



Federal Ministry  
of Transport, Building  
and Urban Development

# Road Safety Programme 2011



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# Road Safety Programme 2011

## Foreword

Dear readers,

If we only look at the figures, then we can undoubtedly state that we have made enormous progress in road safety in the last few decades. In 1970, the worst year in accident statistics to date, 21,332 people were killed on the roads. By 2010, in other words exactly 40 years later, the number of road fatalities had fallen to 3,648 – a record low – while the volume of traffic had tripled.

However encouraging this trend may be, the fact is that every single casualty is one too many. Every case involves someone's life, their family and friends, and personal suffering. That is why, despite all the statistical success, we must never relent in our efforts to make our roads even safer.

There is a multiplicity of approaches to this. Our recast Road Safety Programme focuses on the potential and measures in three "action areas". The first and most important area is *human factors*. Here we want to focus in particular on those road users who are most at risk, while at the same time tackling those who pose the greatest risks. In the *infrastructure* action area, we want to make danger spots more "forgiving" and, by deploying innovative technology, improve the flow of traffic. Finally, in the *automotive technology* action area, we want to encourage the greater spread of "intelligent" safety systems, which can make a significant contribution towards accident prevention.

Our Road Safety Programme is the result of a broadly based process of dialogue. Alongside the federal states, a large number of private sector institutions have also been involved in road safety activities. My sincere thanks go to all those who have participated. Road safety is undoubtedly also an issue for policymakers. But more than this, it is a challenge for society as a whole. Or, to put it in a nutshell: road safety concerns us all.

Please play your part in helping us to make further progress towards more road safety.



Dr Peter Ramsauer  
Federal Minister of Transport, Building and Urban Development



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# Introduction

Road accidents are usually associated with great social and economic loss:

- at the individual level, with the suffering of the casualties and their relatives;
- at the economic level, with burdens imposed on the health service, for instance;
- at the industrial level, with commercial losses due to absence of staff, damage or production downtimes.

Successful road safety activities are a challenge for society as a whole. The aim is safe and efficient mobility that is socially and ecologically acceptable.

The key objective of successful road safety activities is thus to steadily reduce the number of people killed and seriously or critically injured in road accidents. The guiding principle is that every road fatality is one too many.

On the basis of an EU initiative, this Road Safety Programme aims to **reduce the number of fatalities in Germany by 40 percent by 2020.**

The principal aim of the programme is to mitigate human suffering.

The National Road Safety Programme also aims to provide a reference framework for appropriate programmatic approaches to be adopted by the federal states and private sector institutions. It invites all road safety stakeholders to get involved in, and show commitment to, this major ongoing social task.

Road safety is the responsibility of many parties. We all have an impact on road safety through our behaviour as pedestrians, pedal cyclists, car drivers, motorcyclists, HGV drivers, bus/coach drivers or users of other forms of transport. This programme details the major action areas and is designed to encourage people to continue working on the improvement of road safety. In addition, it is designed to identify the approaches that can be adopted in order to achieve the common objective of even better road safety.

## The objectives



The objective of the Federal Government's transport policy is to facilitate safe and secure mobility for all its citizens, while at the same time making this mobility environmentally friendly and reducing its climate change impact. Accordingly, this Road Safety Programme is focused on:

- steadily enhancing road safety;
- facilitating environmentally acceptable and sustainable mobility;
- helping mobility-impaired persons to move through the public realm safely and with as few barriers as possible;
- promoting a culture of mutual consideration and responsible behaviour in road traffic;
- giving positive support to technological innovations by German industry in the automotive and road safety sectors and creating the framework for enhancing the competitiveness of the German automotive sector.

It is also an expression of the firm political will to enhance road safety and further improve the overall road transport system for the benefit of all road users. Because, despite the positive trends, there were still as many as 3,648 road fatalities in 2010. Around 370,000 people were injured. But every road casualty is one too many. For this reason, road safety activities continue to be a key and indispensable concern. In particular, vulnerable road users are to be better protected and the number of accidents on rural roads is to be further reduced. In addition to a further reduction in the number of road users killed in accidents, one of the objectives must also be to significantly reduce the number of critically injured casualties.

## Major success stories

The success stories of road safety activities in Germany to date are encouraging. In 2010, the number of people killed on the roads was 3,648. This was the lowest figure since the introduction of official road accident statistics in 1953. In the 1970s, the number of road fatalities had risen to over 21,000 (in 1970). Since then, thanks to the commitment of many groups in society and through targeted road safety activities, it has been possible to steadily reduce the number of road accident fatalities. If we consider the fact that the vehicle population and mileage have almost trebled since the 1970s, this is an impressive success of all those who are involved in road safety activities, either as individuals or in associations, organizations, companies and public authorities. Here,

the commitment shown by the German Road Safety Council should be highlighted. This body acts an interface between the road safety activities of the —Federal Government, the federal states and local authorities and the road safety activities of the German Statutory Accident Insurance Institution. Members of the German Road Safety Council, such as motoring organizations (e.g. ADAC, ACE), health insurance funds, insurance companies, federal associations (e.g. driving instructors, automotive industry), inspection organizations (e.g. TÜV, DEKRA) and others, are important partners of the Federal Government when it comes to enhancing road safety. In addition, the numerous voluntary workers in the German Road Safety Association deserve particular mention. It is their hard work at the local level that makes the numerous measures and campaigns to enhance road safety at Federal Government level possible in the first place.



## Mandate for the future

The success achieved so far is also a mandate and an obligation for the future. For this reason, the Federal Ministry of Transport, Building and Urban Development has the firm political resolve to continue these success stories and urges all associations, companies, initiatives, groups and individuals involved in road safety activities to continue to play a part in road safety with a high level of commitment.

Road safety activities in Germany have to address new challenges. One of these is demographic change. Activities must reflect the fact the elderly people's share of the total population is increasing and focus on a detailed examination of the accidents involving this age group. One of our key social concerns is to ensure that people can enjoy safe mobility right through to old age.

Mobility, and thus the requirements to be met by the transport system, will continue to increase in the future. Around 50 million motor vehicles use Germany's roads (which include around 12,800 km of federal motorways and around 40,000 km of federal highways). Today, already, the road mode bears the main burden of freight and passenger traffic. Over one half of vehicle mileage is on the federal trunk roads alone, i.e. on 23% of the inter-urban road network. Moreover, all traffic forecasts clearly show that the roads will have to continue to absorb the bulk of traffic in the future. Against this background, the efficiency of the road network has to be safeguarded and adapted to the growing demand for transport.

## The challenges

At the same time, the National Road Safety Programme reflects recent technological developments in vehicles. The major advances in active and passive vehicle safety have made a contribution to the road safety success of recent years. The vehicle and component supply industries have played a crucial role in achieving this. In the future, driver assistance systems and cooperative vehicle systems are likely to deliver further gains in road safety. These systems also enable vehicle-to-infrastructure and vehicle-to-vehicle communications and cooperation.

Road transport faces further revolutionary technological changes. In the coming decades, electric, hybrid and fuel cell powered vehicles will increasingly become a feature of road traffic in Germany. The Federal Government is doing everything it can to support this development, thereby also helping to preserve Germany's technological leadership in the fields of automotive and electrical engineering. This includes identifying and minimizing at an early stage any safety risks that the deployment of new forms of drivetrain may involve.

The advances made in vehicle safety equipment have contributed to the positive trends in the number of serious accidents and the reduction of the risk of being injured; vehicles are safer than ever before. However, in the case of motorcycles and pedal cycles, there is a limit to possible improvements. Different approaches also have to be adopted to further improve the casualty figures for motorcyclists, pedal cyclists and pedestrians. For this reason, activities are to focus on these road user groups more than in the past.

Activities must also focus more on rural roads, because it is still the case that this type of road accounts for around 60 percent of all road fatalities.

## The measures

To support the positive trends in the field of road safety, this programme has launched or will launch a range of measures. Thus, for instance, we will press ahead with our endeavours to ensure that motorcycles are fitted with anti-lock braking systems (ABS) as standard, promote the voluntary wearing of cycle helmets and encourage all road users to comply with the rules of the road. In the future, the focus will also be on the mobility of the increasing number of elderly people. On rural roads, the deployment of more rumble strips and the use of lane keeping assistance systems

could prevent accidents where vehicles veer off the carriageway, which often have devastating consequences for those involved. Research and pilot projects are already underway.

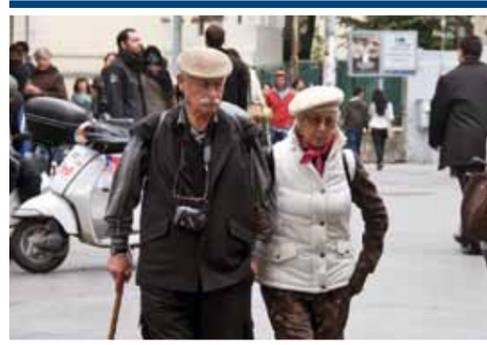
The workload of HGV drivers is likewise of enormous relevance to road safety, because HGV drivers suffering from stress and fatigue also endanger other road users. The construction of new rest areas and the upgrading and refurbishment of existing rest areas, as well as efficient HGV parking management by means of modern information and communications systems, will help to minimize these risks.

The general availability of safety-related traffic information for all road users can likewise make a major contribution towards enhancing road safety. In addition, incentives are to be provided to increase the market penetration of driver assistance systems. The use of "alcolocks"<sup>1</sup> as part of drink-drive rehabilitation training might also further improve accident prevention.

The success achieved in reducing the number of fatalities must encourage us to also curb the number of other serious accident consequences. For this reason, the most frequent injury patterns that result in critical injuries are to be identified and targeted measures developed on this basis.

Given that the trend in accident rates is on the whole positive, which is also due to advances in technology and medicine, compliance with road traffic law has a key role to play in further improving road safety.

The measures in this road safety programme will – like other measures to enhance road safety in the past – be monitored and assessed as part of the Road Accident Prevention Report, which is prepared every two years and submitted to the German Bundestag.



## Communication

This is about people complying with rules, but also understanding the need for such rules. Road users are more likely to accept rules if they understand them. They are more likely to follow rules if there is societal consensus on specific behavioural patterns. Continuous road safety campaigns must promote safe road user behaviour, keep people aware of the safety issue, provide them with facts and help to form opinion that is conducive to responsible behaviour.



<sup>1</sup> Electronic breath alcohol ignition interlocks that cannot be deactivated until the driver has provided a breath sample



# 1. Action programme

This Road Safety Programme is presented as part of our responsibility for ensuring safe mobility for everyone in Germany. We do so with the aim of responding in an appropriate manner to the challenges that exist and with the intention of addressing future and foreseeable challenges at an early stage in order to avert negative trends before they occur.

This cannot be done by government alone. Here, responsibility lies with all public and private sector institutions involved in road transport that are road safety stakeholders, with vehicle manufacturers as well as with every individual road user, who can expect safe mobility but who is also obliged to be alert and show consideration for others.

Within the scope of its competencies, the Federal Ministry of Transport, Building and Urban Development will ensure that:

- national and international frameworks are established to facilitate safe mobility;
- road safety measures and messages reach the public;
- a regulatory framework is created to enable technological innovations to be implemented;
- research is carried out in its sphere of influence to facilitate safe, efficient and environmentally sound mobility in the future.

To this end, appropriate measures will be identified in the following action areas: human factors, infrastructure and automotive engineering. These measures will continue to improve road safety on a sustained basis.

In those cases where other parties are responsible, the Federal Ministry of Transport, Building and Urban Development will, by issuing recommendations, lobby and work to ensure that road safety activities are progressed in these areas too, be it in a dialogue with appropriate federal state and local authority institutions, or in an exchange of ideas and experience with the automotive industry or other institutions of society.

The road environment, road traffic technology and automotive engineering provide the framework within which road traffic operates. Here, it is of fundamental importance that we adapt these areas to the requirements of the traffic environment and, if necessary, proactively shape them in order to facilitate safe mobility on a sustained basis. The Federal Ministry of Transport,



Building and Urban Development will do everything it can to support this by taking appropriate action within its means and competencies.

However, it is human beings themselves who act in road traffic. It is human beings who move through traffic and generate this traffic in the first place. Be it with the help of vehicles or on foot, in their leisure time or as part of their job, as the driver of a vehicle with the responsibility this entails or as a passenger.

Everyone bears responsibility, everyone is a stakeholder and is required to prevent accidents and injuries. The imperative to show consideration for others is especially compelling in road traffic. The deliberate disregarding of the rules of the road is not a trivial offence. Every individual is responsible for behaving on the roads in such a way that no other person is endangered or harmed.

In road traffic, there are “strong” and “vulnerable” road users. Road traffic has to be made safer for all stakeholders, but the “vulnerable” road users require special protection and targeted attention in the complex system that is the road network.

The 2011 Road Safety Programme believes that the principal target groups for road safety communications are those groups that have featured disproportionately in accidents in recent years and those who require special protection.

In the following section, action areas are listed on the basis of individual age brackets and target groups. Starting with children, who, as the most vulnerable road users, require the special protection of everyone, progressing through young people and novice drivers, and finally reaching senior citizens, who have to be able to enjoy safe mobility, and thus quality of life, even at an advanced age.



## 2. The “human factors” action area

The human factors action area centres on measures that focus on road user behaviour. These measures are based both on the age brackets of the road users and on the way in which they use the road, i. e. motorized or non-motorized. The categories listed partly overlap. Thus, for instance, pedestrian-specific measures address both children and senior citizens.

## 2.1 Children and young people



In 2010, a total of 205 **children and young people** aged 17 or less were killed on the roads – 104 children aged 14 or less and 101 young people aged between 15 and 17. This is 6% of all fatalities. More than two thirds (65%, 134 fatalities) were killed either as a passenger in a vehicle (93 casualties) or as a driver/pedestrian who was not primarily to blame for the accident (41 casualties). In the sub-group of children under 15 years of age, 46% were killed as a passenger in a car (48 children). In addition, basic attitudes of adult road users are developed in their childhood and youth. Against this background, the importance attached to road safety and mobility education must be increased and support must be given to in-school and out-of-school road safety and mobility education. In addition, the empirical database for the qualitative and quantitative appraisal of accident rates among children and young people is to be improved.

### Awareness campaign to encourage the use of child restraints in motor vehicles

Although the use of child restraints in vehicles has reached a high level on the whole, too many children are still incorrectly restrained in passenger cars. Thus, in 2010, on built-up roads, around one quarter of children aged 6 to 11 were only restrained by an adult seat belt, which is not age-appropriate. 3% of the children in this age group were not restrained at all. This suggests that many parents are not sufficiently informed about the proper installation and correct use of child restraint systems. The Federal Ministry of Transport, Building and Urban Development will step up its awareness campaign in order to increase the number of children correctly restrained in motor vehicles and to minimize the risk of accidents and injuries.

### Encouraging the voluntary wearing of cycle helmets by children and young people

Every cyclist should know that they are among the vulnerable road users. Wearing a cycle helmet can prevent – or at least mitigate the severity of – head injuries and the consequences of accidents for cyclists. Some cyclists do not seem to realize this, and that includes children and young people. Here, targeted publicity campaigns are needed to enhance parents' sense of responsibility and to make cycling with a cycle helmet more attractive to children and young people, too. The Federal Ministry of Transport, Building and Urban Development will take appropriate action, for instance mounting campaigns, to encourage the voluntary wearing of cycle helmets.



### Regular compilation of the Child Accident Atlas

The Federal Highway Research Institute's "Child Accident Atlas", published in 2008, provided information about the scale on which children are involved in road accidents in a specific area. By analyzing the accident data at a regional level, it is possible to identify and analyze local and regional blackspots and take local action to address them. The Child Accident Atlas provides the regional bodies responsible for road safety as well as the road safety associations, parents and teachers with guidance and helps them to determine their position with regard to solving the road safety problems. The Federal Ministry of Transport, Building and Urban Development will compile the Child Accident Atlas at regular intervals and make it available to the federal states and local authorities as an aid for the purpose of implementing local measures.

### Continuing and improving programmes for children

The Federal Ministry of Transport, Building and Urban Development provides active and financial support to target group programmes for children. The continuity of programmes for children, in particular, will continue to make a major contribution to our road safety activities in the years ahead. At the same time, however, it is also important that the programmes be continuously updated, that new topics be included or existing topics optimized and that, if necessary, new forms and methods of outreach be adopted.



In this context, the following measures, in particular, are to be promoted:

- providing ideas and suggestions for pre-school road safety and mobility education at child day care centres and improving the training of day care teachers and the materials they use for road safety and mobility education;
- continuing cycle training after primary school in order to establish a link between children and their environment and to counteract a rise in the number of accidents resulting from children's wider range of movement by bicycle after they have transferred to secondary school;
- providing schoolchildren with retroreflective high visibility jackets for their journey to and from school;
- making journeys to school safer by means of school travel plans. As part of a research project, the Federal Ministry of Transport, Building and Urban Development has had a "School Travel Planner" developed, which will be made available to the federal states and local authorities for developing school travel plans.

In addition, the federal states will continue to be supported by research findings so that they can provide efficient road safety and mobility education at secondary and vocational schools in line with the recommendations of the Standing Conference of Ministers of Education and Cultural Affairs.

## 2.2 Novice drivers / young drivers

When car drivers or young novice drivers between the ages of 18 and 24 were involved in a personal injury accident, they were recorded as the party most to blame for causing the accident in 62% of these cases. In total, at least one young adult in this age group was involved in almost 95,000 personal injury accidents – in just under 73,000 of these cases as the driver of a passenger car. Two thirds (66%) of the accidents involving young car drivers were caused by young car drivers themselves. In 2010, these accidents (around 48,000) accounted for 17% of all personal injury accidents on Germany's roads, thereby constituting the largest group.

### Improving pre-test driver training

Novice drivers are most likely to be involved in an accident immediately after they have started to drive unaccompanied. Not until they have sufficient driving experience – several thousand kilometres – does this risk drop perceptibly. This makes it necessary to step up efforts to improve road safety among novice drivers. The Federal Ministry of Transport, Building and Urban Development believes that an important starting point for achieving this objective is optimizing the existing system of pre-test driver training. With the "Accompanied Driving from 17" scheme and the introduction of a zero alcohol limit for novice drivers, targeted measures have already been integrated into the existing system. Several studies have shown that the trial scheme entitled "Accompanied Driving from 17" has led to a significant drop in the likelihood of novice drivers committing an offence and being involved in an accident. As a result, the pilot project was converted into permanent legislation at the beginning of January 2011. In addition, it has been proven that the introduction of the zero alcohol limit for novice drivers has resulted in the target group being involved in fewer drink-drive accidents and committing fewer drink-drive offences, and in addition has led to broad acceptance in the population and among those affected. With the introduction of a computerized driving theory test that is more scientifically based, the foundations have been laid for exploiting to an even greater extent in the future the potential inherent in the driving test to reduce the high level of risks novice drivers face and pose.

The quality of pre-test driver training should be monitored in all elements of the existing system from the angle of enhancing road safety and, if necessary, further improved on the basis of the "Framework Strategy for Pre-Test Driver Training in Germany".

Thus, the focus will continue to be on novice drivers when it comes to supporting options for further reducing the risks posed and faced by this at-risk group. The Federal Ministry of Transport, Building and Urban Development has commissioned a research project from the Federal Highway Research Institute entitled "Evolving the System of Pre-Test Driver Training". This project is investigating, inter alia, options for "optimizing the probationary period scheme". The findings will not be available before 2012 at the earliest.



## Target group specific communications



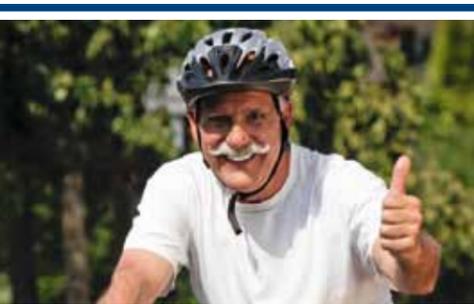
In terms of the risks they face and pose in road traffic, young drivers are an extremely heterogeneous group. The degree to which they pose and face risks in road traffic varies depending on the prevalence of certain personal characteristics, such as attitudes, motives and lifestyles. To improve novice driver safety, it is not only necessary to make learner drivers aware, while they are having driving lessons, of the risks associated with road traffic. Road safety activities in schools must ensure that they develop road safety focused attitudes at an early age.

The Federal Ministry of Transport, Building and Urban Development will thus develop new, or improve existing, target group specific measures and forms of outreach that take these differences into account. In addition, it will ensure that these target group specific measures are implemented as part of campaigns and integrated into the "Young Drivers Scheme", for instance.

## 2.3 Senior citizens

**Senior citizens** aged 65 or over account for a significantly lower percentage of those involved in accidents than their share of the population. In 2010, 11% of those involved in accidents were senior citizens, although their share of the population is around 20%. However, because of the physical constitution of older people, the risk of being killed or injured in a road accident is much higher than is the case with younger road users. Thus, one in four fatalities (25%, 910 fatalities) was aged 65 or over. In addition, the percentage of accidents caused by senior citizens themselves is just as high as that caused by young adults and increases within this group as the senior citizens get older.

The Federal Ministry of Transport, Building and Urban Development is aware that the issue of "senior citizens" requires further differentiation by age group and type of road use if appropriate and problem-focused measures are to be found and implemented. Relevant research findings are to inform road safety activities for senior citizens. Talks will continue to be held with stakeholder associations and institutions with the aim of, for instance, adapting existing and proven target group programmes to reflect new evidence.



## Encouraging voluntary health check-ups

Voluntary health check-ups are a useful preventive measure with which people can find out about their own fitness to drive and the importance of an illness-related deterioration of ability for their own mobility. The Federal Ministry of Transport, Building and Urban Development and the road safety associations have joined forces and are already encouraging older people to have voluntary check-ups. In the future, it will be necessary to raise awareness in the population of the importance of these check-ups in order to reduce people's fear of the examinations and increase their acceptance.

Here, grown-up children also have a role to play. Just as parents worry about the well-being of their children, the children of older people can be important attachment figures with whom they can discuss questions of road safety and look for answers. However, to provide advice to their parents' generation, they require special knowledge of the risks faced by older people, especially as pedestrians and cyclists. Here, the necessary awareness has to be created in the population.



## Widening the range of schemes for providing transport-related medical advice to older road users

The provision of medical advice to older road users, for instance by their GP, regarding their fitness to drive is a major pillar in the overall strategy for ensuring that people remain mobile into old age. The objective must be to enable every road user to enjoy automotive mobility for as long as is justifiable from a medical perspective. The range of transport-related medical advice services has to be widened and optimized, building on the findings of research in this field.

## 2.4 Cyclists

In 2010, the police recorded 71,103 cyclists as being involved in personal injury accidents. Over 62,000 cyclists were injured and 381 killed. This means that one in ten fatalities is a cyclist. Half of the cyclists killed (197 cyclists) were aged 65 or over, and a further 26% (99 fatalities) were between 45 and 64 years old. This means that three quarters of all cyclists killed were at least 45 years old. Most accidents involving cyclists occur within built-up areas.

58% (223) of the cyclists were killed in built-up areas. If all cyclists injured and killed are taken together, as many as 90% were recorded in built-up areas.

### Encouraging the voluntary wearing of cycle helmets



Although wearing a cycle helmet can prevent – or at least mitigate the severity of – head injuries and the consequences of accidents for cyclists, the proportion of cyclists wearing a helmet is very low across all age groups (9% in 2010). The Federal Ministry of Transport, Building and Urban Development therefore actively supports the voluntary wearing of cycle helmets and will continue to encourage it, inter alia by mounting campaigns.

Thus, the Federal Ministry of Transport, Building and Urban Development has launched a nationwide campaign entitled “I wear a helmet”, which is being implemented together with the German Road Safety Association. The campaign focuses on activities to raise awareness of the issue in all age brackets and persuade cyclists to wear helmets. It does this by explaining the protective function of helmets, thereby enhancing their uptake.

### Improving the visibility of cyclists

For cyclists, as for other vulnerable road users, it is important to be seen in good time in the dark and twilight. In addition to the technical means required by law, such as cycle lights and reflectors, visibility can be significantly improved by textiles with reflective material, in particular. Campaigns and schemes are thus to be launched to raise people’s awareness of the importance of such textiles for road safety and to encourage their use.

### Improving consideration shown by and to cyclists



Just like other road users, cyclists are victims and perpetrators of road safety problems in equal measure. Here, it is therefore important that road safety campaigns make cyclists aware not only of their rights but also of their obligations regarding safe use of the road. At the same time, other road users should also be encouraged to show more consideration for cyclists and to comply with the rules of the road.

## Cycling campaigns

The cycling campaigns mounted by the German Road Safety Association on behalf of the Federal Government make a major contribution to road safety and mobility education, and not just that of children. The Federal Ministry of Transport, Building and Urban Development will continue to provide financial support to these campaigns.

## 2.5 Motorcyclists

In 2010, 26,710 motorcycle riders were involved in personal injury accidents. This is equivalent to 4.8% of all persons involved in accidents. However, motorcyclists’ share of all road accident fatalities is 17.4% and thus significantly higher (635 of 3,648 fatalities). In terms of the motorcycle population, the risk of being killed as a motorcyclist in a road accident has dropped significantly since the 1990s (today’s motorcycle population is 2.5 times higher than in 1991 – 3.7 million vehicles). Nevertheless, this risk is still almost three times higher than that for passenger car users. In terms of mileage, the risk is as much as 15 times higher. The decline in the number of fatalities (-36% since 1991) is way below the general trend of -68% for all road users. One quarter of all motorcyclists involved in an accident caused single vehicle accidents (7,147 accidents). More motorcycle accidents occur on rural roads than on any other type of road. 72% of the motorcyclists killed were recorded on rural roads.



Motorcycles have certain inherent disadvantages compared with passenger cars – they lack a passenger cell; the fact that they only have two wheels means that they have different vehicle dynamics; and they have in principle higher acceleration as a result of their power-to-weight ratio – and it will not be possible to fully remedy or offset these disadvantages, even with technical means. In this field, perhaps more than anywhere else, it is imperative to raise people’s awareness of the need to ride their vehicle safely and responsibly.

## Target group specific measures

In the case of motorcyclists, in particular, age, experience, attitudes and lifestyles influence rider behaviour in different ways, and thus also the risks faced by individual riders and their likelihood of becoming involved in an accident. The development and improvement of target group specific forms of outreach are designed to take these differences into account, especially in road safety communications.

### Improving the visibility of motorcyclists, especially by means of retroreflective materials



For motorcyclists, it is vital to be seen in time – especially in the twilight and dark. Textiles with retroreflective materials can make a major contribution to this. As part of its work in the standardization bodies, the Federal Ministry of Transport, Building and Urban Development will create the framework for minimum qualities and performance of these materials for use in road traffic with the aim of achieving better visibility of motorcyclists, thereby preventing accidents.

## 2.6 Alcohol, medicines and drugs in road traffic

In 2010, the influence of alcohol or other intoxicants was identified as a cause in around 16,000 personal injury accidents. Alcohol as the cause of an accident was identified in the case of 29 per thousand drivers/riders involved in accidents, and the influence of other intoxicants was identified in the case of 2.3 per thousand drivers/riders. In the case of young drivers/riders (18–20 and 21–24), the influence of alcohol was recorded in the case of 35 and 43 per thousand persons involved in accidents respectively. The Federal Government's road safety activities will continue to focus on the age group of 18 to 24-year-old drivers/riders, especially with regard to the issue of drink-driving.

## Implementing new findings on drug-driving

Whereas the role of alcohol has been a core issue of academic research on improving road safety for decades, this research has, in recent years, increasingly been focusing on various other drugs and their impact on road safety. Unlike alcohol, however, there is still a need for a lot of research into the influence of drugs on road safety. So far, the scientific derivation of drug-drive limits, similar to drink-drive limits, has not been possible. For this reason, further research work is necessary, the findings of which will inform road safety activities. This also includes the findings of the international DRUID (Driving under the Influence of Drugs, Alcohol and Medicines) research project.



### Improving the system of medico-psychological assessment of a person's suitability to drive and measures to restore their suitability to drive

The medico-psychological assessment of a person's suitability to drive and the measures to restore their suitability to drive are major components of road safety activities in Germany. It is necessary to continuously adapt the diagnostics and measures in this field to the advances in scientific methods and, in doing so, optimize the system as whole. The Federal Ministry of Transport, Building and Urban Development will take these requirements into account within the framework of its legislative powers.

### Appropriate designation and classification of medicines

It must be assumed that a not insignificant number of people drive or ride vehicles under the influence of medicines for the treatment of acute or chronic illnesses. Often, these road users are not even aware that these medicines may influence their perception and reactions in road traffic. Clearer labelling than has previously been the case in patient information leaflets can make the persons affected more aware of the problem. The Federal Ministry of Transport, Building and Urban Development, in consultation with Federal Ministry of Health, will lobby for appropriate designation and classification of medicines, based on the findings of the international DRUID research project.



## 2.7 Fatigue and distraction in road traffic



Driving for a long period of time requires a high degree of concentration. As drivers grow tired, there is a marked drop in their ability to concentrate. In addition to a lack of sleep, sleep disorders, situational factors such as sustained stress, the duration of a journey and monotonous routes, medicines can also aggravate or cause fatigue. The risks posed by driver fatigue are generally recognized by the scientific community. The Federal Ministry of Transport, Building and Urban Development will therefore lobby to ensure that drivers are made more aware of the risks posed by fatigue in road traffic. Measures to prevent accidents caused by fatigue or distraction – including measures of a technical nature – are the subject of ongoing research projects, as is the identification of limit parameters in this field. In particular, it is important to find medically recognized and robust limits (for determination).

## 2.8 Critically injured casualties



According to official accident statistics, the number of people killed or seriously injured in road accidents has been falling for years. However, the group of seriously injured casualties exhibits widely differing injury patterns and comprises all casualties who are treated in a hospital for at least 24 hours. There is as yet no answer to the question as to whether the number of critically injured road accident casualties is also declining.

### Identifying the most frequent injury patterns that result in critically injured casualties

If we are to be able to take effective action to prevent critical injuries in road accidents, we must first identify the number of critical injuries and the most frequent injury patterns that result in serious injuries and place them in relation to the incidence of accidents.

Issues currently unresolved, such as a precise definition of critically injured casualties or the nature and scope of the collection of critically injured casualty figures, are the subject of ongoing research projects commissioned by the Federal Government. In addition, the Federal Ministry of Transport, Building and Urban

Development is lobbying for an EU-wide standardization of accident severity categories, so that an efficient road safety policy can be implemented throughout Europe on the basis of objective and uniform data.

### First aid – making the population more willing to intervene

Germany has a well-developed land and airborne rescue system, with well-defined requirements regarding its operational tactics in the federal states' rescue service acts. In addition to optimizing the response times of the organized emergency services, further measures must be taken to improve the initial care given to casualties injured in accidents. By means of adequate first aid by non-experts and a structured first aider strategy, the interval between the accident occurring and the casualties receiving treatment can be further reduced. For this reason, it is crucial that the population be made aware of the need for first aid by non-experts. The Federal Ministry of Transport, Building and Urban Development will suggest to the appropriate bodies that first aid instruction be made mandatory on the curricula of primary schools, as well as those of secondary and vocational schools.



## 2.9 Compliance with the rules of the road

Compliance with the rules of the road is a basic prerequisite for safe road traffic. General rules make it easier to predict how individuals will behave. This is indispensable if road users are to navigate through traffic, especially in complex situations.

Compared with rail or air transport, road transport is characterized by a high degree of individuality. Here, the transport tasks have to be performed not just by a few drivers, but by all road users. For this reason, it is imperative that every single road user follow the rules of road to ensure that the roads are safe.

Enforcing the rules of the road is the responsibility of the federal states and is thus not a primary subject of the present Road Safety Programme. However, it must be pointed out that many of the measures presented here will not be effective without the necessary enforcement and punishment of offences.

## Encouraging compliance with the rules of the road



This applies to the drivers/riders of motor vehicles and non-motorized road users alike. On the one hand, these include, for instance, rules governing speed and the distance between vehicles, and on the other hand, rules governing cyclists or pedestrians. The basic rule to be followed is in the German Road Traffic Regulations: anyone participating in road traffic shall act in such a way as not to harm or endanger or, more than is unavoidable in the circumstances, to hinder or inconvenience any other person. Beyond supporting the necessary enforcement and punishment of breaches of rules, the Federal Ministry of Transport, Building and Urban Development will appeal to people's willingness not to endanger other road users and, by complying with the rules, to protect their own safety. This applies especially to the use of seat belts to restrain people in vehicles and the use of age-appropriate child restraint systems. Encouraging more compliance with the rules of the road as part of our road safety campaigns will also include raising people's awareness of the purpose of rules and regulations.

## Reforming the penalty points system



Simplified, more transparent and more proportional rules are designed to help road users accept that they have penalty points on the Central Register of Traffic Offenders, thereby enhancing the preventive effect in terms of avoiding traffic offences. The Federal Ministry of Transport, Building and Urban Development will reform the existing penalty points system on the basis of these principles.

## Measures – human factors

### Children and young people

- Awareness campaign to encourage the use of child restraints in motor vehicles
- Encouraging the voluntary wearing of cycle helmets by children and young people
- Regular compilation of the Child Accident Atlas
- Continuing and improving programmes for children

### Novice drivers /young drivers

- Improving pre-test driver training
- Target group specific communications

### Senior citizens

- Encouraging voluntary health check-ups
- Widening the range of schemes for providing transport-related medical advice to older road users

### Cyclists

- Encouraging the voluntary wearing of cycle helmets
- Improving the visibility of cyclists
- Improving consideration shown by and to cyclists
- Cycling campaigns

### Motorcyclists

- Target group specific measures
- Improving the visibility of motorcyclists, especially by means of retroreflective materials

### Alcohol, medicines and drugs in road traffic

- Implementing new findings on drug-driving
- Improving the system of medico-psychological assessment of a person's suitability to drive and measures to restore their suitability to drive
- Appropriate designation and classification of medicines

### Fatigue and distraction

- Raising drivers' awareness of the risks posed by fatigue in road traffic

### Critically injured casualties

- Identifying the most frequent injury patterns that result in critically injured casualties; uniform injury severity categories
- First aid – making the population more willing to intervene

### Compliance with the rules of the road

- Encouraging compliance with the rules of the road
- Reforming the penalty points system



## 3. The “Infrastructure” action area

The provision of properly functioning and efficient infrastructure is an important basis for making road traffic safe. Road construction and traffic regulation measures must be taken to eliminate factors that make accidents more likely and, in addition, danger spots have to be made more “forgiving” to minimize the consequences of an accident.

This applies to motorways, rural roads and roads within built-up areas alike. However, because each of these categories has different characteristics (speed, road users, etc.), there are different priority areas for road safety action.

The Federal Ministry of Transport, Building and Urban Development takes this situation into account in different ways within the framework of its statutory competencies:

In 2011, the Federal Government is providing funding totalling 395 million euros for the conversion and upgrading of federal trunk roads (motorways and federal highways). These funds are being used to finance works whose purpose is primarily to improve road safety and/or enhance capacity.

The Federal Ministry of Transport, Building and Urban Development promotes and supports the development and continuous updating of the technical regulations governing the planning and construction of roads, thereby helping to ensure that motorways, rural roads and roads within built-up areas can be constructed, converted and upgraded with the maximum level of safety, in keeping with the state of the art.

The needs of the disabled and other mobility-impaired people are of great and growing importance, especially with regard to road safety, and are taken into account with the aim of achieving maximum accessibility.



### Funding

### Technical regulations

## Road transport infrastructure safety management



At the end of 2010, the Federal Ministry of Transport, Building and Urban Development, in cooperation with the federal states, transposed the EU Road Infrastructure Safety Management Directive, which mandates various procedures for identifying safety-related shortcomings in the planning and operating phases for the trans-European road network (in Germany this means primarily the motorways).

Road transport infrastructure safety management comprises existing instruments of road safety activities – for instance the safety audit during planning, safety classification, the road condition reviews and accident commissions under the German Road Traffic Regulations or the routine road inspections carried out by the highway maintenance depots on the existing road network – and integrates these measures so that safety potential can be identified in a targeted manner and efficiently unlocked.

The objective of the Federal Government and the federal states is to extend the application of these procedures beyond the trans-European road network to also cover rural roads and (if possible) urban roads. The Federal Ministry of Transport, Building and Urban Development will support this process and progress the continuous evolution of road transport infrastructure safety management and the exchange of communications at the international level. This will involve the discussion of existing approaches, for instance the creation of federal state accident commissions to develop strategies and programmes for enhancing road safety.

Because of the division of responsibilities between the Federal Government and the federal states stipulated in the Basic Law, the focus of the Federal Ministry of Transport, Building and Urban Development's road safety activities is on rural roads – insofar as the Federal Government is responsible for their construction and maintenance – and motorways.

## 3.1 Rural roads

Whereas only around one quarter of all personal injury accidents occur on rural roads, these roads account for 60% of all road users killed. In 2010, almost 74,000 out of 288,297 personal injury accidents occurred on rural roads. 2,207 persons were killed in these accidents. The severity of accidents on rural roads – 30 fatalities per 1,000 personal injury accidents – is significantly higher than the average of 13 fatalities per 1,000 personal injury accidents. This is due firstly to the higher speeds compared with traffic in built-up areas and secondly to the presence of oncoming traffic and at-grade junctions, which are absent on motorways. The consequences of collisions with oncoming vehicles and accidents that involve vehicles veering off the carriageway are usually especially serious.

On rural roads, in particular, it is thus necessary, because of the above-average severity of accidents, to continue the approach adopted to date, i.e. making accident blackspots more "forgiving", thereby reducing the negative consequences of accidents.

Around 80% of rural roads are regional, district or local roads and are thus the direct responsibility of the relevant authorities. The federal trunk roads are administered by the federal states, acting as agents of the Federal Government. The Federal Government merely has financial responsibility. This means that the federal states are, in principle, also responsible for the construction and maintenance of the federal trunk roads.

The Federal Ministry of Transport, Building and Urban Development is helping to improve the accident situation on rural roads with the following fields of action:

### Providing additional overtaking lanes to prevent overtaking accidents

The consequences of accidents caused by mistakes made when overtaking are especially serious on rural roads. By making more use of an additional, third lane, safer overtaking opportunities can be created on certain sections of road. This reduces the pressure to overtake, with the result that risky overtaking manoeuvres are avoided.



## Preventing accidents involving a collision with a roadside obstacle



Driver error, inattention or fatigue frequently result in accidents in which the vehicle veers off the carriageway and the consequences of the accident are especially serious because the vehicle collides with a roadside obstacle.

The Federal Ministry of Transport, Building and Urban Development supports the development of suitable measures for preventing run-off accidents and mitigating their consequences. These include, for instance, fitting vehicles with lane keeping assistance systems, further improving passive safety or using rumble strips on the edge of the carriageway. The findings of ongoing studies by the Federal Highway Research Institute, which are also looking at the problems of noise nuisance for local inhabitants, are expected later this year.

Given that in 2010, 27% of all fatalities on rural roads were victims of accidents involving a collision with a tree, the prevention of such accidents is of outstanding importance.

To mitigate the consequences of accidents, the Federal Ministry of Transport, Building and Urban Development has developed and introduced technical regulations – the “Guidelines for Passive Safety on Roads by means of Vehicle Retention Systems” and the “Recommendations for protecting against Accidents involving a Collision with a Tree”. New roads and roads that are being converted or upgraded must be provided with adequate roadsides that are free of obstacles. To improve safety on existing roads, the competent authorities have been instructed to carefully monitor the rate of accidents and, if necessary, to take suitable measures to protect road users. Depending on the speeds driven, the traffic volume, the distance between the obstacle and the road and other parameters, various measures are available, which are selected according to the local situation. The spectrum of possible measures ranges from the installation of crash barriers through traffic management measures taken by the road traffic authorities to the removal of the obstacle.

Alongside the joint efforts by the Federal Government and federal states to also apply road transport infrastructure safety management to rural roads, the Federal Ministry of Transport, Building and Urban Development requires the federal states to consistently apply these regulations to the construction of new roads and to the conversion, upgrading and structural maintenance of existing roads.

## Motorcycle-friendly safety systems

In the field of motorcycle-friendly safety systems, the Federal Ministry of Transport, Building and Urban Development and the Federal Highway Research Institute have, in recent years, made significant efforts to improve the existing safety systems, for both passenger cars and motorcyclists. As a result, it has been possible to develop secondary rail systems that prevent riders from sliding under crash barriers. These systems are used primarily on routes popular with motorcyclists.

## Enhancing road safety at junctions

Junctions are the places where conflicts between road users most frequently take place. On non-built-up roads, the consequences for those involved in accidents are especially serious, because of the higher speeds compared with built-up roads. Here, appropriate measures must be taken to prevent these accidents and mitigate their consequences.



## Deploying speed monitoring at accident blackspots

Where excessive speed has resulted in many and serious accidents and other measures would appear unlikely to be successful, the relevant federal states should consider whether the deployment of fixed speed monitoring systems that are visible to road users is appropriate.

## Evaluating measures to prevent accidents involving wildlife

Various measures are used in Germany to prevent accidents involving wildlife. The Federal Ministry of Transport, Building and Urban Development will have the various measures scientifically evaluated so that it can take appropriate and tailor-made decisions on the prevention of accidents involving wildlife.

## 3.2 Motorways



In 2010, there were a total of 18,829 personal injury accidents on federal motorways. These accidents involved 29,303 road users, 430 of whom were killed. In 1,237 cases, the accident occurred at a roadworks site. Goods vehicles with a maximum permissible weight of more than 3.5 tonnes were involved in 3,078 personal injury accidents.

The causes of accidents most frequently recorded by the police are "inappropriate speed", "failure to keep a safe distance from the vehicle in front" and "errors while overtaking". 38% of the personal injury accidents were rear end collisions and just over one third were run-off accidents.

In Germany, motorways are the safest roads. Although they account for 32.5% of the total mileage driven, only 6.5% of personal injury accidents occur here. As a general rule, the Regulations on Advisory Speed Limits on Motorways state that a recommended speed limit of 130 km/h applies to passenger cars as well as other motor vehicles with a maximum permissible weight of up to 3.5 tonnes, even when road, traffic, visibility and weather conditions are good, unless a lower speed limit is imposed by traffic signs. The advisory speed limit on motorways has proved a success. We will therefore retain it and encourage road users to comply with it.

Although motorways, which are an inherent Federal Government responsibility, are considered to be the safest roads, the measures listed below are designed to enhance this safety even more in the future.

### Preventing run-off accidents by deploying rumble strips



Accidents in which vehicles veer off the carriageway have a wide range of causes – for instance inappropriate speed, especially in wet weather. However, some of these run-off accidents are attributable to inattentiveness, distraction or fatigue. Studies by the Federal Highway Research Institute have shown that the number of these accidents on high-risk sections of road can be reduced by the use of rumble strips.

The Federal Ministry of Transport, Building and Urban Development has thus identified high-risk sections of motorway with a heightened number of run-off accidents. The highway authorities of the federal states were requested to provide suitable sections with rumble strips.

### Providing additional lanes on gradients

On long and steep gradients on busy motorways, in particular, slow moving HGVs can pose a serious traffic hazard. An additional lane specifically for such vehicles can provide an effective remedy here.

### Installing more active traffic management systems

German motorways are among the safest roads in the world. On congested or accident-prone sections, variable speed limits, which have been promoted by the Federal Ministry of Transport, Building and Urban Development for years through investment in active traffic management systems, exhibit visible, concrete benefits and are accepted by most road users. The Federal Ministry of Transport, Building and Urban Development thus supports the federal states' good practice of only using speed limits where they are appropriate for traffic reasons, and remains committed to modern traffic management systems.



### Making more use of temporary hard shoulder running

Accidents caused by congestion on busy sections of motorway are one of the main traffic hazards on motorways. By allowing temporary use of the hard shoulder as a running lane, the flow of traffic on busy sections of motorway can be improved, thereby significantly reducing the risk of accidents. The Federal Ministry of Transport, Building and Urban Development specifically supports this measure on sections of motorway with levels of traffic that are much higher than average and on which, if the measures were not applied, there could be congestion at peak times.

## Enhancing safety at roadworks sites



Roadworks are essential for road maintenance and for ensuring a level of road safety that is as high as possible. However, the roadworks sites themselves pose a significant potential risk to road users and the people working there, especially on motorways but also on rural roads, because of the speeds driven there. Supplementing the Roadworks Site Management toolkit, which was introduced in 2010, the Guidelines on the Safety of Roadworks Sites will be revised with the aim of stipulating safer and efficient traffic management at roadworks.

## Wrong-way warning signs

The consequences of accidents caused by wrong-way drivers on motorways are usually serious and attract great attention, primarily because of the fact that innocent road users are involved. It is true that they are not among the main causes of accidents, but time and again they are the focus of public concern. Each year, around 1,700 incidents of wrong-way drivers are reported in traffic information broadcasts. Given this high figure, the Federal Government/federal state expert committee on the German Road Traffic Regulations requested the Federal Ministry of Transport, Building and Urban Development to investigate, and produce scientifically robust evidence, why so many wrong-way driving incidents are reported, how many such incidents there are in reality and whether any action needs to be taken. The Federal Highway Research Institute was commissioned with this study. It is expected to publish its findings in 2011.

In addition, a pilot project is currently being conducted in Bavaria which involves deploying the wrong-way warning signs that are common in Austria.

Changing the markings at motorway junctions could potentially reduce the risk of drivers entering the wrong carriageway. This will inform the revision of the Guidelines for the Marking of Roads.

## Rest areas and parking management

Fatigue and inattention on the part of HGV drivers can cause serious accidents. For this reason, it is necessary to provide sufficient parking areas so that HGV drivers can comply with the

mandatory driving times and rest periods. In addition, the risks posed by wrongly parked vehicles at crowded rest areas have to be prevented.

The Federal Ministry of Transport, Building and Urban Development is pursuing various strategies to address these problems, which are likely to get worse in the years ahead as the level of road freight traffic rises. These measures include, in particular, the construction of new rest areas and the upgrading and conversion of existing rest areas, plus making more effective use of the space available for parking by means of parking management.

The Federal Government's objective is to deliver 11,000 new HGV parking spaces between 2008 and 2012, in the interests of road safety.

Between 2008 and 2010, 5,500 additional HGV parking spaces were created at rest areas on federal motorways. The Federal Ministry of Transport, Building and Urban Development provided the federal states with around 240 million euros for this purpose.

The deployment of telematics systems is designed to achieve more effective use of existing parking capacity. The Federal Ministry of Transport, Building and Urban Development, in cooperation with the federal states, is currently conducting several pilot projects in which various methods of detection and options for information transmission (to display vacant parking spaces at rest areas) are being developed and tested. In the medium term, sections of motorway that are particularly affected are to be equipped with telematics systems, and the data acquired in this way is to be made available for use on the Internet and with navigation devices.



## 3.3 New technologies

### Transposing the ITS Directive into national law

In 2008, a "Proposal for a Directive of the European Parliament and of the Council laying down the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other transport modes" (ITS Directive) was submitted. The objective of the directive is to establish the necessary framework that will make it possible to accelerate and coordinate the introduction and use of intelligent transport systems for road transport. Member States are therefore to take the necessary measures to ensure the coordinated introduction and use of interoperable ITS applications and ITS services in the Community. National, regional and local solutions are to be avoided in order to ensure the integrity of the internal market.

The Federal Ministry of Transport, Building and Urban Development supports the proposed directive and will provide active support to this process. By transposing the directive into national law and integrating the national ITS structure into the overall European context, a major contribution can be made to road safety and to the efficiency and sustainability of the transport system in Germany.

### New possibilities for assisting drivers in dangerous situations outside built-up areas through cooperative systems



To improve the accident situation on roads outside built-up areas, it will in the future be increasingly important to exploit the possibilities of modern communicating safety systems. Unlike conventional driver assistance systems, cooperative systems use information that they receive directly or indirectly from other vehicles or the infrastructure. For instance, if a vehicle is involved in an accident or the driver performs an emergency braking manoeuvre, a warning message can be sent to the vehicles behind. With the help of oncoming traffic, such a message could even be sent against the original traffic flow in order to provide an early warning to drivers approaching the danger spot. For these systems, the framework for the establishment of a reliable and properly functioning infrastructure has to be established. The

Federal Ministry of Transport, Building and Urban Development is lobbying to ensure that the development of such systems receives further support.

The SIM-TD research project (Safe Intelligent Mobility – Test Bed Germany) is investigating vehicle-to-vehicle and vehicle-to-infrastructure communications in a large number of traffic engineering applications. The Federal Ministry of Transport, Building and Urban Development will analyze the further potential that cooperative systems have for enhancing road safety and kick start the development of advanced applications. The activities already launched at national level to test cooperative systems using appropriately equipped vehicles in real life traffic will be continued and, if necessary, extended to other systems. These tests will make it possible to assess the benefits of cooperative systems for road safety in Germany and to gain evidence for their possible introduction. The Federal Ministry of Transport, Building and Urban Development will keep an eye on the question as to how these new systems can be organizationally, functionally and technologically integrated into the existing traffic management systems and will progress the necessary harmonization of cooperative systems at European level.



### General availability of safety-related information

Give the technological developments of recent years, the term "infrastructure" now has to be regarded as covering more than just the road environment. The transmission of data and information to road users is an important emerging market with significant potential for growth. The Federal Ministry of Transport, Building and Urban Development will support this trend, while at the same time taking care to ensure that safety-related information is freely available to all road users. This objective has also been defined as a priority of the European Commission. On the basis of research findings, we will join forces with the stakeholders from the German industry to define a proposal for a minimum set of safety-related information and its implementation. The Federal Ministry of Transport, Building and Urban Development's "Traffic Information Services" working group, which is the appropriate body in Germany, will continue to address this issue. As part of its project family entitled "Integrated mobile electronic information and services for the road user in the 21st century", the Federal Ministry of Transport, Building and Urban Development is providing assistance, inter alia, to the establishment of

an electronic mobility data marketplace (MDM), which is being managed by the Federal Highway Research Institute. The aim of the MDM is to coordinate the multiplicity of existing traffic-related information and facilitate an exchange of data, in order to ensure that the relevant service providers can provide high-quality traffic information to all road users. This involves providing financial assistance to innovative mobility services offered by private sector providers and to a high-quality mobility management system operated by the public sector road traffic authorities. It is especially important that all market players be actively involved. This is designed to ensure that the platform assumes an optimum shape.

### Establishing an automated emergency call system (eCall)



Germany has signed the declaration of intent, submitted by the European Commission, on the introduction of an automated emergency call system (eCall), thereby undertaking to cooperate in the introduction of an automated emergency call system that is uniform throughout Europe. An automatic emergency call system in passenger cars that triggers an electronic emergency call in the event of an accident is designed to widen the range of modern in-vehicle safety technology. By means of an injury prediction as part of the automated emergency call system, the efficiency of rescue operations could be enhanced, thereby increasing the likelihood of seriously and critically injured casualties surviving. The Federal Ministry of Transport, Building and Urban Development will create the necessary conditions for the introduction of an effective automated emergency call system so that, for instance, automated emergency calls can be received and processed by the public safety answering points.

## 3.4 Cycling

Accidents involving pedal cycles are not just the result of conflicts with motorized road users. There are also dangerous encounters between cyclists and pedestrians because they are frequently in close proximity in the road environment.

### Cycle infrastructure

Cycle infrastructure should be designed in such a way that cyclists can be easily seen in good time by drivers of motor vehicles at hotspots and that pedestrian/cyclist conflicts are avoided wherever possible. Within the scope of its regulatory competence, the Federal Ministry of Transport, Building and Urban Development will do everything it can to ensure that these requirements are met.



### Measures – Infrastructure

- Funding measures to improve road safety
- Technical regulations
- Road transport infrastructure safety management

#### Rural roads

- Providing additional overtaking lanes to prevent overtaking accidents
- Preventing accidents involving a collision with a roadside obstacle
- Motorcycle-friendly safety systems
- Enhancing road safety at junctions
- Deploying speed monitoring at accident blackspots
- Evaluating measures to prevent accidents involving wildlife

#### Motorways

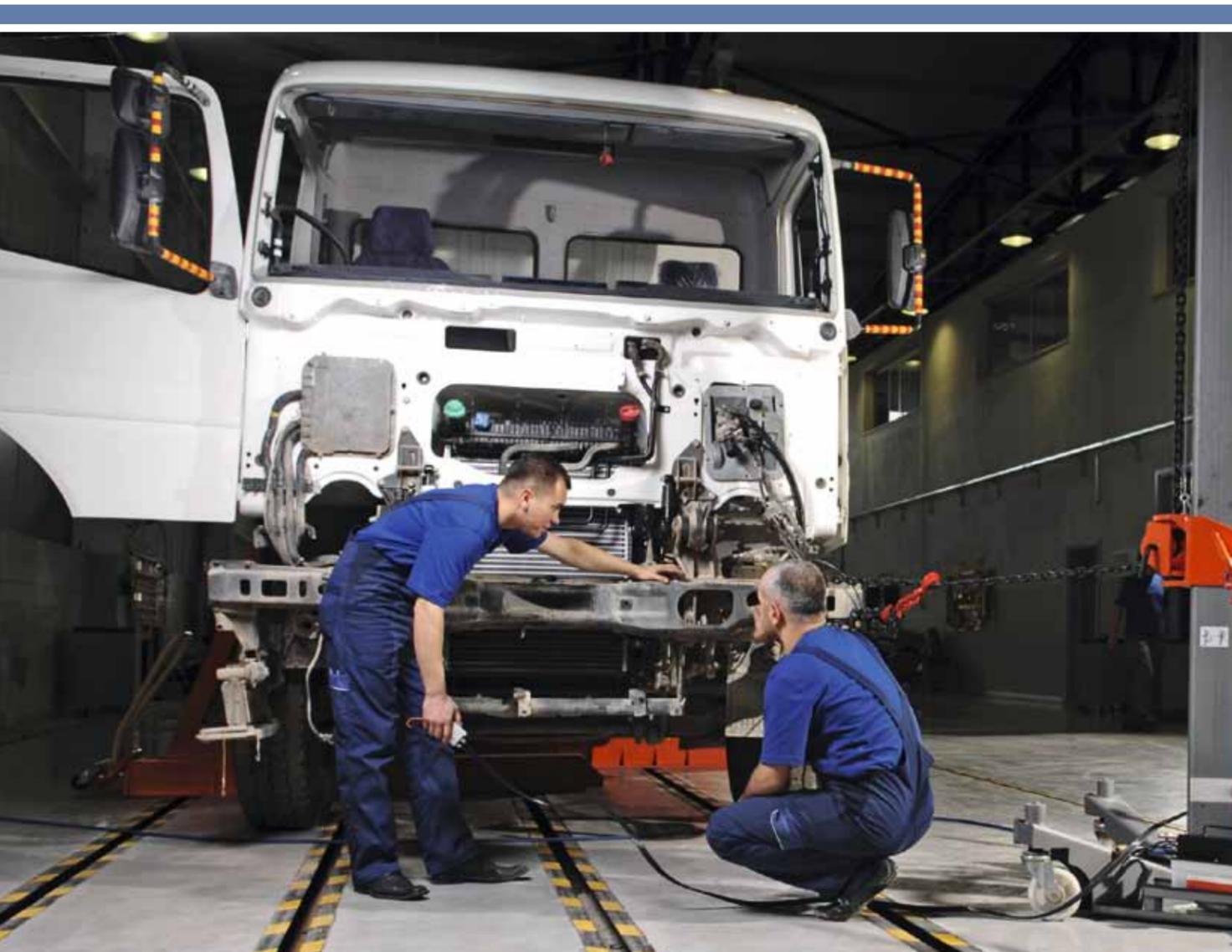
- Preventing run-off accidents by deploying rumble strips
- Providing additional lanes on gradients
- Installing more active traffic management systems
- Making more use of temporary hard shoulder running
- Enhancing safety at roadworks sites
- Wrong-way warning signs
- Rest areas and parking management

#### New technologies

- Transposing the ITS Directive into national law
- New possibilities for assisting drivers in dangerous situations outside built-up areas through cooperative systems
- General availability of safety-related information
- Establishing an automated emergency call system (eCall)

#### Cycling

- Cycle infrastructure



## 4. The “automotive engineering” action area

In the field of automotive engineering, there has been great success for road safety in the past through improvements to passive safety equipment in and on vehicles. However, it is important that scope for optimization continue to be identified and used. The role of active vehicle safety has become increasingly important in recent years and, especially thanks to developments in electrical engineering and information technology, is now on the threshold of new opportunities for preventing accidents by means of “intelligent” vehicle systems. Nevertheless, there is still scope for optimization with individual vehicle types, and this scope can help reduce the number of accidents or mitigate their consequences.

In the field of automotive engineering, further improvements can be achieved primarily at European level, because of the degree of harmonization that has already been reached (rules governing equipment can only be adopted at EU level). The Federal Ministry of Transport, Building and Urban Development will continue to cooperate closely with its partners in all EU bodies and will lobby at this level to ensure that developments in automotive engineering are progressed.

Measures already taken, which the Federal Government hopes will enhance road safety, have been implemented by Regulation (EC) No 661/2009 on harmonized requirements for the construction of motor vehicles. In the future, it will be mandatory to equip new passenger cars and commercial vehicles with electronic stability control (ESC), heavy goods vehicles and buses/coaches with advanced emergency braking systems, commercial vehicles and buses/coaches with lane departure warning systems and passenger cars with tyre pressure monitoring systems.

However, it is primarily representatives of the industry, in particular the motor vehicle manufacturers, who are responsible for advances in the field of automotive engineering. The Federal Ministry of Transport, Building and Urban Development cannot, as a rule, make any financial contributions to fund and progress specific developments that will enhance road safety. Nevertheless, the Federal Ministry of Transport, Building and Urban Development can make a major contribution when it is a question of:



- canvassing support, in an advisory capacity, for uniform systems in Germany;
- enacting legislation where necessary;
- ensuring in the EU that appropriate measures are deployed throughout the EU;
- establishing a framework to enhance the competitiveness of the German automotive industry in the global environment.

In addition, the Federal Ministry of Transport, Building and Urban Development supports the voluntary deployment of technologies for checking fitness to drive with regard to alcohol or fatigue in commercial operators' vehicles and in vehicle fleets.

In addition, it will be necessary to consider whether, and if so to what extent, electronic breath alcohol ignition interlocks ("alcolocks"), which cannot be deactivated until the driver has provided a breath sample, constitute a suitable instrument as part of rehabilitation training for convicted drink drivers. The possibilities and limits of the deployment of this technology as part of drink-drive rehabilitation training are to be discussed on a scientific basis.



## 4.1 Passenger cars and light commercial vehicles – active safety

Numerous studies have shown that accident-preventing, active driver assistance systems can make a major contribution to reducing the frequency and severity of accidents, especially in the case of commercial vehicles.

### Increasing the market penetration of driver assistance systems

Many of these systems, such as electronic vehicle dynamics control systems (ESC – electronic stability control), are already in widespread use in motor vehicles. Other systems are at the development or roll-out stage and are in great demand for upmarket vehicles, in particular. Driver assistance systems to enhance active vehicle safety can assist the driver in performing a wide range of driving tasks. Depending on the system, the driver is either only warned of dangers or the system actively assists the driving task by, for instance, automatically keeping the vehicle in its lane temporarily.



Making greater use of such systems could help to improve road safety on a lasting basis. However, care must be taken to ensure that drivers are not required to do too much or distracted, and that they are not relieved of their responsibility to drive carefully and show consideration for other road users. The appropriate framework for this must be established at national and international level.

If the safety potential inherent in such systems is to be exploited, they need to spread rapidly. However, direct government incentives for specific, existing systems often result in market distortions and could inhibit further innovations.

### Exploiting the scope inherent in driver assistance systems for senior citizens

Some driver assistance systems have the potential to possibly compensate for age-related restrictions in the psychophysical abilities of elderly drivers, thereby making it easier for them to perform their driving task. This potential must be exploited, to safeguard senior citizens' mobility. For instance, intersection assistants could, in the future, help elderly drivers, in particular, to cope with complex situations at intersections.



### Including driver assistance systems in the safety assessment of new vehicles (Euro NCAP) to a greater extent

Euro NCAP (European New Car Assessment Programme), as a European programme for assessing the safety of new vehicles, is an important instrument that provides buyers of new cars with an objective decision-making criterion with regard to the safety of the vehicle. The original assessment criteria – "adult occupant protection", "pedestrian protection" and "child occupant protection" – have, since 2009, been supplemented by the "safety assist" category, in which driver assistance systems, such as ESC, seatbelt warning systems and speed limiters are assessed. As a member of the Euro NCAP, the Federal Ministry of Transport, Building and Urban Development will seek to ensure that, in the future, further driver assistance systems are included in the NCAP assessment if appropriate studies have furnished proof of their benefits for road safety.

## Mandatory use of winter tyres

On 4 December 2010, the new "Winter Tyres Regulations" entered into force. Since then, it has been compulsory for vehicles being driven on slush or slippery surfaces due to ice, packed snow or frost to be fitted with winter tyres (M+S tyres). At the same time, the fines for infringements of this rule were doubled. A fine of 40 euros is now imposed for driving without winter tyres on slush or slippery surfaces due to ice, packed snow or frost. If other road users are obstructed, the fine rises to 80 euros. In addition, the driver receives one penalty point on the Central Register of Traffic Offenders.

During the process of introducing the mandatory use of winter tyres, the Bundesrat brought the Federal Government's attention to further aspects that should be studied. The Federal Ministry of Transport, Building and Urban Development is thus currently considering the following issues, in particular: marking of winter tyres; minimum tread depth of winter tyres; exempting certain vehicles; including keeper liability in the legislation governing the mandatory use of winter tyres. The findings are to be included in the existing legislation governing the mandatory use of winter tyres to make it more precise and to optimize it, in order to further improve both road safety and the flow of traffic in wintry weather conditions.

## 4.2 Passenger cars and light commercial vehicles – passive safety



In the event of an accident, the prime concern is to avoid or minimize injuries to occupants and other parties involved in the accident. Most of the success stories in this field are attributable to a continuous improvement in passive safety in recent decades. Examples include seat belts, airbags, the evolution of passenger cells, as well as the protection of pedestrians thanks to improvements to vehicle front ends through the introduction of appropriate automotive engineering provisions.

In many fields, research is required for the development of new and the evolution of existing passive safety requirements. The Federal Ministry of Transport, Building and Urban Development considers its task to be primarily to create an appropriate framework that both further enhances road safety, for instance

in the event of an accident involving a collision with a roadside obstacle, and facilitates the deployment of innovative systems and technologies.

### Applying the testing requirements governing pedestrian protection to sports utility vehicles (SUVs) and vehicles with a short front end (vans)

Sports utility vehicles (SUVs) and other off-road vehicles usually have high and rigid front ends, which means that there is a need to improve pedestrian protection in some areas. The Federal Ministry of Transport, Building and Urban Development has lobbied at international level to have the rules governing pedestrian protection made mandatory for all passenger cars and light commercial vehicles in the future. Thus, as of 24 February 2015, the requirements of the Pedestrian Protection Regulation will apply to all new passenger cars and light commercial vehicles, including vehicles with a maximum permissible weight of 2.5 tonnes or more. If, in the future, vehicles with a short front end (vans) previously exempted from the type approval procedure for pedestrian protection are also to be included in the regulation, the Federal Ministry of Transport, Building and Urban Development will participate in the appropriate European bodies in the development of new, suitable testing procedures.

### Improving occupant restraint systems in vehicles

The Federal Ministry of Transport, Building and Urban Development supports the further improvement of seat belts and occupant restraint systems in motor vehicles. To this end, it is actively working on developing safety standards for restraint systems to be used in the carriage of people with disabilities. It is planned to recommend these standards to the European Commission for inclusion in the type approval provisions for motor vehicles.

The introduction of IsoFIX, a mechanical anchorage system for the simple and secure installation of child safety seats in vehicles, is supported. The UN-ECE is currently working on a regulation that will make possible the wider, universal deployment of this system in the appropriate vehicles.



The introduction of seat belt reminders is supported. However, given that the seat belt wearing rate in Germany is already very high, the potential for enhancing road safety through this system is believed to be low.

### Emergency response guides

The Federal Ministry of Transport, Building and Urban Development will lobby to ensure that "emergency response guides" are provided promptly. These are designed to make it easier for emergency response services to rescue people from vehicles after an accident.

## 4.3 Electric and hybrid vehicles

The internal combustion engine has been with us for over 100 years. Now, with the emergence of alternative drivetrain technologies, a new era is dawning in the transport sector. In the coming decades, electric, hybrid and fuel cell powered vehicles will increasingly become a feature of road traffic in Germany. The finite nature of fossil fuels and global climate change targets will accelerate this technological progress. These vehicles are important emerging technologies, and German companies are seeking technological leadership in this field. The Federal Ministry of Transport, Building and Urban Development, in cooperation with all stakeholder institutions and the industry, will lobby to ensure that potential safety risks inherent in this new drivetrain technology are identified at an early stage and appropriate solutions found.

### Audible perceptibility of electric vehicles



Hybrid and electric cars emit hardly any noise, which has significant advantages in terms of noise reduction in road traffic, but could, in certain situations, pose a risk to pedestrians and cyclists in particular. Possible solutions must come from various directions. It is especially important that the industry equip electric vehicles with safety technology to prevent accidents. Another possibility would be for electric vehicles to generate a signal in certain situations (for instance when entering or leaving a parking space) to warn vulnerable road users but without counteracting the noise benefits of electric vehicles.

The Federal Ministry of Transport, Building and Urban Development will enter into a dialogue with academia and the automotive industry to look for suitable solutions to this problem and at the same time inform the public of possible risks in order to generate awareness of the problem.

### Roadworthiness testing of electric and hybrid vehicles

The conditions for the roadworthiness testing of electric and hybrid vehicles have already been created. A draft revision of the provisions governing the periodic testing of vehicles already includes appropriate provisions governing gas systems in the drivetrain system of motor vehicles, electric drivetrains of motor vehicles and hybrid drivetrains of motor vehicles. Once these provisions have entered into force at the national level, the Federal Ministry of Transport, Building and Urban Development will also submit appropriate proposals to the European Commission.

## 4.4 Motorcycles, pedal cycles and other two-wheeled vehicles

One of the main priorities of the Federal Ministry of Transport, Building and Urban Development's road safety activities is the safety of motorcyclists. Given the persistently high number of casualties with critical to fatal injuries – especially among motorcycle users themselves – it is important to make use of developments in automotive engineering in addition to the fields of behaviour and infrastructure.



## Fitting all motorcycles with anti-lock braking systems as standard

Many studies have shown that anti-lock braking systems (ABS) on motorcycles have great potential for preventing accidents or mitigating their consequences. In particular, ABS prevents wheels from locking and causing the rider to fall off. The Federal Ministry of Transport, Building and Urban Development thus calls on the motorcycle industry to enter into a voluntary agreement to install ABS on all new motorcycles to ensure that the vehicle fleet is fitted with ABS as quickly as possible.

In addition, the Federal Ministry of Transport, Building and Urban Development will encourage the European Commission to seek European rules making the fitment of ABS on motorcycles above 125 cc mandatory.

## Electrically assisted pedal cycles (pedelecs)

The Federal Ministry of Transport, Building and Urban Development will commission a study into the potential impact of pedelecs and other motor assisted pedal cycles on road safety.

The aim of this project is to analyze potential areas where pedelecs could be a problem for road safety, thereby making it possible to develop and implement appropriate measures at an early stage. In addition to the theoretical processing and analysis of findings from other countries, there are also plans to consult users, stage an expert workshop and conduct a traffic observation or field trial.

It will not be possible to provide information about the next steps until the findings have been published.

## Codifying the "minimum engineering standard" for pedal cycles



At first glance, many pedal cycles look alike. For a purchaser, it often difficult to detect differences in quality between various models just by looking at them, and this can have a negative impact on road safety. That is why the codification of the "minimum engineering standard" for the establishment of minimum technical requirements, such as brakes and lighting, in the appropriate standardization bodies is of great importance to road safety. The Federal Ministry of Transport, Building and Urban

Development will participate in this and, in addition, will observe the continuing trend in the incidence of accidents involving electric cycles.

## 4.5 HGVs

### Protection (such as underrun protection) on HGVs

Rear underrun protection has been fitted to HGVs as standard since the 1970s. Despite this, accidents in which a passenger car collides with the rear end of an HGV often result in serious injuries or even death. In many accident constellations, underrun guards that are fitted too high or with inadequate stability are to blame for this. The Federal Ministry of Transport, Building and Urban Development believes that further tightening the testing requirements in the appropriate international regulation and lowering the permissible height for rear underrun guards would be an effective measure for significantly improving road safety and will table this proposal in the appropriate international bodies.

Following serious rear-end collisions involving vehicles carrying dangerous goods, Germany will take the initiative to further increase safety at the rear end of tank vehicles carrying dangerous goods. The Federal Ministry of Transport, Building and Urban Development will contribute new approaches and the findings of a study by the Federal Institute for Materials Research and Testing to a proposal for an addendum to the European Agreement concerning the international carriage of dangerous goods by road (ADR).



## Measures – automotive engineering

### Passenger cars and light commercial vehicles – active safety

- Increasing the market penetration of driver assistance systems
- Exploiting the scope inherent in driver assistance systems for senior citizens
- Including driver assistance systems in the safety assessment of new vehicles (Euro NCAP) to a greater extent
- Mandatory use of winter tyres

### Passenger cars and light commercial vehicles – passive safety

- Exploring the possibility of applying the testing requirements governing pedestrian protection to sports utility vehicles (SUVs) and vehicles with a short front end (vans)
- Improving occupant restraint systems in vehicles
- Emergency response guides

### Electric and hybrid vehicles

- Audible perceptibility of electric vehicles
- Roadworthiness testing of electric and hybrid vehicles

### Motorcycles, pedal cycles and other two-wheeled vehicles

- Fitting all motorcycles with anti-lock braking systems as standard
- Electrically assisted pedal cycles (pedelecs)
- Codifying the "minimum engineering standard" for pedal cycles

### HGVs

- Protection (such as underrun protection) on HGVs



## 5. Concluding remarks

The success stories of road safety activities in Germany to date are encouraging. Today, the number of people killed on the roads has fallen to its lowest level since the introduction of official road accident statistics in 1953. At the same time, however, these success stories are a mandate for the future. For this reason, the Federal Ministry of Transport, Building and Urban Development has the firm will to continue these success stories with the present Road Safety Programme.

To further support the positive trends in the field of road safety, this programme has launched or will launch 40 measures in the “human factors”, “infrastructure” and “automotive engineering” action areas, which will continue to improve road safety on a lasting basis. In particular, vulnerable road users are to be better protected and the number of accidents on rural roads is to be further reduced.

Thus, for instance, we will press ahead with our endeavours to ensure that motorcycles are fitted with anti-lock braking systems as standard, promote the voluntary wearing of cycle helmets and encourage all road users to comply with the rules of the road. The deployment of more rumble strips and the use of lane keeping assistance systems could prevent accidents where vehicles veer off the carriageway. The construction of new rest areas and the upgrading and refurbishment of existing rest areas, as well as efficient HGV parking management by means of modern information and communications systems, will help to minimize the risks posed by HGV driver stress and fatigue. The general availability of safety-related traffic information for all road users can likewise make a contribution towards enhancing road safety. In addition, the market penetration of driver assistance systems is to be increased.

This programme is a response to both the existing and the future challenges. These challenges include demographic change as well as technological advances in the road transport sector. In addition to a further reduction in the number of road users killed in accidents, one of the objectives in the future must also be to significantly reduce the number of critically injured casualties.

This programme details the major action areas and is designed to encourage people to continue working on the improvement of road safety. It is also designed to identify the approaches that can be adopted to achieve the common objective of even better road safety.



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## **Imprint**

### **Publisher**

Federal Ministry of Transport, Building and Urban Development  
Invalidenstr. 44  
10115 Berlin, Germany

<http://www.bmvbs.de>

### **Editor**

Federal Ministry of Transport, Building and Urban Development  
Division LA 26

### **Layout**

EYES-OPEN – Agency for Communication  
[www.eyes-open.de](http://www.eyes-open.de)

### **Printed by**

Königsdruck, Berlin

Printed on ProfiSilk

FSC Mix, From responsible sources

Forest Stewardship Council (FSC C104114)