

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

# SPECTRUM OF ROAD SAFETY ACTIVITIES



UNITED NATIONS



**UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE  
TRANSPORT DIVISION**

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**UNITED NATIONS  
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## **United Nations Economic Commission for Europe**

The United Nations Economic Commission for Europe (UNECE) is one of the five United Nations regional commissions, administered by the Economic and Social Council (ECOSOC). It was established in 1947 with the mandate to help rebuild post-war Europe, develop economic activity and strengthen economic relations among European countries, and between Europe and the rest of the world. During the Cold War, UNECE served as a unique forum for economic dialogue and cooperation between East and West. Despite the complexity of this period, significant achievements were made, with consensus reached on numerous harmonization and standardization agreements.

In the post-Cold War era, UNECE acquired not only many new member States, but also new functions. Since the early 1990s the organization has focused on analyses of the transition process, using its harmonization experience to facilitate the integration of Central and Eastern European countries into the global markets.

UNECE is the forum where the countries of western, central and eastern Europe, central Asia and North America – 56 countries in all – come together to forge the tools of their economic cooperation. That cooperation concerns economics, statistics, environment, transport, trade, sustainable energy, timber and habitat. The Commission offers a regional framework for the elaboration and harmonization of conventions, norms and standards. The Commission's experts provide technical assistance to the countries of South-East Europe and the Commonwealth of Independent States. This assistance takes the form of advisory services, training seminars and workshops where countries can share their experiences and best practices.

## Transport in UNECE

The UNECE Inland Transport Committee (ITC) facilitates the international movement of persons and goods by inland transport modes. It aims to improve competitiveness, safety, energy efficiency and security in the transport sector. At the same time it focuses on reducing the adverse effects of transport activities on the environment and contributing effectively to sustainable development. The ITC is a:

- Centre for multilateral transport standards and agreements in Europe and beyond, e.g. regulations for dangerous goods transport and road vehicle construction at global level
- Gateway for technical assistance and exchange of best practices
- Promoter of multi-country investment planning
- Substantive partner for transport and trade facilitation initiatives
- Historic centre for transport statistics.

For more than six decades, ITC has provided a platform for intergovernmental cooperation to facilitate and develop international transport while improving its safety and environmental performance. The main results of this persevering and important work are reflected in more than 50 international agreements and conventions which provide an international legal framework and technical regulations for the development of international road, rail, inland water and intermodal transport, as well as dangerous goods transport and vehicle construction. Considering the needs of transport sector and its regulators, UNECE offers a balanced approach to and treatment of facilitation and security issues alike.

# UNECE Spectrum of Road Safety Activities

## Introduction

Without roads the world would grind to a halt. They form an integral part of our lives, enabling the free movement of goods, services and people – within countries and across borders. Coupled with ever-increasing international trade, transport presents the need for neighbouring countries to align their roads and regulations to facilitate passage in a safe, efficient, reliable and sustainable way.

It was in response to this need for international harmonization that the Transport Division of the United Nations Economic Commission for Europe was established in 1947. For more than 60 years, the Transport Division has worked to improve people's everyday lives by nurturing and documenting the cutting edge of advances made in transport while assisting governments to formulate ideas and rules that help keep the world moving.

Of all modes of transport, roads bear the heaviest burden in terms of fulfilling people's logisti-

cal needs. The value that people place on mobility by road has led to continuous growth in passenger numbers, volumes of cargo, vehicle movement and an ever-increasing array of vehicles on roads.

The UNECE secretariat's mandate is to assist in ensuring that the most advanced and effective international rules are discussed, agreed and implemented to guarantee efficiency in passenger, cargo and traffic flows. This is fulfilled while protecting the lives of road users and minimizing negative environmental impact.

## Road traffic safety and UNECE

In 2011, 75 million cars were sold across the globe, bringing the total number of vehicles on the road to approximately 1 billion. This number is expected to double by 2020, with a large proportion of these vehicles operating on the roads of developing countries. Moreover, the number of people living in cities is expected to reach 6 billion in the next 40 years, signalling a pressing need for governments to assess and address future trends and necessities in inland and urban transport. Put in the context of world road safety statistics, the figures are daunting:

1.3 million people die.



*Roads can appear overwhelming, but in the UK, for example, they account for about 1 per cent of the country's total surface area.*



*In many Asian countries, two-wheelers dominate road traffic, and present a specific road safety challenge.*

and up to 50 million more are injured every year in crashes. Of those, some 80 per cent live in low- and middle-income countries and over half are young adults aged 15 to 44.

Population growth forecasts indicate that developing countries will experience a boom in numbers in the coming decades, inevitably accompanied by a rise in vehicle numbers. At the same time, populations in high income countries will decline. The Transport Division of the UNECE believes the decade 2010-2020 to be critical for establishing practices and infrastructure in the developing world that will shoulder this population shift.

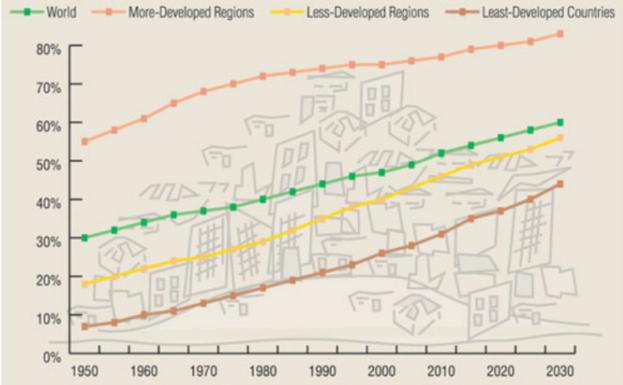
In addition to personal tragedies and tremendous human suffering, road crashes are estimated to cost society some \$500 billion a year worldwide. Given that many of these negative consequences are avoidable, it is imperative that there is a universally shared commitment for efficient, safe and sustainable

adequate regulations for the construction of roads, for the manufacturing of vehicles and for the governance of road traffic. UNECE pioneered road safety activities in the United Nations system with the establishment of an Ad Hoc Working Group on the prevention of road accidents in 1950, followed by the Group of Experts on Road Traffic Safety (GE.20). In 1988 the Working Party on Road Traffic Safety (WP.1) was established, its primary function to serve as guardian of United Nations legal instruments aimed at harmonising traffic regulations. WP.1 is the only inter-governmental permanent body in the United Nations system that focuses on improving road traffic safety.



*Scenes such as this occur all too frequently on the world's roads.*

## THE WORLD'S URBAN POPULATION, 1950-2030



Source: *World's urban population growth, 1950 to 2030, USAID, 2005.*

In a world where road deaths kill more people than malaria, UNECE manages a total of 57 transport-related international legal instruments, which are negotiated by governments and become legally binding for countries that accede to them. These legal instruments cover:

- Traffic rules
- Road signs and signals
- Construction and technical inspection of vehicles
- Road infrastructure
- Border crossing facilitation
- Driving times and rest periods for professional drivers
- Safe transport of dangerous goods and hazardous materials.

Forecasts indicate that, without substantive improvements in road safety management:

- By 2015, road injuries will be the leading cause of healthy life years lost by children (5-14 years)
- By 2020, the number of deaths from road injuries will increase by 80 per cent
- By 2030, road crash deaths and injuries will be:
  - the 4<sup>th</sup> largest cause of healthy life years lost by the total population
  - the 2<sup>nd</sup> largest cause of healthy life years lost by men.

Source:

1. Mathers C., Loncar D. (2005). *Updated projections of global mortality and burden of disease, 2002 – 2030: data sources, methods, and results.*

*Evidence and Information for Policy Working Paper, World Health Organization, Geneva.*

2. Kopits E., Cropper M. (2003). *Traffic Fatalities and Economic Growth. 2003. Policy Research Working Paper Number 3035. The World Bank, Washington, DC.*

The legal instruments also cover related social legislation for professional drivers and transport operators, regulatory frameworks for liability and insurance, as well as economic regulations governing international road transport. All conventions are administered by the relevant Working Parties or Administrative Committees in charge of updating and amending these instruments in the framework of the Inland Transport Committee (ITC). The UNECE secretariat incorporates a governance structure that offers a multi-dimensional approach in effectively assisting government accession to UN road safety legal instruments, as well as aiding implementation.

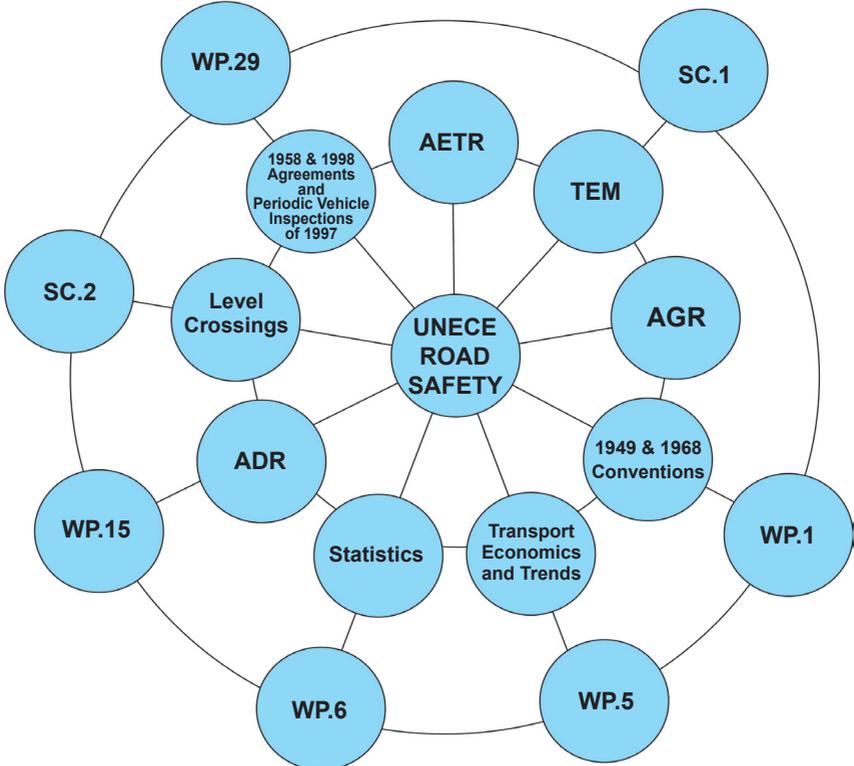
The Road Safety Forum (WP.1), the main coordinating body in the area of road safety, works in conjunction with other working parties to offer a platform that enables cooperation and the exchange of information and best practices among governments.

The core areas of the UNECE secretariat's work can be divided into three pillars: regulatory, analytical and technical assistance. The secretariat manages a regulatory framework to which governments can adhere, while also conducting analytical work which supports the development of legal instruments and explores emerging challenges that require governments to take common action.



*In many developing countries roads are not only for mobility. They are the paved space for living. Thus road safety cannot be improved without eradicating poverty and without understanding cultural differences across the globe.*

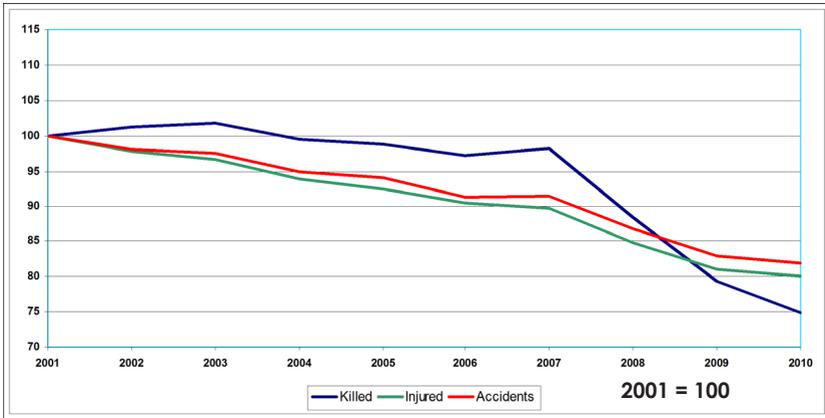
**UNECE 360° structure of road safety Conventions and related Working Parties**



The third pillar focuses on technical assistance and capacity building to help countries better implement international transport legislation. In this context, UNECE staff travel to the developing world to promote accession to, and the better implementation of, the legal instruments.

UNECE countries have experienced a steady fall in road traffic crashes, injuries and deaths over the past decade, despite sustained growth in vehicle numbers. The implementation of UNECE agreements and conventions in member countries, as well as more effective national legislation and enforcement, has greatly contributed to lowering the number of lives lost on roads in the UNECE region.

## Trends in Road Traffic Accidents UNECE Region 2001-2010



### Road safety management

As part of the UN Decade of Action for Road Safety (2011–2020), the UNECE secretariat – entering its 7th decade in road safety – is working to substantively assist its member countries. This assistance aims at increasing management capacity and preparing road safety programmes that take into account different levels of development. The overall objective is to increase political will and strengthen commitments made by governments. In addition, to improve global information exchange and support advocacy activities, UNECE, along with other regional commissions, plays a leading role in the work of the United Nations Road Safety Collaboration.

The primary responsibility for improving road safety is vested in governments. Governments and

key stakeholders play a central role in promoting road safety. This requires clear goals and targets to be set in order to ensure that needed resources are available and to convey the message to the public that they too can play an active role in the effort to reduce road traffic casualties.



President of the Russian Federation, Dmitry Medvedev, speaking at the Global Ministerial Road Safety Conference in Moscow.

However, it is acknowledged that this requires not only political will and commitment for implementation, but also clear strategies that include goals and targets, joint efforts between stakeholders as well as significant funding. The UNECE has therefore strived to create synergies between its different Working Parties and to rally the necessary support, whether political or financial, to better empower working parties to achieve their respective agendas.

Sharing of best practices, for example, with regard to multidisciplinary crash investigation tools is fundamental for identifying factors that may have contributed to road crashes and for helping to marginalize the prevalence of such factors to improve road safety. The secretariat is in an advantageous position to foster cooperation in this area, and the ITC working parties provide the ideal fora for sharing such knowledge and expertise.

## Traffic rules

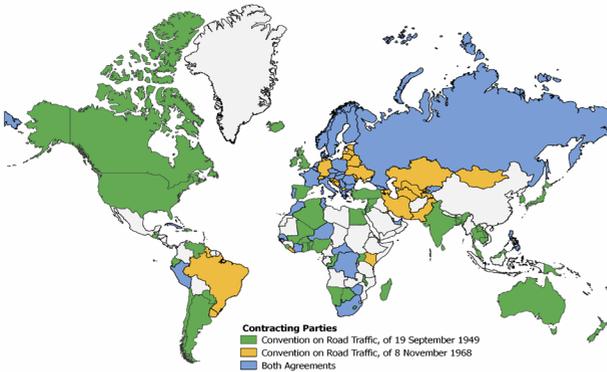
As road users, we tend to take for granted the system of road traffic rules, signs and signals developed to regulate road traffic and avoid collisions. A considerable amount of research, planning and implementation has gone into this system, which has been progressively developed since the start of motorization in the early 1900s.

Given the international dimension of road traffic, it is essential that such regulations are harmonized across countries on the basis of international agreements. A most basic requirement for drastically reducing road crashes is to put in place appropriate road traffic legislation that is based on the relevant international conventions. In resolution A/RES/60/5, the United Nations General Assembly encouraged member States to accede to and/or implement the UN road safety conventions in order to ensure a high level of road safety in their countries.

In particular, the 1949 and 1968 Conventions on Road Traffic – with their latest amendments that make safety provisions more stringent – form the basis for the traffic rules you see today. There are currently 70 Contracting Parties



*'Every driver shall avoid behaviour likely to endanger pedestrians'.*  
(Article 21, 1968 Convention on Road Traffic).

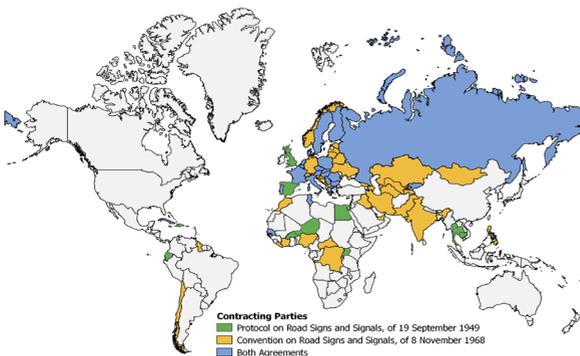


*Contracting Parties to the 1949 and 1968 Conventions on Road Traffic*

to the 1968 Convention on Road Traffic and 95 Contracting Parties to the 1949 Convention. While the numbers seem encouraging, UNECE has tirelessly supported new accession to these most fundamental road safety legal instruments, which help to reduce the injuries, deaths and economic loss that occur on the world's roads.

The 1949 Convention of Road Traffic paved the way for the International Driving Permit (IDP) and was later reinforced by the 1968 Convention, which lays out the main features to be recognized by Contracting Parties in terms of the permit.

The Convention sought to ensure the mutual recognition of domestically issued driving permits, their validity and their issuance to only those who exhibit a reasonable degree of driving aptitude and physical fitness. However, it is an unfortunate reality that the implementation of these Conventions by Contracting Parties is at times imperfect.



*Contracting Parties to the 1949 Protocol and 1968 Convention on Road Signs and Signals*

## Road signs

We see dozens of them on a daily basis and are so used to them that we hardly bat an eyelid in passing, but without road signs our roads would soon descend into chaos. If we cross a border in Europe we most often expect differences in language, culture, landscape and cuisine, but somehow road signs remain the same. This homogenization is the work of the UNECE Road Safety Forum and allows for smooth journeys from country to country within much of the UNECE area and beyond, making for safer roads.

The 1968 Convention on Road Signs and Signals sets up more than 200 commonly agreed reference road signs and signals, prescribes common norms for traffic light signals and uniform conditions for road markings.

Some of the key provisions under the convention are the three categories of road signs: danger warning, regulatory and informative.

The implementation of both the 1968 Convention on Road Traffic and the 1968 Convention on Road Signs and Signals are complemented by sets of recommendations or best practices, known as the Consolidated Resolution on Road Traffic (RE.1) and the Consolidated Resolution on Road Signs and Signals (RE.2), both updated in 2010. RE.1 represents the collective

efforts of governments to create a reference tool with a global scope that presents guidance for countries on the improvement of road safety.

The more countries adhere to these Conventions, the safer roads will become.

## Road infrastructure

Solid road infrastructure is essential for the most effective functioning of economies and for the maintenance of acceptable living standards. The lack of a road can mean severe isolation. As a consequence, those who are isolated in remote



*Some countries use road signs that are not consistent with the Convention on Road Signs and Signals, making them more difficult for foreign drivers to understand.*

villages without a nearby road are effectively marginalized. The importance of road infrastructure is brought home by Millennium Development Goal 1 – Eradicate extreme poverty and hunger. The United Nations Economic and Social Council (ECOSOC) has stressed the importance of ensuring rural settlements with a population of 1,000 or more are connected by an all-weather road, and those with a population of between 500 and 999 are not beyond 2 km of an all-weather road.

While road user behaviour has traditionally been identified as the largest contributor to crashes, road environment also plays a significant role. Some studies in Europe indicate that 70 per cent of fatal injuries are caused by the road alone or in combination with the vehicle and/or human error. In half of these cases experts considered that the fatal outcome would have been avoided if improvements had been made to the roads.



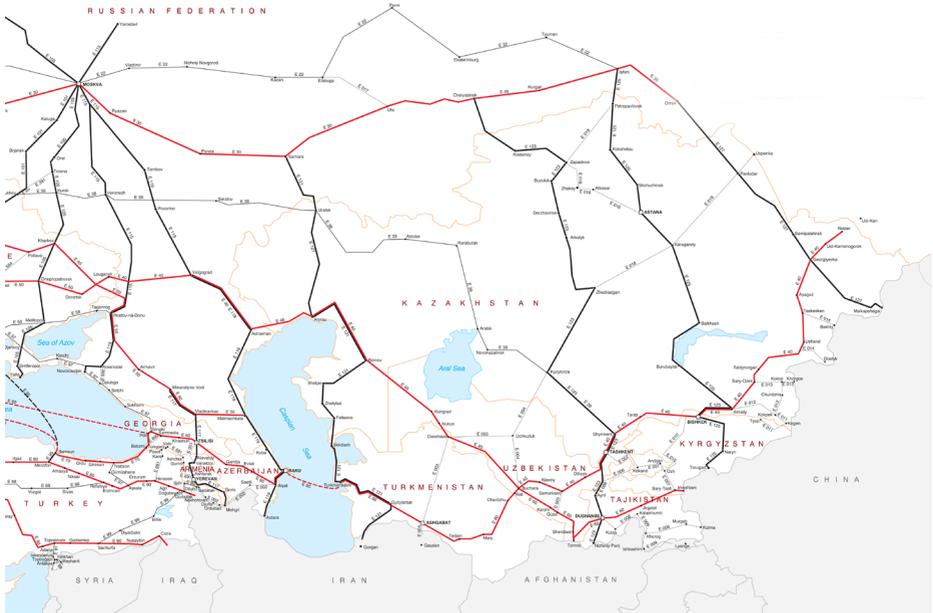
*Poor road infrastructure has a direct impact on road safety.*

It is not uncommon to see roads in low and middle income countries that would be viewed as dangerous in more developed countries. Technical problems vary from a lack of a satisfactory road foundation so that the carriageway quickly deteriorates and becomes hazardous, to roads where death appears to be 'built in'. Poor design makes crashes more likely to happen, or results in more severe crashes because of a lack of safety features, such as guardrails or lane markings. The development of safe infrastructure corresponding to internationally recognized design standards must become an integral part of countries' infrastructure programmes.

Transport infrastructure on particular roads should be equipped and managed in such a way so as to mitigate the effects of crashes that may occur. This element of enhancing road safety is often called 'forgiving roads'.

UNECE's European Agreement on Main International Traffic Arteries (AGR) does just that.

It offers a catalogue of technical standards to ensure roads of international importance (marked E-roads) are built to be safe. According to the AGR Agreement, international roads are classed as motorways, express roads and ordinary roads, and each of the road types have different capacities. Road safety problems arise when users of lower category roads start to treat them as if they are higher



AGR E-roads in the Commonwealth of Independent States (CIS).

category roads. This problem is particularly prevalent in developing countries with low levels of road infrastructure development.

The AGR network promotes the homogeneity of road infrastructure across much of the Euro-Asian continent, helping millions of people to move from the Atlantic coast across towards the Pacific coast more safely by ensuring roads look the same, are built in the same way and are equipped with road signs in a harmonized manner. States that become Contracting Parties to the AGR commit themselves to its implementation, including the construction or upgrading of the E-roads in their territories within their



A joint WP.1/SC.1 session to commemorate 60 years of road safety at UNECE.

national investment programmes, although they are given latitude as to the timing for the completion of construction works.

Another element of safe road infrastructure is 'self-explained roads'. In this case, the AGR Agreement also sets out the basic parameters. Various elements of



*The use of zonal speed restrictions and enforcement by radar is becoming more frequent.*

roads should be built to ensure that drivers can easily 'read' them. In this context, the effectiveness, and particularly the comprehensibility and readability of road signs will depend on a number of conditions: their dimensions and correct placement, the predominance of international symbols over words, the brevity of the message conveyed, appropriate sizes for symbols and characters and suitable proportions in relation to their background and the maximum speed of traffic. All of these elements need to be considered, as is recommended in the AGR Agreement.

Soon, it is expected the AGR will be expanded to establish and implement procedures relating to road safety impact assessments, road safety audits, the management of road network safety and safety inspections of the international E-road network.

An important part of UNECE's infrastructure work is the Trans-

European Motorways (TEM) Project, which was established in 1977 to help coordinate activities across borders. The TEM Project facilitates cooperation among Central, Eastern and South Eastern European countries in the areas of road traffic. It improves the quality and efficiency of transport operations, balances existing gaps and disparities between motorway networks and assists in the integration of European transport infrastructure systems.

Similarly, the Euro-Asian Transport Links project, originally a joint undertaking between UNECE and the United Nations Economic and Social Commission for Asia and the Pacific, identifies main Euro-Asian road and rail routes for priority development and cooperation, creating a cooperation mechanism for the coordinated development of coherent Euro-Asian inland transport links.

## **Road vehicles**

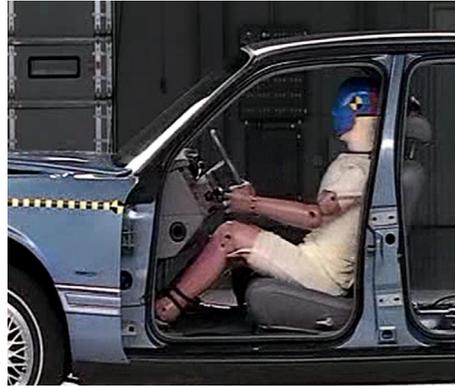
We all love motoring. UNECE Transport Division has always worked hard to ensure that you and those you care about are kept safe on the road. The vehicle regulations developed and administered by the World Forum for Harmonization of Vehicle Regulations (WP.29) encompass

everything conceivable about road vehicles, from the quality of the seat belt that you wear to controls on levels of emissions.

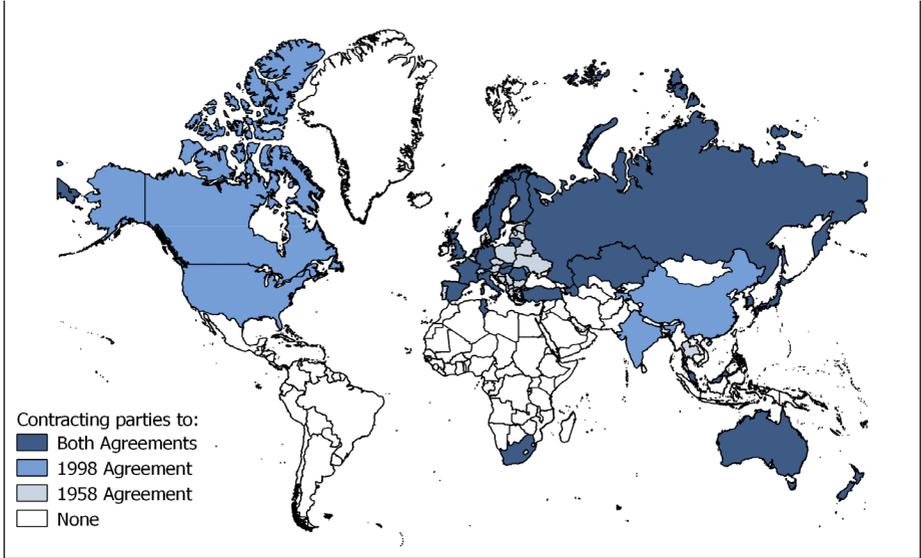
While seatbelts, child seats and helmets are essential for helping protect those who travel by road, it is also of paramount importance that vehicles too should be designed in such way as to provide crash protection for their occupants. Serious or fatal injuries are most common in frontal or side impacts due to the forceful contact the occupant makes with the vehicle's interior.

Under UN Regulations Nos. 94 and 95 on Frontal and Side Impact

Collision Protection, a set of test requirements are stipulated to provide a safety area in compartments of passenger vehicles by ensuring a survival space during and after the collision.



### Countries Contracting Parties to the 1958 and 1998 Agreements



The World Forum for Harmonization of Vehicle Regulations, serviced by the UNECE Transport Division, administers three international agreements on motor vehicles: the 1958 Agreement and the 1998 Agreement for the construction of new vehicles (global technical regulations), and the 1997 Agreement on periodical technical inspections of vehicles in use. It is through these agreements that countries incorporate innovations in vehicle technology into the global regulatory framework, helping to make vehicles safer, more reliable and more environmentally friendly. Many of the industry standards for innovations such as airbags, side-impact bars, Antilock Braking Systems (ABS) and the safety glazing that is used in windscreens have had their technical regulations drawn up at the meetings of WP.29 in the UNECE.

The World Forum also produces recommendations for core elements of vehicle design such as parameters for headlights, the superstructure of buses and coaches and the burning behaviour of vehicles.

Regulations and rules under the 1958 and 1998 Agreements are updated on a regular basis in line with technical progress. Contracting Parties applying a regulation may reject vehicles or equipment that do not fulfil the prescriptions set out in the

regulation and may prohibit such products from entering their markets. Provisions also exist within the Agreements to allow for progressive implementation to take place in less developed countries that do not have the fiscal means to achieve immediate full implementation.

By acceding to the vehicle agreements, countries can help ensure that only safe, well-maintained and environmentally friendly vehicles are allowed to circulate on roads.



*The UNECE World Forum on Vehicle Regulations strives to ensure that even in cases of severe crashes the vehicles are equipped and technically fit to protect the driver and passengers to a maximum extent*

## **Motorcycle helmets**

When it comes to motorcycles, wearing the right protective clothing is just as important as servicing the motorcycle – a helmet will offer protection from an impact, but more importantly, a correctly designed full-face helmet can make a dramatic difference. Motorcycles are overrepresented



*Wearing a correctly designed helmet can often make a difference between life and death.*

in road crashes compared to distance travelled. In the United States of America, motorcycles in 2002 constituted less than 0.33 per cent of all vehicle kilometres travelled, but accounted for almost 8 per cent of the road fatalities.

Unfortunately, the majority of fatal injuries in motorcycle crashes are caused by injuries to the head, even when riders wear helmets.

Governments are now enforcing laws that require riders to wear helmets and helmet manufacturers to meet stringent test requirements. UN Regulation No. 22 on Protective Helmets for Motorcyclists gives performance requirements such as testing conditions, shock absorption parameters and the provision of an adequate field of vision, and is aimed at ensuring motorcyclists receive maximum possible protection from head impact injuries during collisions.

## Seat belts

Wearing a seat belt in a road crash can reduce the risk of death by up to two-thirds. Despite the benefits of wearing a seat belt, many people still do not take the time to 'buckle up'. UN Regulation No. 16 on Safety Belts and Restraint Systems gives specific prescriptions for the performance testing of seat belts. These standards apply to the materials used in their construction, the rigidity of the strap and its ability to absorb energy in the event of an impact, the strength of the buckle, automatic and emergency locking retractors, the conditioning of straps and a breaking-strength test. These safety belt tests aim to ensure that they will function in a satisfactory manner and reduce the risk of bodily injury in the event of a crash.



*Road users cannot rely only on vehicle safety systems such as airbags - airbags alone are not sufficient protection in case of a collision. Wearing a seat-belt can make the difference between life and death in the event of a crash.*

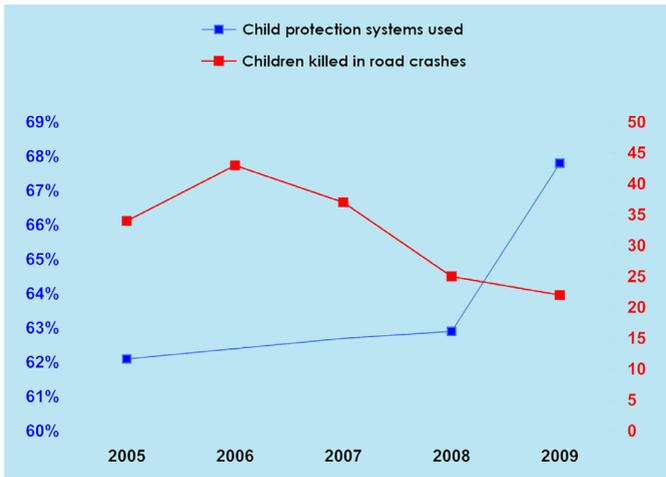


*Child protection systems are now not only safe, but comfortable too.*

## **Child protection systems**

Special child restraint seats are designed to specifically accommodate children since they have different needs depending on their age, weight and size. Early 'child-seats' only acted as a 'booster seat' to help raise the child up to a height where they were in a better position for the seat-belt, it was easier for parents to see them and for the child to see out of the car. The

main purpose of new child restraint systems is to create a well-anchored seat like that of an adult, safeguarding children to the maximum degree possible. Under UN Regulation No. 44 on Child Restraint Systems, technical testing provisions exist to ensure the high safety performance of components used for child restraints. These provisions regulate factors such as flammability, the tensile strength of materials, straps, fixing points and markings and most importantly provide specifications for the positioning of the child's body in the car seat. This is essential for preventing the child's head from coming into contact with the car's interior during a crash.



*The effect that a rise in the use of child protection systems had in Hungary, 2005-2009.*

*Data courtesy of: Gégény István.*

## Electronic Stability Control

Some technologies such as Electronic Stability Control (ESC) - Regulation No. 13-H for passenger cars, and Regulation No. 13 for trucks – have already made a dramatic impact in reducing crashes, showing up to a 50 per cent reduction. In both passenger cars and trucks, ESC helps to avoid rollovers and skidding caused by weather conditions or by losing control of the vehicle.

In 2009, the ESC global installation rate stood at 36 per cent of all newly produced passenger cars and light commercial vehicles (up to 6 tonnes). Many governments are increasingly deciding that ESC should be mandatory on all new models of passenger vehicles – as it is the case in Australia, Canada, the United States of America and also the European Union (EU). Other countries, such as Japan, are also considering making ESC mandatory for trucks.

## Advanced Electronic Braking Systems

The latest in industry innovators' long line of technological advances in the field of road safety has arrived – Advanced Electronic Braking Systems (AEBS). The system has the potential to save lives.

Fitted to trucks and coaches, AEBS employ sensors to monitor the proximity of the vehicle in front and detect situations where the relative

speed and distance between the two vehicles suggests a collision will take place. Emergency braking is then automatically applied to avoid the collision or to at least mitigate the consequences. The EU has already announced that these systems will become mandatory for new coaches and heavy transport vehicles from 2013. It also announced that it will use the UNECE Regulation as the basis for the approval of such systems.



*UNECE public demonstration of AEBS capabilities.*

## Periodical technical inspection of vehicles

Poor vehicle maintenance is a significant contributor to road traffic crashes. Road vehicles are made up of thousands of parts which often rely on each other for appropriate operation. When parts fail individually or in combination, crashes can occur. A 2000 survey by DEKRA Technology Center in Germany, found that out of 15,809 crashes, some 5 per cent were

caused directly by a technical defect. Vehicle maintenance is therefore an essential element of keeping road users safe.

The 1997 Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles and the Reciprocal Recognition of Such Inspections provides the framework for homogeneity in vehicle maintenance standards. The agreement's objective is to establish rules for the periodical inspection of vehicles that are registered or used in the territory of a Contracting Party, thereby improving national and international road safety by ensuring that people's personal

vehicles and existing vehicle fleets are kept safe. The agreement also provides vehicle emission parameters to help reduce the impact road traffic has on the environment.

The periodical technical inspection requirements in the agreement simultaneously facilitate the smooth international transport of goods and the movement of passenger vehicles between countries. Many countries have not yet introduced a system of technical inspections according to best international standards, a step that would enhance both trade capabilities and the safety of road traffic participants.



*Vehicle inspection centres play a crucial role in road safety.*

*However, too few countries have acceded to the 1997 Agreement.*

## Dangerous goods

With road transport shouldering much of the burden of goods distribution, it is unavoidable that dangerous goods will end up being transported on the same roads that you, your friends and your family use.

Dangerous goods have been involved in some of the worst road crashes in history. At the end of World War II a series of dramatic accidents, including the explosion of two ships loaded with ammonium nitrate fertilizer, made governments realize that the international carriage of dangerous goods was increasingly becoming a serious concern. Apart from the existence of a rail regulatory system in Europe, there were no international regulations available to govern such carriage.

A regulatory body was necessary that could, as far as possible, prevent accidents. Without international regulation, the safe trade in chemicals and dangerous products would be seriously impeded, if not made impossible. This prompted the United Nations to create under ECOSOC in 1953 a Committee of Experts on the Transport of Dangerous Goods that would develop recommendations for their safer transport.

At the same point in time, the UNECE Inland Transport Committee (ITC) created a group, now known as the Working Party on the Transport



*The transport of dangerous goods in Thailand, with the tanker displaying UN regulated orange plates.*

of Dangerous Goods (WP.15), to develop regulations that would govern the international transport of dangerous goods in the UNECE region for roads and inland waterways. This led to the European Agreement concerning the international carriage of dangerous goods by road (ADR) in 1957, and the international carriage of dangerous goods by inland waterways (ADN) in 2000.

The UNECE Transport Division is the secretariat to both the ECOSOC committee and to WP.15 of ITC. In the UNECE region, the ADR is the cornerstone. The ADR includes the requirements for issues such as classification, labeling, documentation, packaging and portable tanks. It also includes requirements for the operation of vehicles and for their construction, in particular with regard to braking systems, speed limiting devices, the electrical equipment of tank-vehicles and vehicles intended for the carriage of explosives, as well as parameters for their protection

against fire. Tanks are subject to initial and periodic performance tests and inspections, and the vehicles themselves are subject to a yearly inspection that, if successful, leads to the issuance of an ADR vehicle certificate.

Companies undertaking the carriage, or the related packing, loading, filling or unloading of dangerous goods by road must also appoint one or more safety advisers responsible for helping to prevent the risk inherent in such activities. These advisers must hold a certificate of training as safety adviser issued after examination, valid for five years only and renewable subject to new examination.

The United Nations Recommendations on the Transport of Dangerous Goods, Model Regulations, are implemented throughout the world.

Dramatic accidents involving road transport of dangerous goods are often reported in developing countries and have brought home the need for regulation in the transport of dangerous goods.

It appears that many developing countries do not yet have proper regulations governing the road transport of dangerous goods, nor appropriate administrative structures and mechanisms to guarantee effective implementation of such regulations.

All these recommendations and agreements need constant updating in light of technical progress, the advent of new substances and materials, the exigencies of modern transport systems and, above all, the requirement to ensure the safety of people, property and the environment.

The considerable increase of vehicles and road traffic in many developing countries, combined with poor road infrastructure, lack of adequate road signs, signals and markings, the lack of driver training and driver fatigue due to the absence of legislation limiting driving time, are all factors that increase the risk of collisions. When vehicles carrying dangerous goods are involved in such accidents, the consequences can quite simply be devastating, especially if the vehicle itself and its equipment do not meet the appropriate safety standards.

It is therefore highly recommended that all countries wishing to improve road safety consider developing appropriate legislation based on the ADR (if they have not yet done so already), but also adhere to all of the relevant UN road safety conventions. WP.15 is currently developing a road map on how to set up the administrative structures required for the implementation of the ADR.

## **Driver's Training**

Some of the world's most flammable and hazardous materials are transported by road every day. Safe packaging, labeling and documenting this dangerous cargo is only one side of the coin. It is equally important for road safety that the drivers of vehicles carrying dangerous goods are properly trained and able to effectively put in place measures aimed at achieving greater competence and thus safety. The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) specifies the requirements for dangerous goods drivers' training. These include the requirement for carriers to keep a record of training and the requirement that training should be carried out before a person assumes responsibilities in relation to dangerous goods. Otherwise duties should be carried out only under the direct supervision of a trained person. In order to facilitate transport operators and drivers to meet these challenges, training programs in accordance with ADR standards have been developed worldwide

Knowing how to safely drive a vehicle and how to properly follow the rules of traffic are fundamentals not only for commercial drivers carrying dangerous goods. Obviously truck and coach drivers need different and specialized training compared to car drivers. Their training plays a major role for road safety.

The rules of the road are in the 1968 Convention on Road Traffic, which also sets the obligation that domestic legislation shall lay down minimum requirements concerning the curriculum and the qualifications of the personnel responsible for providing driving training.

UNECE has also commissioned a study on how cultural differences impact driver behavior, which may shed light on necessary steps to be taken with regard to training.

In our highly motorized world and at a time when people drive across borders and across continents, driver training is of growing importance.

### **AETR - driving times and rest periods**

Fatigue when driving can kill. It has been estimated that up to one fifth of crashes on motorways are caused by drivers falling asleep at the wheel. While it is the responsibility of road users to ensure they are in a fit condition to drive, it can be far more dangerous for professional drivers, especially freight carriers, to underestimate their fatigue level. It is for this reason that the UNECE-administered European Agreement Concerning the Work of Crews of Vehicles Engaged in International Road Transport (AETR) was established in 1970 to provide provisions to regulate the work and rest periods of drivers of trucks, buses and coaches.

The AETR agreement now stipulates the use of a control device that takes precise measurements of commercial drivers' movements, can provide printouts for regulatory officials that show speeds, distances travelled and the length of time that a vehicle has been stationary.

The digital tachograph has been obligatory equipment on new trucks and coaches from May 2006 in the European Union and since 2010 (after a four-year transition period) for other UNECE member countries, which are Contracting Parties to the AETR. The control device stores all information relevant to the AETR for the previous 28 calendar days.

## Tunnel safety

Following two major accidents that occurred in Alpine road tunnels in Europe in 1999 and 2001, UNECE created an Ad hoc Multi Disciplinary Group of Experts with the major task of developing recommendations for minimum



requirements concerning safety in tunnels of various types and lengths, beginning with road tunnels. One of the outputs from this Group of Experts was a comprehensive

catalogue of safety measures for road tunnels. This catalogue was commended and used in the EU's subsequent Directive 2004/54/EC.

## Container safety

The use of containers has continued to grow steadily. However, despite all the relevant evidence showing examples of good packing guidelines, accidents involving poorly secured or overweight containers continue. These incidents have resulted in the injury or death of workers, passengers, bystanders and damage to infrastructure and cargo – including vehicle rollovers. The 1997 IMO/ILO/UNECE Guidelines for Packing of Cargo Transport Units in intermodal



transport addresses safety in the supply chain in relation to the packing of containers and securing of cargo. The guidelines have since been upgraded to a Code of Practice and are being revised by a Group of Experts made up of representatives from governments, the private sector and international organizations and are available for implementation into national legislation.

## Road safety statistics

The Working Party on Transport Statistics (WP.6), develops appropriate and common methodologies and terminology for the harmonization of transport statistics. These methodologies allow for the collection and compilation of statistics on inland transport as well as on road traffic accidents. UNECE makes these data available through its publication *Statistics of Road Traffic Accidents in Europe and North*



*While the primary aim is the prevention of road crashes, it is acknowledged that this is not always possible. It is for this reason that when accidents happen, we must learn from them through understanding the causes. Multi-disciplinary crash investigation helps decision makers to lower the probability of future road crashes. They also contribute to more reliable data and statistics.*

America and through an online transport statistics database. Interested stakeholders can freely use these statistics to identify problems, analyse trends and raise awareness to ensure that developments in road safety in their country are closely monitored.

The database can be found on the Transport Division's website, at: <http://www.unece.org/trans/welcome.html>

## Level crossings

A Group of Experts on Safety at Level Crossings is about to start its work under the framework of the ITC. While – statistically speaking – relatively few fatalities and injuries happen at level crossings, the risk of injury or death is unacceptably high. The Group of Experts will provide an international discussion platform for road safety by bringing together specialists from the public and private sectors, as well as academia and independent researchers. A 'Safe System' approach will be adopted by taking into consideration the five key elements (5Es) typically used in level crossing safety: engagement, education, engineering, enforcement and economics. The Group of Experts will be expected to take stock of available data to describe, assess and better understand the safety issues that arise at a road/rail interface, as well as to develop a multi-disciplinary strategic plan aimed at reducing the risk of death and/or injury at level crossings.



*Human behaviour at level crossings contributes to the unacceptably high risk of injury or death. Photo credit: Courtesy of Réseau Ferré de France.*

## Public transport

Public transport plays a central role in providing access to opportunities, work, school, health, etc. It is usually the safest mobility and more environmentally friendly than driving a car. Given the many factors that can contribute to road crashes, reducing the amount of vehicles on roads is one of the possible ways to make roads safer. Affordable,



*Unfortunately due to massive underfunding this benefit of public transport cannot always be reaped. Public buses in many countries are manifestos of limited political will to improve road safety*

well designed and maintained public transport networks with well trained staff are a sustainable way of compensating for reduced private transport and facilitating the safer movement of people.

Another effective way of getting people out of vehicles is to promote the benefits of cycling and walking. People will not want to walk or cycle without first feeling safe. Governments can promote a shift away from vehicles by ensuring that the appropriate infrastructure - such as cycle lanes - is in place to make these transport

modes safer, and therefore more attractive. It is also critical that safety regulations are properly implemented and enforced to further instill a feeling of confidence in bicycle users and pedestrians.

The Transport, Health and Environment Pan-European Programme (THE PEP) was established in 2002 to offer a platform for countries from Europe, the Caucasus, Central Asia and North America to facilitate the sharing of know-how and best practices. THE PEP is focused on policies needed for adequate and safe infrastructure facilities, including efficient public transport, as a way of increasing the attractiveness of cycling and walking as daily modes of transport for city dwellers.

At a high-level meeting held in 2009, governments adopted the Amsterdam Declaration, adding fresh impetus to THE PEP. Four priority goals to be reached by 2014 were agreed, along with concrete mechanisms to achieve them. The goals are:

- To contribute to sustainable economic development and stimulate job creation through investment in environment- and health-friendly transport
- To manage sustainable mobility and promote a more efficient transport system
- To reduce emissions of transport-related greenhouse gases, air pollutants and noise
- To promote policies and actions



*City-wide cycle schemes are a good way of getting people out of cars. However, there must be appropriate infrastructure to ensure the safety of cyclists.*

conductive to healthy and safe modes of transport.

Good, functional public transport systems offer one of many practical solutions for achieving road traffic and emission reduction goals, while simultaneously reducing the number of injuries and deaths that result from road crashes.

## **Innovation**

As technological advances roll out in leaps and bounds, it is no longer practical to use only traditional road safety techniques to improve road safety and reduce road traffic casualties. Innovations that have

the ability to drastically improve road safety and the sustainability of road transport are available and are frequently put into practice over very short periods of time. This constitutes a major challenge for governments and international organizations.

Given that the design and industrial development cycle of innovative technologies are shorter than the policy cycle, regulatory authorities often lag behind at the national level, but do so particularly at the international level. This leads to technical fragmentation and eventually inter-operability issues within and across countries. UNECE, having recognized the importance of innovation and the difficulties that accompany the use of new technologies in transport and road safety, is calling for efforts to speed up the development and implementation of regulations and agreements on technical and technological compatibility.



*While 'Silent cars' reduce noise pollution, they may prove to be an additional risk for pedestrians and other road users.*



*Variable Message Signs help to optimise traffic flow when accidents occur.*

Intelligent Transport Systems (ITS) is increasingly considered to be part of the solution for current and future transport challenges. The technologies that fall under the umbrella of ITS can be as simple as electronic signs that display variable speed limits or as complex as the control centres that monitor traffic and work out the best strategies for achieving smooth traffic flow. ITS is becoming widely accepted as an instrument for achieving efficient and safe transport while at the same time contributing to a better quality of life.

Technical specifications for autonomous emergency braking and Lane Departure Warning Systems are just two topical examples of recent regulations.

In pursuing a common strategy for the future implementation of ITS solutions, ITC launched a strategic review on how ITS can contribute to this goal. The review package consists of a background paper

that provides relevant information – including best practices and aims to raise awareness about the values ITS solutions can deliver. The review package also includes a strategic note that identifies the main gaps and impediments to the broader use and faster dissemination of ITS applications, irrespective of which organizations, institutions or bodies can or will fill the gap. Finally, the package includes a ‘Road Map’ that outlines the areas and lists the activities UNECE plans to undertake between 2012 and 2030, either as a continuation of ongoing tasks or as new initiatives. The core objective of the UNECE strategy on ITS is to pursue new actions and develop policies where ITS could improve quality of life and enhance the availability of sustainable mobility across borders, including safer mobility.

### **Capacity building**

The adage ‘knowledge shared is knowledge gained’ has particular pertinence when applied to the field of transport. Every year the UNECE Transport Division hosts and participates in several capacity-building events around the world to help disseminate its expertise.

The Division’s main capacity-building activities, within the UNECE region, are focused on:

- Capacity-building projects, workshops, seminars and training courses aimed at assisting countries in acceding

to and implementing UNECE legal instruments, norms and standards, transferring know-how and sharing best practices, as well as implementing global commitments in transport

- Providing advisory services, strategic guidance and administrative support for technical cooperation projects designed to develop coherent pan-European transport networks, corridors and areas, and Euro-Asian transport links
- Strengthening national legal and regulatory frameworks on road safety
- Supporting transport initiatives and projects, particularly those carried out by sub-regional groupings, in the framework of the UN Special Programme for the Economies of Central Asia, the Organization of the Black Sea Economic Cooperation, the Central European Initiative and other sub-regional initiatives.

For these purposes, UNECE also works in close cooperation with the other four regional commissions of the United Nations.

The UNECE Plan to implement the UN Decade of Action for Road Safety 2011-2020 incorporates an ambitious capacity building programme to help improve knowledge and capacities relating to road safety management and to aid in the establishment of the national lead agency. The speed at which the UNECE Plan will

be implemented will largely be subject to the availability of donor funding.



*A capacity-building workshop in New Delhi, 2010.*

## Advocacy

In order to achieve a holistic strategy for road safety, the UNECE Transport Division conducts advocacy activities to maximise the number of people that the road safety message reaches. Advocacy efforts amongst



*Road safety education should start at an early age  
Belgrade, 2011.*

the young people – the most vulnerable road users – are of particular importance, and sports are a good way to reach them. UNECE launched an information campaign on road safety at Eurobasket 2011, which was held in Lithuania. The campaign, organised under the motto 'We Play and Drive by the Rules', built on the success of a similar initiative launched in 2010 during the FIBA Basketball World Championship in Turkey. With personal testimony from players who have lost friends or loved ones on the roads, the campaign put forward high-impact road safety statements designed to make people think about their behaviour on roads and inform young people around the world of the simple rules that save lives. At the semi-final games the players unrolled a 'We Play and Drive by the Rules' banner on the court. By spreading the road safety message at such major, televised sporting

events, the dissemination of such a message can be maximised.

Another way of reaching young people is to get them thinking about road safety from an early age. In April 2011, during the UNECE regional launch in Belgrade, an education event was organized during which children got to dress up in high visibility jackets to act out road situations on a specially designed mock-up of a crossroads. Events like these help to teach children the dangers of roads and the caution with which it is necessary to treat them.

Every year thousands of children all over the world enroll in Scout organizations. A road safety information campaign was launched during the 2011 World Scout Jamboree in Kristianstad, Sweden, the culmination of which had some 500 scouts from 160 countries taking part in a



*Ambassadors and heads of national delegations attending UNECE's 64th commission session reaffirmed their commitment to road safety by signing the poster 'We drive by the rules'.*

ceremonial 'Joining Hands for Road Safety'. Other children held up letters forming the slogan 'Scouting for Global Road Safety'. The day included a series of active learning workshops and games to get young people engaged and talking about the importance of road safety. The campaign was the result of UNECE's partnership with the World Organization for the Scout Movement (WOSM), Scouts of Ireland, Scouts of Greece and the Hellenic Road Safety Institute Panos Mylonas (IOAS).

To mark 20 November 2011, the world day of remembrance for victims of road accidents, a memorial sculpture dedicated to the United Nations Decade of Action for Road Safety was unveiled by UNECE at the Park 'Christos Polentas' in Chania, Crete.



UNECE hopes that the sculpture will act as a fitting tribute to those who have lost their lives in crashes. The sculpture represents an olive tree growing on the wild rocks of Crete, with five roots symbolizing the permanent members of the UN Security Council, branches



*The 'Scouting for Global Road Safety' information campaign, organized with the World Organization for the Scout Movement in 2011, featured a series of road safety workshops.*

representing the world's continents and 193 leaves representing the number of UN member States.

Maintaining visibility is very important when it comes to keeping people informed of road safety issues. It was for this reason that UN TV produced a film on the UN road safety legal instruments administered by UNECE, which was shown first at the UNECE biennial session and on many other subsequent occasions. The film can also be found on YouTube.



*United Nations Secretary General Ban Ki-moon, introducing the UNECE road safety film.*

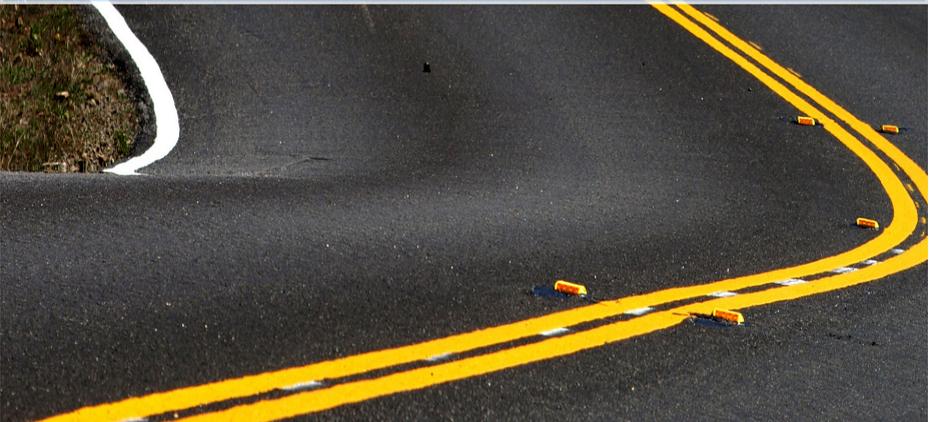


## The way forward

The advocacy of Intelligent Transport Systems is just one of the many steps that the UNECE is taking to realize its goal of drastically reducing the deaths, injuries and suffering that result from accidents on our roads. A world in which safe, sustainable and environmentally friendly transport is the norm should not be viewed as impossible. UNECE provides well-established regulatory frameworks that, when acceded to by countries, form the basis upon which governments can build comprehensive, well-functioning and holistic road safety systems that work to maximize the sustainability of countries' social

and economic wealth.

This vision of safe mobility can be achieved through interaction at every level of the transport process, whether via the provision of best practices to governing bodies, or simple advocacy amongst the world's citizens. All of these activities fall under the scope of the UNECE Plan to implement the UN Decade of Action for Road Safety. Every angle must be covered in the quest for safer mobility – the time to act is now.



## United Nations Economic Commission for Europe

### Road Safety Conventions

**1949** Convention on Road Traffic (95 Contracting Parties [CP]); 1949 Protocol on Road Signs and Signals (39 CP)

**1950** European Agreement supplementing the 1949 Convention on road traffic and the 1949 Protocol on road signs and signals (14 CP)

**1957** European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) (48 CP)

**1958** Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be fitted and /or be used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions (47 CP)

**1968** Convention on Road Traffic (70 CP)

**1968** Convention on Road Signs and Signals (62 CP)

**1970** European Agreement concerning the Work of Crews of Vehicles engaged in International Road Transport (AETR) (51 CP)

**1971** European Agreement supplementing the 1968 Convention on Road Traffic (33 CP)

**1971** European Agreement supplementing the Convention on Road Signs and Signals (32 CP)

**1973** Protocol on Road Markings (27 CP)

**1975** European Agreement on Main International Traffic Arteries (AGR) (37 CP)

**1997** Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles and the Reciprocal Recognition of Such Inspections (12 CP)

**1998** Agreement concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts which can be fitted and / or be used on Wheeled Vehicles, (33 CP).



*The transport family of UNECE at the 64th Commission Session Poster signing campaign.*



For further information please consult:  
Transport Division Website:  
[www.unece.org/trans/welcome.html](http://www.unece.org/trans/welcome.html)

