road Safety Knowledge Exchange project

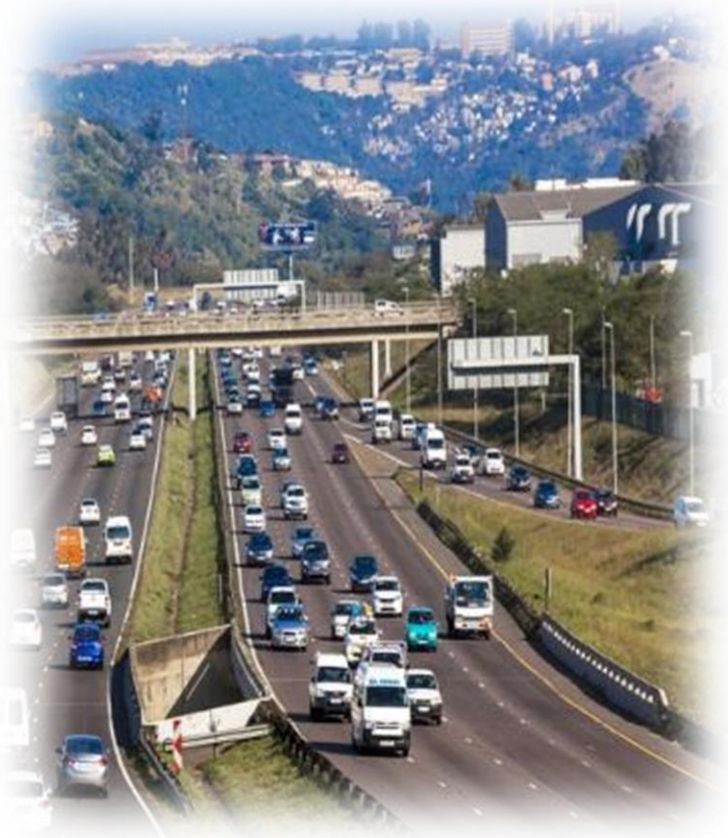
- 2 partners
  - National Technical University of Athens
  - Austrian Institute of Technology
  - Technical Support: USA, Australia, Canada, Québec, South Africa, Sweden
- Duration of the project
  - 15 Months (August 2022 – October 2023)
- Framework Program
  - PIARC – World Road Association
  - Funding from USA, Australia, Canada, Québec, NZ

Objectives

- Aiming to promote **knowledge sharing** through appropriate implementation aids that reflect PIARC road safety work

- Focus on spreading road safety knowledge to **Low- and Middle-Income Countries** (LMIC), where **road crash death rates** are **three times higher** than in High-Income Countries (HIC).

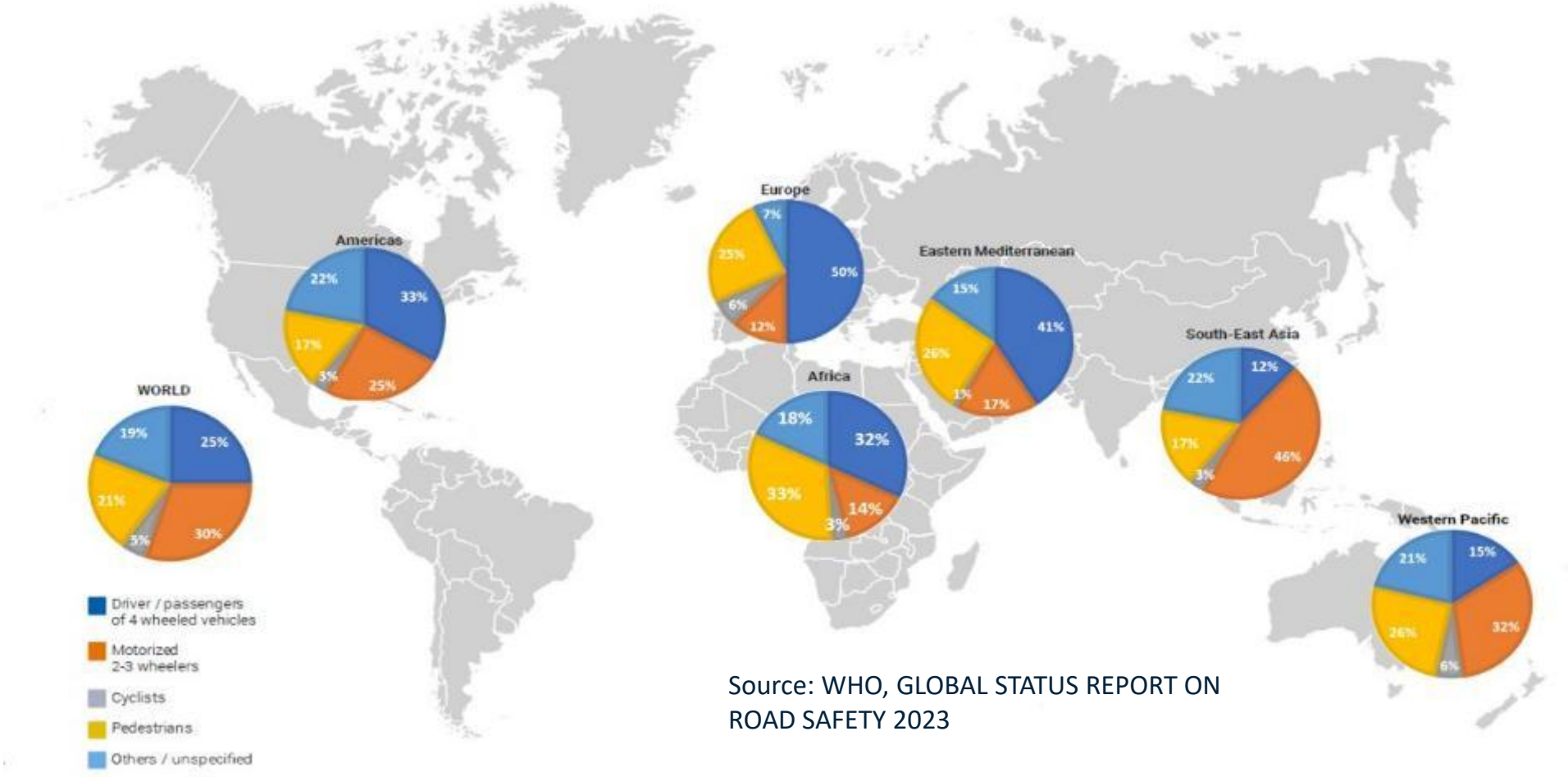
- More than 50 PIARC Technical Reports, Seminar Proceedings, Case Studies have been reviewed, grouped into **8 major Road Safety Areas**: Management, Infrastructure, Tunnels, VRUs, Behavior, Vehicle, Speed and Data.



LMICs Road Safety Basic Facts

Road crash death rates are three times higher in LMICs than in HICs

Distribution of deaths by road user type



Source: WHO, GLOBAL STATUS REPORT ON ROAD SAFETY 2023

VRUs in LMICs

- Each year, 1.19 million people are killed on the worlds' roads, and a further 50 million are injured, with the vast majority of these **(over 90 percent) occurring in LMICs.**
- Despite the increased global attention and progress in policy-making at national level, the number of **road casualties increased in 87 LMICs** since 2013.
- In most LMICs, **the majority of road users are vulnerable road users** – pedestrians, cyclists and these using motorized two or three-wheelers.
- LMICs have **greater variety and intensity of traffic** mixing the slow-moving and vulnerable non-motorized road users, as well as the motorcycles with fast-moving motorized vehicles.
- **Low-income countries** have the highest proportion of fatally injured casualties among vulnerable road users at 57%, as opposed to 51% in middle-income countries, and 39% in high-income countries.

Road Safety Management

- 87% of LMICs have **established lead agency** to guide the national road safety efforts.
- 66% of Low and Lower-Middle and 72% of Upper-Middle Income Countries **fund the lead agency in national budget**.
- **Only 43%** of Middle East & North Africa LMICs fund the road safety institutions in national budget
- 63% of the Low and 75% of the Middle Income Countries have a **national strategy for road safety**.
- **Sub-Saharan Africa** is the region with the smaller percentage of LMICs (65%) with national road safety strategy

Infrastructure

- **88% of pedestrians** travel is on 1- or 2- star roads
- **86% of bicyclists** travel is on 1- or 2- star roads
- **67% of motorcyclists** travel is on 1- or 2- star roads
- **Compliance of treatments** by road users is a significant issue in LMICs, and it is very likely that the treatment effectiveness will be lower as a result
- **Lower level of compliance** with road rules and a lesser respect for the rule of law in most LMICs than for many HICs.

Key Recommendations

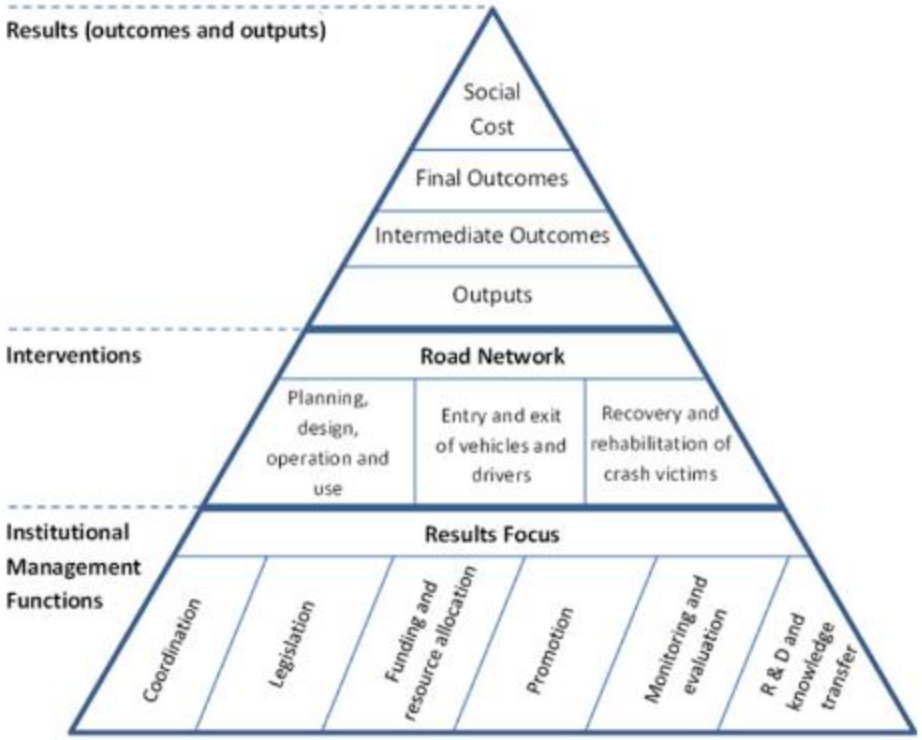
The development of an effective road safety strategy starts from the notion of Safe System Approach

Management

- Develop a **strong Lead Agency** and a robust set of **local guidelines** and **regulations** to ensure road safety management and leadership and build road safety expertise.

- The **country-wide management system framework** is developed in three levels:
  - Institutional management functions
  - Targeted interventions
  - Desired Results

- LMICs should exercise caution in establishing complex targeted strategies and plans until **data** and **appropriate management capacity** are available. They should allow, support and power, but also enforce **good oversight on the agencies**.



Data

- **Better access to data** on the effectiveness and costs associated with specific measures and investments can lead to further improvements and support for a broader implementation of road safety solutions.
- **Crash data** and **Safety Performance Indicators** should support evidence based policies, programs and measures at the LMICs.
- **Training** of data entry staff and police, improvements in the data collection tools and methods (e.g., crash report documents and devices, sensors) and **quality assurance measures** can contribute to the enhancement of data quality and reliability.
- Enforcement measures to **ensure reporting of accidents**, e.g., by making it a legal requirement, should be employed.

Infrastructure

- **Clear and well-defined policies** related to the implementation of Safe System infrastructure are needed to drive road safety improvements.

- **Proactive approaches** should be adopted
  - Impact assessment
  - Road safety audit
  - Safety inspection
  - Road assessment programs

- **Risk assessments** should be performed systematically by road authorities for the whole network, when possible, as well as at known high-risk locations.

- Care should be taken when **borrowing policy from other countries** to ensure that it is fit for local conditions.

Speed

- **Speed limits must be credible**, homogenous, consistent, visible and maintained over time to increase driver compliance.
- Speed management requires the **planning and designing of appropriate road layouts** and networks to ensure safe travel speeds.
- Solutions such as speed bumps, lane narrowing, new pedestrian crossing solutions are **low-cost essential techniques for LMICs**.
- In urban areas where there is a mix of road users a maximum speed limit of **30km/h should be established**.
- Managing speed through behavioral change or speed compliance regulations could be done by **enforcement, education, demerit points and fines** to road users.

Vulnerable Road Users

- Road design should include **self-explaining** and **failure-forgiving roads** according to the users' needs.

- Measures to **enhance VRUs safety** along road sections include:
  - wider and paved shoulders,
  - proper crossing facilities,
  - separated footpaths,
  - lanes for cyclists/mopeds,
  - appropriate road lane widths.

- Key message for road engineers and designers is to **include VRUs in the design process** and include self-questions such as "what if a child /blind /elderly /disabled person is crossing".

- To ensure compliance, a combination of **communication and education campaigns** and enforcement measures should be employed.

Human Factors

- The road transport system needs to **anticipate and accommodate for human errors** and prevent fatalities and serious injuries. This includes road infrastructure that facilitates safe behavior such as clear road signage, traffic calming designs and physical separation of road users.
- Road safety evaluations and inspections should be made by an **interdisciplinary team** including human factors and behavior experts.
- Developing countries should consider **strategies** that have been **successfully implemented in other countries**. This might include the adoption of technologies such as alcohol interlocks and seat-belt warning systems.
- **Legislative measures** such as setting speed limits, establishing blood alcohol limits and mandating the use of protective equipment should be enacted and enforced.

Support Mechanisms for Safer Roads

All actions and methods contribute fully to the success of the UN Second Decade of Action for Road Safety

PIARC Tools

- **Road Safety Manual** (RSM - 4th Edition just released):
  - A manual for practitioners and decision makers on implementing safe system infrastructure.
  - Designed to help all countries and especially LMICs, at every stage of infrastructure development to fulfill road safety objectives.
  - Aligned with key pillars for the United Nations Decade of Action for Road Safety 2021-2030.

- **Human Factors Method** (RSE_HF):
  - An improved approach to implement road safety inspections.
  - Aims to include into the road design and management procedures the study of human factors and human risk-taking behaviors.
  - Supporting LMICs that are still at the starting phase of the road safety management process.

The African Road Safety Observatory

- a **useful tool** to support evidence-based decision making of Authorities, the Stakeholders and the Society providing with data, analyses and capacity building

- the basis was set through:
  - the European Horizon Project: **SaferAfrica**
  - and the World Bank SSATP Program

- currently **under development** through funding of the European Commission to be hosted by the African Union Commission

Conclusions

Support LMICs road safety authorities with continuous consulting in every step of the road safety procedures, from road design to road management

Conclusions

- Despite significant progress, disparities in financial commitments and strategic planning persist across regions, necessitating a more **universally implemented approach.**
- Building awareness of the **Safe System Approach**'s application is a crucial step for LMICs.
- **Crash data** serves as a **crucial cornerstone** for infrastructure management in LMICs, aiding in assessing risks and implementing effective safety measures.
- **Managing speed** is a key priority for increasing road safety and critical to the effective implementation of the Safe System Approach.
- Although this study was undertaken for improving road safety in LMICs, the **recommendations** and **observations** identified can be considered **relevant and valuable for all countries** aiming to improve safety on their roads.

THANK YOU!

George Yannis
geyannis@central.ntua.gr

Host – Symposium Sponsor

International Partners

National Supporters

HELLENIC REPUBLIC
MINISTRY OF INFRASTRUCTURE
AND TRANSPORT

HELLENIC REPUBLIC
Ministry of Digital Governance