



# Roundtable discussion

## Vision of the Future for Safer Roads in CAREC and the Challenges in Achieving This

Facilitator: Phillip Jordan, ADB Road Safety Engineering Consultant



Designing Safer Roads: Accelerating the  
implementation of the CAREC Road Safety Strategy  
30–31 August 2017 • Dushanbe, Tajikistan

Проектирование более безопасных дорог: Ускорение реализации  
Стратегии безопасности дорожного движения ЦАРЭС  
30–31 августа 2017 г. • Душанбе, Таджикистан



**What can CAREC engineers do to make roads safer for all?**

# I WISH TO THANK OUR INTERPRETERS

**This workshop would be impossible without our interpreters – and so I would like to express my thanks for their help**

# Objectives:

**Our aim has been to bring together professionals (engineers, Police, others) from across the CAREC Region to outline road safety engineering, and to discuss how to make safer roads for all.**

**It is wonderful  
that you have  
travelled to  
join us –  
welcome.**

**Please:**

- **Ask questions – in Russian, Australian or in English.**
- **Participate.**
- **Share your experience with each other.**
- **We want to take action within our profession to produce safer CAREC roads for all.**

# OBJECTIVES OF THIS ROUNDTABLE DISCUSSION:

- To define “road safety engineering”, and a “crash”
- To emphasise the important role of the road in road safety
- Then to discuss the challenges you face in this area, and ways to address these



# What is road safety engineering?

“A process, based on analysis of road and traffic related accident information, which applies engineering principles in order to identify road design or traffic management improvements that will cost-effectively reduce the cost of road accidents”

(Ken Ogden – page 35, “Safer Roads”)

The main processes in road safety engineering are:

- Accident blackspot investigation (a *reactive process*) – relies on a proven crash record for a site, and aims to reduce the crash frequency/severity at that site. Needs good Police crash data.
- Road safety audit (a *proactive process*) – takes the same skills and applies them during the design stages of a new road project to prevent crashes.

Then there are technical topics:

- Roadside hazard management
- Safety at road works
- Signs, lines, delineation
- Safe geometric design
- Intersections



## Road safety engineering gives consideration to all road users:

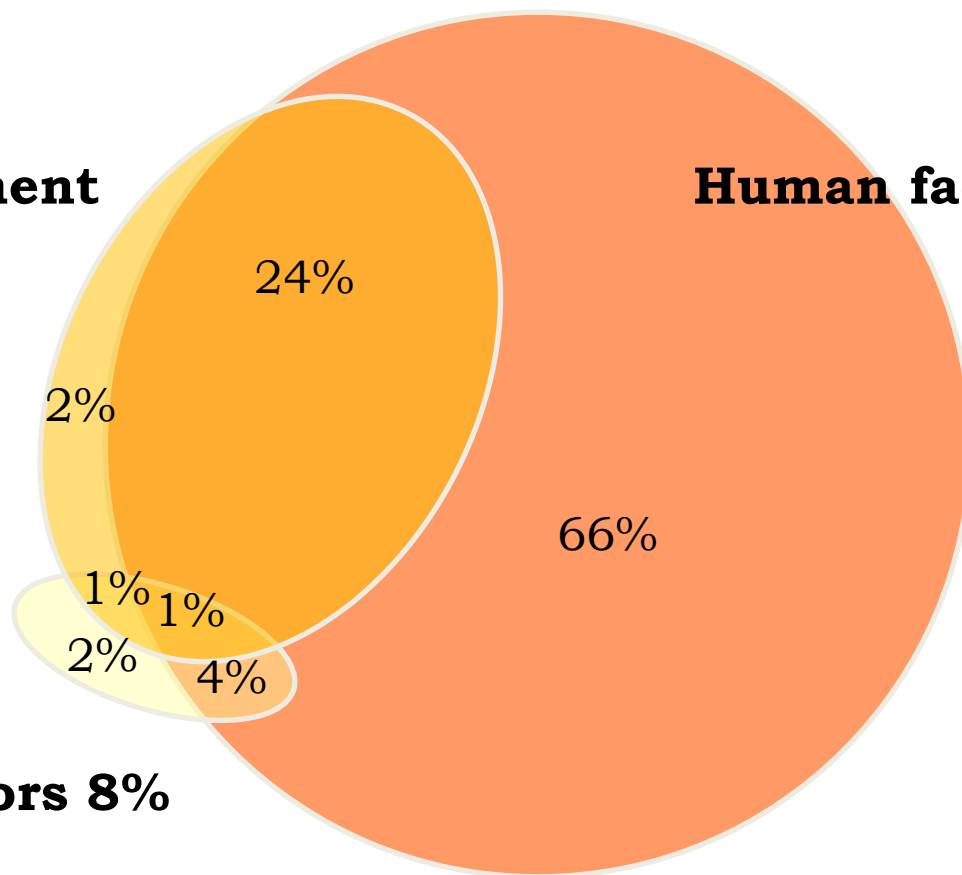
- Cars – drivers, passengers
- Trucks
- Matsukas/taxis/mini buses
- Pedestrians – of all ages
- Road workers
- Motorcyclists
- Bicyclists
- Agricultural machinery
- Animal drawn vehicles



# The factors involved with crashes

**Road environment factors 28%**

**Human factors 95%**



**Vehicle factors 8%**

Based on British and American research

Road user error is the major contributing factor to road crashes.

**But.....** it is easier to make an error on a “bad” road (with poor alignment, inadequate signing, lacking traffic control).

It is also easier for more serious injuries after an error on a road with unsafe roadsides (trees, poles, unsatisfactory barriers).

Remedying such defects (via road safety audits, or via blackspot programs) is an important step towards reducing the cost of road crashes.

We must not blame the drivers/riders for everything that goes wrong on the roads!

# Road safety engineering.....

..... is one profession that tries to break the chain of events that leads to a crash





# GLOBAL STATUS REPORT ON ROAD SAFETY 2015



**Have you seen  
this report?**

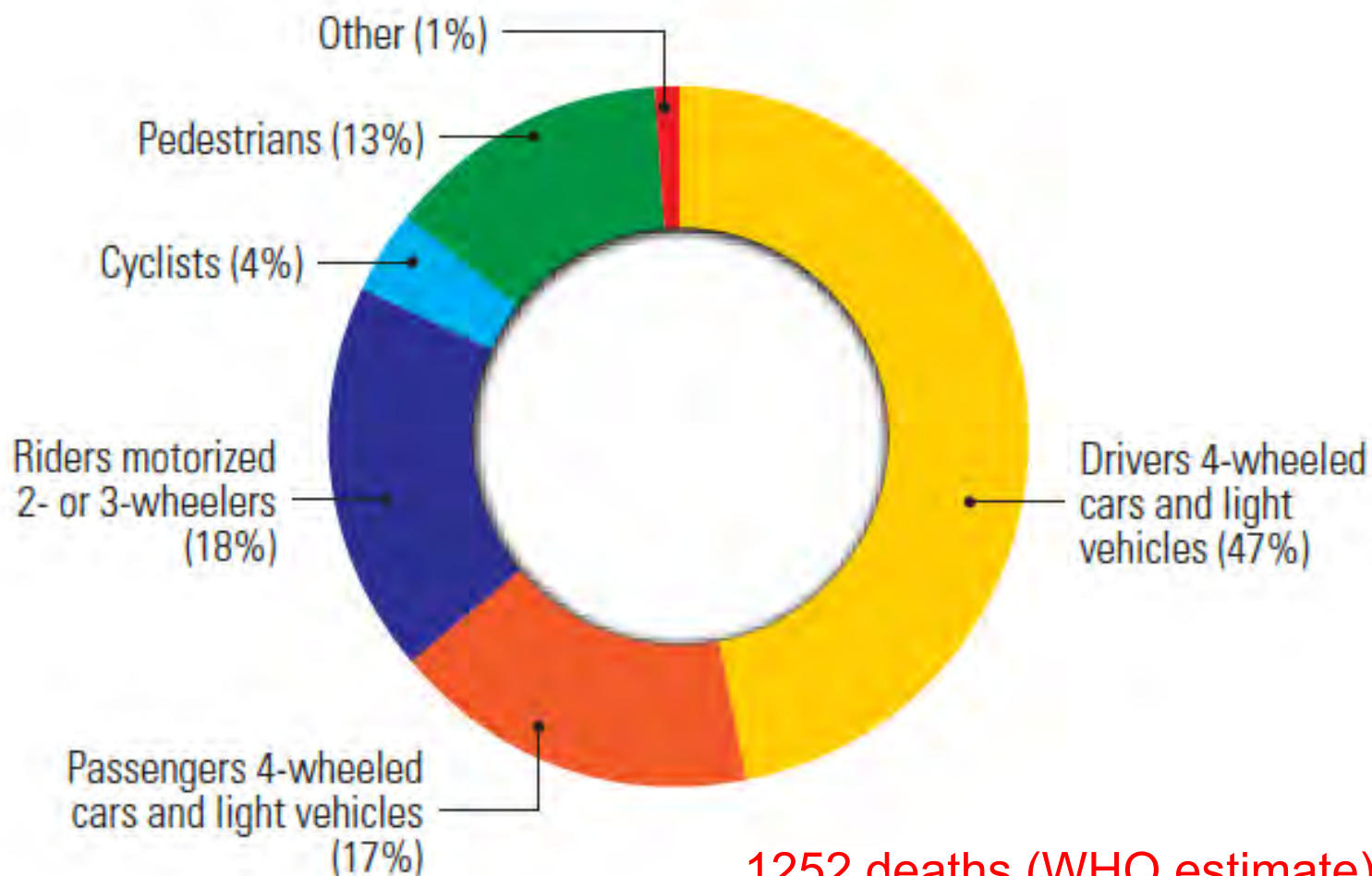


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# Road crash data – Australia

## DEATHS BY ROAD USER CATEGORY

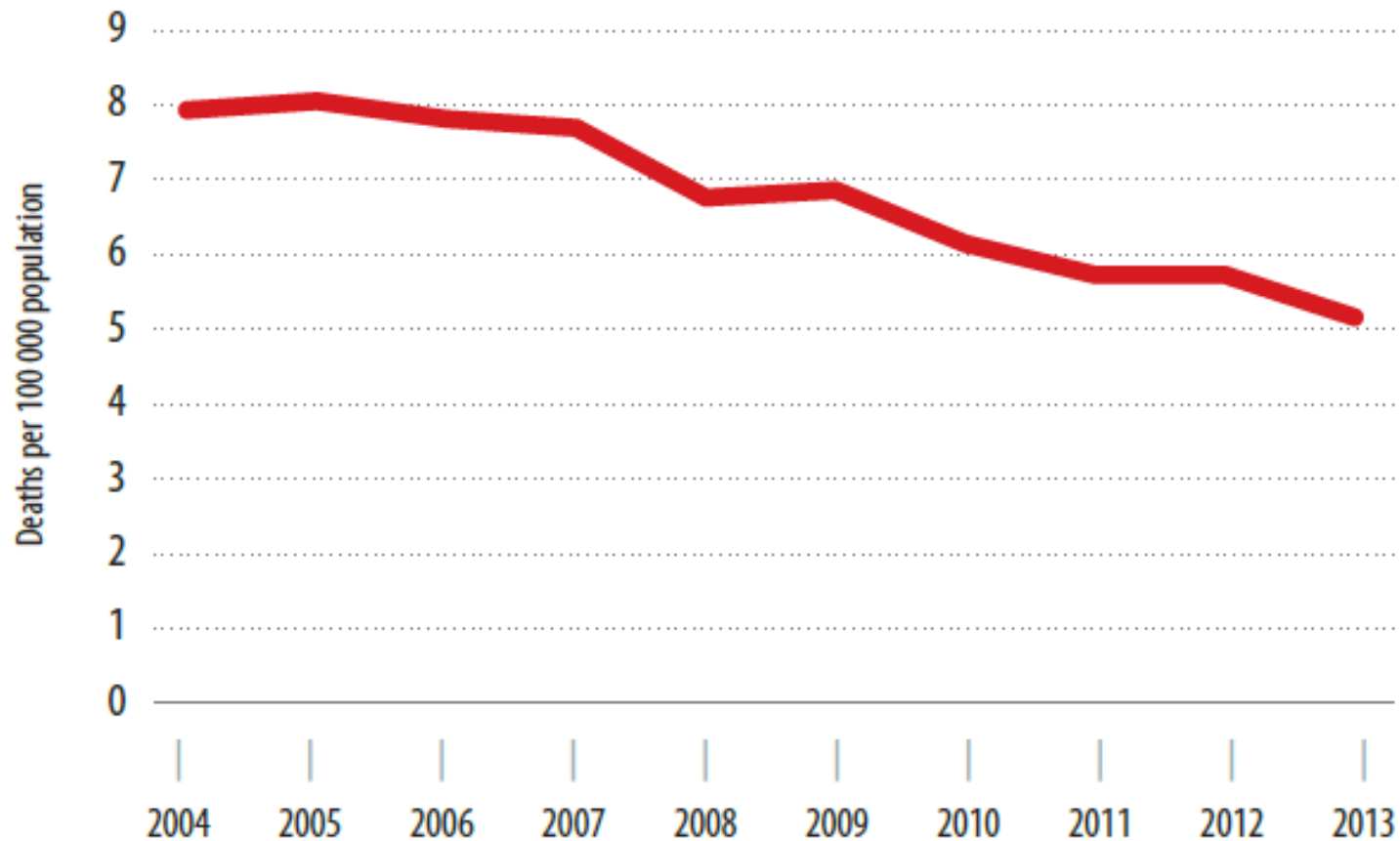


1252 deaths (WHO estimate)  
5.4 fatalities per 100,000 pop.

Source: 2013, Australian Road Deaths Database.

# Road crash data – Australia

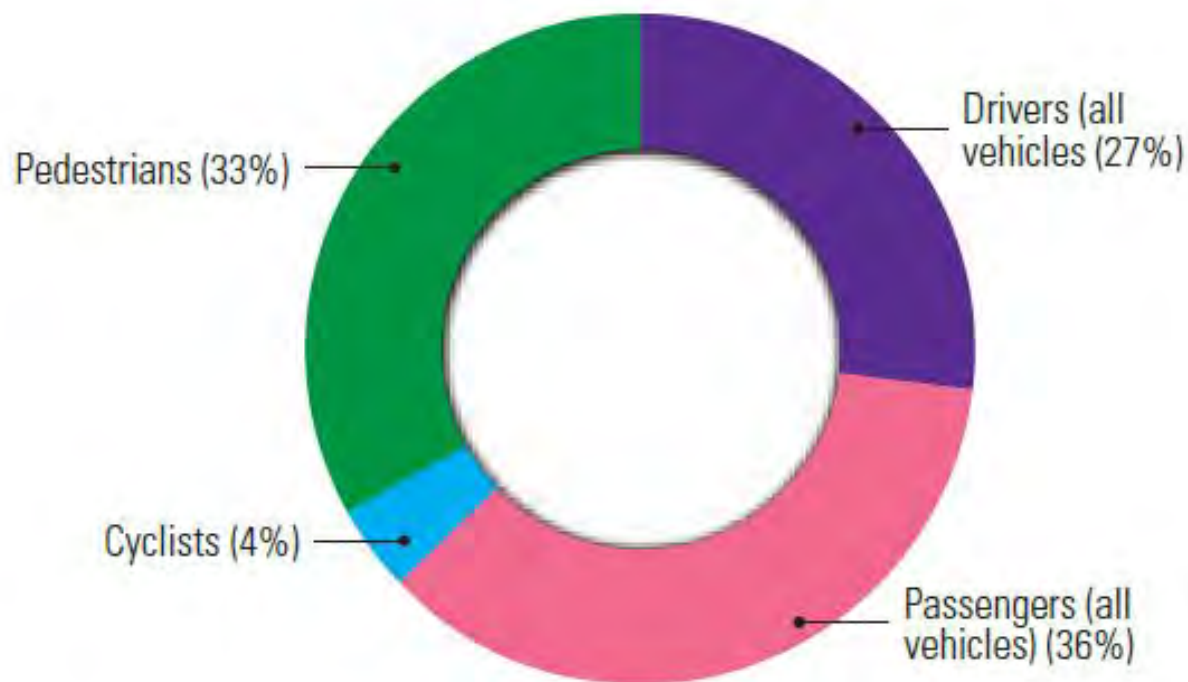
## TRENDS IN REPORTED ROAD TRAFFIC DEATHS



Source: Australian Road Deaths Database and Australian Bureau of Statistics.

# Road crash data – Tajikistan

## DEATHS BY ROAD USER CATEGORY

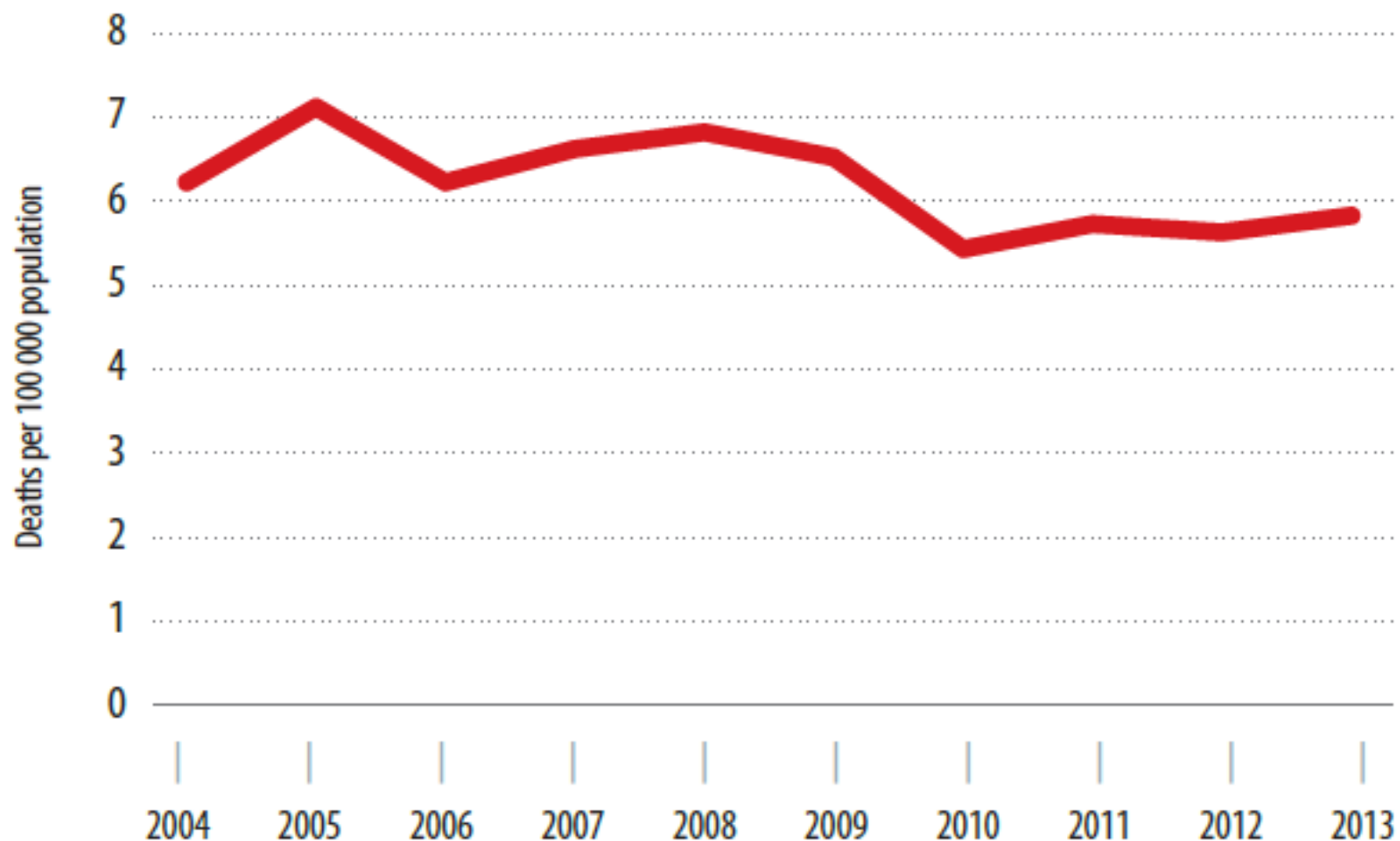


Source: 2013, State Automobile Inspectorate of the Ministry of Internal Affairs, Analytical review of the events on the roads of the Republic of Tajikistan in 2013.



# Road crash data – Tajikistan

## TRENDS IN REPORTED ROAD TRAFFIC DEATHS



# Road crash data – Tajikistan

Population	\$GDP	Level	Reported road deaths	Estimated number of road deaths	Range	Death rate per 100,000 pop
8,207,834	\$990	Low	472 (2013)	1543	1387 - 1699	18.8

**Fatality rate 18.8 deaths per 100,000 population**

**(4 times that of Australia)**

# What is a Road Crash?



“a rare, random, multi-factorial event in which one or more road users has failed to cope with their environment.”

# A road crash is the end result of a chain of events...

To break that chain, where do we start?  
Let's look at a "typical" chain of events.....





The chain of events...

A 35 year old man is the driver of this truck. His boss allows him to drive it home some weekends.

## Chain of events...

- He spends one whole (frustrating) weekend repairing the truck.
- The brakes were very worn.
- He finishes late Sunday – it took much more time than expected.
- Friends drop around – just as he finishes the repair work.
- Relaxing after a bad weekend - they drink/ talk until very late.
- He does not get much sleep.

## Chain of events...

- Monday morning – he must start early.
- Little sleep, no breakfast, late for work.
- Drives the truck along the National Highway towards work.





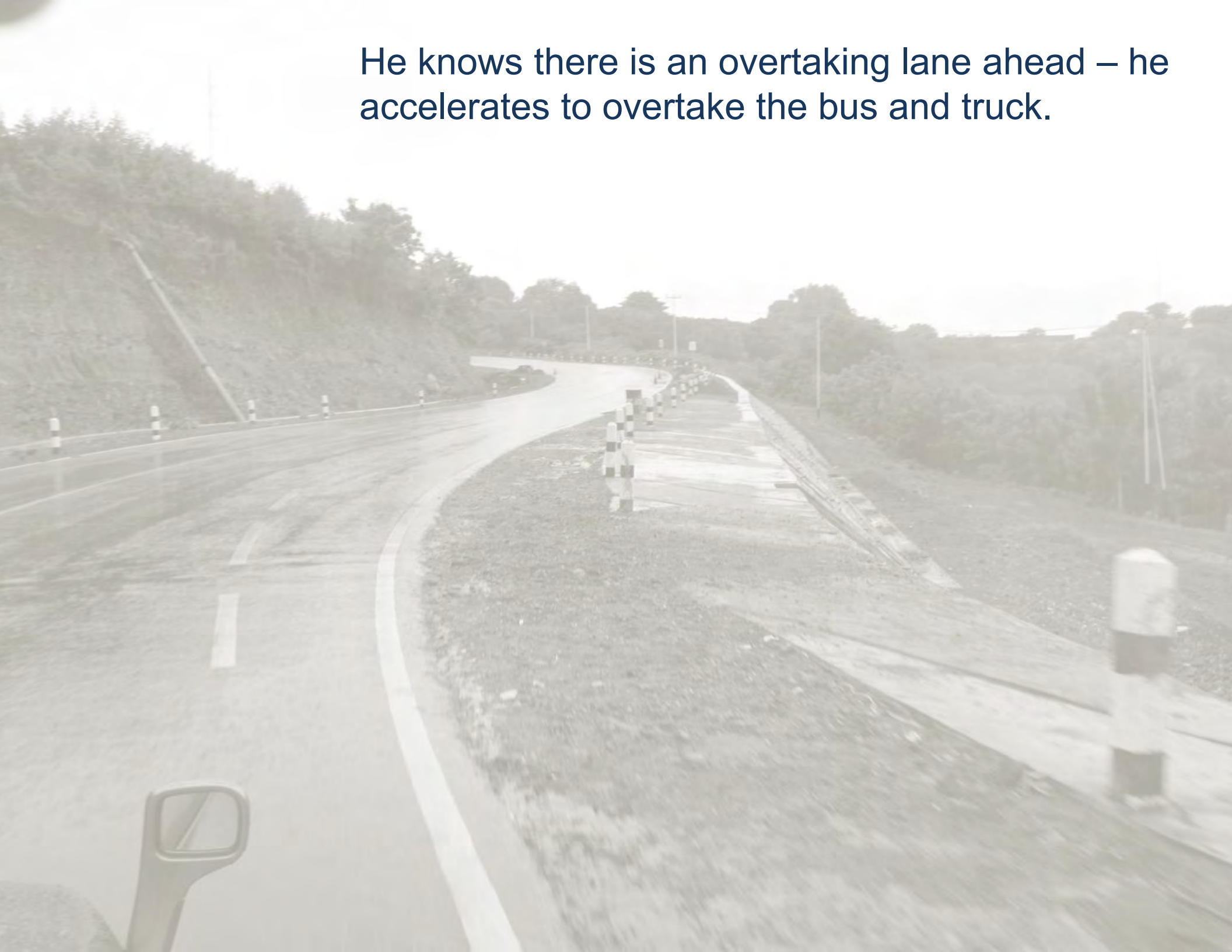
- Traffic is heavy.
- Many cars, a few motorcyclists, some pedestrians and bicyclists.
- The highway has unsealed shoulders.
- Light rain is falling. He travels fast

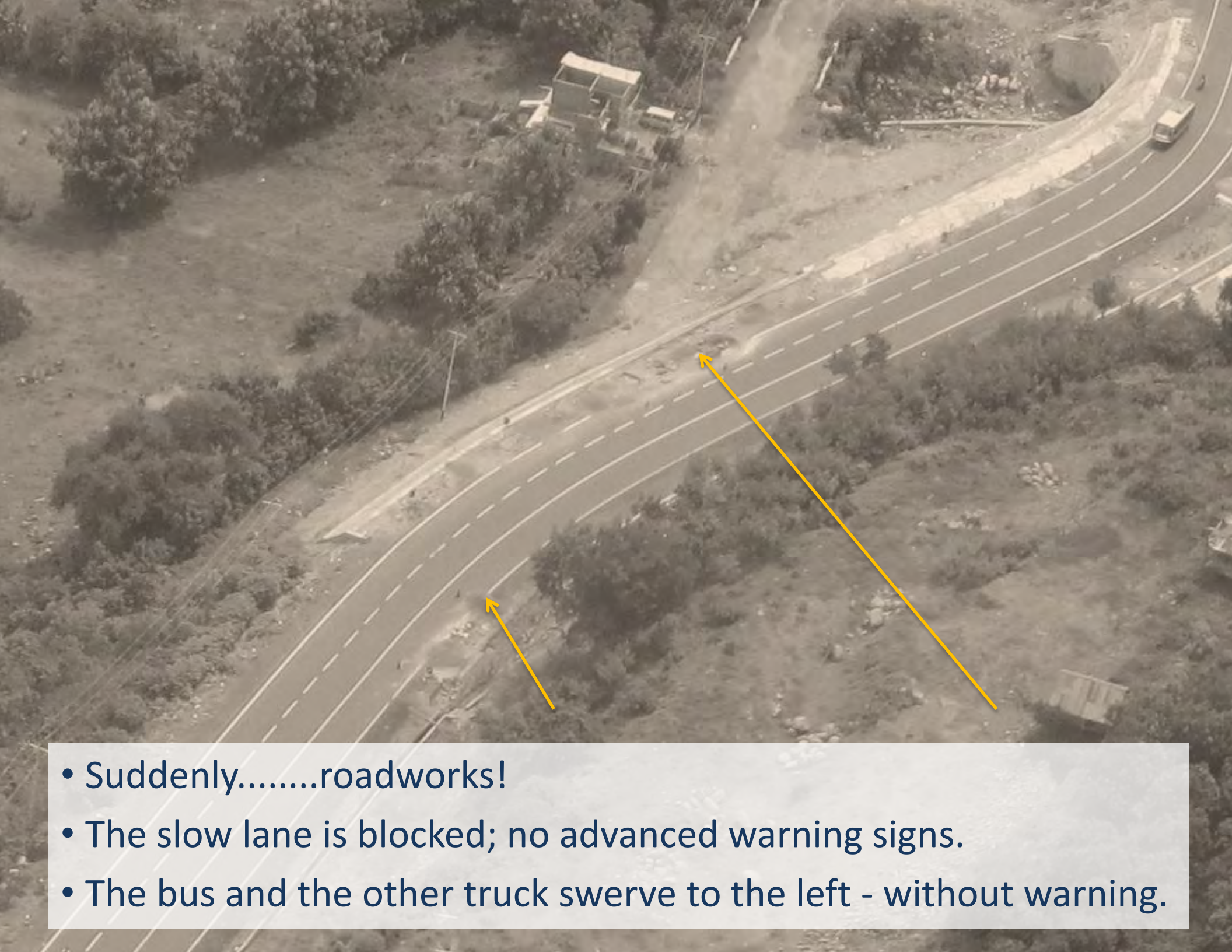


- He drives close to the truck ahead of him – impatient to overtake. The truck ahead has broken brake lights; there is a bus at the front of the platoon of traffic.



He knows there is an overtaking lane ahead – he accelerates to overtake the bus and truck.





- Suddenly.....roadworks!
- The slow lane is blocked; no advanced warning signs.
- The bus and the other truck swerve to the left - without warning.

Roadworks!  
No advanced warning signs.



Our driver has no time to react – to avoid a “side swipe” collision with the other truck he swings left.

- At that instant a small car carrying a family of four is travelling past in the other direction. None are wearing seatbelts!



- Our truck driver brakes hard – but the new brakes “grab”.
- The truck strikes the small car head-on.
- It then side swipes the truck and the bus – tipping the bus over.

## Two bus passengers dead



## Two car passengers dead

# What “caused” that crash?

And what could our profession have done to prevent this crash – or minimise its effects?





# Possible Causes

- His frustrating weekend?
- His drinking?
- His lack of sleep?
- Excessive speed?
- His impatience and inattention?
- The people in the small car – not wearing seatbelts?
- The new brakes of his truck?
- The dirty/broken brake lights of the other truck?
- The rain?
- The bus and truck swerving because of the roadworks?
- Materials being stored on the road?
- The “slick” road conditions?
- The lack of sealed shoulders?
- No advanced warning of the roadworks?



- Store materials off the road
- Better advanced warning of the road works
- Seal shoulders (give added space for “escape”)

**YOU CAN SAVE LIVES!**



# Engineers can save lives





Road safety engineering applies engineering principles .... to identify road improvements that will cost effectively reduce the cost of crashes (and break the chain of events that would lead to a collision)

# 2030

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远离烟花爆竹 静候春暖花开

新文门内大街

6:00-23:00

CAREC Hwy - 2030



CAREC Hwy - 2030

## What could CAREC highways be like in 2030?

- Numerous expressways – limited access, and no pedestrians or animals
- Major CAREC highways built and maintained to a similar high standard.
- Wide paved shoulders in rural areas.
- Where duplication cannot be justified, overtaking lanes provided.
- Speed limits have been agreed regionally and are consistently signed.
- Road safety audit is routine. Dozens of experienced auditors are available in each country.
- A blackspot removal program is well resourced in each country and is giving excellent crash savings to the community
- Roadside hazards are being removed/treated. Newer safety barriers
- Many more pedestrian facilities in towns/cities
- Safer road works
- A national standards committee responsible for constant up grading of national standards (eg bridges)

# How can you get there by 2030

- Road safety auditors needed.
- Blackspot programs needs funding.
- Roadside hazards need road safety engineers and funds.
- Newer safety barriers need road safety engineers plus installation crews
- Pedestrian facilities – what type? Funds? Maintenance?
- Safer road works need Contractor support
- Paved shoulders in rural areas. Will cost inhibit this?
- Speed limits regionally consistent and signed. What role Police?
- Bridges that offer increased safety.
- Updated standards need a national multi-organisation committee/co-operation.



# How can your country get there?

- **Road safety auditors needed.**
- More road safety engineers – to give a pool of auditors
- National accreditation
- A national RSA policy
- A willingness for road agencies to adopt road safety audit reports
- Willingness to accept recommendations which may not meet existing standards



# How can your country get there?

- **Blackspot programs needs funding.**
- Better Police crash data (to identify the sites)
- More engineers trained in crash investigations
- Codes of practice about this process
- Funds – several \$million per annum



# How can your country get there?

- Roadside hazards need road safety engineers and funds.
- More engineers engaged in road safety engineering
- An agreed method of calculating a clear zone
- More funding
- Updated standards



# How can your country get there?

- Newer safety barriers need road safety engineers plus installation crews
- More engineers engaged in road safety engineering
- Enhanced standards
- Maintenance teams able to install and repair barriers





# How can your country get there?

- Pedestrian facilities – what type?
- Funding?
- Installation skills, and maintenance?
- More engineers engaged in road safety engineering
- A changed attitude towards road safety
- More funding
- Updated standards



# How can your country get there?

- Safer road works need Contractor support
- What guidelines will you follow?
- How will you enforce compliance?



# How can your country get there?

- Paved shoulders in rural areas.
- Will cost inhibit this?
- A changed attitude towards road safety
- New standards



# How can your country get there?

- Speed limits regionally consistent and signed.
- What role will Police have?
- National uniformity is one issue
- How will several countries agree speed management across a Region?
- Is your country ready to move on from the traditional (60 and 90kmh) urban and rural speed limits?
- How will you make drivers aware of the new limits?



КӨҢҮЛ БУРГУЛА!  
40  
МЕКТЕП!  
ОКУУЧУЛАР!



MEGA



# How can your country get there?

- **Bridges that offer increased safety.**
- A changed attitude towards road safety
- New bridge standards





# How can your country get there?

- Updated standards need a national multi- organisation committee/co-operation.
- A recognition that some standards are no longer “safe”
- Recognition that new standards are needed, but there is a need for national discussions
- Transfer the new standards into the highway profession





I look forward to your country having a  
modern, well designed, well  
constructed and safe road network in  
2030