



Road Safety Programme **2020**





S2000

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## PREFACE

Austria's roads are getting safer. In 2010 the number of casualties has decreased by more than 7%. Particularly on motorways and expressways accidents occur to a lesser extent. Yet road safety does not happen by chance! It is the result of numerous measures that have been implemented over the years to increase the safety on Austrian roads for all road users.

This is by no means a reason to rest on these achievements. The following is clear: Every death and serious injury resulting from road accidents is one too many! Unfortunately accidents are not completely preventable in practice. Our joint goal is to design a road system along the guidelines of 'Vision Zero' so that human mistakes in road traffic do not result in deaths. Road accidents cause immeasurable suffering. Therefore it is a main concern to provide even more protection for every driver in public space.

In the field of infrastructure a catalogue of comprehensive accident prevention measures has been developed. These measures range from redevelopment to innovative technologies in the field of telematics to the Road Safety Audit – a policy to assess the safety aspects of road building and reconstruction projects – to technical road safety inspections of the existing network, including the improvement of tunnel safety and restrictions on overtaking for lorries. Cost-effective investments and targeted structural measures, such as construction of new tunnel sections to avoid two-way traffic are major factors for the improved safety on Austrian roads.

An important next step has been made with the ASFINAG Road Safety Programme to make Austria's motorways and expressways the safest in Europe. 'Vision Zero' is a high aim, but it is not a utopia. Together we will meet this challenge and implement the right measures now to prevent accidents and make Austria's roads even safer.

A handwritten signature in black ink that reads "Doris Bures".

Minister for Transport, Innovation and Technology  
Doris Bures



## PREFACE

ASFINAG motorways and expressways comprise 2% of the length of the Austrian road network. Yet 40% of all traffic flow occurs there and 5% of all accidents. Thus motorways and expressways are already very safe roads, due to the measures we have implemented in the past years.

Nevertheless there is still much to do. Every casualty is a tragedy. We have to give our best to avoid accidents and to minimise their consequences. Road safety is the top priority at ASFINAG.

Until the year 2020 ASFINAG wants to offer its customers motorways and expressways that are among the safest in Europe. Due to the comparatively high traffic volumes, measures on motorways and expressways are by far more effective and efficient than on the rest of the network. Nevertheless there is a need for a number of tailored measures. These are not only investments in the road infrastructure, but also initiatives and awareness-building measures that shall guide the driver to adopt responsible driving behaviour. The goal is to collaborate with our clients to significantly decrease the number of road deaths and injuries.

In the following Road Safety Programme 13 target areas, 32 priorities and 130 individual measures have been defined. This programme must be implemented systematically.

The possible accident causes are complex and so are the contact points for further improvements. Beside structural improvements on the road and the roadside, additional lanes are built and new tunnel sections installed in order to avoid two-way traffic. The maintenance of roads (e.g. winter and roadside maintenance) will also be further improved upon. New technology from the telematics field will be consistently applied to enhance road safety. Communication will be even more important - and partly automated. The timely warning before an event occurs is not only a matter of comfort but also a safety issue.

The clients of motorways and expressways have at least one thing in common: they want to reach their destination quickly and safely. And they are entitled to this. With the creation and implementation of the Road Safety Programme over the next ten years we willingly accept our responsibility. Together with our clients we can become even better and safer.

ASFINAG Executive Board  
DI Alois Schedl

ASFINAG Executive Board  
Dr. Klaus Schierhackl

# THE ASFINAG SAFETY PHILOSOPHY – SAFE SYSTEM APPROACH

The Road Safety Programme displays the ASFINAG commitment to integrated road safety work by targeting three areas of intervention: infrastructure - human factors - vehicles. In doing so ASFINAG makes a decisive step beyond the „common“ safety tasks of infrastructure operators and includes measures in the areas of driver compliance and vehicle inspection. This involves support of the police for effective enforcement along the whole network and targeted awareness raising of drivers.

The philosophy of the ‘Safe System Approach’ builds on the Swedish ‘Vision Zero’ and the Dutch ‘Sustainable Safety’ approaches and includes the following principles:

- It is of utmost importance to guarantee (and promote) maximum safety for all participants in the road traffic system, and in case of minor mistakes (human **performance limit**) to prevent system related severe consequences of spurious actions (considering the biomechanical tolerance of humans).
- Another principle is **Shared Responsibility**, i.e. ASFINAG takes an active part in its responsibility to raise awareness of its clients.
- At its core are strategies that are geared to the physical strain a human can handle (**impact energy**).
- All measures will be implemented according to **cost-benefit estimates**: the measures with the highest safety potential have the highest priority.
- Effective **communication and management structures** for all responsible parties ensure the efficiency of the programme.
- Road safety goals** are harmonised with other economic goals (e.g. environment, health).

For ASFINAG this translates into a new aim at the strategic level: ‘**We provide a safe, high-level road network for Austria**’. Especially important for success is the collaboration with the road users. **Infrastructure measures cannot compensate for excessive risk taking and careless driving.**

## MISSION

Making Austria's  
motorways the safest  
in Europe!

## OPERATIONAL GOAL

Reducing road fatalities  
(per billion vehicle-km)  
by 50% till 2020<sup>1</sup>

## DURATION

2010-2020

<sup>1</sup> Basis: average of 2007-2009  
Goal achieved: average of 2018-2020



## CHALLENGES FOR ASFINAG'S ROAD SAFETY WORK

Austria only ranks average

A European comparison shows the safety figures of ASFINAG ranking average. The front-runners (Switzerland, Denmark, Netherlands, UK) – based on kilometres driven – have death rates partly less than half of those on Austrian motorways. The risk of ASFINAG's network has nevertheless strongly improved since the mid-90's. The European forefront is almost in reach:

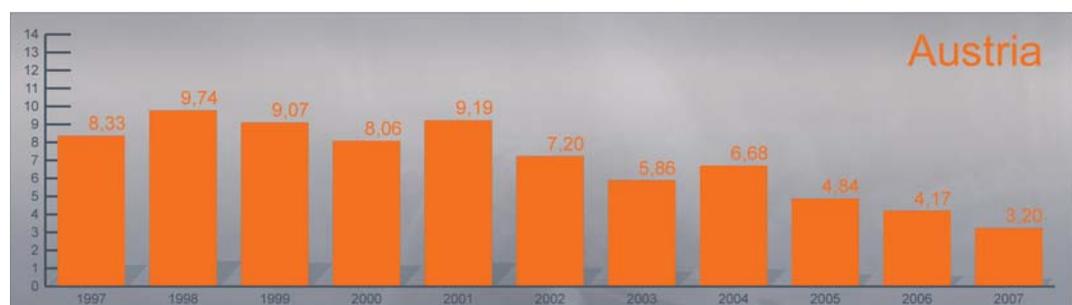


Figure 1a: Fatality rate (fatalities per billion vehicle kilometres) on motorways and expressways 1997-2007; in certain OECD countries see next page. Source: IRTAD

Forerunner in Austria

In Austria ASFINAG was able to reduce the number of road accidents faster than the rest of the road network.

The goals defined in 2003 within the first ASFINAG safety programme have in general been surpassed to date.



# ACCIDENT AND FATALITY RATES – AUSTRIA RANKS AVERAGE

**Austrian motorways and expressways compared to Europe**  
(Fatalities based on kilometres driven).

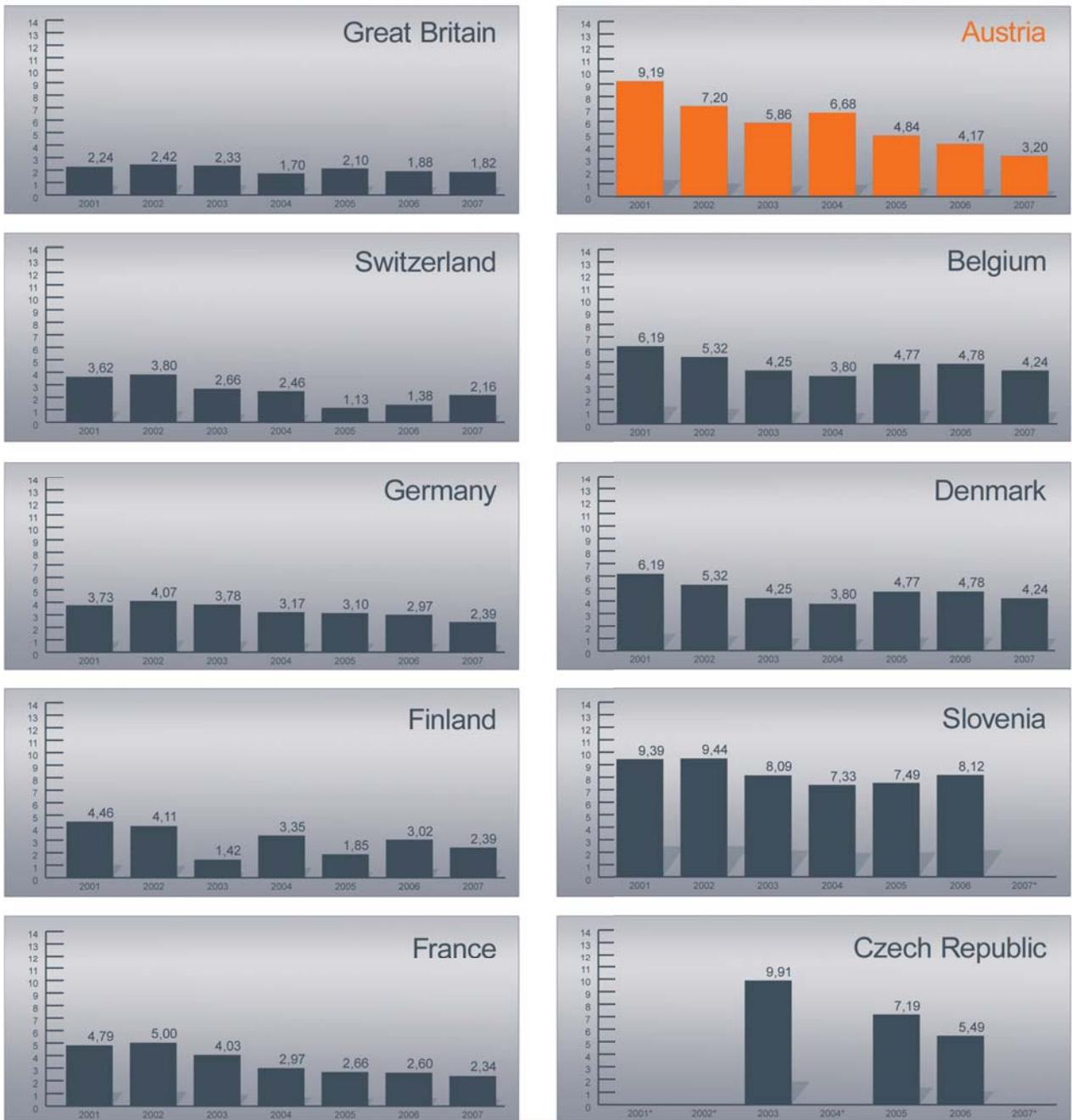
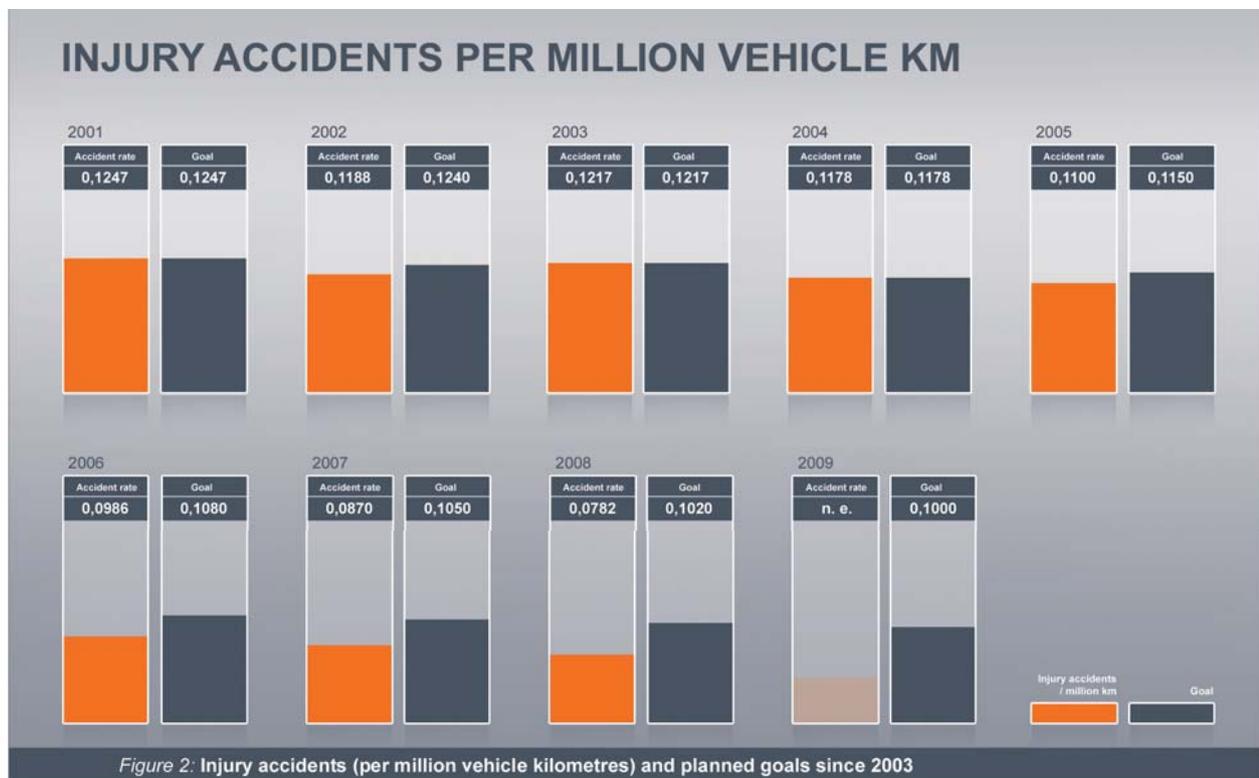
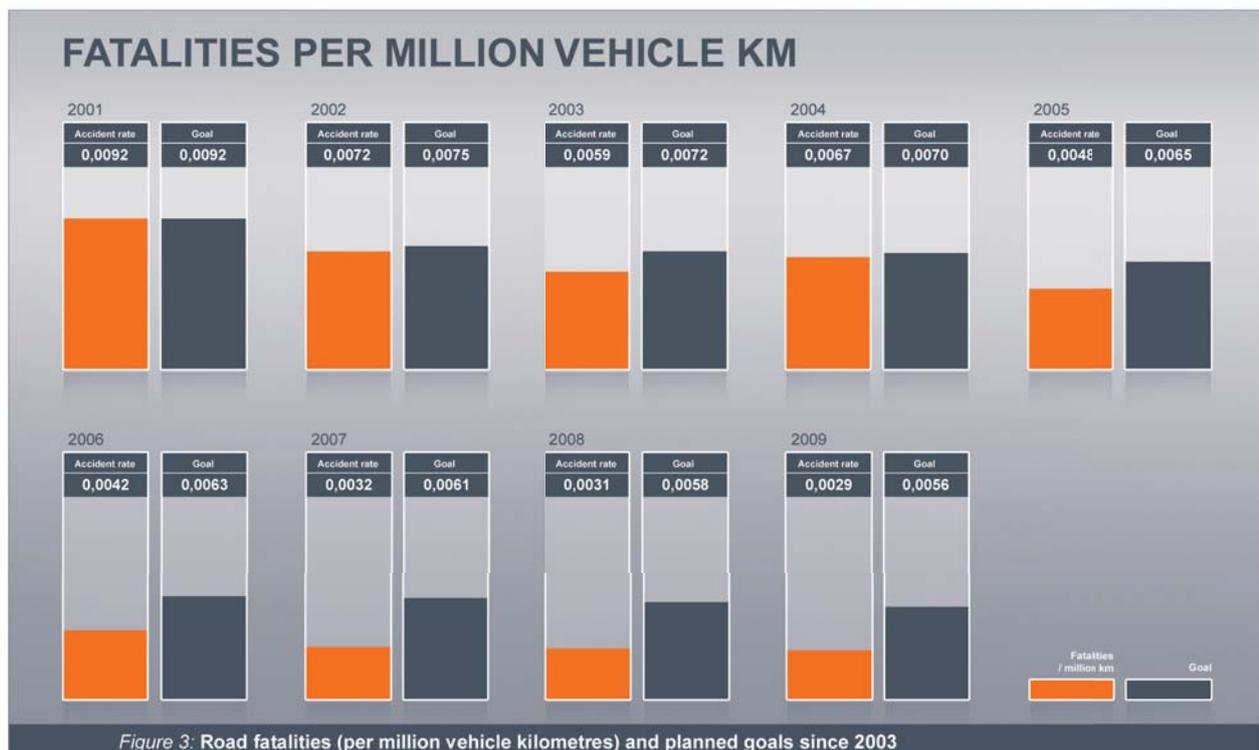


Figure 1b: Fatality rates (fatalities per billion vehicle kilometres) on motorways and expressways 1997-2007 in certain OECD countries. Source: IRTAD, \* no data provided

**Significantly positive reduction of accidents on motorways and expressways in Austria**  
 (Injury accidents based on kilometres driven in comparison with the planned goals)



**Significant decrease also in road fatalities in the past years**



# MAIN FACTS

## Accident types

On average during the years 2004-2008 approximately 2.500 injury accidents occurred yearly in the ASFINAG network, resulting in 3.850 casualties and 100 deaths.

**Rear-end collisions** occur most frequently and comprise approximately 40% of all accidents, however resulting in relatively minor accident severity: 'only' about 24% of all road fatalities were due to rear-end collisions.

**Head-on collisions** occur mostly in the few parts of the network where median barriers are missing. The mostly severe crashes comprise only 0,8% of all accidents but 6% of all fatalities.

## 50% of fatalities due to run-off-the-road accidents

**Run-off-the-road accidents** comprise about 38% of all accidents and almost **half of all fatalities!** A particularly high accident severity level occurs mainly in run-off-the-road accidents where no guardrails are in place and which result in crashes with **objects on the side of the road!** In this group alone a third of all deaths are noted within the ASFINAG network.

The accident severity of **crashes with median guardrails** ('side impact left') has been almost halved in the past eight years due to the implementation of higher containment levels.

**Run-off-the-road accidents** occur more often among young drivers, whereby e.g. rear-end collisions occur equally among all ages.

## Involvement of non-German speaking drivers

80% of all vehicles involved in an accident have **Austrian** license plates, and this decreases to 60% for fatal accidents. The proportion of vehicles with German license plates has decreased in the accident statistics, whereby the proportion of potentially **non-German speaking drivers** involved in an accident (road fatalities) has increased to 25%. On **transit routes** (e.g. Brenner) up to 50% of accidents involve foreign vehicles.

## Driving speed

The **driving speeds** have barely changed over the years, for cars the 85th percentile speed is at about 135km/h and for semi-trailer trucks at 90km/h. In-depth analyses show that on motorways an above average number of accidents are related to inadequate choice of driving speeds.

## Seatbelts: 40-60% of fatalities not wearing a seatbelt

**Seat belt** usage has now reached about 90%, on rear seats only 60%. A number of European countries have been able to reach a driver seat belt usage of 97-99% (Denmark, France, and Sweden). Motorways and expressways have a significantly **high number** of passengers **not wearing a seat belt involved in fatal crashes** (occurring in 40-60% of all fatalities).

An above average number of fatal accidents on motorways are related to **driver fatigue** (16%; whole network 7%), another 20% due to **driver distraction** (19% in the whole network). In comparison the **alcohol-related accidents** are fewer (6%) than in the rest of the road network (10%).

Impaired drivers

**Accidents at roadwork zones** had a peak in road fatalities in 2000 (12% of all fatalities on the ASFINAG network) and then significantly decreased. Yearly about 120 accidents and 4 deaths occur at roadwork zones. Currently the proportion of road construction related accidents compared to all road accidents is approximately 4%.

Roadwork zones

**Cars** are involved in about 80% of road accidents, but only about 60% of fatal accidents. **One-third of all deaths** on the ASFINAG network are related to heavy goods vehicles. The proportion of these accidents compared to all road accidents for all weight classes (including ≤ 3,5t) and is now between 16 and 18%.

Heavy goods vehicle accidents

**Dangerous goods transports** play a minor role in road accidents, yet these are mentioned due to their potential for resulting in catastrophes.

Dangerous goods transports

**Wrong-way driving accidents** also occur infrequently (approximately 10 a year) but have a high media impact.

Wrong-way driving

Multiple collisions due to **fog** happen even less frequently, yet result in high accident severities and consistently take place at least once a year.

Fog

For **tunnel accidents** (approximately 100 a year) a steady decline in the number of deaths has been observed. The majority of the accidents occur at the entrances. The majority of fatalities are single vehicle accidents (3-4 per year), followed by head-on collisions (2 per year).

Tunnel

The majority of accidents occur on **dry road surfaces**. Wet road surfaces have been observed in about one-fourth of accidents and 20% of deaths, although wet roads are only expected for a time period of 10-15%. Under such conditions the **road surface parameters** (grip, lane grooves) may play a role in accidents.

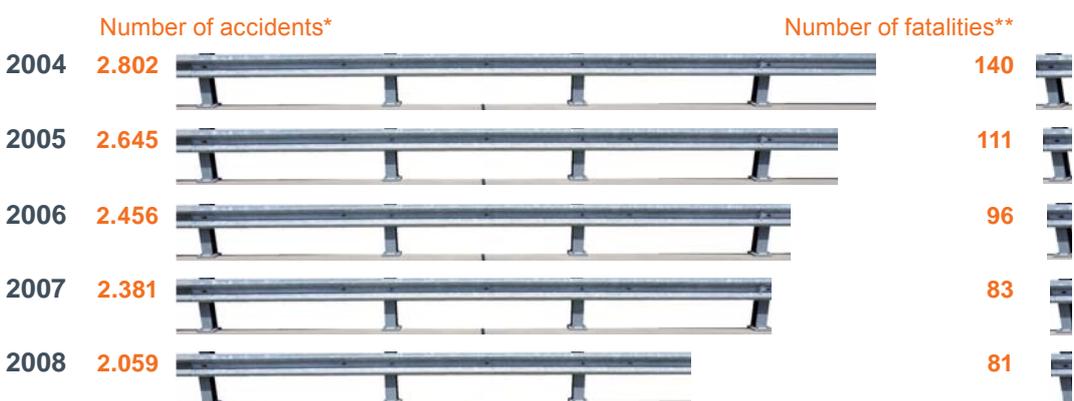
Weather

Although making up only 8% of the network, motorway and expressway **ramps** are the location of 8% of accidents and just under 5% of deaths.

Ramps

**Motorcycles** are marginally involved, making up only about 3% of all road accidents on the entire ASFINAG network.

Motorcycle



\* Number of injury accidents on Austrian motorways and expressways  
 \*\* Number of fatalities on Austrian motorways and expressways

# 13 TARGET AREAS AND PRIORITIES





# 13 TARGET AREAS AND PRIORITIES

The ASFINAG Road Safety Programme 2020 comprises 13 target areas, 32 priorities and 130 measures.

## SAFETY STANDARDS IN THE EXISTING NETWORK

- | Safety inspections
- | Black spots and Network Safety Management
- | Road markings
- | Traffic signs
- | Grip, lane grooves
- | Road restraints: guardrails and median barriers
- | Monitoring and inspections of bridges and tunnels
- | Winter maintenance
- | Vegetation control

## EXTENSION AND IMPROVEMENT OF THE NETWORK

- | Extension of the network (new construction)
- | Improvement of the existing network
- | Road Safety Audits (RSA)
- | Road Safety Impact Assessment (RSIA)

## EMPLOYEE SAFETY

## RESEARCH AND DEVELOPMENT

- | Integrated safety management
- | R&D strategy

## ENFORCEMENT

- | Priority setting
- | Driving speed
- | Following distance
- | Seatbelts and child restraints

## COMMUNICATION AND AWARENESS RAISING

- | Information
- | Campaigns

## MOTORCYCLE SAFETY

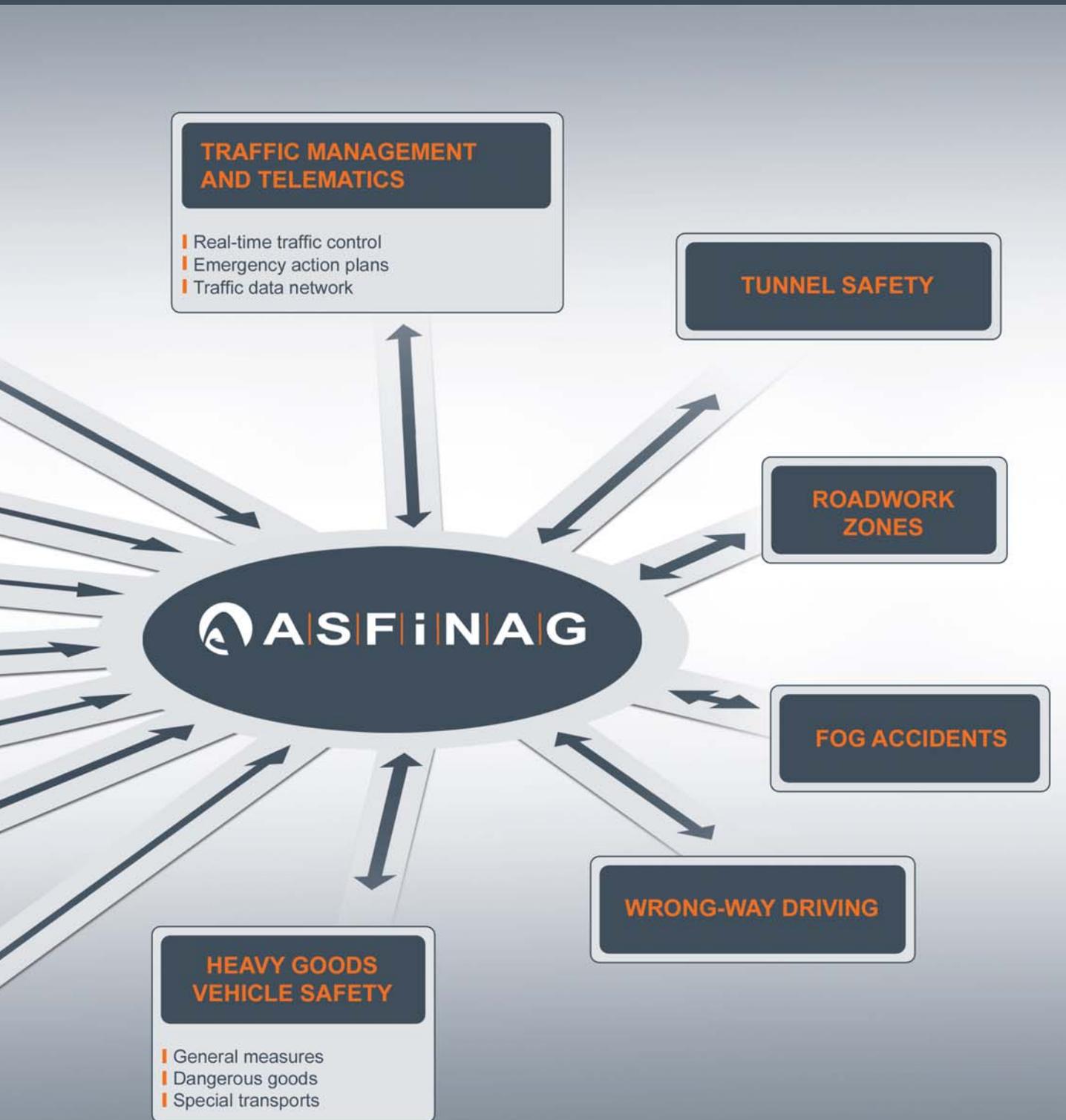


Figure 4: 13 Target areas of the ASFINAG Road Safety Programme 2020



## CATALOGUE OF MEASURES

The catalogue of measures represents the core of the Road Safety Programme. All 130 measures will be implemented in four different time periods within the road safety programme:



### Start package

Of the 130 measures, 23 have been placed in the start package as it is urgently necessary to implement these immediately.

Start package measures are displayed in light orange.



The key facts of each measure are listed in a table as shown below. For basic safety management measures (so-called general preparatory efforts) the following data are neither scientifically nor statistically fully quantifiable:

Injury accidents per year		Basis is the average of 2004 to 2008 (5 years) for each priority	
Fatalities per year		Basis is the average of 2004 to 2008 (5 years) for each priority	
Reduction potential		In percent (injury accidents or fatalities involved) or absolute numbers (on availability: Injury accidents, fatalities, severe injuries, minor injuries)	
Cost	Cost-efficiency	Investment cost and annual expenditure	Cost-benefit analysis (poor [ $<1$ ], good [1-3], excellent [ $>3$ ])
Operational goal		Description of quantifiable goal and time period for the priority	

# 1/13 SAFETY STANDARDS IN THE EXISTING NETWORK



# SAFETY STANDARDS IN THE EXISTING NETWORK

The priorities of this target area cover the fields of road safety inspections, black spot management and safety analysis, road marking, traffic signs, grip and lane grooves, road restraints (guardrails etc), monitoring and inspection of bridges and tunnels, winter maintenance (snow and ice clearance), and vegetation control.

## ROAD SAFETY INSPECTION (RSI)

At the regularly conducted safety inspections, potential safety deficits for the existing road network and its surroundings are documented through standardised reviews. The necessary measures will be taken to remove problem areas before any increase in accidents occur.

To further improve the quality of its network ASFINAG created 'ASFINAG Pilots': a defined number of frequent drivers, private or business related, who provide ASFINAG with their observations of the road, e.g. potholes, road cracks, lane grooves, storm and thunderstorm damage, hidden or unrecognisable traffic signs, and deficient signage of roadwork zones.

### Key Facts

Injury accidents per year	approximately 2.500		
Fatalities per year	approximately 100		
Reduction potential	15% fatalities, 10% severe injuries, 5% minor injuries of the treated section		
Cost	Cost-efficiency	< EUR 500.000/a	good to excellent
Operational goal	>150 km RSI per year and consistent implementation of the insights gained starting 2010		

List of Measures (RSI)

## Measures

Start package	Short-term	Mid-term	Long-term	Road Safety Inspection (RSI)
✓	✓	✓	✓	Annual implementation of detailed Road Safety Inspections on at least 150 km of the network
✓				Clarification of the status and use of the existing RSI in fulfilling the EU Directive for Safety Management (in collaboration with the Austrian Ministry for Transport, Innovation and Technology, BMVIT)
	✓	✓		Clear selection process and priority-setting for the road sections under inspection
✓	✓	✓	✓	Consistent implementation of the RSI measures: accounting for the middle and long-term measures in the planning and maintenance programme of the next few years
	✓			Road service employee training on the basis of RSI experience to date and adoption of important content in the daily inspection work
	✓	✓	✓	Annual safety inspections by the responsible road surveyor
✓	✓	✓	✓	ASFINAG-Pilots: detection of quality deficits in the network by frequent drivers

## BLACK SPOT MANAGEMENT AND SAFETY ANALYSIS

In the entire Austrian road network black spots are identifiable on certain locations or road sections. The ASFINAG activities in this field focus on systematic **treatment of infrastructure-related black spots** and **safety analysis** for the entire network [„Network Safety Management (NSM)“] as required by the Infrastructure Directive of the European Commission. For the safety analysis ASFINAG is setting the stage for the necessary work (see target area ‘Research and Development’). ASFINAG will be actively involved in the **further development of the Austrian Guideline RVS 02.02.21** in order to improve the parameters for the definition of black-spots on motorways and expressways.

## Key Facts

Injury accidents per year	609 on 97 black spots 2007		
Fatalities per year	9 on 97 black spots 2007		
Reduction potential	14% injury accidents on the treated section		
Cost	Cost efficiency	Dependent on the type of measure	good to excellent
Operational Goal	<50 black spots by 2020		

## Measures

Start package	Short-term	Mid-term	Long-term	
<b>Black spots and network safety management</b>				
✓	✓	✓	✓	Systematic treatment of infrastructure-related black spots
	✓	✓	✓	Implementation of safety analyses
	✓			Improve the parameters for the definition of black spots on motorways and expressways (further development of the Austrian Guideline RVS 02.02.21)

List of measures (Black spot management and safety analysis)

## ROAD MARKINGS

Due to the excellent safety effects of **rumble strips** ASFINAG has decided to promote this or a similar marking system, although questions still need to be clarified regarding water removal and noise protection. The use of rumble strips has the potential to significantly reduce run-off-the-road accidents which comprise almost 40% of all injury accidents with almost half of all deaths in the ASFINAG network. The goal is a long-term coverage of all areas with increased risk of run-off-the-road accidents outside of noise sensitive zones.

The numerous regional **expertise on marking methods and durability** will be networked upon and in the future all ASFINAG road markings will be included in the **Road Database**. The continual improvement of the **night visibility of markings** under wet conditions is a major safety criterion. Until all expressways are equipped with median barriers, barred areas (with increased gap of the solid centre lines) and rumble strips are applied and provided with green median markings – as a transitional measure and according to the Dutch standards.

## Key Facts

<b>Injury accidents per year</b>	970 (run-off-the-road accidents)		
<b>Fatalities per year</b>	47 (run-off-the-road accidents)		
<b>Reduction potential</b>	31% Injury accidents on the examined section (rumble strips)		
<b>Cost</b>	<b>Cost-efficiency</b>	< EUR 10.000/km	good to excellent
<b>Operational Goal</b>	Nationwide coverage of all areas with increased risk of run-off-the-road accidents with rumble strips or the like by 2020		

List of measures  
(Road markings)

### Measures

Start package	Short-term	Mid-term	Long-term	Road markings
✓	✓	✓	✓	Increased use of rumble strips to reduce run-off-the-road accidents
			✓	Austrian-wide networking on experience with a variety of marking methods and products, as well as their durability
			✓	Incorporation of the road markings in the ASFINAG Road Database (positioning, type, material, age)
		✓		Improvement of the night visibility under wet conditions using structural and profile marking
	✓			Barred areas with rumble strips and green median marking as transitional solution for expressways without median barriers

### TRAFFIC SIGNS

Regular maintenance, the reflection factor and legal safety (regulation and localisation) are major safety factors. ASFINAG is creating a **GIS-based registry** for all traffic signs which require by-laws for their placement and inspection videos for the entire network. In the future **updates to the registry of traffic signs** should be carried out (half-) automatically on the basis of inspection videos (see also target area 'Research and Development').

Together with the Austrian Ministry for Transport, Innovation and Technology the project „Inspection of Traffic Signs“ investigates the limits and features in the life cycle of traffic signs.

### Key Facts

<b>Operational Goal</b>	<b>Registry of traffic signs till 2012</b>
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### Measures

List of measures  
(Traffic signs)

Start package	Short-term	Mid-term	Long-term	Traffic signs
	✓			Creation of a registry of traffic signs which require by-laws for their placement according to the Road Traffic Regulation (StVO §44)
			✓	(Half-)automatic update of the registry of traffic signs

## GRIP AND LANE GROOVES

The characteristics of road surfaces can – especially under wet conditions – have a decisive impact on road safety. Approximately 10% of all injury accidents and fatalities in the ASFINAG network occur under wet conditions. Therefore ASFINAG launched a package of measures that contains **consistent quality assurance** of road surface parameters and lays special attention also on slip roads.

### Measures

Start package	Short-term	Mid-term	Long-term	Grip and lane grooves
	✓	✓	✓	<p>Package of measures „<b>consistent quality assurance</b> of the road surface parameters (grip, lane grooves, etc.) for the entire network and slip roads“</p> <ul style="list-style-type: none"> <li>• Status index for the entire network</li> <li>• Integrated digital road surfacing registry (cross-linked with the Road Database)</li> <li>• Timely inspections after traffic approval</li> <li>• Further development of relevant guidelines (RVS)</li> <li>• Continuous discussion on the configuration of thresholds (approval, guarantee)</li> <li>• Proactive further development of measuring methods and evaluation systems (location and time intervals of measurements, etc.)</li> <li>• Support research on the connection between road safety and road surface parameters</li> </ul>

List of  
measures  
(Grip and  
lane grooves)

## ROAD RESTRAINTS: GUARDRAILS AND MEDIAN BARRIERS

Run-off-the-road accidents constitute almost 40% of all accidents on the ASFINAG network, with almost 50% of all fatalities. At accidents where no road restraints were present and resulting in a collision with an **object on the side of the road**, especially high accident severity is observed, and a third of all fatalities (proportion of all accidents: almost 24%). ASFINAG has therefore developed a strategy to mitigate these accident sites.

Driving into guardrail ends and median barriers often results in severe accidents. As a result of the package of measures short guardrail gaps (up to 150 m) will be closed. Since 2007 ASFINAG documents all severe accidents that are related to driving into guardrail ends. In addition, together with the Austrian Ministry for Transport, Innovation and Technology, a further approach will be worked out within the framework of a research project. In the project „Safety evaluation of guardrail ends“ accident in-depth analyses will be performed and recommendations for measures developed on the basis of cost-benefit analyses.

The functional capability of **game fencing** is subject to improved quality assurance.

The location and type of road restraints will be included in the ASFINAG **Road Database**.

## Key Facts

Injury accidents per year	970		
Fatalities per year	< 50		
Reduction potential	40 bis 45 %		
Cost	Cost efficiency	EUR 15 to 30 Mio	guardrail ends: good, objects at the roadside: good to excellent
Operational Goal	< 30 fatalities from run-off-the-road accidents based on a 3 year average till 2020		

## Measures

List of measures  
(Road restraints:  
guardrails and  
concrete median  
barriers)

Start package	Short-term	Mid-term	Long-term	
				<b>Road restraints: guardrails and concrete median barriers</b>
	✓			Package of measures to decrease collisions with objects at the roadside
		✓		<ul style="list-style-type: none"> <li>Detailed survey of the economic significance of these accidents</li> <li>Implementation plan including a timeline for additional restraining elements</li> </ul>
✓				Package of measures „Driving into guardrail ends“
	✓	✓	✓	<ul style="list-style-type: none"> <li>Detailed survey of the economic significance of these accidents</li> <li>Implementation of the research results (study of Ministry for Transport, Innovation and Technology)</li> </ul>
	✓			<ul style="list-style-type: none"> <li>Forming a working group (ASFINAG, Ministry for Transport, Innovation and Technology, Automobile Clubs, Austrian Road Safety Board (KfV) for questions regarding guardrail ends in the Austrian Guideline RVS 05.02.31</li> </ul>
✓	✓			<ul style="list-style-type: none"> <li>Closing short gaps of guardrails up to 150 m (existing and newly built)</li> </ul>
✓	✓	✓	✓	Ascertain the functional capability of game fencing
	✓		✓	Detailed survey and creation of a database with location and type of road restraints for the ASFINAG network

## MONITORING AND INSPECTIONS OF BRIDGES AND TUNNELS

All ASFINAG engineering structures (bridges, tunnels etc.) are controlled at regular intervals. Bridges undergo an external inspection every six years and every two years ASFINAG internal personnel perform a check.

The closing of bridges is relevant to road safety as the detour to the secondary road network (higher accident rate!) as a rule results in an increased accident risk. ASFINAG commissions studies to determine the consequences of the increased amount of heavy goods vehicles on the infrastructure. Also relevant is an estimate of the additional reconstruction and investment needs, particularly with regards to the potential use of so-called Giga-Liners (60 t-HGV).

## Measures

Start package	Short-term	Mid-term	Long-term	
		✓		Determine the relevant consequences of the increased amount of heavy goods vehicles for maintenance management, including the prospect of Giga-Liners.

List of measures  
(Monitoring and  
inspections of  
bridges and tunnels)

## WINTER MAINTENANCE

ASFINAG strives to keep weather related disturbances in road traffic flow to a bare minimum. This includes **prompt snow clearance** and targeted **prevention of black ice** by using modern weather forecast models. For this a new **Crisis Management System** will be created and **cooperation** with the police as well as private road maintenance services intensified. Sufficient locations for fitting snow chains have to be provided as well as closures of motorway sections promptly issued by means of **prefabricated by-laws**. Other constraints (e.g. by roadwork zones) are systematically avoided on **road sections critical** for winter maintenance. The locations of the ASFINAG winter maintenance service stations are **continuously reviewed** and a strategy is being worked out for further extension.

## Key Facts

Injury accidents per year	162 (accidents during winter pavement conditions)
Fatalities per year	5 (accidents during winter pavement conditions)
Operational Goal	No (winter-) weather-related traffic breakdown starting 2010

List of measures  
(Winter maintenance)

**Measures**

Start package	Short-term	Mid-term	Long-term	Winter maintenance
	✓			Review of the established division of labour between ASFINAG and private contractors and optimising the allocated resources in case of extreme conditions regarding optimal crisis management
		✓		Creating and testing a crisis management system for weather-related extreme conditions
		✓		Status analysis and priority listing of new locations for fitting snow chains
	✓			Intensify collaboration with the police for crisis prevention in winter-related extreme conditions
	✓			Prefabricated situation-dependent regulations for prompt reaction in winter-related extreme conditions
		✓		Avoiding other traffic constraints, e.g. roadwork zones, on road sections critical for winter maintenance
			✓	Review of locations for winter maintenance service stations and working out a mid-term strategy for new locations

**VEGETATION CONTROL**

The ASFINAG road service inspects the entire road network several times a day. For this reason road safety related problems due to roadside vegetation occur rarely.

The road service personnel are trained on the basis of results from RSI and roadside mowing zones are installed – where possible – only in **non-peak hours**. The correct handling of work zone signage according to the Austrian Guidelines will be enforced.

**Measures**

List of measures  
(Vegetation control)

Start package	Short-term	Mid-term	Long-term	Vegetation control
	✓			Training for road service personnel on the basis of RSI results and handling of workzone signage
	✓			Integration of planning and control of roadside mowing zones into the management system of roadwork zones and limitation to non-peak hours





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## EXTENSION AND IMPROVEMENT OF THE NETWORK



# EXTENSION AND IMPROVEMENT OF THE NETWORK

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The priorities of this target area consist of new construction and upgrading of the existing network, as well as Road Safety Audits (RSA) and Road Safety Impact Assessments (RSIA).

## EXTENSION OF THE NETWORK (NEW CONSTRUCTION)

Since 2000 ASFINAG has expanded the road network by 7%. Amongst the numerous roadwork projects were - apart from the new S 1 and A 6 - the takeover of state road links to S 37 and S 3. Within this takeover, short-term measures to improve road safety will be performed on the basis of Road Safety Inspections (RSI), until the upgrade of these sections is completed.

Also, for the entire duration of the Road Safety Programme numerous expansions are planned, such as the A 5 North Motorway, the A 26 Linzer Motorway, the S 10 Mühlkreis Expressway, the S 7 Fürstenfeld Expressway, the S 8 Marchfeld Expressway, the S 34 Traisental Expressway, as well as the completion of the 'Regional Ring' around Vienna.

It is clear that the construction of new motorways and expressways has a positive impact on road safety, as traffic volume is absorbed from roads which partly have significantly higher accident rates. Research and studies will be performed together with the Austrian Ministry for Transport, Innovation and Technology for optimal and appropriate cross-section design.

## IMPROVEMENT OF THE EXISTING NETWORK

Since the mid-90's ASFINAG has completely renovated a considerable part of the network, such as the entire A 1 West Motorway, the S33 Kremser Expressway and the 'Pack' section of the A 2 South Motorway. During this time other general renovations were undertaken such as the A 8 Innkreis Motorway, parts of the A 2 South Motorway, as well as the entire A 10 Tauern Motorway.

Within the framework of the Road Safety Programme ASFINAG will equip all 4-lane expressways with **median barriers**. On the basis of a risk analysis a strategy will be developed for **retrofitting of hard shoulders** on all critical locations. For **Park&Drive facilities** a concept will be worked out together with the provinces. Further extension measures will be established on the basis of an integrated **model for safety potentials and deficits** (see also the priority Research and Development).

## Key Facts

<b>Injury accidents per year</b>		Median barrier: ca. 20 Hard shoulder: ca. 30	
<b>Fatalities per year</b>		Median barrier: ca. 6 Hard shoulder ca. 8	
<b>Reduction potential</b>		Median barrier: 80% fatalities, 45% severe injuries	
<b>Cost</b>	<b>Cost efficiency</b>	Median barrier: EUR 300 to 500 Mio (high impact on fatalities) Hard shoulder: EUR 0,5-1 Mio/km Park&Drive: < EUR 500.000	Median barrier: rather poor Hard shoulder: unknown
<b>Operational Goal</b>		<b>Full implementation of median barriers for all 4-lane expressways till 2020</b>	

List of measures  
(ASFINAG  
construction projects)

## Measures

Start package	Short-term	Mid-term	Long-term	ASFINAG construction projects
✓	✓	✓	✓	New Construction Programme: A 5 North Motorway, A 26 Linzer Motorway, S 10 Mühlkreis Expressway, S 7 Fürstenfeld Expressway, S 8 Marchfeld Expressway, S 34 Traisental Expressway, completion of the "Regional Ring" around Vienna  Extension Programme till 2020 (Basis for the Construction Programme 2010 and onwards)
			✓	Median barriers for all 4-lane motorways and expressways
		✓		Strategy for retrofitting of hard shoulders for all critical locations (on the basis of a risk analysis)
		✓		Expansion concept for Park&Drive facilities (in cooperation with the provinces)
	✓			Initiate an integral model for accident reduction potentials (accident prediction model) in the strategic planning of construction measures

## ROAD SAFETY AUDIT (RSA)

According to the Infrastructure Directive ASFINAG will carry out all future Road Safety Audits in a minimum of **4 phases**; newly included is an expert audit shortly before traffic approval. Audits will also be performed for forthcoming extensive **roadwork and renovation projects**. ASFINAG has proactively initiated a **training and continuing education track** for auditors and will make the results from audits accessible to planners.

## Key Facts

<b>Cost</b>	<b>Cost efficiency</b>	< EUR 0,5 Mio/a	excellent
<b>Operational Goal</b>		<b>4-step implementation of audits for all relevant new, expansion and renovation projects starting 2010</b>	

**Measures**

Start package	Short-term	Mid-term	Long-term	Road Safety Audit (RSA)
	✓			Initiate a 4th phase at Road Safety Audits
	✓			RSA also at construction and renovation projects in the existing network
✓				Training and continuing education track for auditors
		✓		Knowledge management for planners with RSA results

List of measures (RSA)

**ROAD SAFETY IMPACT ASSESSMENT (RSIA)**

The **Infrastructure Directive** requires a so called „Road Safety Impact Assessment“ (RSIA) prior to all new construction projects. In cooperation with the Austrian Ministry for Transport, Innovation and Technology the existing processes in this field will be brought into alignment with the Directive. In addition the socio-economic costs of accidents will be included within the investigation framework and the „zero option“ will be assessed regarding its impact on road safety.

**Key Facts**

Injury accidents per year	Basic safety measure
Fatalities per year	Basic safety measure
Operational Goal	Implement RSIA for all measures according to the Austrian Penal Code (BStG) starting 2010

**Measures**

Start package	Short-term	Mid-term	Long-term	Road Safety Impact Assessment
✓				Establish compatibility between the current processes and the EU Directive for Infrastructure Safety in agreement with the Austrian Ministry for Transport, Innovation and Technology
	✓			Include socio-economic costs of accidents in the investigation of variants and assessing the zero option regarding its impact on road safety

List of measures (RSIA)

# 3/13 TRAFFIC MANAGEMENT AND TELEMATICS



# TRAFFIC MANAGEMENT AND TELEMATICS

The priorities of this target area consist of the fields of real-time traffic control, emergency action plans, as well as a traffic data network.

## REAL-TIME TRAFFIC CONTROL

Traffic control – especially on heavy traffic roads – with variable message signs often has a positive effect on road safety: situation dependent speed limits and warnings of congestion, accidents or weather-related problems are very well appreciated by drivers and provide a homogenisation of speed levels, increased awareness and thereby a reduction in accidents. Currently 270 km of the ASFINAG network are equipped with real-time traffic control. ASFINAG is reworking its **criteria** and will promote further deployment of these systems where high traffic and road safety necessitate it. The **criteria for use of real time traffic control** in neighbouring countries will be investigated and a cross-national agreement strived for with regards to **incident management**. The long-term goal is a **traffic control co-ordinated across borders**.

In order to further increase the **compliance with variable speed limits**, cooperation will be aimed at with the police as well as collaboration with the traffic authorities with regards to acquisition, location and use of surveillance cameras.

In view of a steady increase in the age of motor vehicle drivers and an increased number of non-German speaking drivers, ASFINAG is committed to an **improved comprehensibility** of texts and pictograms of real-time traffic controls.

## Key Facts

Injury accidents per year		Road dependent	
Fatalities per year		Road dependent	
Reduction potential		16-44% on equipped roads	
Cost	Cost efficiency	Approx. EUR 265 Mio	Surveillance with stationary radar good to excellent, real time traffic control: road dependent
Operational Goal		20% coverage of network by 2013	

List of measures (Real-time traffic control)

## Measures

Start package	Short-term	Mid-term	Long-term	Real-time traffic control
	✓			Inspection of road safety relevant application criteria with socio-economic cost calculations
	✓	✓		Expansion of real-time traffic control according to the Road Construction Programme 2010 and onwards
			✓	Increase the compliance in real-time traffic control sections (enforcement, cooperation regarding purchasing, camera operations)
			✓	Cross-border agreed upon incident management and concept for cross-border real-time traffic control
			✓	Observe human physiological performance limitations, aging society, bilingual texts, testing of the pictograms (comprehensibility)

## EMERGENCY ACTION PLANS

ASFINAG meets the challenge of the growing need for a functioning emergency management free of error and delays with a range of measures: the success rate of **video-based incident detection** will be raised and also **acoustic sensors** integrated. In the mid-term planning the video technology currently in use in tunnels should also be expanded to include rural road sections with increased accident rates. The **tunnel emergency exercises** will be reviewed and the results from the new ASFINAG tunnel accident database integrated.

To improve accuracy of driver emergency calls **kilometre signage** will be introduced with a distance of **max. 100 m**, as done in the Netherlands. Due to the increased number of emergency calls (via emergency telephones) from drivers originating from CEE countries, the ASFINAG Service Centre also offers **telephone support in Eastern European languages**.

On motorways with high traffic load **tow trucks** will be positioned during rush hours in order to help reduce long traffic jams and secondary accidents. Following the German role model the introduction of the system of “virtual” emergency lanes („**Rettungsgasse**“) that allow for faster access to an accident location for emergency services will be investigated.

## Key Facts

<b>Injury accidents per year</b>	Approx. 2.500		
<b>Fatalities per year</b>	Approx. 100		
<b>Reduction potential</b>	No direct reduction other than secondary accidents		
<b>Cost</b>	<b>Cost efficiency</b>	< EUR 500.000	low; emergency lanes and tow trucks excellent
<b>Operational Goal</b>	Consideration of the implementation of “virtual” emergency lanes		

**Measures**

Start package	Short-term	Mid-term	Long-term	Emergency action plans
	✓	✓	✓	Improve the performance of video-based incident detection (in cooperation with industry partners) Development and deployment of acoustic incident detection to support video-based detection
	✓			Review tunnel emergency exercises and integrate results from the tunnel accident database
	✓			Strategic concept for video surveillance on rural road sections with increased accident rates
		✓		Localisation of emergency calls: increased km-information at the roadside (max. 100 m)
	✓			Telephone support in Eastern European languages through the ASFINAG Service Centre
		✓		Positioning of tow trucks on critical points to prevent long traffic jams and secondary accidents
✓				Investigate the introduction of "virtual emergency lanes" for faster access to accident locations for emergency services.

List of measures (Emergency action plans)

**TRAFFIC DATA NETWORK**

ASFINAG continuously collects traffic data which have a high value for authorities and research. In the course of projects such as the Graph Integration Platform (GIP) ASFINAG will intensify data exchange with other authorities.

A yearly brochure is made available to the public with aggregated traffic data (including daily traffic load records). The network of measuring sections for a **comprehensive traffic data collection** will be expanded to provide data for as many sections of the network as possible.

**Measures**

Start package	Short-term	Mid-term	Long-term	Traffic Data Network
	✓			Participation in the Graph Integration Platform (GIP)
		✓		Expand the network for the automatic collection of traffic data

List of measures (Traffic Data Network)

4/13 TUNNEL SAFETY



# TUNNEL SAFETY

Since the Tauern tunnel fire in 1999 ASFINAG has completely redesigned the tunnel safety management, for existing as well as newly built tunnels. The retrofitting measures serve above all to prevent accidents and improve the possibility of self-rescue. These include the areas of ventilation, lighting, signage of escape routes, brightening the stopping bays, rumble strips, LED markers on curbs, brightening the tunnel paintwork, a clearly visible design of the tunnel entrance and inclusion of traffic radio at incidences, as well as shortening of the distance between the escape routes.

The request for dual-tube tunnels from the Austrian Road Tunnel Safety Law (STSG 2006) will be fulfilled by ASFINAG with the **extension scheme** until 2019:

Road section	Project	Comment
S 6	Ganzstein Tunnel, 2nd tube	Traffic approval of both tubes done
A 9	Bosruck Tunnel, 2nd tube	Start of tunnel construction end of 2009, traffic approval of both tubes 2015
A 10	Katschberg Tunnel, 2nd tube	Traffic approval of both tubes done
A 10	10 Tauern Tunnel, 2nd tube	Planned traffic approval of both tubes June 2011
A 12	Roppener Tunnel, 2nd tube	Planned traffic approval of both tubes December 2010
A 14	Pfänder Tunnel	Planned traffic approval of both tubes June 2013
S 16	Perjen Tunnel, 2nd tube	Planned construction start 2017
S 16	Flirscher Tunnel 2nd tube	Planned construction start 2018
S 16	Dalaaser Tunnel, 2nd tube	Planned construction start 2017
A 9	Tunnelkette Klaus, 2nd tube	Planned construction start 2015
A 9	Gleinalm Tunnel, 2nd tube	Planned construction start 2013

Approximately one-fourth of all tunnel accidents and half of all fatalities occur at tunnel entrances and pre-entrances. In agreement with the new Austrian Guideline RVS 09.01.25 a homogeneous design of tunnel (**pre**)entrances is aimed at.

The reliability of automatic **video-based incident detection** will be further improved (see also the chapter Emergency action plans). With the new **Regulation of Dangerous Goods ADR/RID/ADN 2009** tunnel restriction codes will be assigned for dangerous goods. The ASFINAG tunnels will undergo risk analyses and categorised according to ADR (A to E).

## Key Facts

<b>Injury accidents per year</b>	100 (tunnel accidents), 22 entrance+pre-entrances
<b>Fatalities per year</b>	5 (tunnel accidents), 3 entrance+pre-entrances
<b>Reduction potential</b>	1 fatality/a
<b>Cost</b>	Approx. EUR 800 Mio
<b>Operational Goal</b>	<b>Conformity with Austrian Road Tunnel Safety Law until 2019</b>

## Measures

List of  
measures  
(Tunnel safety)

Start package	Short-term	Mid-term	Long-term	Tunnel safety
✓	✓	✓	✓	Extension scheme till 2019
	✓	✓	✓	Homogeneous design of tunnel (pre)entrance areas in the entire network (in agreement with the new Austrian Guideline)
		✓		Evaluation of grip-enhancing measures in tunnels
		✓		Promotion of video-based incident detection
✓	✓	✓	✓	Shortening of distances between escape routes
			✓	Implementation of the new Dangerous Goods Regulation ADR/RID/ADN 2009: Categorisation of tunnels regarding restrictions for certain dangerous goods and signage for detour routes



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# ROADWORK ZONES



# ROADWORK ZONES

In relation to accident data, roadwork zones show an increased accident risk on the ASFINAG network. Since 2001 roadwork zones with two-way traffic are solely implemented with median barriers. A comprehensive package of measures will further promote safe design and quick execution: new roadwork zones will be inspected together with the police and undergo **intense observation** in the first days after traffic approval. During the entire duration **daily road safety checks** will be performed and **fines** given out to construction companies if defects are caused by them.

Observations about defects from „**ASFINAG Pilots**“ (see also the chapter Road Safety Inspection) and via the **ASFINAG Service Centre** are handled with the highest priority. The Road safety checks of roadwork zones are performed in accordance with the **European Infrastructure Directive** and a new **Roadwork Zone Handbook** is prepared (in accordance with the RVS 05.05.42). At roadwork zones that have a significant **influence on the traffic flow** Road Safety Audits (RSA) are performed in advance. Short-term roadwork zones will be integrated into ASFINAG’s new **roadwork zone management system** and operated, when possible, in non-peak hours. In the future it will be possible to retrieve **evaluations** and also the **history** of traffic constraints related to roadwork zones from the system.

In order to keep traffic constraints due to roadwork zones as low as possible, ASFINAG has developed **quality criteria** to regulate their number, length and travel time lost. These criteria are further developed on a continuous basis.

A new generation of **work zone trailers with overhead display** improves the level of recognition and compliance and thereby reduces the risk of collision.

In order to reduce the consequences of collisions with work zone trailers, these trailers will all be equipped with **crash cushions or other absorbers**.

In terms of work safety the **project manager** will write a protocol of all work accidents and their consequences, from **start to approval** of the roadwork zone.

## Key Facts

Injury accidents per year	120 (roadwork zone accidents)		
Fatalities per year	4 (roadwork zone accidents)		
Reduction potential	5-10% of roadwork zone accidents		
Cost	Cost efficiency	< EUR 50.000/a	good
Operational Goal	< 80 Injury accidents within a 3 year average in roadwork zones by 2015		

List of  
measures  
(Roadwork zones)

## Measures

Start package	Short-term	Mid-term	Long-term	Roadwork zones
	✓			Collaboration of the local motorway agency and police for the approval of a roadwork zone and intensive surveillance in the critical first days after traffic approval
		✓		Daily inspection through on-site construction supervision (by means of a checklist) and fines for construction companies for defects that are caused or not corrected by them
	✓	✓	✓	Quick reaction to inputs to the ASFINAG Service Centre & from „ASFINAG Pilots“
✓				Implementation of roadwork zone RSI in accordance with the EU Directive
	✓			Update the roadwork zone handbook according to the new RVS 05.05.42
	✓	✓	✓	Road safety audits for specific roadwork zones with a significant impact on traffic flow
	✓	✓	✓	Short-term roadwork zones integrated into the roadwork zone management system
	✓			Implementation of the history of roadwork zones (length, duration, type of interference, etc.) in the roadwork zone management system to facilitate evaluations
	✓	✓	✓	Roadwork zone management: Evaluation and, when indicated, amendments to the criteria, based on customer satisfaction
	✓	✓		Project leader will deliver a report on work accidents and their consequences at the approval of each roadwork zone



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# 6/13 FOG ACCIDENTS



# FOG ACCIDENTS

Although multiple collisions in foggy conditions are rare events (1-5 accidents with five or more vehicles per year), ASFINAG is currently improving the **fog warning system** on the A 1 near Seewalchen: In 2008 algorithms and display texts were optimised. The impact of these measures on driver behaviour will be **scientifically evaluated**. In the mid-term display texts and pictograms (including speed limits) should be multilingual. Also the extension of the system to the whole A1 section with high fog probability is considered.

The implementation and maintenance of dedicated fog markings in foggy areas has been a standard for many years now on the ASFINAG network and will be continued.

## Key Facts

<b>Injury accidents per year</b>	< 10		
<b>Cost</b>	<b>Cost efficiency</b>	EUR 1-12 Mio	poor – yet danger of multiple collisions with severe consequences
<b>Operational Goal</b>	<b>Continuous evaluation and optimisation</b>		

## Measures

Start package	Short-term	Mid-term	Long-term	Fog accidents
	✓			Evaluation of the influence of the fog warning system on driver behaviour
		✓		Mid-term optimisation measures on the fog warning system in Seewalchen
✓	✓	✓	✓	Maintain fog markings in fog regions

List of measures (Fog accidents)





7/13

# WRONG-WAY DRIVING



# WRONG-WAY DRIVING

The number of reports for wrong-way driving has stagnated at a high level, according to the radio station Ö3 (approx. 500 per year). Only about 15% of radio announcements are validated by police observation – and wrong-way driving accidents play a lesser role with about ten injury accidents a year. But because these accidents show high accident severity, their prevention remains a high priority.

Compliance with the Austrian „**Wrong-way Driving Guideline**“ (RVS 05.06.31) is very different according to the region, as it comprises a number of measures for slip roads in the regional road network which are only realisable in collaboration with the on-site responsible authorities.

ASFINAG continuously aims to improve its knowledge base of **motorway junctions** where wrong-way driving originates more frequently. Such problem zones are treated immediately. At the same time certain solutions to optically improve the road layout come into play, which currently cannot (yet) be found in the Austrian Guideline, such as active guidance elements (e.g. LED).

ASFINAG will strive in relevant committees to implement a multi-stage model for the design of motorway junctions in the Austrian Guidelines – dependent on the risk potential.

## Key Facts

Injury accidents per year	Approx. 10		
Fatalities per year	Approx. 3		
Reduction potential	1-5 accidents per year		
Cost	Cost efficiency	< EUR 2 Mio	poor
Operational Goal	Complete implementation of wrong-way driving warning signs, direction signs and markings as required in the Guideline by 2015		

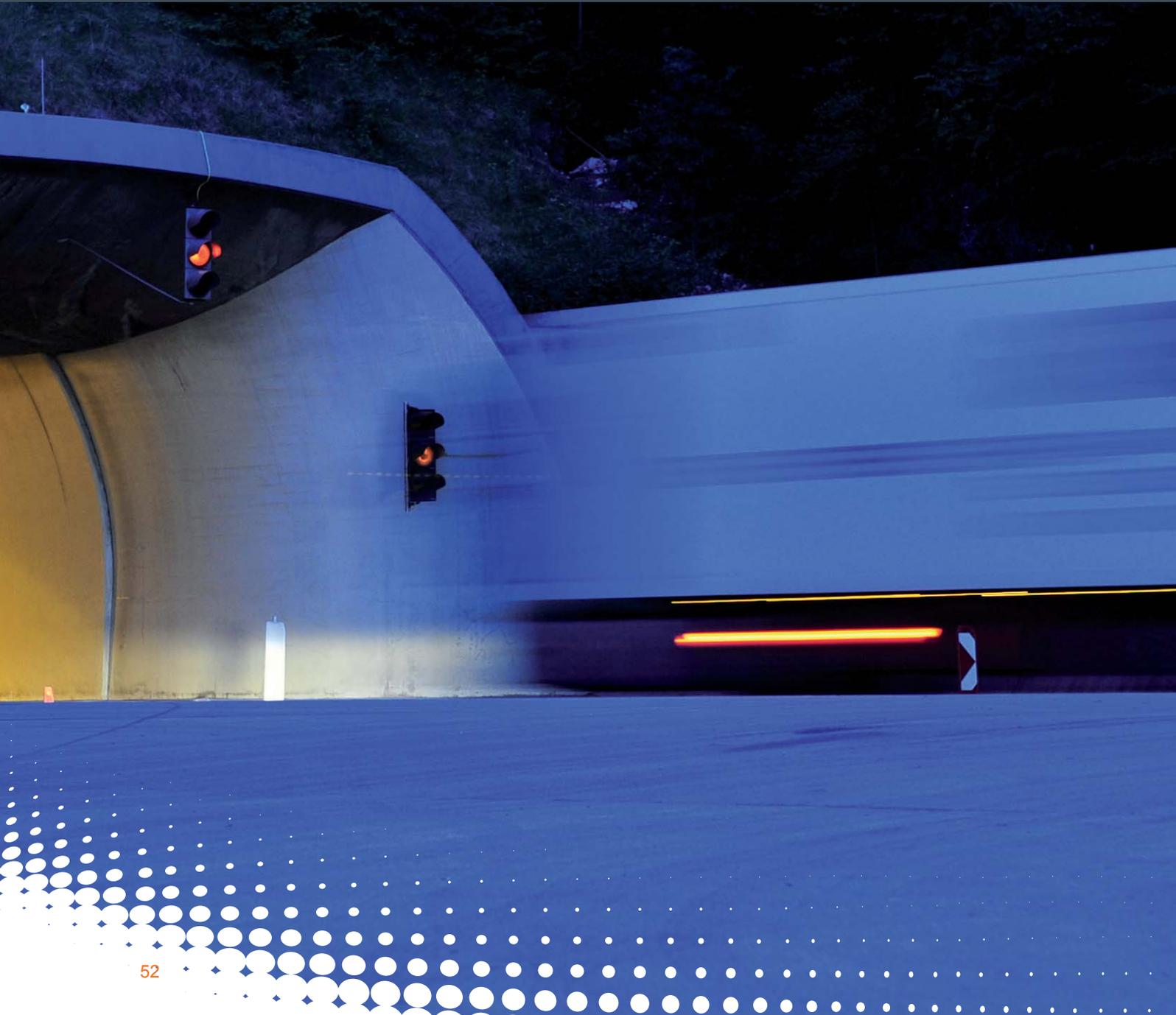
## Measures

Start package	Short-term	Mid-term	Long-term	Wrong-way driving
✓	✓	✓		Complete implementation of the <b>“Wrong-way Driving Guideline”</b> (RVS 05.06.31) in collaboration with the provinces: measures on the regional road network
	✓			Identification of black-spots and treatment of locations where wrong-way driving originated
		✓		Argumentation for a risk-based, multi-stage model in the next Guideline for the design of motorway junctions
✓	✓	✓	✓	New measures to improve the traffic guidance in problem areas

List of measures (Wrong-way driving)

8/13

# HEAVY GOODS VEHICLE SAFETY



# HEAVY GOODS VEHICLE SAFETY

In accident statistics heavy goods vehicles play a major role, especially at accidents with severe and fatal consequences: they are involved in 18% of accidents on the ASFINAG network, with **a third of all fatalities**.

ASFINAG is providing **1.000 additional parking spaces for heavy goods vehicles** to guarantee enough opportunities for rest periods. Relevant information should also be understandable for non-German speaking drivers.

ASFINAG supports the continuous quality improvement of rest areas and rest locations to contribute to a driver's rest.

In the future **lorry control sites** will be on every corridor (in both driving directions), to check the technical condition and loading of the vehicles, and the driving and rest periods.

Based on the lorry control sites location analysis and on the already available sites for enforcement, toll control and lorry control, a study will be performed on additional, useful **enforcement sites/areas** which are necessary for mobile enforcement by the police.

ASFINAG supports the provinces as much as it can to evaluate **prohibitions on overtaking** for heavy goods vehicles, for example through comprehensive data supply and analyses.

## DANGEROUS GOODS

Although the transport of dangerous goods in general can be classed as above-average in safety, they still merit special attention. The specific risk involved is the catastrophic impact a single accident can cause. That is the reason why the topic „dangerous goods accident“ cannot be approached by the usual means of statistics.

The existing **risk analyses of tunnels** will be adapted on the basis of current traffic volume and the breakdown according to classes of dangerous goods. For agglomerations (rural roads) risk scenarios will be worked out and the emergency plans amended accordingly.

## SPECIAL TRANSPORTS

Special transports often pose an extraordinary burden on engineering structures, especially bridges. It is assumed that some special transports are driving without appropriate permits.

The identification of non-licensed special transports will be increased at lorry controls sites. For the control in free traffic the ASFINAG **Control Services** will be involved.

## Key Facts

<b>Injury accidents per year</b>		Approx. 450	
<b>Fatalities per year</b>		Approx. 30	
<b>Reduction potential</b>		< 20 %	
<b>Cost</b>	<b>Cost efficiency</b>	< EUR 30 Mio	control sites: good to excellent
<b>Operational Goal</b>		<b>19 control sites by 2020</b>	

## Measures

List of measures (Heavy goods vehicle safety: dangerous goods, special transports)

Start package	Short-term	Mid-term	Long-term	Heavy goods vehicle safety: dangerous goods, special transports
✓				1.000 parking spaces for heavy goods vehicles by 2010 and relevant information and instructions also for non-German speaking drivers
		✓		Extension plan for control sites (on every corridor and in both driving directions) and rest areas, in accordance with the ministries and provinces
✓	✓	✓	✓	Prohibition on overtaking for heavy goods vehicles: continuous analysis and extension where appropriate
	✓			Inspection of risk analyses of tunnels with regards to dangerous goods accidents and increased traffic load
		✓		Deliver risk scenarios for agglomerations and amendments to emergency plans
		✓		Special transports: Inspection of permits and potential overloading at control sites
			✓	Checking of special transports through the ASFINAG personnel (Control Services): compliance with the requirements of the authorities



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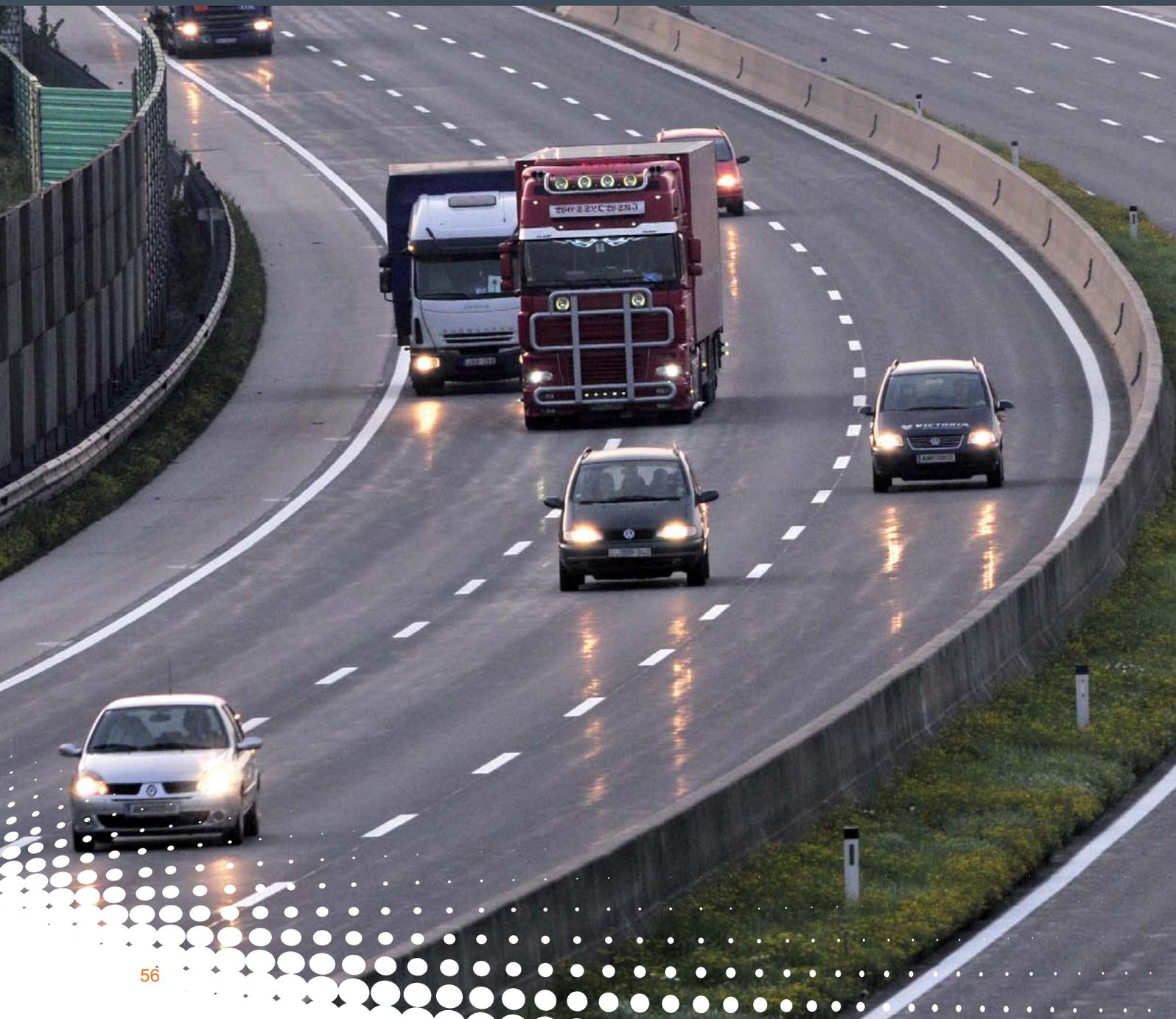
Fog  
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# 9/13 MOTORCYCLE SAFETY



# MOTORCYCLE SAFETY

Motorcycles are marginally involved in accidents on the ASFINAG network, with approximately 3% of accidents. Nevertheless accidents with motorcycles are **continuously analysed** in order to implement the appropriate measures in locations with high accident frequency, for example modifying the construction of guardrails.

The local motorway agencies are assigned to **regularly clean the roadway**, especially at the beginning of the motorcycle season and after an accident.

In addition a main focus is sealing small cracks, respectively retrofitting the road surfacing at critical points. This is especially for slip roads where about 20% of all motorcycle accidents occur.

## Key Facts

Injury accidents per year	< 80
Fatalities per year	< 4
Reduction potential	low
Operational Goal	Continuous evaluation / optimisation

## Measures

Start package	Short-term	Mid-term	Long-term	Motorcycle safety
✓	✓	✓	✓	Monitoring of motorcycle accidents and appropriate implementation of countermeasures
✓	✓	✓	✓	Routine cleaning of the road, especially at the beginning of the motorcycle season and after accidents; sealing of cracks, respectively retrofitting road surfacing at critical points (for example slip roads)

List of measures (Motorcycle safety)



10/13 COMMUNICATION AND  
AWARENESS RAISING



# COMMUNICATION AND AWARENESS RAISING

An excellent communication with the clients is a central business goal of ASFINAG. On one hand it is essential to receive feedback about satisfaction and the condition of the road network, while on the other hand ASFINAG is committed to supporting driver behaviour that conforms to road regulations, mainly through awareness-building road safety campaigns.

## INFORMATION

The **ASFINAG Service Centre** (0800 / 400 12 400) will be altered to be more customer-friendly also for foreign speaking clients and the **ASFINAG website** has been completely renovated to serve as a central communication tool.

In the future clients can find a so called **safety dictionary** on the website which provides answers to frequently asked questions, such as the share of wrong-way driving accidents of all road accidents.

Regular surveys on client satisfaction offer ASFINAG a valuable basis for their activities on the design and communication of safety work. Drivers should be made aware of the existence and the progress of the Road Safety Programme via appropriate channels (e.g. regular **press releases** and a short brochure for toll paying clients) and called upon to provide feedback.

ASFINAG will join the European Commission's **Road Safety Charter** and in doing so displays an internationally visible signal of its integrated safety work.

## CAMPAIGNS

**Awareness-raising campaigns** will be launched on the basis of problem areas in accident statistics in collaboration with the Ministry for Transport, Innovation and Technology, the Ministry of the Interior and the Austrian Road Safety Board (KfV). Due to the high rate of fatalities not wearing seatbelts (40-60% of all fatalities on the ASFINAG network) a seat-belt/child restraint system campaign will take place first. Other important topics include for example driving speed, following distance and driver distraction.

Campaigns are most effective when they are accompanied by police enforcement.

In the future campaigns will be pretested with the target group before going into production. The rules of perception and the maximum cognitive operating capacity of drivers must always be taken into account. At the planning phase of each campaign the process and impact evaluation will be prepared and after the campaign is finished these will be carried out.

## Key Facts

Injury accidents per year	Basic safety measure
Fatalities per year	Basic safety measure
Reduction potential	e.g. seatbelt campaign 12 fatalities / year
Cost	< EUR 500.000/a

## Measures

List of measures (Communication and awareness raising: information, campaigns)

Start package	Short-term	Mid-term	Long-term	Communication and awareness raising: information, campaigns
		✓		Key communication tools: Service Centre, ASFINAG website (relaunch)
✓	✓			Safety dictionary on the ASFINAG-Website
			✓	Use of CSI surveys (customer satisfaction) for strategic safety work
		✓	✓	Media support via press releases and short brochures on the progress of the Road Safety Programme
		✓		Information about the Road Safety Programme for toll paying clients
	✓	✓	✓	Awareness-building campaigns on the basis of problem areas in accident statistics: <ul style="list-style-type: none"> <li>■ Start with seatbelt/child restraint system campaigns</li> <li>■ Involve the police in agreement with the Ministry of the Interior</li> <li>■ Pretesting and evaluation of all awareness-raising campaigns</li> </ul>
	✓			ASFINAG joining the European Commission's Road Safety Charter



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# 11/13 ENFORCEMENT



# ENFORCEMENT

As an infrastructure company ASFINAG is limited in its capability to increase road safety. Thus ASFINAG counts on the close collaboration with the Ministry of the Interior, especially regarding surveillance of drivers on its network.

A concept for effective allocation of resources for supplying surveillance infrastructure will be developed together with the authorities and the Ministry of the Interior. In this concept also the temporal and spatial priority setting of mobile and fixed enforcement will be agreed upon. The ASFINAG road and accident data analyses as well as the risk analyses offer a significant input.

## DRIVING SPEED

The use of the four Austrian section controls is a success story: accidents and fatalities were significantly reduced. For the further use of section control in tunnels of certain risk classes, at roadwork zones of specific ranges and real time traffic controlled sections, **usage criteria** will be worked out on the basis of an ASFINAG-wide model for safety potentials and deficits (see also Chapter Research and Development). Additional units will be installed on this basis.

Existing speed cameras will be geographically recorded and integrated in the ASFINAG **safety management**; the **installation of additional cameras** will be recommended, especially at sections which show increased accident rates related to driving speed. These may be partly financed by ASFINAG. In the purchase of equipment value will be placed on **driver recognition** capabilities, in order to guarantee legal safety following a cross-border pursuit due to speeding. The plan is to push the use of such equipment in combination with real time traffic control.

## FOLLOWING DISTANCE

Common systems for measuring following distances are costly in terms of time and personnel. That is why ASFINAG will push for the development of **fully automated surveillance equipment to measure following distances** – for example using an award procedure – and the topic will be included in future awareness campaigns.

## SEATBELTS AND CHILD RESTRAINT SYSTEMS

Given the rather moderate seat belt wearing rate of approximately 90% compared to higher rates internationally, and the high rate of fatalities not wearing seatbelts (40-60% of all fatalities on the ASFINAG network), ASFINAG supports police in enforcement operations. Seatbelt/child restraint system inspections can only be performed when the vehicle is stationary, for example at entrances and exits as well as parking and rest areas and traffic control sites.

## Key Facts

<b>Injury accidents per year</b>	Approx. 2.500		
<b>Fatalities per year</b>	Approx. 100		
<b>Reduction potential</b>	Section Control: 17% fatalities, 11% severe injuries, 6% minor injuries Radar boxes: 15% fatalities, 10% severe injuries, 5% minor injuries Seatbelts: 8-23% Injury accidents, 12 fatalities		
<b>Cost</b>	<b>Cost efficiency</b>	< EUR 1,5 Mio/a	good to excellent
<b>Operational Goal</b>	<b>Targeted use of enforcement equipment, evaluation and optimisation on accident prone sections</b>		

## Measures

List of measures (Enforcement)

Start package	Short-term	Mid-term	Long-term	Enforcement
	✓	✓	✓	Concept for the allocation of enforcement infrastructure Collaboration with the Ministry of the Interior: agreement and priority setting for locations in order to increase the efficiency and intensification of enforcement Violation hot-spots (frequency of tickets and fines) as influencing factor on safety management
	✓			Creation of application criteria for section controls
	✓			Survey of demand on basis of the usage criteria and installation of more section controls
	✓			Radar: Database for locations and inclusion in safety management
	✓	✓	✓	Stationary speed cameras: further extension on certain road sections with increased accident rates and accident costs (also financed by ASFINAG)
		✓		Driver recognition in new devices/locations to guarantee legal safety
		✓	✓	Increased use of „overhead“ radars, also in connection with real time traffic control
	✓			Seatbelt and child restraint system surveillance: increased collaboration with the police
	✓			Development of fully automated surveillance of following distances; starting a project with a competent industrial partner



Safety Standards  
in the Existing  
Network

Extension and  
Improvement of  
the Network

Traffic  
Management and  
Teleinformatics

Tunnel  
Safety

Roadwork  
Zones

Fog  
Accidents

Wrong-  
way Driving

Heavy  
Goods Vehicle  
Safety

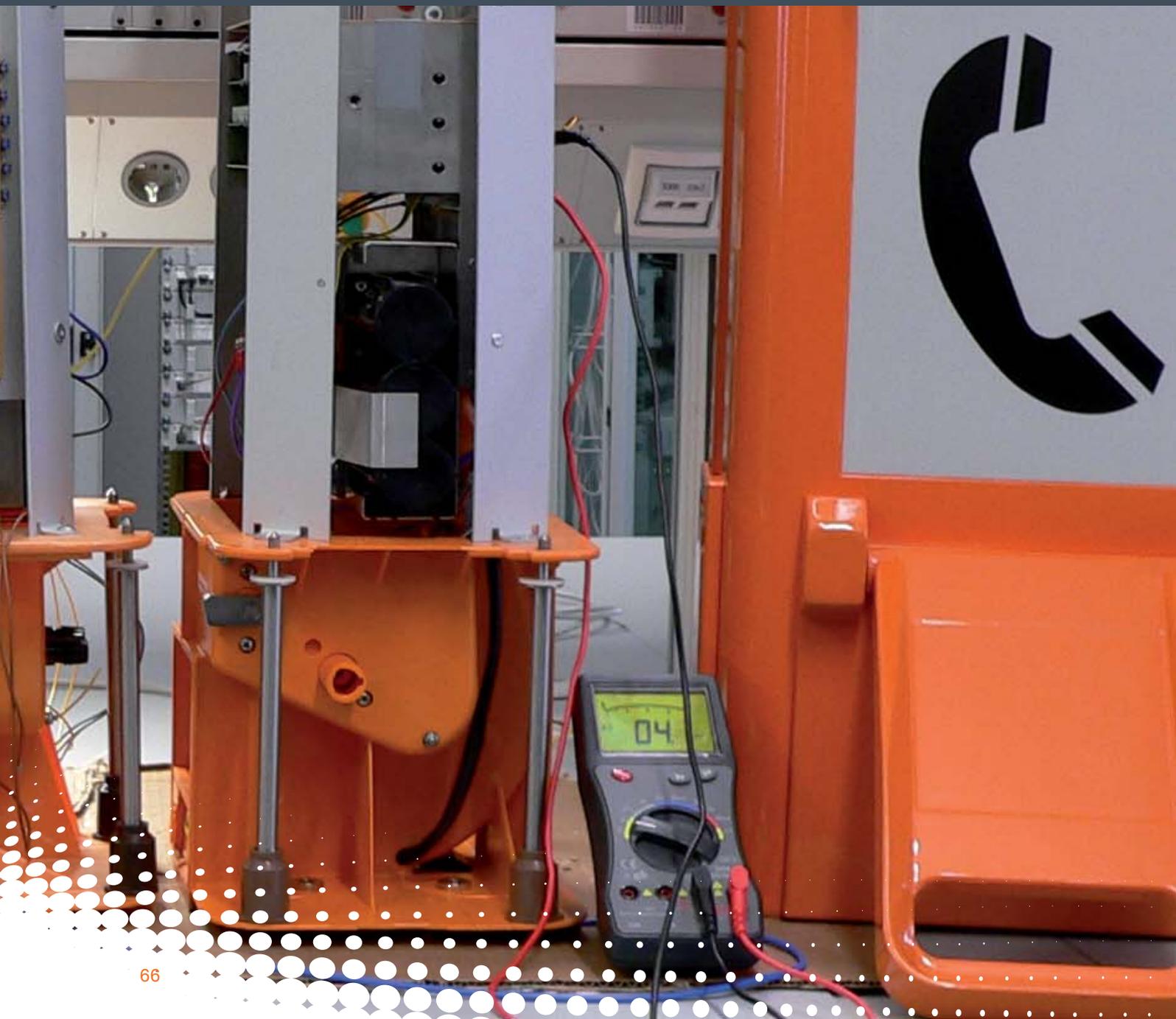
Motorcycle  
Safety

Communication  
and Awareness  
Raising

Enforcement



# 12/13 RESEARCH AND DEVELOPMENT



# RESEARCH AND DEVELOPMENT

Within the framework of the new ASFINAG safety strategy numerous new developments are being promoted.

## INTEGRATED SAFETY MANAGEMENT

The new **database** that has to be created for an integrated safety management consists of:

- I A (geo-)referencing system in which accident data from official statistics can be clearly allocated
- I A road database which includes all safety analyses related parameters: this also includes design parameters (longitudinal and lateral slopes, gradients, curve radii) as well as comprehensive information on the number of lanes, type and characteristics of hard shoulders, restraint installations, traffic signs, road markings, etc.
- I Comprehensive information on road surfacing and on the parameters of the network (e.g. grip, lane grooves, cracks, texture)
- I Traffic load for each segment of the network, including prognoses (average daily traffic volume, proportion of heavy goods transports, daily traffic load record etc.)
- I Events on the network e.g. change in traffic guidance due to a roadwork zone (including short-term roadwork zones) and closures/constraints due to accidents

In the future all road safety relevant measures will undergo a **cost/benefit analysis** for which the necessary methodology and data basis will be created. As a result an integrated accident prediction model will be built.

For the evaluation of safety deficits and potentials, the new German standard (**Recommendations for the Safety Analysis of Road Networks**) and the methodology from **EuroRAP (European Road Assessment Programme)** will be compared in a study to assess the practicality of these methods for ASFINAG. On this basis future construction projects and programmes can be objectified and the topic of road safety becomes a fixed **component in the construction programme**.

## RESEARCH AND DEVELOPMENT PROJECTS

ASFINAG is a trustworthy partner in the field of (safety) technology. For example ASFINAG is involved in the following projects:

- | Project **PVIS** („Platform for a Road Information Service“) with the product „**ASFINAG Road Pilots**“ (online)
- | ASFINAG video system with **video image detection** and TV services
- | Service **TMCplus** in cooperation with the Austrian Broadcasting Corporation (ORF) traffic department
- | Project management of grants in telematics (e.g. **EASYWAY**)
- | Further development in telematics especially cooperative („**COOPERS**“), and co-modal („Road Pilot“) systems and services
- | Update of the **register of traffic signs**
- | Safety evaluation of **guardrail ends** and **inspection of traffic signs**
- | Options for operation of **half-upgraded** motorways and expressways
- | Creation of an **accident prediction model** – Project A<sup>3</sup>V
- | Participation in the **traffic data integration** (e.g. GIP.gv.at)

ASFINAG will also continue to promote road safety relevant projects in close collaboration with the Ministry for Transport, Innovation and Technology and the Austrian Road Safety Fund.

List of measures (Research and development)

### Measures

Start package	Short-term	Mid-term	Long-term	Research and development
		✓		Develop an integrated database for a safety management system
		✓		Create an accident prediction model
		✓		Implement a cost-benefit analysis for all future safety relevant measures in the ASFINAG network
	✓			Initiate a safety analysis as basis for the objectification of the construction programme with regards to the evaluation of safety potentials or deficits
		✓		Centralised collection of property damage accident data



Safety Standards in the Existing Network

Extension and Improvement of the Network

Traffic Management and Telematics

Tunnel Safety

Roadwork Zones

Fog Accidents

Wrong-way Driving

Heavy Goods Vehicle Safety

Motorcycle Safety

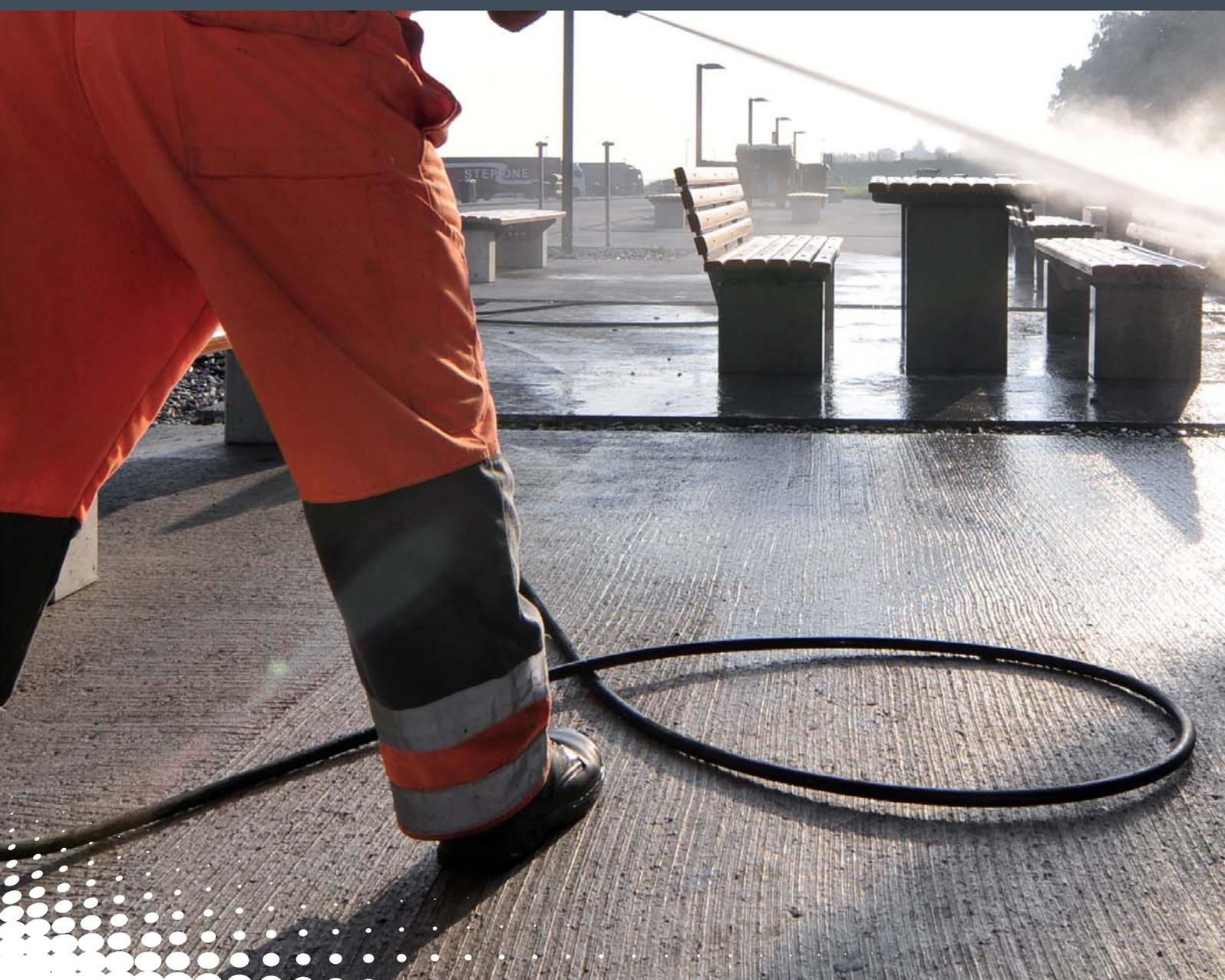
Communication and Awareness Raising

Enforcement

Research and Development



# 13/13 EMPLOYEE SAFETY



# EMPLOYEE SAFETY

Road safety is one of the highest priorities at ASFINAG – also in the daily work of employees. In all new ASFINAG cars **event data recorders** will be installed, as this has been proven in international studies to significantly reduce the accidents in fleets.

The current **driver safety trainings** in one division of ASFINAG will be extended to additional employees with the corresponding work activities. An organisation-wide statistics on work-related accidents will be created and integrated into the **quality management system** and serve as a basis for further safety work.

Employees will be regularly trained with regards to appropriate behaviour that conforms to the regulations at roadwork zones. The Road Services employees will be trained on the basis of the safety inspection experience (see Chapter Road Safety Inspections).

## Key Facts

<b>Reduction potential</b>		Event data recorder: 7% fatalities/severe injuries/minor injuries Driver safety training/Defensive Driving: 10%	
<b>Cost</b>	<b>Cost efficiency</b>	Event data recorder: approx. EUR 1.000/ cars, Driver safety training: < EUR 200/ course	Event data recorder: excellent
<b>Operational Goal</b>		<b>No ASFINAG employee fatalities</b>	

## Measures

Start package	Short-term	Mid-term	Long-term	Employee safety
		✓		Equip new ASFINAG fleet cars with event data recorders
	✓	✓	✓	Expand driver safety training to all employees with the corresponding work activities
	✓	✓		Create ASFINAG-internal work safety statistics, and integrate it into the quality management system and use as a basis for further safety work
	✓	✓		Employee training concerning roadwork zone safety
	✓	✓		Training of Control Services employees on basis of RSI results

List of measures (Employee safety)



# IMPRINT

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**Media Proprietor and Publisher**  
**ASFINAG Service GmbH**  
**Modecenterstraße 16**  
**1030 Vienna**

Concept and design: AGENTUR JUNG & NETT  
Editorial staff: Department of Traffic Management  
Photos: ASFINAG  
Print: Stiepan Druck Leobersdorf  
Date: January 2010  
Edition: 4.000 German, 500 English

[www.asfinag.at](http://www.asfinag.at)

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