

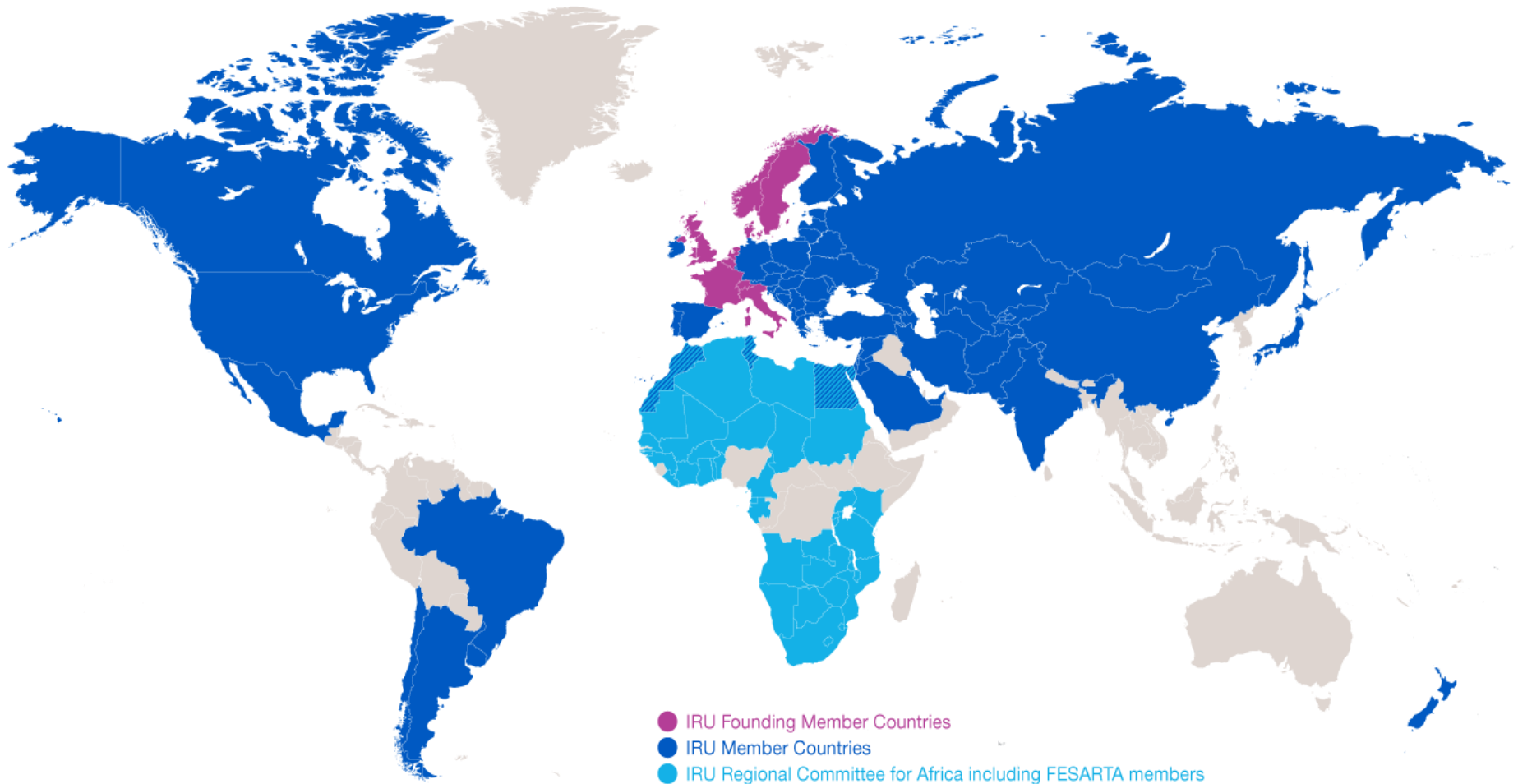
# Sustainable innovations in Bus and Coach

Jacques Marmy  
*Head - Technical Affairs*

**24 May 2016**

Beijing

# This is the IRU



# This is the IRU



Freight Transport Council

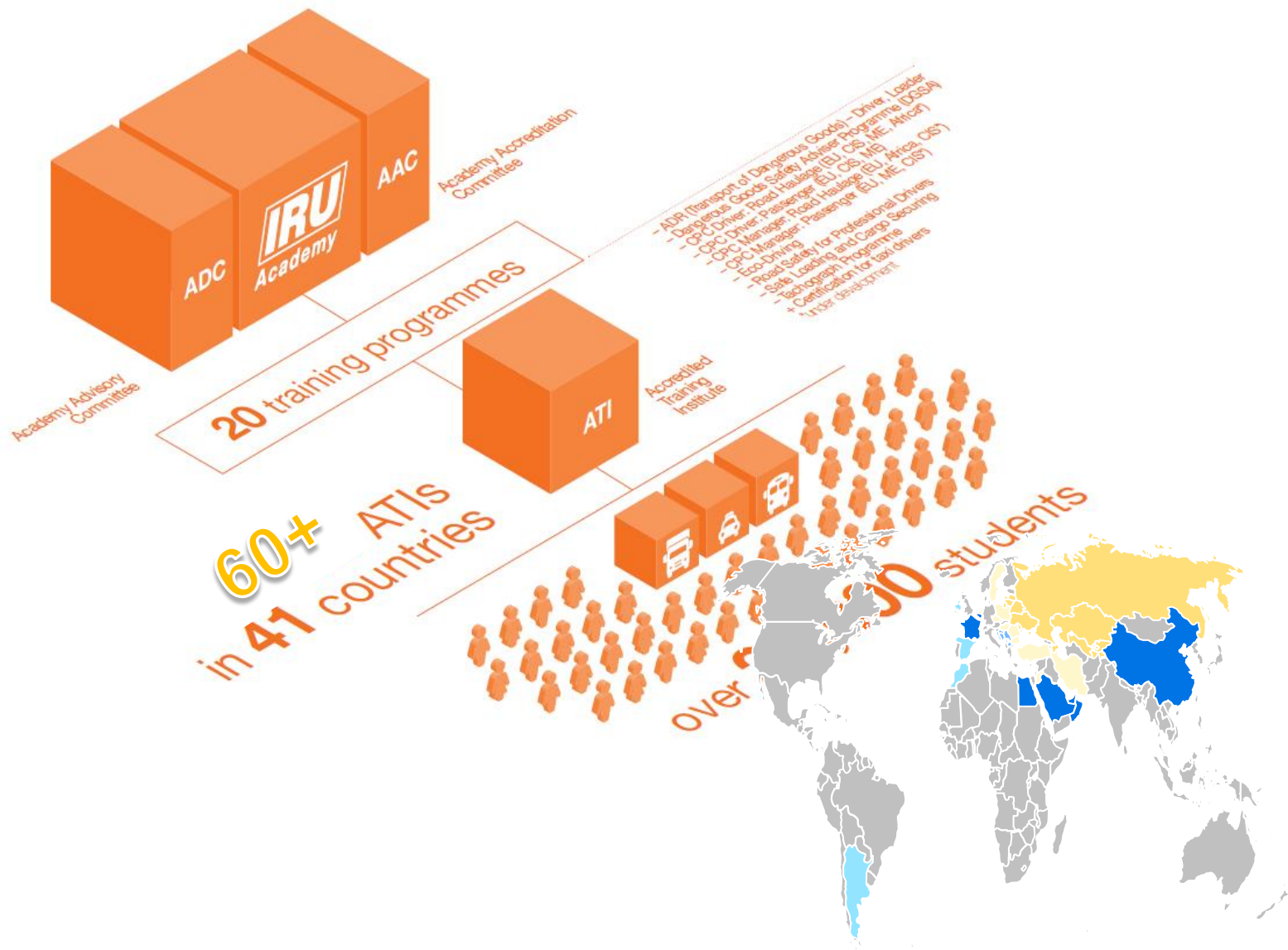


Passenger Transport  
Council



Taxi Group

# The IRU Academy at a glance



# Road Safety – a global issue

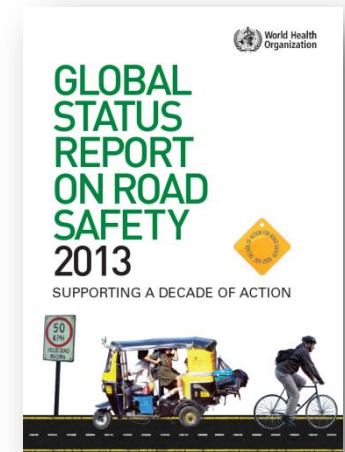


**1.24** million  
road traffic deaths every year.

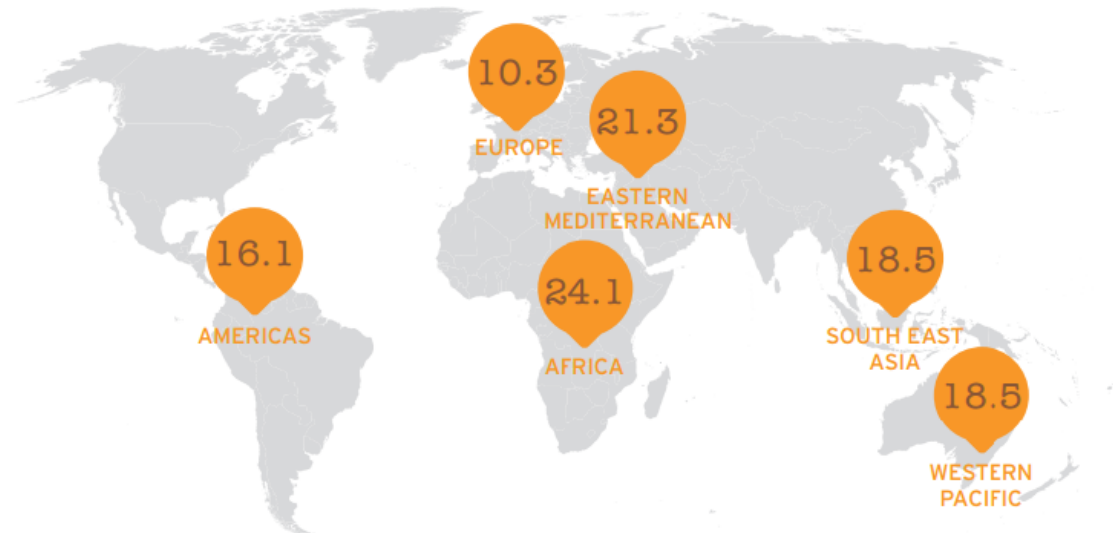
As many as  
**50** million  
are injured each year.



**8th**  
leading cause  
of death globally



HOW SAFE YOU  
ARE DEPENDS  
ON WHERE  
YOU ARE:  
**ROAD  
FATALITIES  
PER 100,000  
POPULATION**



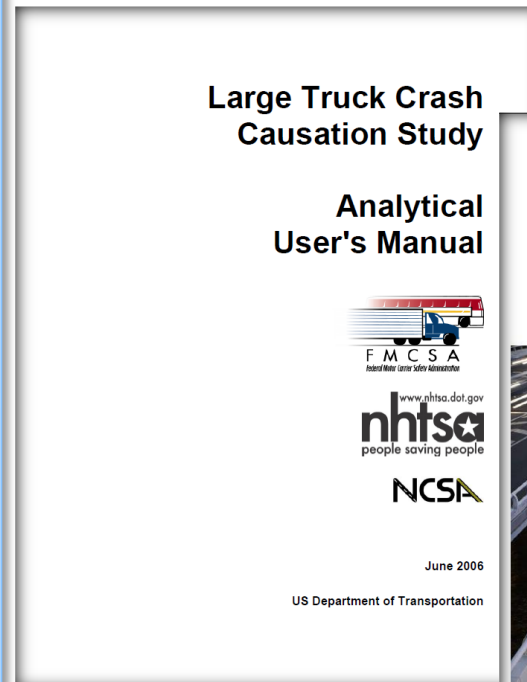
Global Road Safety Partnership Annual Report 2013

# IRU Safety Culture





## Results confirmed by other studies



European Truck Accident Causation Study (ETAC) : [http://www.iru.org/en\\_bookshop\\_item?id=171](http://www.iru.org/en_bookshop_item?id=171)

Large Truck Crash Causation Study (LTCCS): [http://ai.fmcsa.dot.gov/lccs/data/documents/LTCCS\\_Manual\\_Public.pdf](http://ai.fmcsa.dot.gov/lccs/data/documents/LTCCS_Manual_Public.pdf)

# Crash Prevention Programme



**Crash  
Prevention  
Programme**

1-day classroom-based programme on  
crash prevention, compatible with  
periodical training format

- ✓ **Highly visual**  
Combines simulation playbacks, on-board camera footage, and various videos
- ✓ **Highly practical**  
Evocative real-life crash cases illustrate the theory
- ✓ **Highly engaging**  
Focus on group discussions and crash case analysis
- ✓ **Story-based**  
The course is introduced by the story of a fatal crash, told by the truck driver
- ✓ **Includes next generation commercial vehicle simulator software licence**



# IRU safety handbook

## bus and coach road safety handbook



safety first

doubling the use  
of buses and coaches

[www.busandcoach.travel](http://www.busandcoach.travel)

**IRU** International  
Road Transport  
Union



### Checklist Against Fire for Buses/Coaches

In order to prevent fire on  
worked out a checklist of  
inspections to be integrate  
performance activities of t

### Winter Checklist for Drivers and Transport Operators

Before the winter season

Before starting a jour



The dri  
✓ The t  
on a  
week  
tyres  
other

- ✓ No liquids are leaking unda  
check). Ensure that no oil is  
that you see no excessive t  
consumption).
- ✓ The proper functioning of t  
and interior).
- ✓ The exhaust system compo

When operating a ve



The dri  
✓ Chec  
gaug  
✓ Chec  
(/ahk  
✓ Chec  
syste  
(/ahk

- ✓ Check regularly the tyres' p  
vehicle equipped).
- ✓ Avoid any overheating. Stop  
brakes or retarder become  
unusual odors or smoke, or
- ✓ Park in a safe area.



The te  
vehic  
impen  
basis!  
✓ All c  
con  
acti  
✓ The  
the  
con  
✓ The  
the  
con  
con

#### Electric

##### Drive belt

- ✓ Inspect the  
(a drive belt
- ✓ Check the l  
alternator ou

##### Electrical co

- ✓ Check the a  
vehicle and the

##### Battery

- ✓ Check battery ch  
the vehicle batter

##### Alternator

- ✓ Check the charging  
system is under full  
on.

##### Tyres

##### Winter tyres

- ✓ Use winter tyres bear  
M&S (they offer better  
variety of winter conditi  
in mud and snow).
- ✓ Fit winter tyres at least  
national requirements).

##### Tyre pressure

- ✓ Correctly inflate tyres for bet  
and handling (cold winter  
reduce tyre pressure).
- ✓ Follow the recommended pre  
owner manual.

##### Travel "light"

- ✓ Remove unnecessary weight from  
the vehicle.

## ECO-DRIVING SAFELY FOR BUSES AND COACHES

Think economically and environmentally!

ECO-driving is not only an easy and cost-efficient way to reduce fuel consum  
greenhouse gases and accident rates, but also an attitude and respo  
society as a whole. In order to help drivers adjust their driving behaviour acc  
to different situations, the IRU has developed this checklist of smart, smoo  
safe ECO-driving techniques.

### BEFORE THE JOURNEY



**Maintain your vehicle**  
Maintain proper engine oil and air filters  
to keep vehicles running efficiently. Use  
the appropriate fuel as recommended by  
the manufacturer to keep the engine  
clean and performing efficiently. Al  
ways consult the vehicle's owner manual  
for proper maintenance.



**Check your tyres**  
Keep tyres properly int  
pressure recommended  
factor. This alone  
average amount of fu  
Under-inflated tyres  
resistance and increa  
They also wear mor  
vehicle's owner m  
pressure label fo  
inflation pressure  
sis Tyre Pressure  
enables the drive  
pressure direct  
Axle alignment  
In / toe out  
should also be  
recommended



**Consolidate trips and use on-board  
devices**  
Plan your trips ahead. This will enable  
you to bypass congested routes and  
mean less idling. An on-board computer  
may help to save time and take the right  
routes.



**Travel "light"**  
Remove unnecessary weight from the  
vehicle.

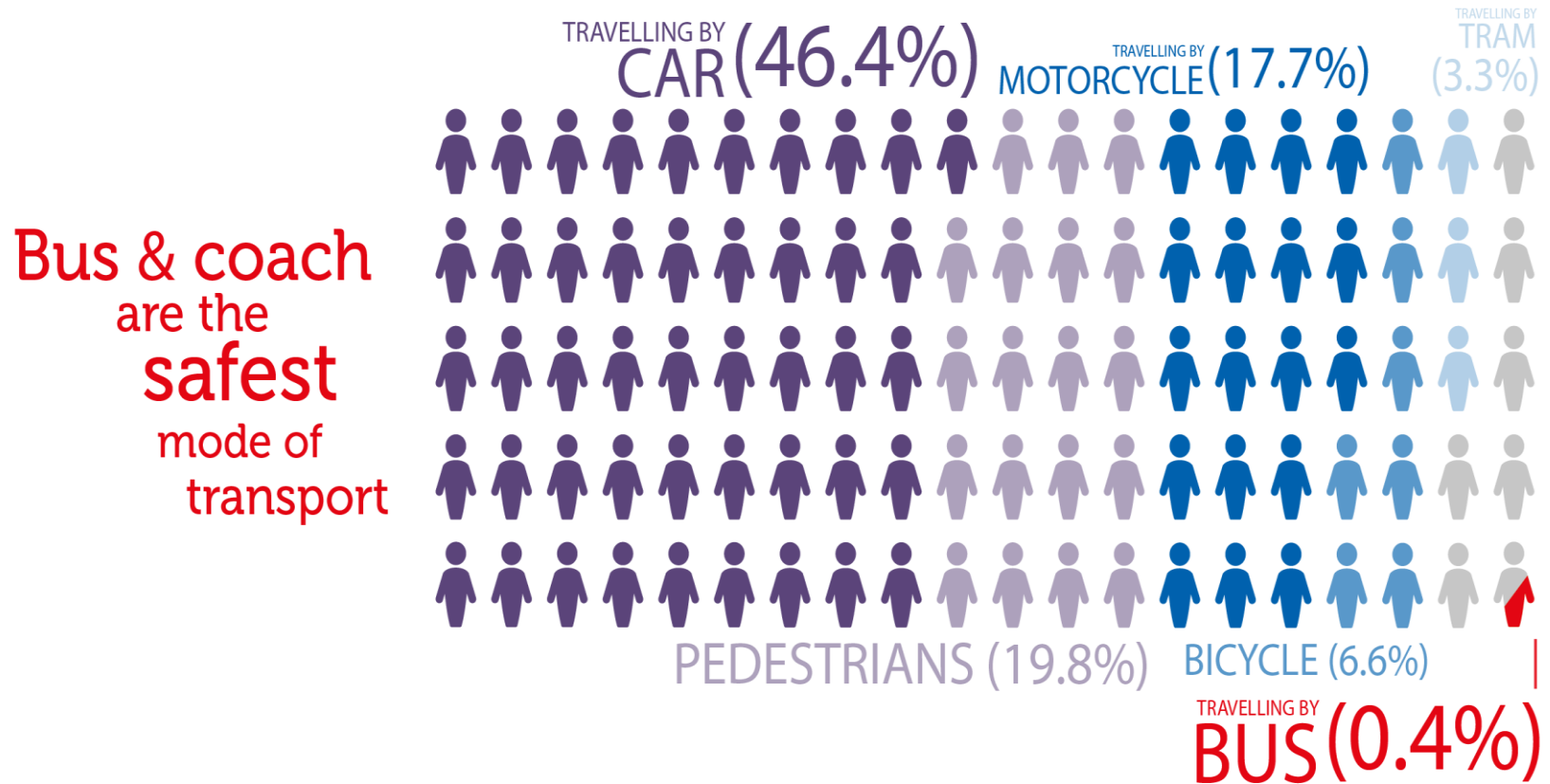
### DURING THE JOURNEY



at a steady speed  
steady speed by using  
avoiding

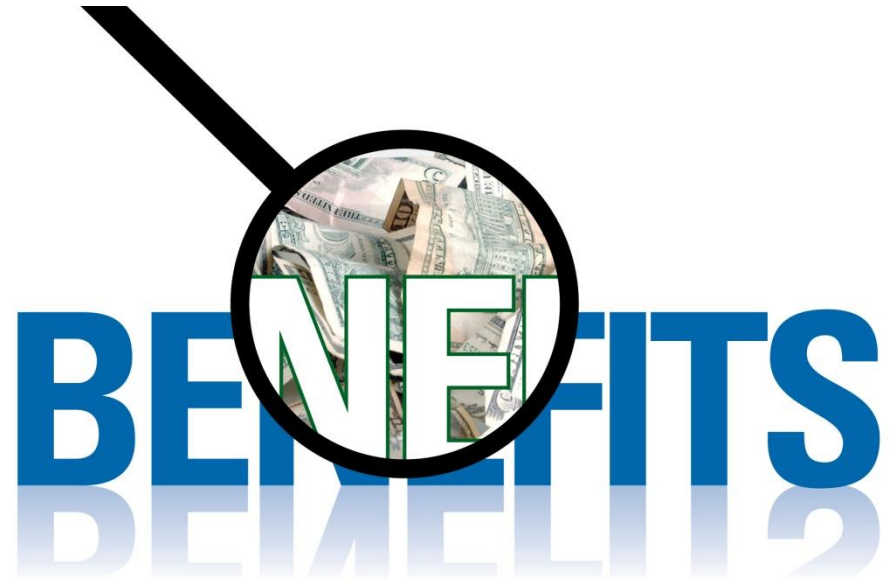
# The safest way to travel by road

## Road fatalities in the EU by transport mode



# Why road transport professional training?

- ✓ Fewer accidents
- ✓ Lower maintenance costs
- ✓ Less vehicles damaged
- ✓ Improved road safety
- ✓ Improved transport companies image
- ✓ Better producing and more aware drivers
- ✓ Less fuel consumption
- ✓ Less CO<sub>2</sub>



To correctly address road safety issues, companies must strive:

- ✓ To set measurable targets and to evaluate the outcome of actions
- ✓ To obey speed limits and use seatbelts
- ✓ To reach the target of zero accidents and incidents
- ✓ To have enough time to take all measures.



# New guidelines on level crossing safety to help save lives



# Blind Spot - issue





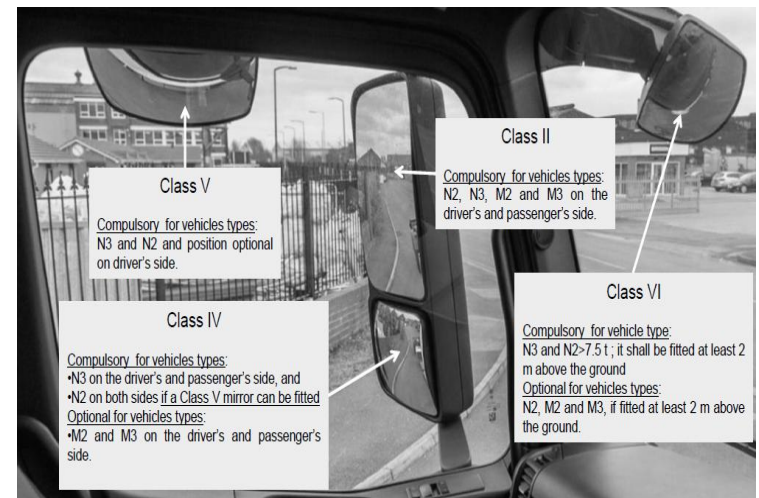
# Blind Spots – IRU Flyer (coming soon)



UNECE GRSG priority is to protect vulnerable road users from vehicles.

Improvement of a driver's sight by using devices for indirect vision such as mirrors, camera monitoring systems, or sonars.

ADAS exist already to mitigate impact with VU.



# Vehicle fire safety

## Fire testing of fire suppression systems in engine compartments of buses/coaches

The installation of fire suppression systems in engine compartments of all single-deck, double-deck, rigid or articulated vehicles of category M2 or M3 will be required most likely June 2018 for new types and June 2019 for all types.

In Europe, this measure will be legislated. The other countries will have to refer to UNECE Regulation 107!



## Training tool on ADAS

- Existing advanced technologies embedded in vehicles:
  - ✓ Electronic Stability Control (ESC)
  - ✓ Adaptive Cruise Control (ACC)
  - ✓ Advanced Emergency Braking Systems (AEBS)
  - ✓ Lane Departure Warning Systems (LDWS)
  - ✓ Blind Spot Detection system or Lane Change Assistant system
  
- Upcoming advanced technologies embedded in vehicles:
  - ✓ Pedestrian Detection (PCD)
  - ✓ Emergency Electronic Brake Light (EEBL)
  - ✓ Curve Speed Warning (CSW)
  - ✓ Railroad Level Crossing Warning (LC)
  - ✓ eCall (AECS)

# STOP – LOOK – WAVE Campaign



The IRU will continue to encourage all drivers to promote road safety and to take action in relation to children. As shown on the poster of the joint initiative with Volvo, they are invited to spread the safety message “Stop, Look, Wave” all over the world and to advocate safe behaviour of children at crosswalk sections



**Give us a hand**

**Safety campaign sponsored by Volvo in cooperation with IRU**  
Every year, more than 1.2 million people die in traffic accidents. To help reduce the number of traffic fatalities, Volvo sponsors an international campaign called “Stop, Look, Wave”. The aim of the campaign is to make children all over the world aware of how to act safely.

**Stop, Look, Wave**  
In the campaign, the children are taught to STOP at crosswalks, LOOK both ways and seek eye contact with the driver. To make sure they have gained the driver's attention, they should WAVE and wait for the driver to wave back before crossing a road.

**Wave back!**  
To get the maximum effect of the campaign, we ask you as a driver to wave back to the children. You are also more than welcome to help us spread the message “Stop, Look, Wave” to as many children as you can. Volvo has developed a lot of images, scripts etc. that you are free to use.

You'll find the material on:  
[iru.org](http://iru.org) and [volvogroup.com/stoplookwave](http://volvogroup.com/stoplookwave).

Thank you for your cooperation!

**IRU** [www.volvogroup.com](http://www.volvogroup.com) **VOLVO**

Good roads lead to both lower crash risk and milder severity of injury...

The importance of road properties on commercial vehicle crashes is underestimated.

- Road geometry: In many cases, hazards are “designed into the road”
- Bearing capacity: Often weak pavement edge at truck rollover crashes
- Traffic safety zone: Crash barriers should protect, not cause hazards
- Road management: Relevant maintenance, speed limits & warning signs
- Winter road maintenance: Decisive for risks of severe collisions
- Road roughness: Whole-body vibration increases crash risk.

# How can we improve sustainable road transport?



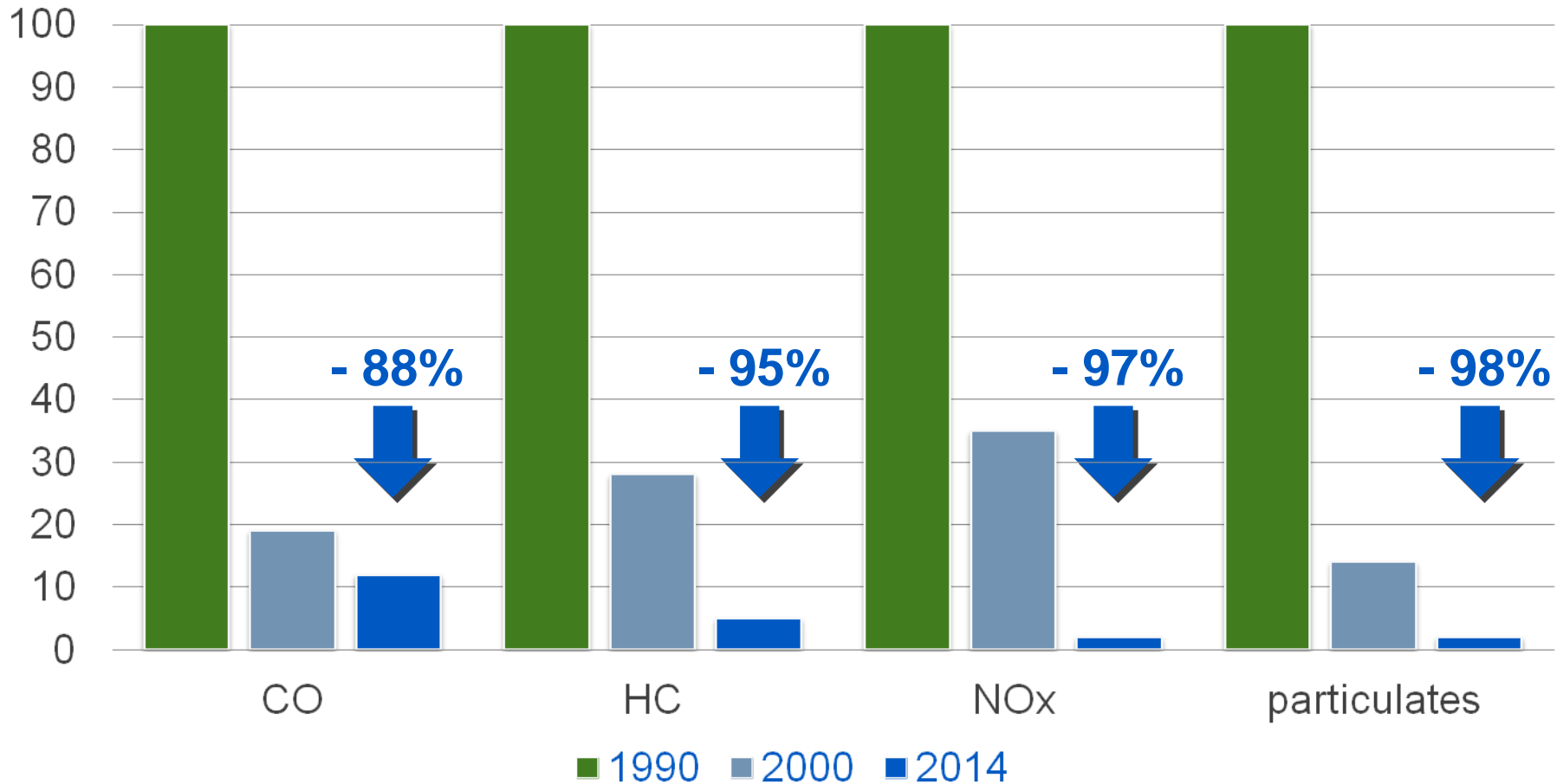
- ✓ Client and road transport companies working together
- ✓ Laws and regulations
- ✓ Planning of logistics
- ✓ Vehicle and equipment
- ✓ Driver attitude and knowledge
- ✓ Driver behaviour and control
- ✓ Road maintenance



# Global Evolution of Commercial Vehicle Toxic Emissions

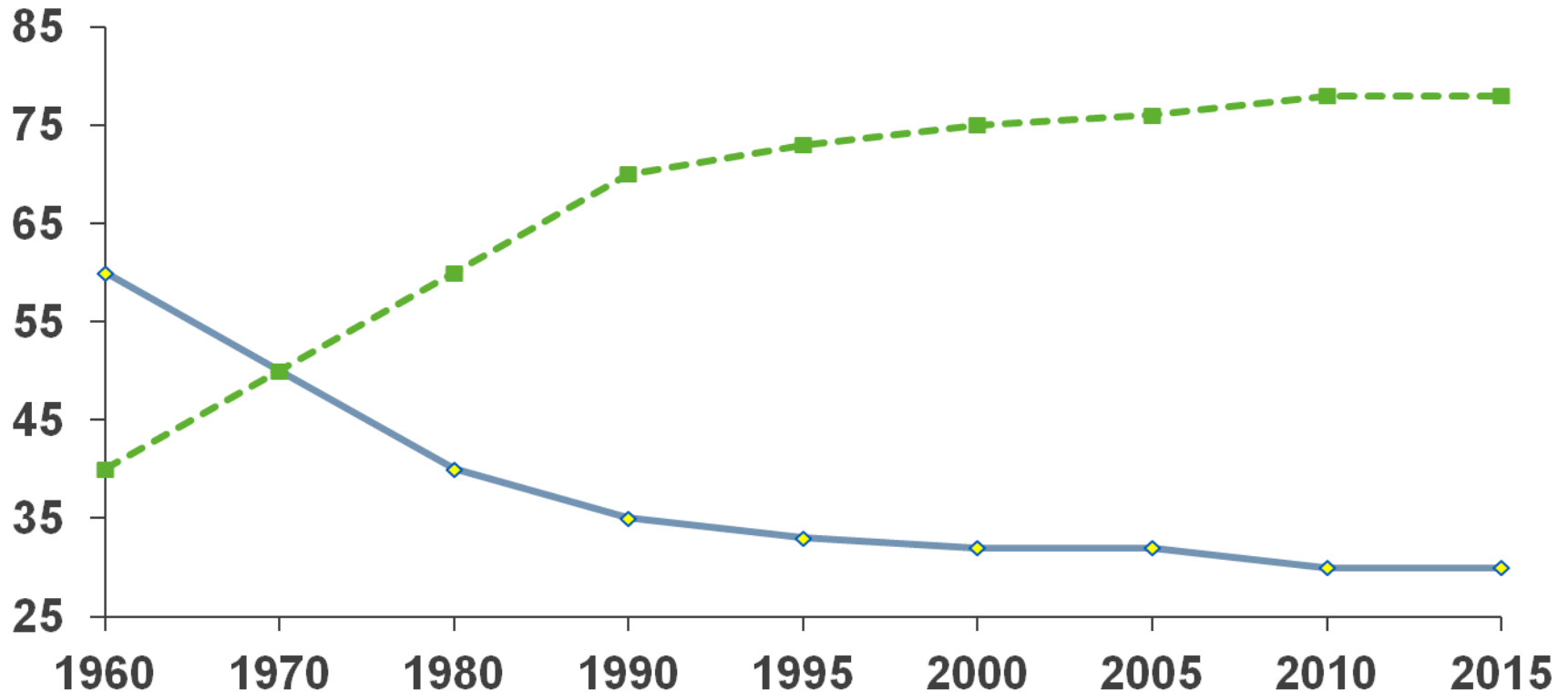


**Toxic emissions must be guaranteed over a period of 700,000 km for heavy vehicles**



Source: IRU, based on EU Commission 2008, US Environmental Protection Agency 2010, Japan Ministry of the Environment 2005.

# Evolution of commercial vehicle performances



Since 1960:

- average speed has doubled
- average consumption divided by 2 (by 2015, 27-30 l/100km)

## - 30% CO<sub>2</sub> by 2030



The road transport sector has voluntarily committed, on the basis of innovative technologies and practices, to reduce CO<sub>2</sub> emissions by 30% by 2030 based on transport performance in tkm and pkm and related to the base year 2007.



# A harmonised measurement methodology



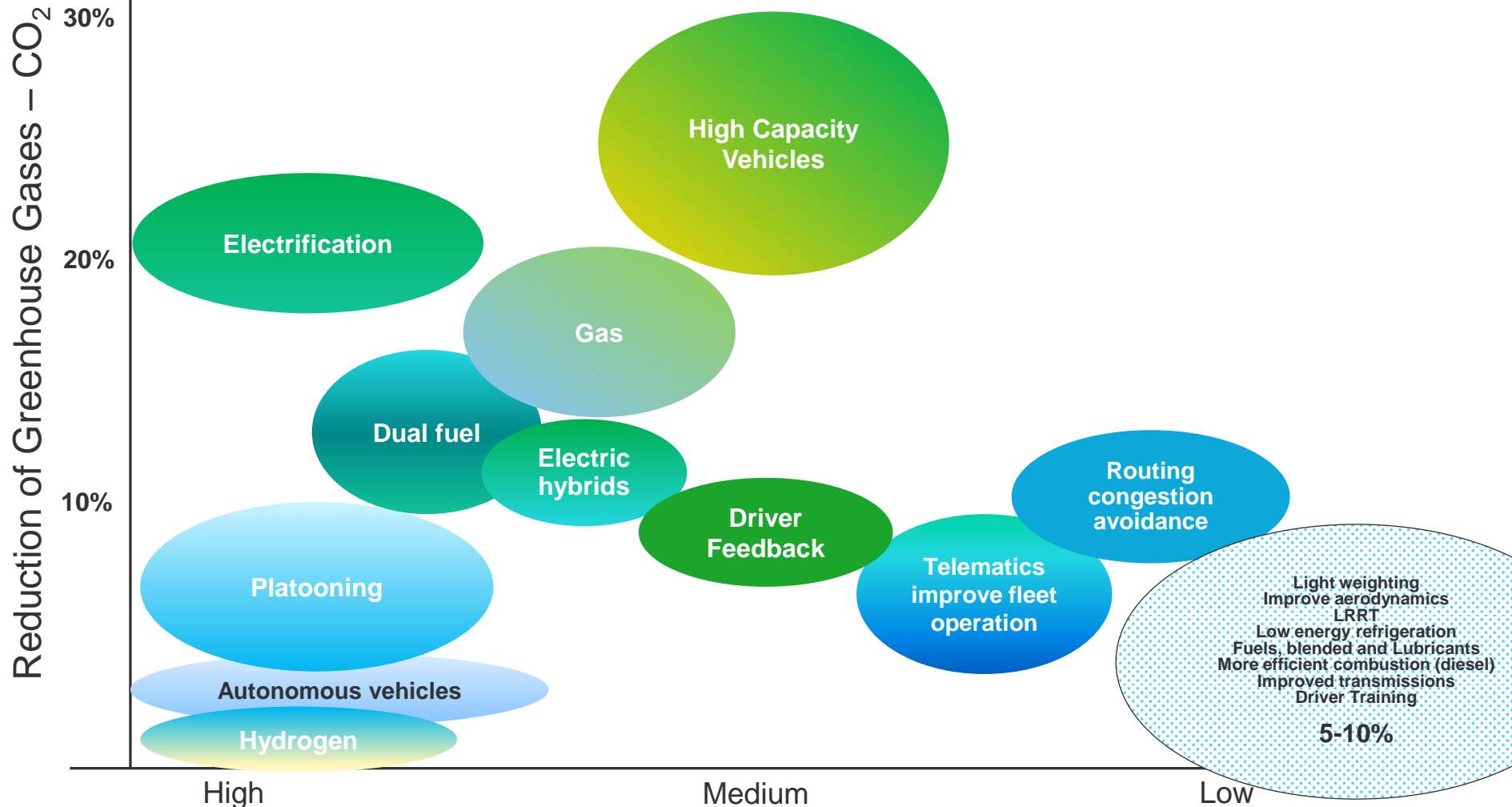
Methodology on further CO<sub>2</sub> reductions based on several general actions:

- Increase cost-effectiveness by improving logistics when moving passengers
- Use clean fuel
- Improve infrastructure in order to facilitate passenger transport, including free flow traffic
- Improve logistics and develop more efficient transport units given the work to be done

*How could the measuring of CO<sub>2</sub> in the different transport modes be better integrated in order to demonstrate more transparent values for a complete logistic operations?*

# Main different technology options to decarbonise CV

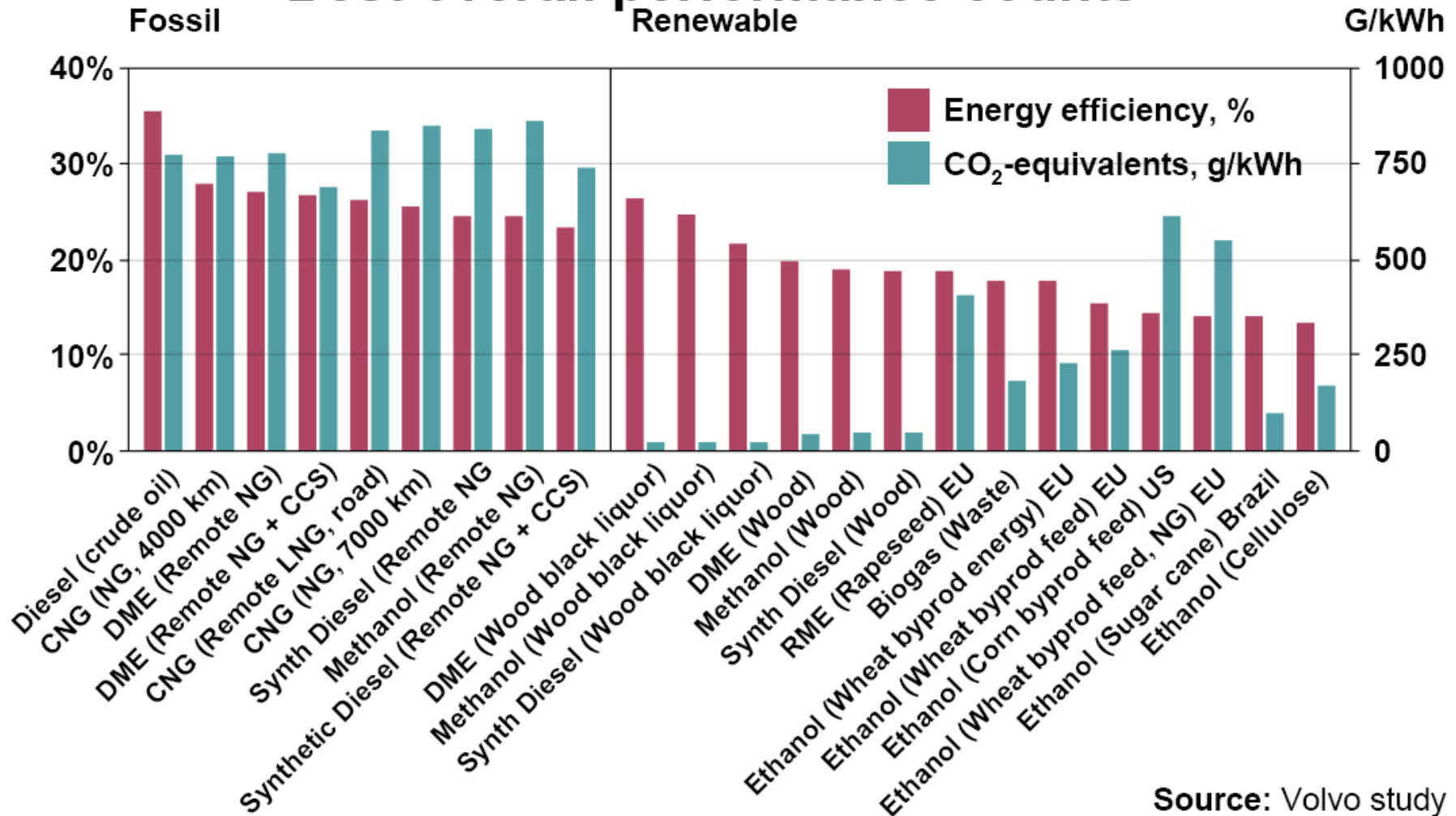
Barriers to mainstream adoption (Political, Economical and Technical)



# The right fuel - a political decision...



## Best overall performance counts



Source: Volvo study



A blurred photograph of a large crowd of people walking across a zebra crossing, creating a sense of motion and a busy urban environment.

Join us



# IRU World Congress

Beijing, 18-19 May 2017

**1,000 leaders / 100 countries**

**World of trucks, buses and coaches,  
taxis**



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information

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