Door to door safety

Road Safety Strategic Plan 2030:
A joint vision on the approach to road safety policy

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July 2019

Introduction

All road users must reach their destination safely. After decades of declining numbers, the number of road fatalities has stagnated, while the number of road injuries has been increasing for years. Traffic is changing. Cycle paths are becoming increasingly busy, especially in the cities. There are new (quieter) vehicles, such as the pedelec. The increasing technological ingenuity in cars is something we have to learn to deal with. There is more distraction from social media, and people continue to participate in traffic at an older age.

The changing circumstances require new measures. Additionally, there are target groups that continue to demand attention, such as young inexperienced drivers and traffic offenders. With the current policy, we will not be able to break the trend. What we need is renewed and structural attention to road safety. All parties have their own responsibility in this regard, i.e., road users, public authorities (national, regional and local), manufacturers, civil society and its organisations, and knowledge institutions.

We are already doing a lot, but there are still significant opportunities to do more together. By taking the initiative in advance to tackle risks, rather than only taking measures once a crash has occurred. We want to use the resources available for this in such a way that the highest traffic risks are diminished. The public authorities have therefore jointly devised and described a new approach in the Road Safety Strategic Plan 2030. Only by working together can public authorities, civil society organisations and road users improve road safety, each party operating on the basis of its own responsibility and knowledge. Thinking from the perspective of road users: how can we make road users more aware of unsafe behaviour and what do they encounter along the way as regards potentially unsafe situations? You can prevent dangerous situations by tackling unsafe roads. Technology in cars and on bicycles must be safe.

We also remind road users of their own responsibility: do not participate in traffic while under the influence of alcohol and/or drugs and comply with all traffic rules. Because more and more data are available, we can better identify what measures are most effective based on analyses and information about potential risks. In this way, you can set better balanced priorities. The road authorities share the results of these analyses with the Public Prosecutor and the police in order to discuss, to a greater extent than is now the case, what measures the road authorities should take and where enforcement should be happening. Knowledge can be exchanged with civil society organisations, companies and road users. Cooperation between the central government, provinces, municipalities and transport regions creates a better insight into the most pressing measures that need to be implemented throughout the Netherlands. An implementation plan with measures to be taken at national level will be available later this year. In the year ahead, provinces and municipalities will be working on regional risk analyses that will form the basis of the regional implementation plans, in which the most important issues are tackled with a set of measures.

Road safety affects us all. We have to get started! If all parties involved contribute, we will together ensure safer road conditions in the Netherlands. Let's aim for zero injuries!

Ministry of Infrastructure and Water Management
Ministry of Justice and Security
Association of Provincial Authorities
Association of Netherlands Municipalities
Transport Authority Amsterdam
Metropolitan Region Rotterdam The Hague

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Summary

Door to door safety: Road Safety Strategic Plan 2030 (RSSP 2030)

Road safety is of high public significance. It affects us all, every day. All road users must reach their destination safely. However, we notice that the number of serious road injuries continues to increase and that the decrease in road fatalities is stagnating.

The government, provinces, municipalities and the transport regions together with civil society organisations have devised and described a new approach to structurally improving road safety. Only by working together can road safety be improved, while each party operates on the basis of its own responsibility and knowledge.

1. Why are more far-reaching ambitions necessary?

The RSSP 2030 has a zero casualty ambition: each road casualty is one too many. Public authorities, together with partners in civil society, want to make a maximum effort to identify risks and then focus on measures to reduce those risks. This requires a boost for a road safety policy that includes structural attention, a proactive policy and broad cooperation between parties.

2. What is the purpose of the RSSP 2030?

The zero casualty ambition means that the public authorities are joining forces to achieve the greatest possible effect on road safety. The RSSP 2030 is not a collection of measures, it is a vision of a new approach. A starting point for all public authorities and partners in civil society to pay structural attention to road safety in national, regional and local implementation programmes. Road safety increases by first identifying the risks and by then taking measures to reduce the major risks.

The focus is on five core elements:

- More structural attention to road safety
- More unity and cooperation between public authorities and civil society organisations
- Risk-based policy through the analysis of the major risks
- Promoting an integral road safety policy
- Monitoring and adjusting the implementation in consultation

3. What developments are taking place?

Social trends have an impact on the traffic safety domain and contribute to the negative trend in the number of road injuries. The way traffic is perceived is changing because of the introduction of new types of vehicle, increased traffic on cycle paths, senior citizens remaining mobile for longer, digital media having an increasing impact on daily life and innovations leading to new issues with regard to road safety.

4. Which themes have priority?

The RSSP 2030 describes nine policy themes with the most important road safety risks. In addition, for each theme a vision of the future is created and possible solutions are outlined for inspiration.

Three themes examine risks arising from the traffic system and the vehicle:
1. A safe infrastructure
2. Heterogeneity in traffic
3. Technological developments

Two themes concern specific risk groups (young people and senior citizens) and modalities (two-wheelers, pedestrians):
4. Vulnerable road users
5. Inexperienced road users

The last four concern risks arising from individual road users and their behaviour.
6. Driving under the influence
7. Speeding
8. Distraction in traffic
9. Traffic offenders

5. How is the governance of the implementation of the RSSP 2030 arranged?

Making the Netherlands' roads safe requires stronger liaison not only between public authorities, but also between public authorities and civil society organisations. At regional level, round tables are set up where parties prepare joint implementation agendas, discuss their implementation and adjust them, if necessary. In addition, there is an annual national official ministerial consultation where progress of the (implemented) policy is discussed and the course is adjusted, if necessary.

6. What is the timeline for the implementation of risk-based working?

The intended transition does not simply happen. It requires a shift in thinking and a different way of working (together). The RSSP has a lead time until 2030.

There are roughly three phases in achieving the transition:

- Phase 1: Implementation – Introduction period (2018–2020)
- Phase 2: Implementation – Experience, learn and evaluate (2020–2025)
- Phase 3: Adjust and professionalise (2025–2030)

1. Why are more far-reaching ambitions necessary?

Road safety is of high public significance.

Road safety affects us all, every day. Nearly everyone participates in traffic, wants to travel in a pleasant and safe way and expects to return home unharmed. Road safety is therefore an important social issue.

In a densely populated country such as the Netherlands, it is quite a task to allow all road users to participate safely in traffic, by car, bicycle or on foot. Nevertheless, the importance of road safety is often underestimated.

Only when things go wrong do people realise the consequences and experience the impact of traffic hazard. This leads to a lot of personal suffering. In addition, there is damage to vehicles, and medical expenses, production losses, handling costs and congestion costs also cause major societal harm. Estimates run to more than € 14 billion per year, which is 2% of the gross domestic product (GDP)[1] In that context, too, road safety is of major importance to society.

Policy developments in the field of road safety

Policy and measures from the past have led to many successes and have greatly reduced the number of road injuries. The approach that was picked up in 1998 on the basis of the vision Sustainable Safety[2] played an important role in that. With the introduction of the previous Road Safety Strategic Plan 2008–2020 (RSSP 2020), the Netherlands could call itself a 'world leader in road safety'. Ambitious goals were defined for 2020.[3] Unfortunately, it soon became apparent that the number of serious road injuries was actually increasing. The increase in the number of (elderly) cyclists played an important role in this.

In response to this, the 'Road Safety Policy Incentive' was published in 2012, with a focus on cyclists, senior citizens and young, novice drivers. This policy incentive was unable to reverse the negative trend of serious road injuries.

It has been clear for some years now that the target for 2020 (a maximum of 10,600 serious road injuries) will not be achieved. Meanwhile, the decrease in the number of road fatalities is also stagnating, which makes it unlikely that the target of a maximum of 500 road fatalities by 2020 will be achieved.

Figure 1: Number of road fatalities

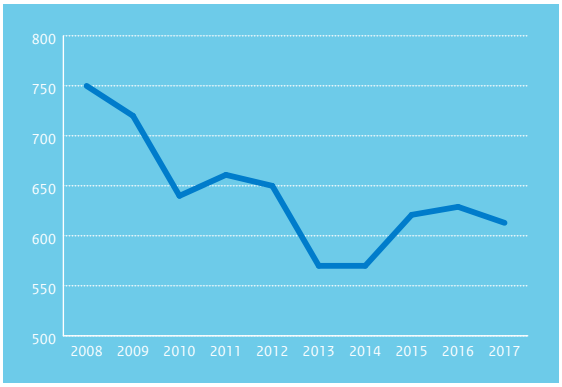
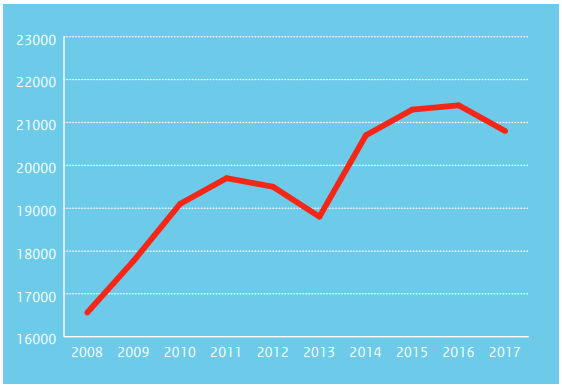


Figure 2: Number of serious road injuries*



* Serious road injuries: estimated actual number of serious road injuries in the Netherlands since 2008. Source: Statistics Netherlands (CBS) statline

[1] Knowledge Institute for Transport Policy Analysis (KiM) – Mobility Vision (2016).

[2] 'Safe System Approach': not just humans, but also roads or vehicles can cause a crash

[3] House of Representatives 2007–2008, 29 398, No. 120 – Targets for 2020: a maximum of 500 road fatalities and a maximum of 10,600 serious road injuries

Partners in civil society provide a new impulse

Partners in civil society emphatically demand attention to the effective improvement of road safety. Their role is indispensable. In the past year, many initiatives instigated by civil society have provided a positive impulse. For example, the Dutch Automobile Association (ANWB) managed to unite over 30 partners to formulate ambitions on 5 important themes.

The Cabinet listens to the appeals of these partners in civil society. The coalition agreement of October 2017 explicitly mentions road safety. It states:
"The number of victims must be reduced. Together with (branch) organisations, provinces, municipalities and enforcement agencies, we are committed to the realisation of the Manifesto, Road safety: a national priority."

Early in 2018, the Institute for Road Safety Research (SWOV) presented the updated vision Sustainable Safety 3.

Public authorities are also taking new initiatives. Provinces are increasingly exploring how they can proactively eliminate road safety risks. A number of municipalities have specifically identified road safety as a point of attention in their coalition agreement.

This means that there is a widely shared ambition for a safer road situation. This broad involvement is a crucial link in the establishment and implementation of this Road Safety Strategic Plan 2020–2030 (RSSP 2030).

Road safety is also a European ambition

Road safety is also an important issue in Europe. In effect, the stagnation in the decrease in the number of road injuries is also visible in Europe. This is why the European Commission decided to develop a highly ambitious European Road Safety Strategy 2021–2030 with zero road fatalities in the European Union (EU) in 2050 (European Commission, Vision Zero 2050).

In Europe the time has come to take serious steps in the area of road safety. The EU wants to set clear targets and work with performance indicators that have a direct link with the prevention of fatalities and serious injuries among all road users. The EU will be further developing the strategy in 2019. We are setting a similar course in the Netherlands so that we can ensure good alignment with the European strategy.

The number of casualties must be reduced. This requires a new impulse for road safety

A new road safety plan for a new impulse

The number of road injuries must be reduced. This requires a new impulse for road safety. This demands:

More structural attention and cooperation between public authorities
Road safety can improve if public authorities give it more structural attention and priority, as well as complementing one another. Cooperation between and within public authorities can be strengthened by linking local, regional and national policies. This requires clear agreements about mutual expectations and what results must be achieved. Public authorities must join forces if they are to increase road safety.

The former successful road safety policy may have led to the paradoxical reflex that 'what goes well' requires no (extra) attention and priority anymore. In public authorities, the capacity and budgets for road safety are under pressure. Other government domains (such as the health and welfare sector) demand a lot of attention. By focusing less on road safety, knowledge also decreases.

The focus on traffic enforcement is also a point of attention, partly because the police forces have been given many other priorities. In addition, research has shown that there is still a lack of proper harmonisation between road authorities, the Public Prosecutor and the police.[4]

[4] This was demonstrated, among other things, by the Interdepartmental Policy Survey on Traffic Enforcement

A more proactive policy
Traditionally, road safety policy was mainly based on the reactive approach with regard to local crash concentrations ('black spots'). The number of problematic locations has now dropped sharply, due partly to successful measures. The 'low-hanging fruit' has been picked and the crashes that are now still taking place are more spread across the road network.

Therefore, more attention needs to be paid to a proactive approach to prevent crashes. The Sustainable Safety approach that started at the end of the nineties applied this approach and produced good results. Upgrading this approach, while learning lessons from risk-based working in Sweden, for example, could give a new impulse to the road safety policy. A comprehensive explanation of what risk-based working entails is included in Appendix A.

A more effective policy
Road safety can be tackled more effectively if it is linked to other domains, such as mobility, spatial planning, city bustle, healthcare (senior citizens, alcohol consumption) and education. This includes combining safer design with large-scale maintenance of sewers to save costs. More attention can be paid to these interfaces.

More attention is also needed to the effectiveness of policy and the measures previously taken. This strengthens learning in practice and allows for the comparison of different approaches so that it becomes clear which measures work. To further reduce the number of road injuries, it is therefore important to systematically monitor the (effects of) measures previously taken.

2. What is the purpose of the RSSP 2030?

This plan has a horizon of 2030. The RSSP 2030 aims to achieve a change in the approach to road safety while responding to the developments set out in Chapter 3.

On the way to zero road injuries

The human suffering caused by road crashes is ethically unacceptable. That is why public authorities and partners in civil society have set themselves the goal of preventing every victim in traffic. In practice, there should always be a balance between the desire for (the free choice of) mobility and/or mode of transport and road safety. The behaviour of road users will also continue to play an important role in road crashes. This means that it will never be possible to fully control risks and that an actual zero scenario is unrealistic.

To be able to break the trend, it is necessary to tackle risks as effectively as possible. By identifying the most important risks, public authorities can take the most effective measures to minimise the number of road injuries. This is the guiding principle for the RSSP 2030.

The number of road fatalities and serious road injuries serves as an indicator for effectiveness

Now that zero victims is the target, the numbers of road fatalities and serious road injuries, about which the House of Representatives is informed every year, no longer count as targets. However, road injuries remain the most important indicators of the effectiveness of the policy pursued. As in the past, these numbers will be published annually.

Focusing on results will take place by means of (sub) indicators directed at the most important measurable risks, among other things with regard to infrastructure as well as behaviour.

At the end of 2018 the SWOV exploration[5] is being released with forecasts for 2030, both for the current policy and for the policy envisaged on the basis of the RSSP 2030. Based on this, it is possible to agree on target values for the number of fatalities and serious road injuries in 2030.

Tackle the key risks based on mutual agreements and set targets

This plan identifies nine themes that together cover the entire road safety field:

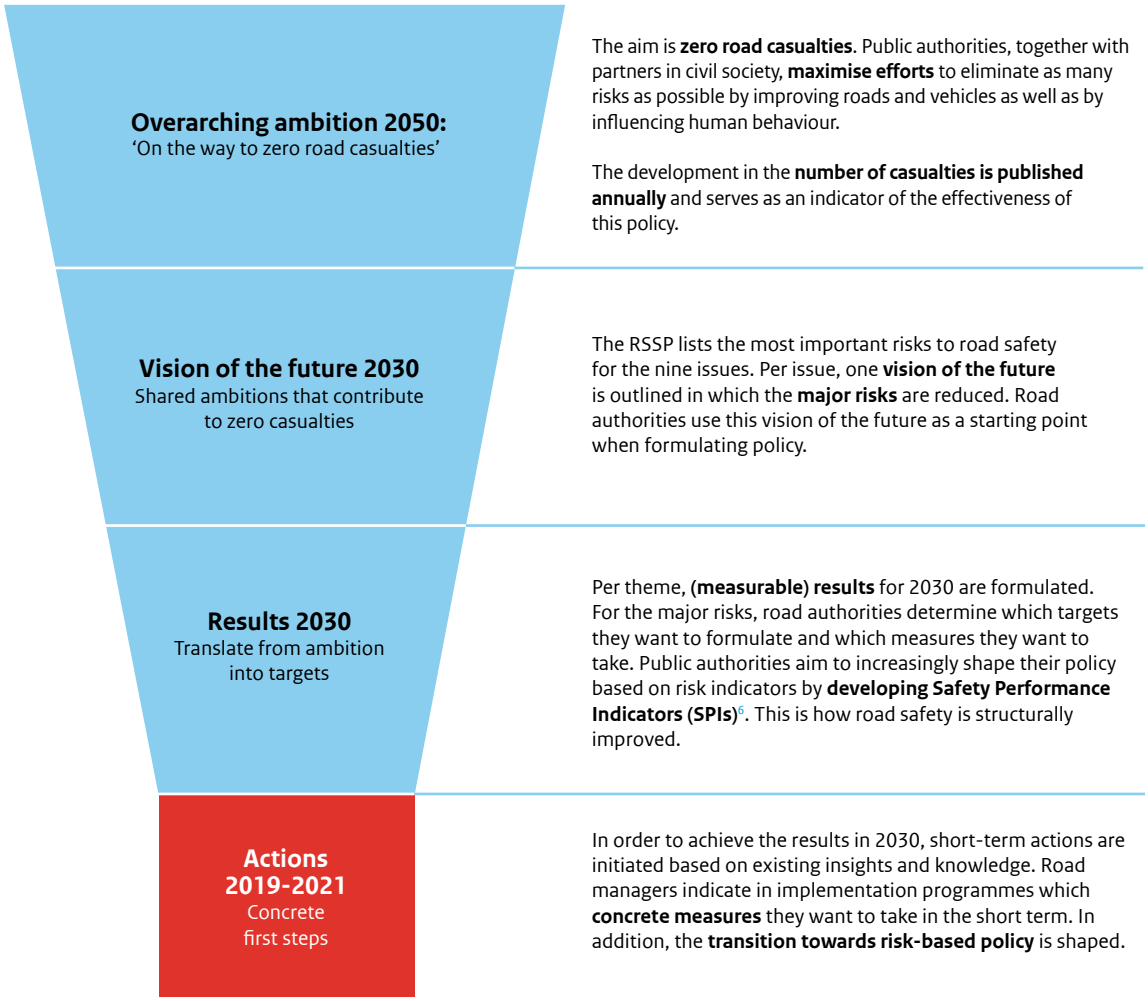
1. **Safe infrastructure >**
2. **Heterogeneity in traffic >**
3. **Technological developments >**
4. **Vulnerable road users >**
5. **Inexperienced road users >**
6. **Driving under the influence >**
7. **Speeding >**
8. **Distraction in traffic >**
9. **Traffic offenders >**

Each theme encompasses road safety risks. For each theme, a vision of the future is created for 2030 and, in addition, possible solutions are outlined to improve road safety. The RSSP 2030 does not contain concrete measures. These will be included in the national and regional implementation plans, prepared by the road authorities responsible. In this respect, the themes form the framework for national and regional policy. The regions themselves determine what are for them the most concrete risks that need to be tackled.

The agreements between the public authorities are shown in Figure 3 (next page). The RSSP 2030 gives substance to the blue blocks, while the actions are elaborated in separate implementation programmes and a risk-based policy implementation plan (see Chapter 6).

[5] At the end of 2018, SWOV will release a first study in which scenarios are calculated based on the RSSP 2030. It will quantify what the possible effects of this policy could be and how this translates into the number of fatalities and serious road injuries.

Figure 3: From RSSP 2030 to implementation



[6] Safety Performance Indicators

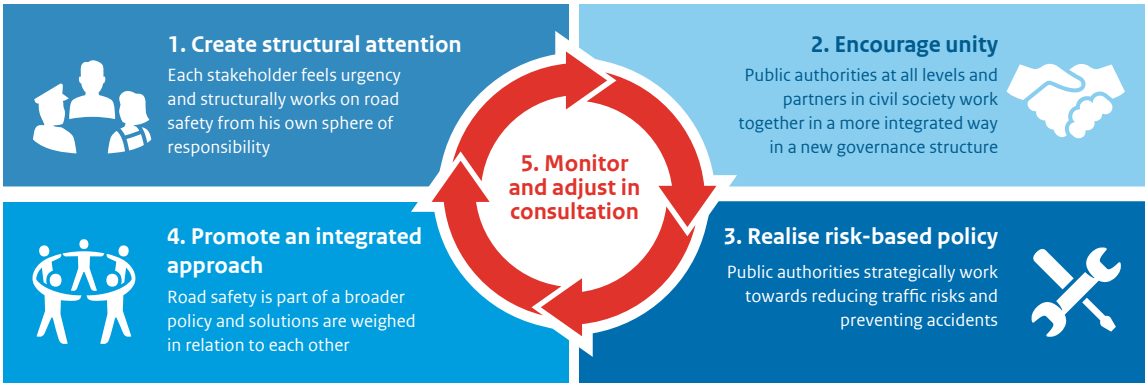
The new method encompasses five core components

1. More structural attention to road safety

This RSSP 2030 aims at ensuring that everyone can safely participate in traffic and return home unharmed. This goal is ambitious and requires that all parties involved, both public authorities and the various partners in civil society, experience urgency, pay structural attention to road safety and take responsibility for their own part in the chain.

It is evident that the national government, provinces, transport regions, municipalities and water authorities primarily have to play their part. These are the road authorities who are responsible for traffic safety on their roads and who can be held accountable for that by the residents. It is important that public authorities have a clear vision on road safety, identify the risks, consider what measures they take, monitor their implementation and, if necessary, make adjustments. It is important in this context that road safety is an integral part of planning, not only for road safety plans, but also for the integral safety plan or for environmental plans related to the spatial planning of a municipality. This way, road safety becomes a more integral part of a broader deliberation process. Capacity and resources are deployed as effectively as possible.

Figure 4: Core components RSSP 2030



2. More unity and cooperation
It is impossible for the government on its own to realise the ambitious goal of zero road injuries. That is why this strategic plan wants to connect people, parties and domains, more than ever before.

Effective policy is achieved only by cooperation within each public authority, between public authorities and between public authorities and civil society organisations as well. The Road Safety Manifesto demonstrates that these parties really want to be accountable for this.

In addition, as indicated in the 'Traffic Enforcement Plan in relation to infrastructure and information'[7], good cooperation and coordination between the road authorities, the Public Prosecutor and the police is required at local, regional and national level.

3. Risk-based policy through the analysis of the major risks
The guiding principle of this joint approach is the risk-based approach. By systematically identifying risks and reducing them as much as possible, crashes can be prevented. This requires an approach in which traffic and safety risks are assessed at local, regional and national level and that measures are taken on the basis thereof. This proactive policy builds on the Sustainable Safety Approach. This has led to measures in the field of infrastructure, such as 30 and 60 km/h zones, permanent traffic education, information and enforcement. This plan gives new and reinforced meaning to this approach.

The RSSP 2030 wants to structurally improve road safety and is committed to the development of a risk-based policy that identifies risks based on data and indicators. Ultimately, this should lead to SPIs, indicators that have a strong causal link with road safety. Particularly in the field of infrastructure, some public authorities have already gained experience in recent years to methodically assess the safety level of infrastructure with the use of SPIs. Consider, for example, PROMEV (provincial roads), VIND (national roads) and CycleRap (cycling infrastructure). These methods identify to what extent infrastructure complies with applicable guidelines. Currently, even more SPIs are being developed for known traffic risks, such as speeding and driving under the influence of alcohol. This method also matches the European Union's method that wants to work with SPIs.

In order to effectively support the policy, SPIs must meet a number of requirements. There must be a proven relationship with road safety, they must be properly measurable to monitor developments and have a clear relationship with the measures to be taken. This will not be possible for all themes. A social norm can make a supportive contribution by reinforcing the effect of other measures. This does not mean that the social norm itself is the outcome, but the reduction in risky behaviour through the social norm is.

The RSSP 2030 examines the entire chain and all of the developments that can precede a crash. Based on this, parties can examine where in the chain the major risks lie. In this way, they can take measures there where they have the most effect. The figure above shows which factors influence the different phases in the process that can lead to crashes.

[7] House of Representatives 2016–2017, 29 398, No. 565

Figure 5: Risk chain (source: SWOV – SWOV Work Programme 2015 (2014))

By applying risk-based work, road authorities, reasoning from within the problem, will be able to balance the measures most effectively. In addition, this working method also provides a basis for policy evaluation and subsequent monitoring. This ensures better accountability of the choices made towards citizens and politics.

4. Risk-based work promotes more integration in the road safety policy
Improving road safety is shaped by an integral policy. This means that measures in the areas of engineering, education and enforcement (the 3 Es) are assessed globally. The Strategic Plan makes an important contribution to this by choosing risk-based working as the guideline and by using a governance structure in which an assessment can be made at regional and national level based on a shared risk analysis.

Overall, measures can be classified into three categories: infrastructure adjustments and technical solutions in vehicles; education and information; enforcement.

- Adapting the infrastructure will provide the most permanent changes in the behaviour of road users. By adapting the road layout, road users are encouraged to abide by the rules. In addition, adjustments to vehicles can also reduce risks.
- Information and education ensure that road users are familiar with the traffic rules and the various risks. They are prepared for situations they may encounter in traffic.
- Enforcement is important for road users who, despite the preventive measures, still violate (traffic) rules. Enforcement also has a preventive effect because a higher subjective chance of being caught will mean that drivers are not so quick to commit a violation.

5. Monitoring and adjusting the implementation with the new governance structure
The cooperation between public authorities is shaped by a new governance structure. This structure helps to ensure that relevant topics are put on the regional and national agendas and discussed with all stakeholders (see also Chapter 5).

More than ever before, this will create the possibility to share successes, learn from each other and formulate a better policy. An important goal of this structure is to monitor and adjust, where necessary, the implementation programmes. The implementation programmes list short-term measures with a permanent eye on the 2030 target. This consultation will serve as a driving force for the improvement of road safety by increasing structural attention to road safety, making risk awareness a priority and by involving civil society organisations and the business community.

The implementation programmes list short-term measures with a permanent eye on the 2030 target.

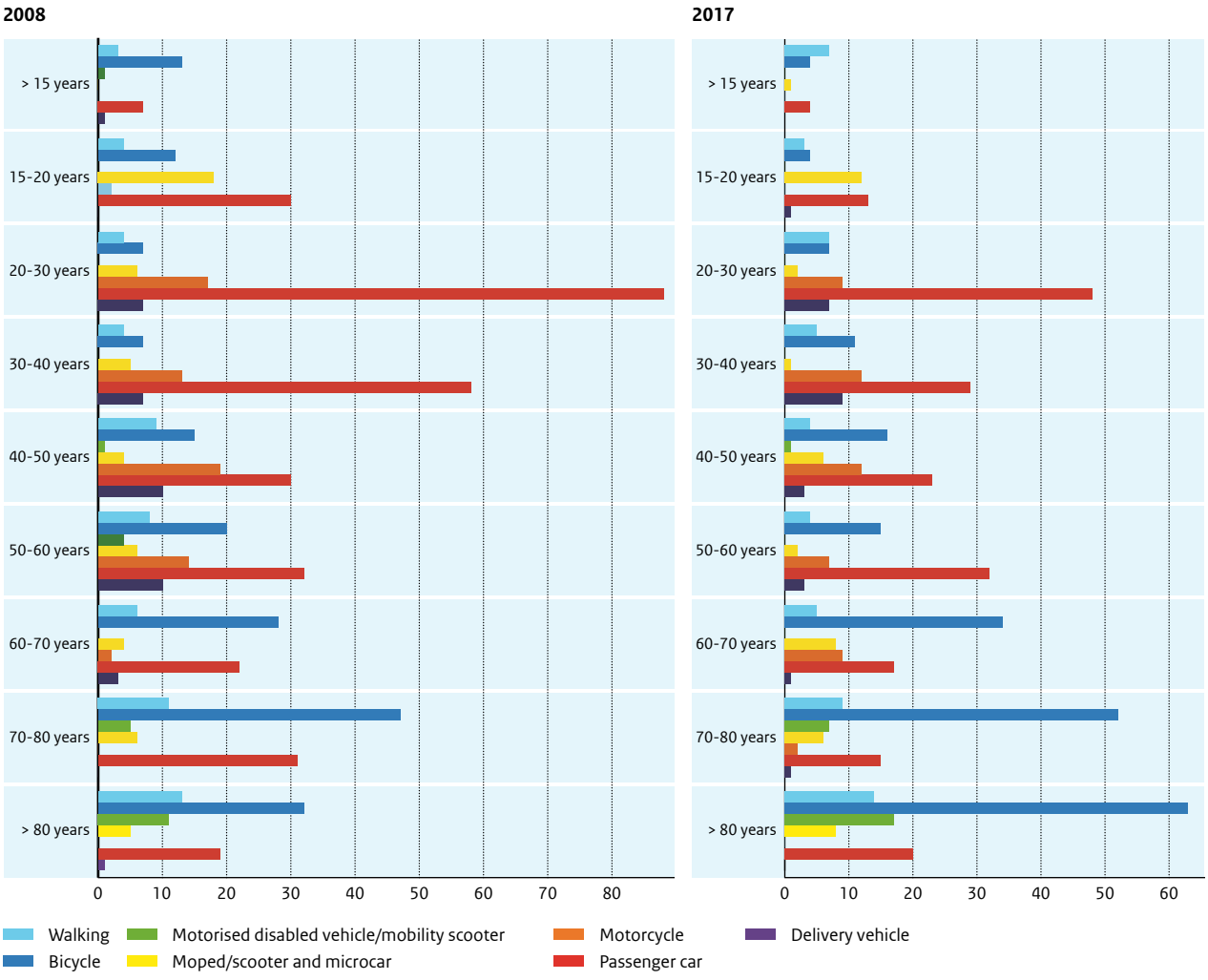
3. What developments are taking place?

This chapter discusses the most important developments that influence road safety, including in the fields of mobility, demographics and technology. These constitute the context of the Road Safety Strategic Plan 2030. This chapter provides a brief overview of the most important developments. A comprehensive analysis of the trends can be found in publications of the Knowledge Institute for Transport Policy Analysis (KiM) and the Institute for Road Safety Research (SWOV).

The number of road injuries has been increasing in recent years

The decrease in the number of road fatalities can no longer be taken for granted and the number of serious road injuries has been increasing for years. See Figures 1 and 2. The largest increase can be seen in cyclist-only crashes (no other road user involved), particularly among senior citizens. In 2017, for the first time, there were more fatalities among cyclists than among car occupants.

Figure 6: Road fatalities according to mode of transport and age in 2008 and 2017 (Source: CBS Statline)



Heterogeneity of vehicles in traffic creates other risks

The emergence of new ways of transportation also creates new issues. Think of pedelecs, cargo bikes, speed-pedelecs and the frequency with which increasingly larger groups travel. A new street scene is being created, particularly in the larger cities, where these shifts in transport modes often go hand in hand with the continuing urbanisation.

Dangerous situations may also arise. For example, when agricultural traffic and freight traffic use the same infrastructure as vulnerable road users such as cyclists. This increasing complexity creates new challenges.

Demographic developments increase the size of risk groups

Elderly road users (65 years and older) are over-represented in both the number of road fatalities and serious road injuries. The ageing population and the increasing mobility of the elderly reinforce this development because elderly road users stay mobile for a longer period of time and because they travel longer distances, both by car and by bicycle. More and more use is made of modes of transport such as pedelecs, mopeds and mobility scooters.

The mobility of the elderly is strongly related to other social developments, such as self-reliance and autonomy. This is a good development; however, it also leads to more safety risks. This increases the need to seek cooperation with other domains, such as the healthcare sector.

Distraction due to dependence on digital media leads to risks

In society, technological developments follow each other quickly and new digital media are an integral part of our lives. This provides many benefits in the form of location-independent work, access to information and knowledge sharing. At the same time, dependence on (mobile) devices and 'social media' is growing, also in traffic.

Many road users are busy phoning, using apps, listening to music and indulging in other distracting activities while participating in traffic (see also Section 4.8: Distraction in traffic). Providers are also increasingly offering traffic information and route advice on mobile devices and in-vehicle systems. In principle, up-to-date navigation information contributes to road safety and traffic flow, because a well-alerted road user can make better choices. At the same time, this also provides extra stimuli and distractions. These forms of distraction in traffic pose an increasing risk and present road authorities, enforcement officers and policy makers with new challenges.

Interaction between road users, vehicles and infrastructure is changing

The world of mobility is becoming ever smarter. For example, vehicles are increasingly equipped with systems that support the driver's driving task and can recognise and avert unsafe situations. During the term of this plan, it is expected that these systems will gradually take over parts of the driving task. This also changes the interaction between road users, vehicles and infrastructure.

The number of fully autonomous vehicles on public roads is not expected to be high in the coming decade. However, in the transition phase, the use of driver support systems will increase. On the one hand, this can lead to new road safety risks, but on the other hand it can also provide new opportunities to improve safety. These systems are still under development. Currently, the differences in functionality and operations are large and most drivers are still insufficiently familiar with them.

Not just vehicles change, so does the way traffic is managed. Increased connectivity makes it possible to steer road users in their travel behaviour in smarter ways. Moreover, the developments in automation and connectivity ensure that more and more data are available about infrastructure and vehicles. Based on this, public authorities can better shape their road safety policy. In addition, automation offers new opportunities for (digital ways of) enforcement. Innovations open up new opportunities, but also lead to new questions about the road safety policy. Since developments are coming in quick succession, constant adjustments are required. This requires a vision of public authorities regarding the desired level of innovation and how to deal with new developments.

Increased use of drugs and medicines requires a tighter policy stance

Alcohol use in traffic remains a major risk that, just as in previous years, requires constant attention. At the same time, we see that drug use among young people is increasing, also in traffic. In addition, irresponsible use of medicines in combination with other substances poses additional, sometimes unknown, risks.

Sometimes users do not know what risks they run with (multiple) medication use or do not act in accordance with the information they receive.

Continued attention needs to be paid to vulnerable road users and multiple offenders

There are categories of road users needing continued attention, such as:

Inexperienced road users

Comparatively, many adolescents and young adults (15–29 years) are still killed in traffic. Due to lack of experience, these road users often overestimate their skills. As a result, they are three-times more likely to suffer a fatal crash. Despite targeted policies, reducing the crash rates for this group of beginners has so far been unsuccessful.

Comparatively, many adolescents and young adults are killed in traffic

Cyclists

Groups such as cyclists also remain over-represented in the crash rates. The number of cyclist-only crashes, crashes involving no other road users, is increasing. The risk for cyclists is therefore developing unfavourably compared to other transport modes (modalities).

Traffic offenders

Violating traffic rules increases the likelihood of a crash. This holds particularly for multiple traffic offenders, a group of road users who continue to (consciously) commit offences.

4 Which themes have priority?

Nine policy themes give structure to the most important road safety risks

With the ambition of zero road injuries, the RSSP 2030 is shaping policies and confirms the shared vision for the future in nine concrete policy themes. They were created from a joint and broad exploration of all road safety risks. The methodology used and an explanation of the process can be found in Appendix C.

The 9 policy themes encompass the most important road safety risks per theme:

1. **Safe infrastructure >**
2. **Heterogeneity in traffic >**
3. **Technological developments >**
4. **Vulnerable road users >**
5. **Inexperienced road users >**
6. **Driving under the influence >**
7. **Speeding >**
8. **Distraction in traffic >**
9. **Traffic offenders >**

The first three themes are generic in nature and look at risks arising from the traffic system and the vehicle. These form the basis for effective policy. Themes 4 and 5 relate to specific risk groups (young people, senior citizens) and modes of transport (two-wheelers, pedestrians). The last four have to do with the risks arising from individual road users and their behaviour.

In principle, the themes encompass all possible risks for road crashes and therefore offer tools to increase safety. Specific risk groups (young people, senior citizens), modes of transport ((motorised) two-wheelers), or categories (freight traffic) are found in several themes. These return identifiably in the directions in which solutions should be sought per theme.

There is more attention to the coherent approach needed to measures in the area of infrastructure, education and enforcement. This is explained under the various themes. Specific measures are then discussed in national and regional implementation agendas.

How are the nine themes developed?

The policy themes are worked out in more detail in this chapter. A vision of the future is outlined for each theme; a vision in which the major risks have been reduced. This forms a perspective on a traffic situation that is as safe as possible and paves the way for policies. Based on this vision, concrete (long-term) results have been formulated for each theme.

Central government and the regions use these results to prepare concrete measures in the implementation agendas. The agendas have a clear schedule and explicitly assign the responsibilities and the (civil society) partners who are involved. At both levels, the agendas are periodically updated based on recent developments, measured risks and results achieved.

The themes in this chapter have the same structure. For each theme are described, in turn, the delineation of the theme, the background and most significant risks, the future vision and the results intended for 2030. Subsequently, a vision is provided of the orientation of policy.

1
Safe Infrastructure

credible limits

adjust infrastructure

safe verges

4.1 Safe infrastructure

Delineation of the theme

Safe design of roads and cycle paths is a precondition for the safe handling of traffic. A safely designed road can prevent crashes and limit the injury severity of possible crashes. This is in line with the Sustainable Safety vision.

Road authorities (central government, provinces, water authorities and municipalities) are responsible for the existing and new infrastructure. They must tackle hazardous components of the existing infrastructure and make sure the new infrastructure becomes as safe as possible.

A tool for the safe design of roads comprises the so-called CROW guidelines. As a result, the function, configuration and use of roads have been brought more into line with each other. However, many road variants have arisen where the function and use are not always unambiguous ('grey roads'). Developments such as the increasing congestion in urban areas and the increasing use of bicycles also create new challenges for the safe design of infrastructure.

Road safety risks

The Dutch road network is more than 140,000 km long[8] and consists mainly of municipal roads (approximately 85%). The other road authorities manage a smaller part of the total road length: the provinces (approx. 6%), the water authorities (5%) and central government (4%).

The distribution of traffic intensity and crashes reveals a different picture. In 2016, 15% of the registered road deaths occurred on national roads (central government), while about half of the total number of vehicle kilometers were covered there. This means that these national roads have a relatively low crash risk (number of crashes per kilometer travelled). Thanks to the design and the exclusion of unprotected road users, traffic conflicts are prevented, despite the high speeds.

In 2016, 21% of road fatalities were on provincial roads. On these roads there is a relatively large volume of traffic at a higher speed than on municipal roads. Moreover, provincial roads have a relatively large number of conflict situations and obstacles. As a result, these roads have on balance a relatively high crash risk.

In absolute terms, most crashes occur on municipal roads. In 2016, 61% of road fatalities occurred in urban areas. The high level of interaction between road users and the (increase in the) numbers of vulnerable road users, such as cyclists, play an important role in this.

The extent to which infrastructure design influences limiting the number of crashes and the severity of the outcome, differs per (type of) crash. Multiple factors always play a role in the occurrence of crashes. However, a safe and credible layout of roads and cycle paths for road users is an essential condition for the safe handling of traffic. Suboptimal choices in the design are currently to be found throughout the country and are not limited to a specific road type.

This also concerns the bicycle infrastructure, a topic that is increasingly demanding our attention. In addition to behaviour, increased congestion and speed differences, the large and increasing number of cyclist-only crashes are also caused by infrastructural choices. This could improved by increasing the quality requirements during the design of cycle paths with regard to markings, obstacles and safe verges. A fully safely designed bicycle infrastructure would prevent an estimated 115 fatalities and 3,850 serious injuries per year.[9]

Level crossings are a vulnerable link for road and train traffic. They have a major impact on passenger and road user safety, reliability of the train schedules and the flow of road traffic. Based on, among other things, the crash in Dalfsen and the experiences with the ongoing level-crossing programmes in recent years, the level-crossing policies have been tightened. Along with the railway infrastructure management, road authorities are jointly responsible for the safety on level crossings. The Secretary of State reported this on behalf of the Minister of Infrastructure and Water Management to the House of Representatives in a letter dated 20 March 2017[10].

Several factors impede a design that is optimal for road safety. For example, dealing with design issues, the road authorities have to deal with multiple interests, such as historical, spatial and financial aspects. This is why an uncompromising design for road safety is not always possible.

[8] National Road Database (based on carriageway)

[9] SWOV – Road Safety Study 2020: effects of additional measures (2012).

[10] House of Representatives 2016–2017, 29 893, No. 211

In addition, measures are often not implemented right away, but only when roads are handled within the context of management and maintenance programmes.

Finally, other factors can also interfere, such as lack of (political) priorities or knowledge about the effectiveness of measures.

Vision of the future: quality leap in the safe design of infrastructure

In 2030, significant improvement has been achieved in the safe design of infrastructure throughout the Netherlands. This will limit the risk of a crash occurring, as well as the severity of a possible crash.

To create a concrete policy on this, an attempt is being made to reach the following concrete results in 2030:

1. Risk factors have been identified for all infrastructure based on scientifically based methods accepted by road authorities.
2. Based on the insight into risk factors, road authorities have set priorities for improving the infrastructure and have set a realistic target.
3. Road authorities have translated the priorities into concrete measures in major renovations, management and maintenance.
4. New infrastructure is always based on a road safety risk analysis (audit).

Towards solutions

Test against guidelines

An important step in the consistent identification of infrastructure risk factors is to testing against the relevant guidelines for road design. The extent to which existing infrastructure meets the current guidelines and principles for safe road design is not always known. And roads where this is known, despite efforts made, still do not always comply with the guidelines.

Furthermore, guidelines differ in nature (minimum requirement or vision) and there are circumstances that give rise to deviations, such as conflicting interests about urban planning, for example, and traffic flow, resources or a preference for customised solutions over consistency. Mere compliance with the guidelines therefore does not a priori guarantee a safe situation in practice. If there are deviations from guidelines, it is important that road authorities explicitly take road safety and other interests into account.

To be able to form a good basis for assessing road design, it is important that the guidelines themselves, where necessary, are also reviewed. Updating guidelines may be necessary in order to reflect new developments in knowledge of current risk factors, in vehicle types and in the use of roads. Public authorities applying the guidelines tackle this together with CROW.

Identifying risk factors

A targeted improvement plan starts with insight into risks. Insight into the current state of the infrastructure and the most hazardous elements requires a proper analysis and the proactive management of the road network. Such an approach, based on risk remediation, is not yet commonplace among road authorities. Its development and implementation constitute a major operation that usually does not pay off immediately. Substantial results for road safety often become visible only in the long term.

The desired result is that all road authorities have full insight into risk locations on their own road network and know which measures are effective there. It is known that there is still room for improvement on several road types:

- safe design of bicycle infrastructure;
- safe and plausible design of 30 km/h areas and 60 km/h roads;
- safe and plausible design of 50 km/h roads, including the separation of traffic flows, for example by constructing separate cycle paths;
- safe design of 80 km/h roads, including the improvement of the verges, the segregation of physical directions and reduction of the number of access roads;
- safe design of roads/motorways, including the safe layout of verges.

In addition to these improvements, the road network as a whole should also be reviewed. For example, is it possible to convert more 50 km/h roads to 30 km/h roads in urban areas? And, can the results of the Urban Traffic Design method (road categorisation based on vehicle category choices, see also 4.2) be applied more broadly? Depending on the local bottlenecks and the cohesion of the networks, a road authority can make choices in this regard.

Methods for risk-based policy
There are several methods available to identify risk factors for roads. Proactive road safety scans focus on taking stock of design features with a scientifically proven relationship with crashes or the occurrence of injuries.

Examples of such methods are ProMeV (provincial roads), EuroRAP (all types of roads) and VIND (national roads). Also available are studies for bicycle infrastructure that indicate design risks (such as CycleRAP). The scans and guidelines are constantly supplemented and improved with new insights.

Methods can co-exist but must serve the same purpose: a safer design. The uniformity of the design contributes to clarity for road users about expectations and road behaviour. A precondition for this is the collection, availability and applicability of suitable data about the quality status and the use of the infrastructure

Active support and guidance is desirable for the (continued) development of methods to identify risks and for the prudent and unambiguous application of these by the various public authorities. Central government can play a role in this. In the long term, based on this collaboration, national agreements can be made about Safety Performance Indicators (SPIs) and the extent to which they contribute to effective policies.

Prioritise tackling risk factors and achieve agreements at minimum level
Road authorities prepare their own programmes and schedules based on risk inventories to prioritise measures for their road network. The local road authority makes the decisions, but dialogue at regional and national level can contribute to efficiency and uniformity in road design. This includes, for example, problems around border areas or, for example, unambiguous road markings and roundabouts between one region and the next. This increases clarity for road users, making their behaviour more predictable and safer.

Policy coordination takes place at the regional consultation tables. In the national administrative discourse, central government plays a coordinating role and monitors the progress of the implementation agendas. Bottlenecks and potential solutions are discussed during this discourse.

Integrate road safety further in broader decision-making
In all phases of construction and management of infrastructure, road safety risk factors should play an explicit role in the assessments regarding design, based on current guidelines and scientific knowledge. Even when this concerns renovation and adjustments to roads for other purposes. Choices can be justified with risk analyses and/or audit instruments.

This development fits in with the existing EU Directive for safety management on road infrastructure.[11] Central government has already voluntarily applied this directive, which is mandatory for European TEN-T-roads (Trans-European Transport Network), to the entire national road network. Central and regional authorities are discussing the extent to which a road safety audit should also apply to the infrastructure of other road authorities. This in line with the EU context, in which the extension of the EU Directive to a larger number of roads is under discussion.

In all phases of construction and management of infrastructure, road safety risk factors should play an explicit role

[11] Directive 2008/96/EC Road Infrastructure Safety Management

2
Heterogeneity in traffic

speed differences

mass differences

new types of vehicles

4.2 Heterogeneity in traffic

Delineation of the theme

In a densely populated country like the Netherlands, a lot of people are using the same infrastructure. Theme 1 (Safe roads) already discussed the joint ambition for the safe design of this infrastructure. However, the increased use of the infrastructure creates additional challenges.

Particularly in urban areas, there is limited space, and roads, cycle paths and footpaths are busy. This pressure on space will increase even more in the coming years because of further urbanisation and growing mobility; it will lead to more potential encounters and conflicts between road users. At the same time, new transport vehicles and existing (ever evolving) means of transport must all use the same traffic space. Hazardous situations also arise outside the cities when, for example, agricultural traffic and freight traffic have to use the same infrastructure as cyclists.

The differences in speed, mass and size of vehicles are large. This raises the question as to which modes of transport, dimensions, speed regimes, degree of protection and place on the road coexist safely or should be segregated, and what rules are required for this. Moreover, new vehicles present new challenges. The pedelec, electric moped, electric balance bike and the speed-pedelec ensure that the road user can increasingly choose a suitable mode of transport, but that uniformity among road users decreases. This is despite the fact that uniformity offers many benefits for road safety. This theme addresses this issue.

Road safety risks

Differences in modes of transport (heterogeneity of modalities, and therefore differences in mass, speed, size and protection) in traffic lead to an increased risk of crashes for road users unless measures are taken.[12]
In addition, the risk of injuries and its severity increases for lighter and slower road users when the mass and speed differences between road users are greater.[13]

For example, about two-thirds of the registered road fatalities among cyclists occur in crashes involving motorised traffic.[14]

The diversity of traffic, especially on cycle paths, has increased in recent years, and not all consequences of this have yet been mapped. One of the causes of crashes that occur on cycle paths are differences in speed between the different road users. The majority of traffic on cycle paths currently still consists of traditional cyclists. However, the increase in modes of transport on cycle paths leads to more complexity and speed differences. Increasing use of these new modes of transport may lead to new risks, even though these have not yet been scientifically proven.

The expectation is that in the future, separating traffic flows will become more difficult than it already is, since there is insufficient space to give the increasing number of transport modes their own place on the road.

Adapting the maximum speeds to take into account the most vulnerable road user increases traffic safety, but is not always possible. Municipalities need good insight into road safety risks in order to make a decision like this and to formulate policies for their infrastructure. Because this insight is sometimes still lacking, it is possible that unsafe traffic situations are underestimated and that risks are not addressed (quickly enough).

[12] SWOV – Speed and speed management (2016).
[13] SWOV – DV3 – Sustainable Safe Road Traffic Vision 2018–2030 (2018).
[14] SWOV – Road Safety Monitor (2017).

Vision of the future: road authorities make conscious choices about how they design their road network based on congestion and differences in mass and speed

In 2030, all road authorities will have a categorisation plan. This plan describes how they deal with different speeds, masses, driving directions, extent and degree of protection on their roads/cycle paths. Two concrete results are part of this:

1. Road authorities make a substantiated assessment between road capacity and road safety. With every spatial development, a choice is already made in the vision and planning phase (such as the environmental vision and the environmental plan) about the categorisation of the road network and the design of the network to minimise speed and mass differences.
2. The traffic system is designed in such a way that it stimulates safe behaviour and safe interactions between different modes of transport.

Towards solutions

Working from generic principles for risk analysis and planning

As with the other themes, the aim is to work as much as possible according to generic principles, with Sustainable Safety 3 as the starting point. An example might be separating traffic flows and homogeneity of speeds.[15] Due to major regional differences, customisation is expected. In addition, the common principle remains to protect the most vulnerable road user as well as possible.[16]

Furthermore, existing initiatives to give (powered) two-wheelers much more attention and space in the city can be built on. Think of measures such as 'car as guest' (cars tolerated on cycle paths), 'red carpets' (pedestrian-friendly routes) and the ANWB initiative 'Traffic in the City', where roads are categorised by vehicle family and special attention is given to vulnerable road users such as pedestrians.

Improving road safety on this theme starts with a complete picture of the risks and where they arise on the (local) road network. A first risk assessment has been carried out for national roads, provincial roads and a small proportion of the municipal roads. However, this was done on the basis of different methodologies and not yet nationwide.

All road authorities can develop a network vision based on risk analyses, if they do not already have one. It contains choices about separating through traffic and residential traffic, which vehicle category is welcome on which road and where various speeds are used. In the network visions, road authorities can also take into account traffic routing and phasing, which is the separation of traffic flows in time

Adjust policy frameworks for new modes of transport

We have a large number of vehicle categories with several design speeds and requirements. For most vehicle categories this is regulated at European level and there is no need for new policies. However, this does not apply to light electric vehicles (LEVs) such as pedelecs and speed-pedelecs. These innovative vehicles can contribute to sustainable mobility. That is why the development of LEVs is encouraged and 15 different modalities are already allowed under this heading.

To improve the safety of (new) modes of transport, the central government is reviewing the existing (authorisation) framework. In addition, central government is investigating the classification of vehicle categories based on, for example, mass, speed and size. This could help (local) road authorities to better deal with increasing heterogeneity.

Offer customised laws and regulations

For more road safety, local (customised) choices in policies can be important, just like changes to laws and regulations to respond to this. Central government consults with local authorities on this.

[15] SWOV – DV3 – Sustainable Safe Road Traffic Vision 2018–2030 (2018).

[16] For example, based on the principles of ANWB – Traffic in the city.

3 Technological developments

driver support systems

self-driving vehicles

innovation

4.3 Technological developments

Delineation of the theme

Much is expected to change in the area of mobility in the next ten years. The role of information and data is becoming much greater in the traffic system. Road users are almost constantly connected to their surroundings, and automated systems ensure that vehicles can take over more and more tasks from the driver. Because of IT, the car becomes part of the entire traffic system. These developments will change the role of the driver, the vehicle and the road in the traffic system in the years to come. This also changes mutual interaction. The driver, especially during the transition period, has to be well aware of what task is still expected of him.

During the term of this strategic plan we may already see (partly) self-driving cars on motorways, but these will not yet appear in traffic on a large scale. However, in the period up to 2030, vehicles will be able to take over and support more and more tasks thanks to the presence of automated systems and devices. For example, emergency assistance systems, such as emergency brakes or emergency steering systems, can help prevent last-minute crashes. Driver support systems and devices can also assist the user or (in the near future) take over his driving task (temporarily) at some points.

In addition, vehicles increasingly have access to information about speed limits, other road users and their surroundings. Examples are situational circumstances, such as weather conditions, incidents, slippery road conditions, etc. It is expected that vehicles will be able to receive or collect data themselves in an increasing number of ways. There are various options for this. For example, by using smart road maps or road sign detection, by being connected with the infrastructure or other vehicles and/or by driving together.

Not just vehicles change; the way traffic is managed and enforced also changes. Increased connectivity makes it possible to steer road users in their travel behaviour and inform them in smarter ways. Moreover, with the help of telephonic data and smart cameras, the journeys and behaviour of road users can be better identified. These developments ensure that more and more data are available on which governments can base their road safety policies.

Road safety risks

With innovative technology, opportunities and risks are two sides of the same coin. Driver support technology, for example, can help senior citizens stay mobile for a longer period of time. Innovations can also make traffic safer by taking over drivers functions and therefore make risky behaviour impossible, prevent crashes and limit injuries.

In addition to a potential improvement, technological developments may also entail new risks. These arise from the interaction between the (imperfect) driver and (imperfect) systems. Since systems are constantly being improved, it is expected that these risks will decrease in the long term.

However, the coming decades will be characterised as a transition period in which conventional and 'smart' vehicles are used interchangeably in old systems and cannot yet work together safely at all times. Developments that play a role in this:

- Automated systems are becoming progressively better, but are not yet fully able to take over the driving task. That is why it remains important that the driver knows what is expected of him, so that he is able to intervene in time.
- The interaction between (semi-)automated vehicles and non-automated modes of transport, such as walking and cycling, can lead to more risky situations even though it is not yet clear to what extent pedestrians and two-wheelers adjust their behaviour with regard to automated vehicles.
- The knowledge someone has and how often he or she uses safety systems are important factors that determine how much these systems increase safety.

The interaction between vehicles and other vehicles and between vehicles and infrastructure also impacts on road safety. This requires adjustments to the traffic system in the future. The road design, construction of the road network and the design of traffic management must be able to safely accommodate the new technology. The joint public authorities are working on this within the framework of *smart mobility* , also where it concerns a uniform road design in the underlying road network.

Road safety is an important component of the smart mobility policy. Many of the measures that use digitisation, computerisation and other technological innovations can only be rolled out together with regional or local public authorities and/or private parties. Consider, for instance, an intelligent traffic control system (ICTS) that takes into account current information about the arrival of vulnerable road users and emergency and rescue services, or adaptively setting the lighting based on the traffic situation on a given road.

Vision of the future: Technology can prevent an increasing number of crashes by making unsafe behaviour impossible and by safely taking over more driving tasks.

Opportunities offered by innovations to prevent crashes and improve road safety are seized with both hands. This requires a forward-looking approach and a flexible attitude from all parties involved. Since it is hard to fully predict developments, a shared vision on the role of technological developments in road safety is important. Based on this vision, legislation can be laid down that offers room for new, demonstrably safe measures. This must ensure five results in 2030:

1. Road safety is explicitly included internationally as a criterion in the development and authorisation of relevant vehicle technology.
2. Road users are well informed, know and understand the added value and limitations of technology in their vehicle.
3. The Netherlands is at the international top in terms of possession and proper use of safety-promoting systems.
4. There is a national policy and legislation, based on a joint vision, aimed at the safe integration and supervision of new developments.
5. Road authorities are aware of the consequences of automated driving for road management, design and equipment and for the future-proofing of their road network.

Towards solutions

Clear vision on technological developments and the role of the government

Multi-year guiding policies enable all parties to determine their own course and responsibilities and build synergies. Central government has a directing role and takes the responsibility to (often in a European context) shape the cooperation with market parties. Only in close cooperation can proven technologies be implemented and will the necessary adjustments to the infrastructure come to light. The joint public authorities have already started this in the form of the manifesto 'Joining Forces for Smart Mobility'. Cooperation between governments and with partners in civil society will be further expanded, so that a clear vision is developed of the technological developments and what the role of government can be in this process.

In the Letter to the House of Representatives regarding smart mobility in road traffic[17], it is indicated how central government is working together with local and regional authorities to achieve greater impact on joint priorities, to strengthen joint efforts and to have more joint influence at international, national and regional level.

Encourage (the safe use of) driver support systems

In the short term, central government will focus on stimulating and increasing the safety of driver support systems. It is taking the lead in making agreements at EU level with the vehicle industry about the introduction of new systems and the increase in vehicle safety. This particularly concerns increasing the share of smart vehicles on the road with demonstrably safe driver support systems.

Key areas on which to focus are:

- Better insight into which systems can be used safely and which (as yet) not.
- Safe use of these systems by all road users (including the elderly). Technology is only effective when users actually purchase it, use it properly and do not abuse the systems. That is why informing, training and testing road users also play an important role.
- The detection of cyclists and pedestrians by vehicles with driver support systems.

[17] House of Representatives 2018–2019, 31 305, No. 264

4 Vulnerable road users

pedestrians

mobility scooters

two-wheelers

4.4 Vulnerable road users

Delineation

If a road user is more vulnerable than others in traffic, this entails risks that have an effect on the probability and severity of crashes. The concept of 'vulnerability' is originally intended to describe 'unprotected' road users. The definition of 'vulnerable road users' in this plan follows the EU definition recently proposed by the European Commission[18]: pedestrians (*in traffic*), cyclists and drivers of powered two-wheelers such as motorcyclists and drivers of mopeds, scooters and mobility scooters. This naturally also includes riders of new modes of transport such as pedelecs and speed-pedelecs. These are all vulnerable as road users.

In addition to the formal definition, vulnerability in society is interpreted more broadly to describe that some groups run a higher risk (the 'vulnerable groups'). Within road safety, this concerns vulnerability in traffic as a result of:

- Task incapability, medical conditions and functional limitations. This is particularly the case with senior citizens.
- Frailty of the elderly road users or the child, which may increase the severity of a possible crash.

Road safety risks

Unprotected modes of transport (regardless of the user) and vulnerable groups have an increased traffic crash risk.

Vulnerable road users

Vulnerable road users do not have the protection of a vehicle around them and therefore run an increased risk. Keeping their vehicle in balance also increases the risk of crashes for these road users. Because they drive at a higher speed, powered two-wheelers have an (even) higher risk than cyclists.

The measure of lack of safety on the road is the number of crashes and/or the number of injuries involved. To be able to compare the number of crashes among different groups, this is considered in relation to mobility, i.e. the number of injuries per distance travelled.

The risk of dying in traffic as a vehicle occupant is relatively limited compared to other modes of transport and has been dropping in the Netherlands since the 1970s. The unprotected road users (pedestrians, cyclists and powered two-wheelers) are the ones who demonstrably run a much higher risk per kilometer travelled. The absolute number of road fatalities is therefore higher with these modes of transport than with most other modes of transport.

People with a medical condition

In some cases, people with a medical condition face relatively higher risks in traffic. Conditions (such as sleep apnoea, dementia or chronic heart failure) and functional limitations due to old age (such as reduction in response capacity, deterioration of motor functions) can lead to higher risks in traffic.[19] The effects on road safety are not yet clear for all conditions.

Vulnerable elderly and children

Specific attention should be paid to the elderly. Elderly road users (75 years or older) relatively often use the bicycle as a vehicle and almost three-quarters of the cyclist fatalities (73%) and almost half (46%) of the serious road injuries among cyclists registered by the hospital are 60 years or older.[20] The expected increase due to cycling more and over longer distances (especially with pedelecs) by the elderly demands additional measures.

Many elderly road users also use a mobility scooter or a vehicle for use by a disabled person to stay mobile when other modes of transport are no longer possible. With the increasing ageing population, the use of mobility scooters is increasing. The number of road fatalities among mobility scooter drivers is also increasing. According to figures of Statistics Netherlands, this number has doubled between 2010 and 2015, from 19 to 41. In 2016 and 2017, there were 38 and 25 road fatalities, respectively, among users of motorised vehicles for use by a disabled person, such as the mobility scooter. SWOV conducted an in-depth study into the occurrence of crashes with mobility scooters.[21]

[18] See eur-lex.europa.eu, for the definition of vulnerable road users: Vulnerable road users: non-motorised road users such as pedestrians and cyclists as well as road users who use a two-wheeled motorised vehicle.

[19] SWOV – Risk-increasing factors for traffic hazard (2012).

[20] VeiligheidNL – Bicycle crashes in the Netherlands (2017).

[21] SWOV – Mobility scooter crashes. How do they occur and how can they be prevented? (2018).

Senior citizens have a greater chance of injury if a crash occurs due to their greater fragility. For example, in a similar crash, the risk of dying is about three-times greater for a 75-year-old passenger of a motor vehicle than for an 18-year-old.[22] When senior citizens are not protected, for example when walking, cycling or using a mobility scooter, the consequences of physical vulnerability are even greater.

The combination of functional limitations and physical vulnerability at an older age makes the elderly a clear risk group in traffic and therefore an important point of attention for road safety policies.

Vision of the future: vulnerable road users protect themselves and others

The number of road injuries among vulnerable road users has decreased by 2030. This is partly the effect of measures taken within the scope of other themes such as safe infrastructure, traffic heterogeneity and technological developments. Specific results to be achieved by 2030 are:

1. In the (re)design of infrastructure, the key features of vulnerable road users (e.g. senior citizens) count as design criterion.
2. Vulnerable road users are aware of the risks they run in traffic. They know what measures they can take to protect themselves and their environment to prevent injuries and crashes. Parents are also aware of the risks.
3. At local level, the public transport options are optimised to offer vulnerable road users safe alternatives. Road users know which modes of transport are available and are able to select the right one.
4. (Vulnerable) road users participate in traffic with proper lighting and appropriate personal protection. Wearing a helmet has become the norm, especially for children and senior citizens.

For the group of young children (0–4 years) we see that they are more vulnerable to head injuries during a crash. This is due partly to the size of the head compared to the rest of the body. This is as an important point of attention when transporting children on bicycles, in carrier bikes and in the car and when children start cycling (independently).

Towards solutions

Keep roads well maintained and adapt road environment to vulnerable road users when redesigning

By matching the road design and the layout of the road environment with the most vulnerable road users, risks for all road users are minimised. Making the road environment senior-proof therefore basically benefits everybody.

This includes measures such as:

- high-contrast road markings
- medians when crossing
- removing obstacles
- improving lighting
- more visible pedestrian crossings
- simplifying complex surroundings
- tactile paving for the blind and visually impaired.[23]

To achieve this, road safety should be given a much more prominent place in road design and maintenance work. In this way, road safety can become an integral part of decision-making. Locally, a customised approach is needed to take vulnerable road users into account at potential risk locations, such as safety around schools or at complex locations such as intersections.

Increase the range of safe modes of transport

From a road safety perspective, it is preferred that road users opt for the safest possible mode of transport. As a start, people can gain insight into the risks they are running. However, this also depends on which modes of transport are made attractive and whether they fit in well with their situation.

An important starting point for policies is that people themselves choose how they participate in traffic. However, by making a more conscious choice, they can often travel with a safer mode of transport.

On the one hand, attention must be paid to the adequate supply of alternatives (public transport, taxi services, etc.), also in residential areas. But on the other hand, sufficient

[22] SWOV – Fact sheet the elderly in traffic (2015).

[23] See also CROW – Senior-citizen-proof road design (2011).

The government has a role in protecting vulnerable groups.

knowledge and understanding must be provided so road users can make an informed choice.

This means that road users know which mode of transport best suits their (physical) condition. Both the range of transport modes and the local coordination and information provision require customisation and are therefore an important part of municipal planning. The idea is to make road safety (and the associated selection offered) an integral part of spatial planning issues.

Enabling the development of innovative vehicles and concepts
Vehicle manufacturers have in recent years introduced many innovations to the products they have been marketing, such as the development of bicycles for seniors with a low step-through frame. These and other innovations will further improve road safety. Central government will stimulate manufacturers to continue their innovations and to make it more attractive for consumers to use them.

New transport concepts can also contribute to a safer choice of transport and therefore safer road use.
A prominent development is Mobility as a Service (MaaS). Steps will be taken in this regard in the next years. Through this, the government is stimulating the development of new concepts.

Providing information about safe traffic behaviour
The government wants to encourage vulnerable road users to behave more safely by better protecting themselves and taking responsibility for the safety of themselves and others. There are two groups that benefit from information on doing something about this:
1. vulnerable target groups such as senior citizens and school-aged children and their social environment;
2. (healthcare) professionals such as doctors and nurses, who in turn can give their clients the right information.

Coordination and alignment with other domains, such as the social domain, are important so that vulnerable road users receive advice at times and through channels that make sense. For example, advice from doctors, pharmacists, nurses or physiotherapists.

Advice and administrative measures
The government has a role in protecting vulnerable groups. This lies in stimulating protective measures and – where necessary – making these measures, such as helmets and clothing, compulsory. Central government will explore the need to expand the current measures. For people with a medical condition, the Central Driving Licence Agency (CBR) plays an important advisory role. The agency also imposes restrictions on driving licences on the basis of medical examinations. The CBR is assessing whether and how it can better reach people with a medical condition, including looking into the possibility of the process for (re)testing being made simpler and easier. The personal responsibility of the aspiring driver remains pivotal in this.

In a 'tour de force', public authorities are jointly assessing what is needed to make even more use of the power of the bicycle, also by paying attention to bicycle safety, knowledge sharing and the safe design of the (bicycle) infrastructure.

Internationally, the European Commission explicitly calls attention to vulnerable road users in its road safety strategy. For example, within a European context work is being done on design requirements such as collision protection zones and improved visibility of vulnerable road users from the driver's seat in new lorries and cars. Also, lorries and cars will be required to have smart detection systems in order to prevent collisions with cyclists and pedestrians.

5
Inexperienced road users

Children

Novice drivers

New modes of transport

4.5 Inexperienced road users

Delineation

Young people and other inexperienced road users are an important risk group. Unfortunately, so far, the current policy does not seem very effective at reducing dangerous behaviour resulting from inexperience.

Inexperience is a very broad term and also includes ignorance or lack of knowledge when this leads to wrong (risky) choices or decisions. For this theme, we use two definitions of inexperience:

- insufficient task competence, including higher-order skills such as hazard perception and situation-related task competence;
- lack of skills due to inexperience with new modes of transport or situations.

Road safety risks

There are several causes for the risks that inexperienced road users run. Their higher risk arises primarily through insufficient task competence and skills. Higher-order skills in particular (hazard perception, coordination (calibration) between task competence and task requirements) are of great importance in this regard.

In addition to this inexperience, there can also be risk-seeking behaviour due to a desire for excitement and new experiences. The impulse control of young people is not yet fully developed. In particular, young men from the age of puberty are sensitive to the influence of peers, especially of other young men. This causes an increased crash risk in traffic, for example in situations where they carry passengers.

Young drivers are relatively more often involved in a fatal crash than older, more experienced drivers. For each kilometer travelled, the crash rate for the group up to 30 years is five-times higher than for drivers between 30 and 60 years.[24] Inexperience is particularly relevant in the initial phase of independent driving and then decreases rapidly as people start driving more.

Children also have an increased risk of crashes, especially around the age that they cycle to school independently for the first time. The risks these children run are caused by inexperience on the road or unfamiliarity with the route and surroundings. Therefore, cyclists between 6 and 14 years of age are relatively often involved in serious crashes. They run extra risks due to limited protection and because their exposure to risks is relatively high due to the high number of younger cyclists. Crashes are often cyclist-only crashes.[25] In absolute numbers, the biggest safety problem for children lies in the group of cyclists aged 10–14. This is mainly because at that age they more often participate in traffic independently as cyclists.[26]

For all road users, inexperience arises again when they choose a new mode of transport, e.g. when they first use a pedelec or mobility scooter, or when they use driver support systems in their vehicle for the first time. The use of such systems for the first time is expected to lead to an increased crash risk, although no precise figures are available.

Vision of the future: Inexperienced road users competently on the road

In 2030, road users have learned skills to strengthen their task competence. Three results will contribute to this:

1. Young people and new drivers participate in traffic with adequate higher-order skills, such as hazard perception (risk awareness, self-reflection and calibration).
2. Pupils, especially cyclists between 10 and 14 years old, are well informed and instructed about the risks on their way to school.
3. When purchasing a new vehicle, the user knows what the risks are and has learned how to deal with them.

Towards solutions

Focus on higher-order skills for novice road users

In the past, several extra measures were taken for novice drivers. However, these did not reduce their over-datainexperienced drivers, in addition to the measures imposed by the CBR within the framework of administrative law (educational behaviour measure and the driving skill study), has proved insufficiently effective. The introduction of 2toDrive, i.e. when young people can take the theoretical exam from the age of 16 and start practical lessons from 16,5, appears to be giving a positive

[24] SWOV – Fact sheet 18- to 24-year-olds: young drivers (2016).

[25] Unilateral crashes or with an obstacle. VeiligheidNL – Bicycle crashes in the Netherlands (2017).

[26] SWOV – Fact sheet Children's road safety in the Netherlands (2004).

boost to road safety among these young, inexperienced drivers.[27] However, the number of young people making use of 2toDrive is limited. Therefore, the number of young people involved in crashes is still very high.

Having sufficient higher-order skills is essential for safe participation in traffic, regardless of the transport mode. Higher-order skills involve traffic insight, risk awareness and self-assessment. Are hazards perceived, are one's own skills overestimated and the risks underestimated?

Research shows that increased hazard perception leads to a reduction in crashes.[28] Hazard perception can be effectively assessed during the driving test; however, it is not possible to test risk awareness and the ability to align one's own skills with the tasks that one takes on in traffic (calibration). Higher-order skills increase while acquiring driving experience and with age (no longer sowing one's wild oats). Training can accelerate this process. For example, motorcyclists who participated in a separate course after obtaining their driving licence turned out to be assessed as better motorcyclists.[29]

Central government will examine how higher-order skills can be taught and/or tested. This includes looking at the testing method and the requirements for driving licences per mode of transport. The experiences and results from other countries (EU member states, but especially the US and Australia) are explicitly included.

Review sanctions
If young drivers commit driving offences, enforcement and imposing appropriate sanctions is important. In addition, it will be examined if and how the administrative educational behaviour measure and the CBR driving skill study can be improved.

Take inexperience into account with road design
Where inexperience can indeed lead to (potential) crashes, there are possibilities to construct the infrastructure in such a way that the risk of a crash and its consequences is reduced. For example, by removing obstacles and constructing safe verges. Road design is a comprehensive consideration that is further detailed under the theme 'Safe infrastructure'.

Seek cooperation with partners in civil society
The responsibility for modifications to the driving test and administrative measures lies with the government. The responsibility for road design lies with the road authorities. However, cooperation with a wider range of partners (in civil society) is important for a successful implementation.

For the development of measures aimed at senior citizens, pupils and the application of new technologies, (local) governments are explicitly looking for cooperation with partners (in civil society). For example, manufacturers, vendors, civil society organisations, such as the Dutch traffic safety association 'Veilig Verkeer Nederland', senior-citizen organisations and healthcare organisations can offer assistance to increase familiarity with new developments such as the pedelec, mobility scooter and driver support systems.

[27] House of Representatives 2015–2016, 29 398, No. 477
[28] Thomas, F.D., et al. (2016). Evaluation of the safety benefits of the risk awareness and perception training program for novice teen drivers. DOT HS 812 235. National Road Traffic Safety Administration NHTSA.
[29] SWOV – The effects of a one-day advanced driving course for motorcyclists (2013).

6
Driving under the influence

alcohol

drugs

combination use

4.6 Driving under the influence

Delineation of the theme

This theme examines psychoactive substances that influence safe participation in traffic:
1. alcohol
2. drugs

Alcohol is a legal stimulant for which clear social and legal standards have been set for participation in traffic. Current standards are based on EU Directive 2001/115/EC. For drugs, the law 'Drugs in traffic' was introduced on 1 July 2017. The legislative amendment has resulted in clear standards (thresholds) for traffic participation for 10 types of drug. It has also been laid down that the saliva tester can be used to detect the use of these types of drug more easily.

Road safety risks

Alcohol

Driving under the influence of alcohol considerably increases the chance of a crash. Much research has been done into the risks of driving under the influence of alcohol. For example, automatic processes deteriorate for experienced drivers with a blood alcohol content of 0.3‰ (per mil) or higher. At 0.5‰ the driver's alertness and vehicle control also decrease.[30] Novice drivers already experience the effects on their driving skills at lower values.

The alcohol consumption in traffic has dropped considerably in recent decades. For example, during weekend nights in 2002, 4.1% of drivers were under the influence of alcohol, but in 2017 that was 1.4%. Nevertheless, an estimated 75 to 140 road deaths were caused by alcohol in 2015[32] In particular, a combination of alcohol and drugs leads to a vastly higher risk of serious traffic crashes than alcohol or drugs separately.[31]

Drugs

A hospital study shows that an estimated 1 in 10 of serious road injuries were under the influence of psychoactive substances. 4.9% used 'only' drugs, 1% medicines and 4.8% a combination thereof.[32] Another study found that 3.4% of Dutch drivers have traces of drugs or medicines in their bodies.[33] In 2017, cannabis, ecstasy (MDMA), cocaine and amphetamines are the most used drugs[34]. However, new drugs are always being introduced onto the market for which knowledge is lacking. An additional problem is that some drugs are also prescribed as medicine and medicines can also be used as drugs (e.g. morphine, Ritalin, cannabis oil, etc.). In addition, category III medicines include sleeping tablets and tranquillisers such as diazepam and valium. Pharmacists inform users about the influence of medicines on the ability to drive and also stickers on the packaging indicate that you are not supposed to drive with this category. If these are not category III medicines, they will not have a negative effect on the ability to drive if used as directed.

Vision of the future: significantly less substance use in traffic in 2030

In 2030, significantly fewer road users will participate in traffic under the influence of alcohol and/or drugs. This is indicated by three results:

1. substance use in traffic is increasingly less (socially) accepted.
2. there is more knowledge about drug use and drug users in traffic and drug users are well aware of the dangers of using drugs in traffic.
3. a national alcohol SPI is available for a risk-based approach.

Towards solutions

Work on the basis of data, insight and improved research methods

To reduce the risks of substance use in traffic, a diverse approach has been selected with regard to possible solutions and responsible parties. Each substance requires reliable data, a solid analysis and the commitment of several parties. In addition, a distinction is made between the light and serious offender, incidental user, repeat offender and addict.

Risk-based working starts with knowledge about the risks and the prevention (prevalence) of irresponsible substance use in traffic and knowledge of the various types of user. Since 1990, the study Driving under the influence of alcohol (Dutch: ROI) has been carried out. This study is an important indicator to see whether the number of drivers

[30] SWOV – Fact sheet Driving under the influence of alcohol (2018).
[31] SWOV – Fact sheet Driving under the influence of alcohol (2018).
[32] SWOV – Info sheet Drugs in traffic (2014).
[33] European project DRUID, as described in SWOV – Medicines and drugs in Dutch traffic (2013).
[34] Trimbos – National drug monitor, 2017 annual report.

under the influence of alcohol is decreasing. It also provides insight into the characteristics of the offenders.

In the northern provinces, research has been carried out which shows that data from police alcohol testers can be easily implemented. Further research is being carried out aimed at establishing a nationwide monitoring network which could possibly develop a national indicator for a risk-based approach to this subject.

More research on the topic of drugs and combination use is needed. However, this is many times more complex due to the many types of active substance that cannot be measured easily and unambiguously. In addition, the developments of the saliva tester are followed, which means that the use of more types of drug may be checked in the future.

Strengthen and expand the social norm
A preventive approach to substance use remains necessary, also to ensure that other measures are more effective. In the coming years, efforts will be made to strengthen the social norm for substance use in traffic by informing and educating people.

Match measures with type of offender
The largest group of users of alcohol and drugs is the occasional user who is driving under the influence of alcohol. For this group, the approach focuses on preventive policies that encourage increased awareness about the risks of substance use and a clear social norm. There are also serious offenders or addicts, a relatively small group that poses the greatest threat to road safety. This requires a customised approach. Possibly, in the long term, technological solutions may contribute to the prevention of substance use in traffic, perhaps regulated at EU level.

Approach issues from a broader perspective
Furthermore, broader cooperation with partners from the field can be examined (for example the Ministry of Public Health, Welfare and Sports within the framework of the National Alcohol Prevention Agreement). In this way it is specifically examined what the causes and reasons are for serious substance abuse and how this can be limited from a broader perspective.

Increase (subjective) chance of being caught
A responsible mix of measures can further limit the number of people participating in traffic under the influence of substances. Enforcement is also important in this respect. Increasing the (subjective) chance of being caught will lead to a decrease in the number of people who drive while under the influence. Driving under the influence therefore remains a priority within traffic enforcement by the police. In addition, the principle applies that a breathalyser is performed with every apprehension.

The decision on the enforcement deployment of the basic police teams is an important competence reserved for the local triangle.

In addition to criminal law measures, there are administrative legal measures for alcohol and drug offences that are imposed by the CBR. The limit for a psychiatric evaluation into alcohol dependence is to be lowered, so that a larger group of alcohol users cannot drive for at least a year if they have a positive score. These administrative legal measures will also be extended to drivers of mopeds, scooters and mobility scooters.

7
Speed in traffic

speed limits

safe speed

credible road design

4.7 Speed in traffic

Delineation of the theme

Driving faster than is allowed or safe is done both consciously and unconsciously. In this theme, the focus is on motor vehicles with a maximum speed limit and on the behaviour with respect to this limit.

There is no speed limit for non-motorised traffic (pedestrians, cyclists, pedelecs). Speed differences between modes of transport (for example between pedelec and bicycle) also contribute to risks, but are discussed under the theme 'Heterogeneity in traffic'.

Road safety risks

The causal relationship between speed and the risk of a crash or the severity of its outcome has been extensively scientifically demonstrated. For example, the graph below shows the relationship between speed and lethality of crash injury.

The figure below clearly shows the effect a higher speed can have on the severity of crashes. International research estimates that one-third of all fatal road crashes are (partly) caused by speeding.[35]

In general, the following applies: if the average speed on a road goes up, this automatically leads to a greater risk of crashes with a greater risk of a serious outcome.[36] The risk definition of proven risks is specifically broken down into:

- spread of speed: large differences in speed between road users are more risky and increase the risk of crashes;
- absolute speed: the higher the speed in a certain design, the more hazardous this is and the greater the risk of a (serious) crash.

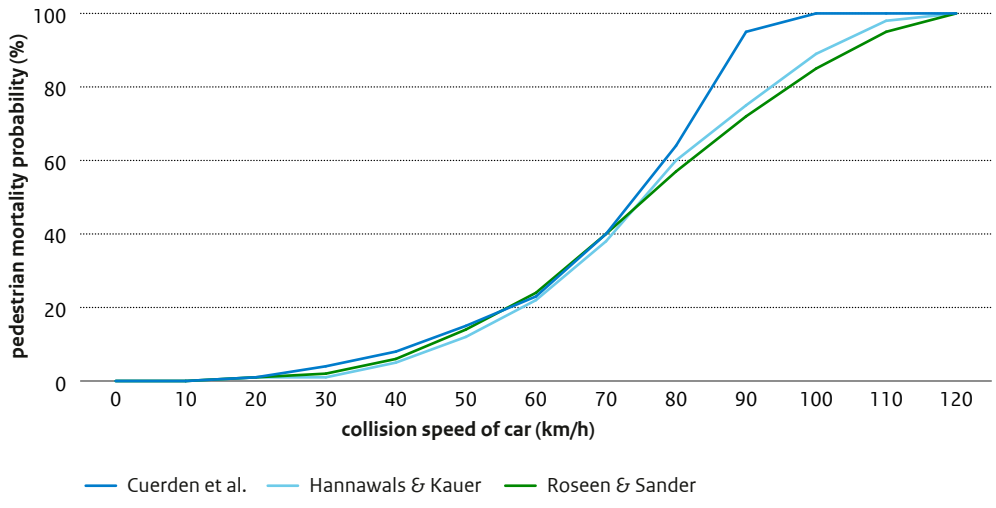
In order to safely facilitate high speeds, stricter design requirements for roads apply as the speed limit rises. To persuade people to drive at safe speeds, it is important to have a plausible road design that matches the limit.

What plays a role in speed is that road users are not always aware of the speed they are driving and the danger that this behaviour causes. This is partly because vehicles have become quieter, faster and more comfortable in recent decades.[37] This can lead to people speeding more often than before.

It also sometimes happens that the safe speed is lower than the maximum speed. For example, because of bad weather, congestion or an ambiguity in the road design. If road users do not adjust their speed to this, more hazardous situations will arise.

[35] OECD/ECMT – Speed Management (2006).
[36] SWOV – Speed and speed management (2016).
[37] SWOV – Speed choice (2012).

Figure 7: Possible death rate in relation to speed (source: SWOV – Speed and speed management (2016))



Vision of the future: significantly fewer casualties due to speeding in 2030

Every road has a safe and credible speed limit and road users adhere to it. This results in significantly fewer injuries. Four results provide this:

1. the design of the road network matches the (credibility of the) speed limit.
2. an indicator has been established for exceeding speeds: this is monitored and enforced.
3. the social norm around speed has been strengthened.
4. the number of drivers exceeding the maximum speed is decreasing, where possible supported by new vehicle technology.

Towards solutions

This theme explicitly requires a good balance between measures in the areas of infrastructure and of engineering, education and enforcement (the 3Es). Good consultation at regional and local level is therefore necessary. The proper functioning of the governance structure (see Chapter 5) can make a significant contribution.

Prevention is the focal point: preferably, speed violations are prevented. It is therefore important that road authorities, the automotive industry, partners in civil society, the Public Prosecutor and the police work together intensively for the most effective mix of measures.

Determine safe speed and target efforts on plausible road designs and credible speed limits

A safe traffic system first of all requires determination of what a safe speed is. How fast can road users drive to have an acceptable level of safety? It is important that road authorities know where the differences lie in their road network between a speed limit and a safe speed. This can be measured with an indicator that is still to be determined, such as the 85th percentile speed[38].
An instrument such as Safe Speeds, Credible Speed Limits (Dutch: VSGS) can also help with this.[39] Road authorities will jointly determine which indicators are relevant, how these are applied and which data are needed for this (see 'Develop SPI speed' below).

Based on what is locally the safe or maximum speed, the road design can be adjusted if necessary to enforce safe behaviour. The credibility of the design determines the extent to which road users are thereby persuaded to a safe speed. In the first place, the limit must be safe and, subsequently, road users must perceive the streetscape in such a way that the limit is also credible. The selection of credible limits is an important design criterion for every infrastructural (re)organisation. There are guidelines available for doing this.[40]

Develop a national SPI speed

Ever more up-to-date data on speeds actually driven are becoming available. As a result, risks can be better identified and tackled ever more effectively. Consequently, road authorities are able to provide a substantiated reassessment of the maximum speed and take measures that make limits more credible.

However, more insight is needed into the location and nature of speeding offences. To provide this insight, efforts are being made to provide national access to speeds driven (in relation to the speed limits). Based on this, a national definition of a speed SPI can be developed. With a common data set, cooperation between the road authority, the Public Prosecutor and the police can also be improved.

Encourage (the safe use of) speed-limiting technology

Automated systems in vehicles can contribute to a more focused and effective policy because they directly or indirectly influence the speed of road users. However, this does require that systems have information about the applicable maximum speeds. For example, via the signs that state the maximum speed on kilometer marks. Ideally, the systems would also know what the safe speed is at any time, for example in the event of slippery road conditions or congestion.

[38] The speed that is not exceeded by 85% of the drivers.
[39] SWOV – Proactive Measurement of Road Safety (2014)
[40] For example, CROW – Basic features of road design, and, CROW – Basic features of intersections and roundabouts.

Intelligent Speed Adaptation (ISA) technology in vehicles lends itself to supporting or even enforcing a safe speed and exists in various degrees:

- informative: shows speed limit and warns when exceeded;
- smart: makes it difficult for the driver to exceed the maximum speed, for example by means of a throttle that pushes back;
- limiting: prevents driving faster than the maximum speed limit. Trucks already have a static speed limiter at 89 km/h.

In a European context, the obligation to have smart ISA in all new vehicle types from 2021 is being discussed. It is important that this be implemented smoothly and with the greatest possible effect on road safety. Therefore, it is necessary for maximum speeds to have been (and remain) reassessed, but there should also be sufficient information exchange between road infrastructure and road user.

For an effect on road safety, it is not only essential that ISA systems be present in vehicles, but also that road users actually use them. Partners in civil society, such as vehicle manufacturers, vendors, lease companies and professional transporters, can make an important contribution to the (responsible) use of these automated systems.

Retrofitting smart or limited ISA systems (speed lock) in existing vehicles is practically impossible due to negative effects on the functioning of the engine. However, the existing navigation equipment, both in-vehicle and smartphone, can be used for the (lighter) informing role of ISA.

More enforcement of offences helps to enforce a safe speed

Intensify automatic enforcement

More enforcement of offences helps to enforce a safe speed. The goal is to intensify enforcement by means of permanent and automatic forms of enforcement such as average speed check zones and speed cameras.

8
Distraction in traffic

smart functions

passengers

music

4.8 Distraction in traffic

Delineation

Technological developments follow each other rapidly in society. There is a growing dependence on technological tools and social media. The danger of distraction is therefore always lurking. At the same time, the 24-hour society is putting increasing pressure on our lives. The constant need to be accessible and online, busy jobs, young double-earning families, carriers and delivery services that make more deliveries in less and less time. These are just a few examples of factors that can make people feel rushed, tired and less alert. These developments come together in this theme.

Road safety risks

Distraction

New technology offers opportunities, but also potential road safety risks: distraction plays an important role in traffic. The forms of distraction are also changing. This could contribute to a higher crash risk. The main risk comes from visual distraction.[41] If your eyes are not focused on the road and traffic, the driver is the most distracted from the driving task. This is followed as the most important risks by:

- cognitive distraction: talking to passengers, hands-free calling;
- auditive distraction: listening to music;
- manual distraction: eating and drinking, holding a phone.

It is often a combination of all these forms.

Recent data on (the effect on road safety of) distractions are unavailable. However, American studies have shown that in 68% of crashes, the driver was distracted immediately before the crash happened.[42] No distinction was made with regard to the type of distraction.

European drivers spend 10% of their driving time on distracting activities. This behaviour is even more prominent among truck drivers: they appear to be engaged in distracting activities for almost 20% of the driving time.[43] In the crash data it is therefore to be expected that distractions play a role, too. SWOV estimates the number road fatalities due to distraction therefore to be between a few tens to more than a hundred.[44]

The SWOV research provides a broad interpretation of distraction and it can result from:

- behaviour of road user: texting, phoning, operating navigation system, eating;
- behaviour of others: such as (peer) pressure from passengers, children in the back seat.
- other external stimuli: for example, roadside advertising, traffic jam on other lane.

The use of mobile phones is one of the most common forms of distraction: 65% of Dutch people say they sometimes use their phone in traffic. Even though 75% also say they think their own behaviour is dangerous, the usage does not decrease.[45] Awareness of the risks therefore seems insufficient to change behaviour.

Fatigue

Reduced alertness and concentration problems increase the risk of crashes and also occur because of (chronic) fatigue. As a cause this is difficult to measure, but according to conservative estimates in foreign research, driver fatigue is involved in 10–15% of crashes.[46] There are several reasons for this, including:

- disruption of the day-night rhythm
- sleep disorders
- driving too long
- underload situation (monotonous driving task)

[41] SWOV – Distractions in traffic (2012).
[42] SWOV – Fact sheet Distractions in traffic (2017).
[43] Results UDRIVE study, see also: www.udrive.eu.
[44] SWOV – Estimated number of road fatalities due to distraction (2013).
[45] SWOV – Survey among 4,000 road users (2017).
[46] SWOV – Fact sheet Fatigue in traffic: causes and consequences (2012).

Vision of the future: alert in traffic in 2030

Deliberately removing your focus from the driving task must be taboo for road users. In 2030, road users will participate alert and relaxed in traffic, are focused on the driving task and use safe driver support systems. The surroundings are not distracting, nor do they offer temptation to non-driving-task-related activities. The results we want to achieve in 2030 are:

1. Communication by road users in traffic is at most hands-free, but as little as possible.
2. Manufacturers of devices (both mobile and in-car) adhere to the requirements of the 'Safe use of smart functions in traffic' agreement.
3. Employers provide for conditions that help their employees to keep focused on driving.

Towards solutions

Implement the commitments of the 'Safe use of smart functions' agreement

In 2017, the 'Safe use of smart functions in traffic' agreement was launched by a group of market parties, public authorities and partners in civil society. Its goal was to have as many parties with an impact on the level of distraction on the road taking action in accordance with the standard from the agreement and have road users communicating only when this does not distract from the driving task. Each party that signs the agreement develops products, services or operations that contribute to this standard.

For central government this means, among other things, a new national campaign: 'MONO'. The logo propagates the essence of the standard for a longer time, just like the 'Bob' campaign for alcohol in traffic (in a group, the driver remains sober). MONO focuses on the use of the automatic do-not-disturb-mode while on the road and on not sending messages to people who are on the road. In addition, central government aims for a total ban on the handheld use of all electronic devices in traffic. Technical solutions are important in preventing distractions. This agreement encourages manufacturers to adjust the functions of their products so that driver support can be used safely and road users are not lured into non-driving-task-related functions.

Systems to make reading and writing text messages impossible while driving are already available but also have limitations. For example, they cannot detect who is the driver or who is the passenger. Driver-support functions such as navigation and ISA must also remain available to the driver.

Systems that are now applicable:
- do-not-disturb mode: activate before departure;
- functions that (partially) block a telephone or break the data connection, for example when opening a bicycle lock;
- functions that block the phone screen while driving and send a message to the employer if someone is not using the system.

The use of these systems is non-binding. Systems that enable the employer to check whether employees are using these systems properly are often unwanted. This means that technical solutions should be designed in such a way that they are pleasant to use without the necessary functions becoming inoperable. That is why attention will be paid to the further development and use of these technological applications. Central government will follow the developments in the market and encourage the use of relevant applications. A very close cooperation with all partners in civil society is essential.

If both the MONO campaign and employers, producers, insurers and leasing companies choose for the same course as formulated in the agreement, the chance of a new social norm is high. The agreement is therefore being expanded to include as many parties as possible so that they too can cooperate in preventing distractions. Central government will also monitor the agreements and the parties will hold each other accountable regarding follow-up actions.

Intensify cooperation with employers

Employers are important partners in stimulating the use of technological applications. They can also support a social norm for the use of those techniques – for example, by stimulating a culture in which it is normal not to disturb each other while driving. In the period ahead, central government wants to further collaborate on this and make arrangements with employers with a focus on distraction from driving tasks and on fatigue.

[47] https://verkeersveiligheidscoalitie.nl/wp-content/uploads/2018/09/Convenant¬Veilig¬gebruik-smartfuncties¬in¬het¬verkeer¬DEF.pdf (Dutch only)

Lack of alertness because of fatigue is related to starting a journey well rested and being alert to signs of fatigue. The rule of thumb 'two hours driving, fifteen minutes rest' helps with this, provided that it is applied consistently. Rules governing driving and rest periods apply to professional drivers. However, these rules do not guarantee compliance.

This is why employers are important in giving commercial traffic a safety boost. Within the transport sector, it is important that businesses create a climate where there is room for drivers to take a break whenever they feel it is necessary. The further exploration of technical possibilities also plays a role.

Incorporate distraction criteria in road design
Distraction is also caused by the road environment and the way in which it is designed. In cases where this is not yet done, road authorities will take distraction into account when designing and redesigning infrastructure. They include the risks of distraction in their assessment of road design and verge elements.

This is why employers are important in giving commercial traffic a safety boost.

Continue research into new forms of enforcement
Enforcement options will be adapted to new possibilities and developments. Current research into technical and legal possibilities of automatic enforcement of (handheld) smartphone use will be continued.

9
Traffic offenders

camera surveillance

laws and regulations

corrective sanctions

4.9 Traffic offenders

Delineation of the theme

Some road users (systematically) commit traffic violations. They often reason, whether or not consciously, from their own situation and perception of safety, without taking into account fellow road users. This theme deals with dangerous behaviour and committing specific traffic violations, such as the current national traffic priorities of the Traffic Teams: repeat offenders, driving under the influence of alcohol and drugs, red light running, distractions and speeding offences. Themes 6 up to and including 8 provide more detailed information about driving under the influence, speeding and distractions in traffic.

Road safety risks

The Dutch Road Traffic Act of 1994, along with the underlying regulations including the Rules on Traffic regulations and traffic signs, is intended to promote road safety. Compliance with the rules should prevent dangerous behaviour among road users. This makes their behaviour more predictable and safer.

Violating traffic rules increases the likelihood of a crash. For some specific traffic violations, a scientific link has been made with road safety. This applies in particular to speeding and substance use (themes 6 and 7). Furthermore, recent research shows that the relative risk of a fatal crash is about 14-times higher if drivers ignore a red right.[48] Leaving insufficient distance between two vehicles (tailgating) also increases risks. It is the most common cause in rear-end and multiple collisions.[49]

The risks do not just apply to road users who violate the rules once, but all the more to repeat offenders. SWOV research shows that vehicles involved in multiple violations are more often involved in road crashes than vehicles, the licenced owner of which had never, or only rarely, been fined.[50]

[48] SWOV – Risk factors at 50 km/h intersections with traffic lights (2017).
[49] SWOV – Fact sheet Time headway and road safety (2012).
[50] SWOV – Relationship between traffic violations and traffic crashes (2011).

Vision of the future: road users know and respect the traffic rules

In 2030, the number of traffic violations will be greatly reduced. In concrete terms, this means the following results:

1. Road users know the traffic rules and are aware of the risks of dangerous behaviour for themselves and for other road users.
2. Road users commit fewer traffic violations.
3. New technology is applied to achieve the maximum enforcement possible and to increase the probability of apprehending offenders.

Towards solutions

Traffic violations can be discouraged in several ways, depending on the type of violation and the people who commit them: from incidental to repeat offenders. The effectiveness of policy is enhanced by combining various measures:

- road design that discourages violations or makes them impossible;
- use of vehicle technology, such as ISA
- campaigns for a strong social norm regarding good and safe road behaviour;
- legislation, effective enforcement and appropriately strict penalties.

Adjust infrastructure to discourage unsafe behaviour

The most effective measures encourage road users to behave as safely as possible. The infrastructure should be designed in such a way that violations are prevented as much as possible. This can be done by making violations practically impossible – for example, by applying a partition between two directions that is not surmountable, or hardly so. This makes it hard to (dangerously) overtake another vehicle and it increases safety on the underlying road network.

A road design that ensures low speeds on road stretches or at intersections contributes to safe behaviour. For example, with short straight stretches, road humps and roundabouts. Measures to regulate intersecting traffic are also important, such as a flyover or a roundabout that prevents red light running. These measures should always be reviewed within a local context to assess their feasibility and appropriateness.

Credibility of the design plays a role in discouraging unsafe behaviour. If road users perceive the road design and traffic lights adjustment as credible, they are more likely to comply with the rules. Road authorities implement this.

Supporting measures through awareness
Measures for the design of roads can be strengthened by awareness about traffic rules and risks. Existing campaigns and information provision on traffic violations will be continued. The goal is to create and maintain broad awareness among the entire population, without focusing on specific target groups/offenders. In addition, market parties and civil society organisations can promote compliance with rules by propagating a social norm.

Encourage innovative initiatives to influence behaviour
In addition to campaigns, attention is paid to innovative initiatives. An example of this is citizen participation in signalling violations using apps or hotlines. Partners in civil society can play a role in this by further developing initiatives such as rewarding good behaviour in insurance premiums. A coordinating and encouraging role of public authorities in such initiatives can strengthen the effect.

Increase (subjective) probability of being caught
Central government is taking a leading role in the development and rollout of new digital enforcement systems. Technology offers new possibilities for smarter and more efficient enforcement. The possibilities will be further examined in the next few years. At the request of a municipality, all parties will target their efforts on prioritising enforcement in the local triangle where the deployment of police capacity is discussed.

Central government will focus on corrective measures for notorious offenders if preventive measures are unsuccessful. Measures are optimised in administrative legislation and heavier penalties are imposed in criminal law. The adjustment of the system of penalties is also being explored.

5. How is the governance with regard to the implementation of the RSSP 2030 organised?

The agreed governance promotes structural attention

Making the roads of the Netherlands safe requires a stronger connection between public authorities. That is why agreements have been made about a governance structure. This structure makes it possible to tackle road safety more coherently at national, regional and local level.

A start with this consultation structure will be made in 2019. From now on, an official ministerial consultation will be taking place once a year. During this consultation, progress of the (implemented) policies is discussed in order to adjust the course, if necessary. The translation from national policies to regional priorities takes place at regional round tables. In these consultations, parties hold each other accountable with regard to their responsibilities. By endorsing the RSSP 2030, the administrative support is guaranteed so that on all government levels work can be done in a structured and action-oriented way.

The intended structure not only ensures that road safety remains high on the agenda, but also allows parties to share results with each other and provides opportunities for more effective access to data. Matters that are normally discussed at different tables in a fragmented way, now come together at an administrative level. Moreover, governance facilitates the sharing of knowledge and experiences regarding, for example, the further development of risk indicators, taking measures and monitoring results at all levels.

Figure 8: Road safety governance structure

Implementation agendas are created at regional round tables

At the administrative regional round tables, parties, including local and regional road authorities and enforcement partners, meet at regional level and establish the regional implementation agenda. In addition, attention is paid to the necessary cooperation with partners in civil society. Central government offers support to regions in the form of expertise in identifying risks for the implementation agendas.

The implementation agendas establish the regional objectives and priorities on the basis of this RSSP 2030. They work towards the joint ambitions and desired vision of the future for 2030. Based on the themes of the RSSP 2030, the regional and local road authorities determine which risks are dominant in their area. This leads to tackling a concrete number (five for example) of regional road safety risks that can be rectified on a regular basis. In the short term, this takes place on the basis of existing insights and knowledge. In the long term, more data are becoming available that facilitate measurable goals using risk indicators (SPIs).

Where possible, existing consultation structures are taken into account and/or linked with during the establishment of the regional round tables. These include, for example, regional traffic steering groups with representatives of the Public Prosecutor, the police and the road authorities in which, among other things, the (regional) enforcement plans of the Police Traffic Teams are coordinated.

National Action Plan

The implementation agenda at national level can be found in the National Action Plan. In this plan, the central government sets out the measures that should help accomplish the vision of the future for 2030. It also lists the parties with whom it wants to cooperate. The National Action Plan is a dynamic document and is always valid for a period of two to three years.

National ministerial consultation provides for coordination and direction

Central government is in charge of the national ministerial consultation. Each year, the leaders responsible will discuss with the minister during this consultation:

- results of the road safety policy;
- progress of the agreements made in the national and regional implementation agendas;
- possible bottlenecks.

The consultation provides the opportunity to exchange information on how national and regional policies are shaped and to discuss the effectiveness of the policies pursued and mutual requirements. The Ministry of Infrastructure and Water Management, the Ministry of Justice and Security, the National Police and the Public Prosecutor are represented in the consultation. Also represented are the parties responsible for regional policies, such as provinces and transport regions.

The Governance creates a space for social initiatives.

The national and regional consultations are an interpretation of the government‘s directing role, but are obviously not the only opportunity for road safety initiatives. Many important initiatives have started bottom-up in recent years. Where possible and desirable, public authorities join these initiatives and the knowledge and energy in (civil society) organisations is directed at and explicitly included in the policies and implementation. The ANWB Manifesto, as stated in the Introduction, is an important initiative and will continue to exist alongside this RSSP 2030. That is why in the further implementation of measures from the RSSP 2030 or the implementation agendas, a clear link will be established with the working groups and the core group of the manifesto structure.

Governance brings together road authorities and enforcement authorities

With regard to the deployment of the police, all parties (road authorities, Public Prosecutor and police) have the responsibility to give road safety a high priority.

The deployment of the police is twofold. On the one hand, there are the Traffic Teams. The deployment of the Traffic Teams is determined based on (regional) enforcement plans. They are coordinated in the regional traffic steering group consisting of representatives of the Public Prosecutor, the police and the road authorities.

On the other hand, there is the deployment of the Basic Teams. The deployment of the Basic Teams is determined based on agreements made in the triangle (Mayor, Public Prosecutor and police). All parties have the duty to keep road safety risks on the agenda for the triangle. It would be helpful if municipalities included traffic in the integrated safety plans. The governance structure offers opportunities to strengthen the cooperation between road authorities and enforcement authorities because the Public Prosecutor and the police also participate in the different consultations.

6. What is the timeline for the implementation of risk-based work?

The period applicable to the RSSP 2030 is divided into three phases:

Phase 1: Implementation – Introduction period (2018–2020)

The RSSP 2030 introduces a new risk-based way of observation and cooperation that still needs to instituted nationwide and regionally. However, the policies and implementation are of course still moving forward. The measures from the National Action Plan and the already planned regional measures will be implemented as scheduled. 2019 is used as a transitional year for setting up the new working method. In this year, the governance structure is taking shape and the regions will elaborate their implementation agendas based on the risk-based philosophy.

To support the regions with the introduction, the Ministry of Infrastructure and Water Management will be ensuring that an expertise centre and process support team will be made available. This team will assist regions and municipalities in setting up the governance structure, elaborating the implementation agendas and organising risk-based working. In 2018, an inventory was made of the wishes per region to ensure that the support was in line with the needs of the decentralised public authorities. In the autumn of 2019, the first national ministerial consultation will take place and the various governmental authorities will review the progress.

Phase 2: Implementation – Experience, learn and evaluate (2020–2025)

During these years, the public authorities will be gaining experience with the risk-based approach and they will be learning from each other about the effectiveness of measures. Initially, policies are formulated and measures are taken based on existing insights and knowledge about risks.

The goal is that in 2025 the public authorities, at all levels, will be using a set of risk indicators (SPIs) for road safety policy. Parties are familiar with the major road safety risks at national, regional and local level and have formulated proactive policies and measures based on this. The central government coordinates the risk-based approach by monitoring the regional development of SPIs at national level.

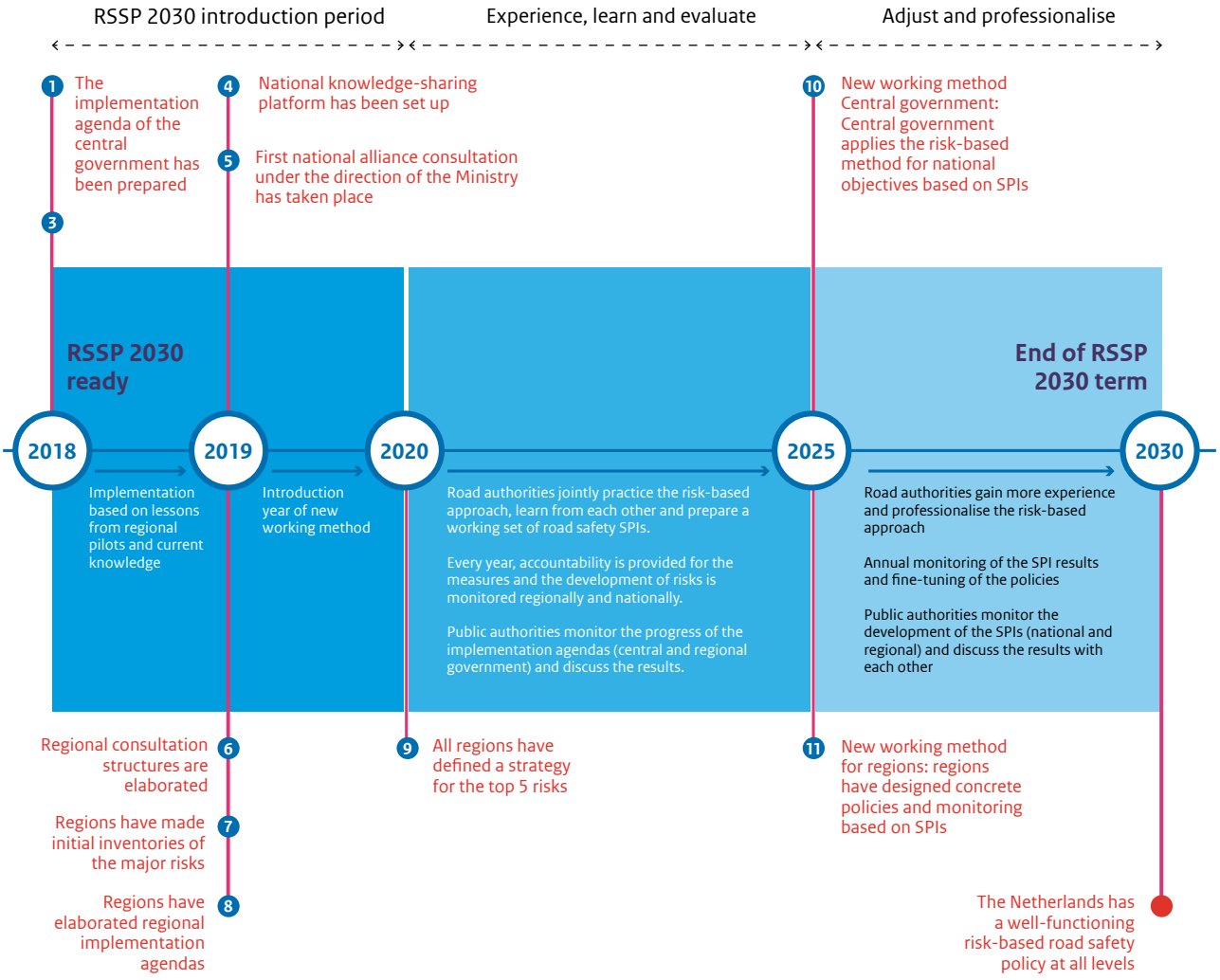
In 2025, central government will evaluate the Road Safety Strategic Plan 2030 and the associated policies and, where necessary, it will make new agreements with all parties involved. This pre-agreed reassessment step allows for the inclusion of new technological and social developments in the plan.

We consider Phases 1 and 2 as the implementation phases of the risk-based approach.

Phase 3: Adjust and professionalise (2025–2030)

Based on the lessons from previous years and the adjusted Strategic Plan, public authorities will continue to professionalise the risk-based approach. They will develop even better monitoring instruments, will be better equipped to indicate which measures provide better results and will further develop the risk indicators.

Figure 9: RSSP 2030 timeline



Appendices

Appendix A

What is the risk-based approach?

Traditional versus proactive policy

Measures to improve road safety are often based on an analysis of characteristics of the sites where the most crashes or injuries occur. These are specific locations and routes where extra energy and resources are invested. This is a traditional reactive policy: only after a crash has occurred is what exactly happened at that site investigated along with what could be done to prevent crashes with similar causes in the future.

The purpose of proactive policy is to take more action where it is relatively dangerous: where risks are high. This policy is based on the idea that where a high or increased risk occurs, sooner or later, there will be more casualties, regardless of past incidents.

Why a risk-based approach?

Risk-based policies help policy makers to determine where crashes could happen or increase in the future. By looking in the policy-making process at the risks that can lead to crashes, there is no need for unnecessary injuries. This form of policy also helps because crashes are increasingly spread across the road network and a reactive approach has therefore become less effective. In addition, we do not always know where crashes occur (especially crashes without involvement of motorised traffic) because this is not registered and it is often not possible to identify the various causes of a crash.

In this, it does remain important to analyse the causes of crashes that have already occurred to know what is still going wrong. This knowledge can also be used for risk-driven policy by translating it into (a few important) risk factors. These risk factors must then be monitored, after which the parties are made responsible for reducing them.

Towards a risk-based approach

One of the first steps in proactive policy was the Sustainable Safety Start-up Programme. With this approach, measures were taken based on generic risks. For example, 30 and 60 km/h roads have been built on a large scale to protect vulnerable road users against high-speed motorised traffic, enforcement at a number of key points (core behaviour with increased risk for road safety) has been intensified via regional enforcement teams, and a process for permanent traffic education has been initiated to continuously educate different target groups in traffic about their (new) traffic task. However, the focus of these proactive policies was not yet based on specific risk factors.

Risk factors or SPIs as a basis for the approach

Risk factors within road safety are defined as features that have a strong connection with the occurrence of crashes. Risk factors can be defined both in terms of behaviour, infrastructure and vehicles as in the 'handling' of crashes. The identification of these risk factors is carried out with meaningful, measurable, valid and reliable risk indicators. Indicators for risk factors that are meaningful to policies are also called safety performance indicators (SPIs). The main purpose of these indicators is to demonstrate the road safety performance of the traffic system, or to understand the process leading to crashes and injuries.

Key risk factors

Key risk factors identified in studies are[51]:

- Speed (proportion of traffic driving faster than the safe speed)
- Alcohol (proportion of drink-drivers to be measured with random breathalyser tests)
- Use of safety devices (proportion of road users not wearing a seatbelt or helmet of the group who should wear this)
- Lighting (proportion of vehicles not carrying a light)
- Quality score of roads (proportion of road length complying with a safe standard, e.g. 4 or 5 stars of the EuroRAP Road Protection Score or a high score in ProMeV, VIND or CycleRAP)

[51] Aarts –Risk-based road safety policy. Contribution to NVVC (Dutch Cardiology Association) (2016)

- Quality score of vehicle fleet (e.g. proportion of vehicles complying with a safety standard, e.g. 5 stars of the Euro NCAP score)
- Handling of crashes: arrival time for first aid, admission speed in an emergency room at a hospital, admission speed in a trauma centre.

Subjective safety within the risk-based approach

Subjective safety or risks currently experienced by people also play an important role in shaping policies, particularly with regard to the decentralised road network. For example, many municipalities use complaints from citizens about unsafe situations to gain insight into actual risky situations. SWOV studies show that there is not always a direct link between objective and subjective safety;[52] however, it is also possible to use reports from citizens as part of the risk-based policies. For example, if there are a lot of complaints about a specific location, a municipality may use this as a red flag to examine whether there are indeed elevated risks by carrying out measurements.[53]

Swedish approach to risks

The risk-based approach is still fully in the developmental phase, but is not new. For example, SWOV's Sustainable Safety vision has long been based on the principle of excluding potentially risky situations as much as possible. Currently, there are several methods for identifying risks. A more detailed explanation of the risk-based approach and examples of methods can be found in a SWOV overview.[54] Sweden is a frontrunner. The country has been working some time with a risk-based approach with 'vision zero' as a starting point. In the framework below is an example of how the country developed the approach.

Towards a risk-based approach in five steps

1. First of all there was 'vision zero' (the ambition to reach 0 serious injuries in the long term) translated into objectives within a limited number of SPIs. For example: everybody complies with the speed limit, everybody wears a helmet, roads have the maximum number of stars
2. Then, the key players were approached per SPI and it was examined what each SMART can contribute to achieving the objectives set out above. For example, for speed, the engagement of road authorities, police and insurance companies was reviewed
3. On the basis of the agreements made, the ambitions were translated into SMART objectives. To do this, it was first necessary to identify the current situation (what about speed offenders, use of helmets and road quality?), translate the deployment of players into a realistic reduction that this can yield per SPI. This is then linked to a concrete year (for example: 'In 2010 (start of measurement) 45% of traffic complied with speed limits on national roads, in 2020 (target year) that will be 80%')
4. Because SPIs have a causal relationship with crashes and injuries, the Swedes then translated these objectives from SPIs into objectives in terms of an expected reduction in deaths.
5. After having implemented the policy, players meet regularly to discuss progress. An international expert committee to monitor the process was also appointed.

Next steps for developing a risk-based approach within the RSSP 2030

This strategic plan lays the foundation to further elaborate the risk-based approach in the coming years and to use it to shape policies. Chapter 6 provides a look ahead at the process to arrive at a risk-based approach.

[52] SWOV Fact sheet – Subjective traffic hazard (2012)
[53] Aarts – ibid.
[54] Aarts – ibid.

Appendix B

What is the role of data in the RSSP 2030?

The importance of good information

Data on risks and traffic crashes are essential for good road safety policies. Without good information about road safety, it is not possible to formulate new and effective policies at national, regional and local level. The RSSP 2030 is developing a risk-based approach together with road authorities. Risk-based work requires data and indicators that describe risks. This Appendix to the RSSP 2030 briefly explains the relevant developments with regard to data collection.

Crash data

Causes of crashes

Crashes often happen because of a combination of circumstances. The police record a number of characteristics of the crash when they have been requested to assist. It is not always possible for the police to reliably determine the extent to which someone was distracted, tired, or under the influence of alcohol during the crash.

Therefore, in many cases it requires a more thorough investigation to determine the cause of the crash. This is why in-depth studies are being carried out by SWOV, Veiligheid.nl and the Directorate-General for Public Works and Water Management (Rijkswaterstaat, RWS), commissioned by the Ministry of Infrastructure and Water Management. Where possible and within the limits of the privacy laws, official police reports are also analysed. Since police investigations are mainly focused on the question of guilt, they do not always provide an answer about the original cause of the crash.

Data sources of crash data

In the Netherlands, traffic crashes are registered in BRON [Bestand geRegistreerde Ongevallen in Nederland (File of Registered Crashes in the Netherlands)]. BRON contains data of police records, incident management data, information from the Royal Netherlands Marechaussee (Military Police) and vehicle data from the Netherlands Vehicle Authority (RDW). The Directorate-General for Public Works and Water Management is responsible for this, acting on behalf of the Ministry of Infrastructure and Water Management. During a part of the term (2009-2013) of the previous strategic plan, crash registration deteriorated significantly. This was because of a change in the police's registration method and the way the Directorate-General for Public Works and Water Management processed data. Crash registration has in the meantime improved, due to different registration of information with the police, initiatives within the framework of STAR (Smart Traffic Crash Reporting, Private-Public Cooperation between the police, insurance companies and VIA [IT bureau]) and because of internal quality improvements at the Directorate-General for Public Works and Water Management.

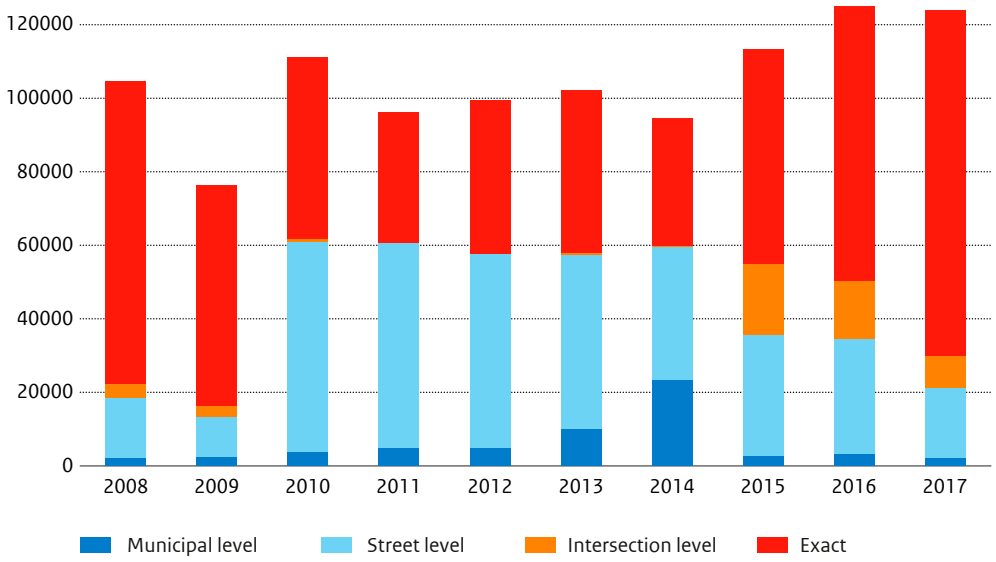
Important aspects, such as the exact location and transport modes involved, are known for an increasing proportion of registered crashes. This allows road authorities to analyse where which types of crash happen. The quality of the data on crashes with motorised traffic has meanwhile improved in such a way that it can help shape road safety policies. Work is still being done to further improve the registration of crash characteristics and the development of data over time.

In addition to BRON, the road fatalities statistics of Statistics Netherlands (CBS) and the National Basic Hospital Registration (Landelijke Basisregistratie Ziekenhuiszorg, LBZ) are the most important sources of data for estimating the number of road fatalities and the number of serious road injuries. This estimate is important because the police are hardly ever called in the event of crashes not involving motorised vehicles (such as cyclist-only crashes). By using the above-mentioned additional sources, Statistics Netherlands and SWOV can make an estimate of the actual number of road fatalities and serious road injuries.

New sources for unregistered crashes

We know little to nothing about some crashes.
In particular crashes that do not involve motor vehicles.
This is why it is important that we gain a better understanding of crashes that are not yet registered.
The network of partners with information about traffic crashes is therefore broadening.

Figure 10 Accuracy of crashes registered in BRON (source: RWS)



The Injury Information System of VeiligheidNL has therefore become more important in recent years. Data on road injuries treated at emergency rooms give a more complete view of the number of injuries in crashes not involving motor vehicles.

To get a better grasp of these crashes, it was decided to make ambulance data accessible for road safety policies. The big advantage of this is to provide road authorities with a better understanding of locations of crashes not involving motor vehicles.

Insurance companies also have information about crashes. However, this information cannot yet be used for road safety policies because it is not digitally or widely available. More information will be available in digital form in the future thanks to crash registration with apps. With the new Mobile Damage Report app of the Dutch Association of Insurers, police and the traffic IT agency VIA, additional crashes can be registered in the long term, with exact location determination, if people fill this in on the spot.

Data through technological innovation

Increase understanding through increase of data collection

We are on the brink of the fourth industrial revolution, with far-reaching robotisation and integration of sectors that were previously segregated, for example the IT and automotive industries. Even though it will take some time before we have the fully self-driving car, an increasing number of systems are being built into cars that also provide information about crashes. Sources such as E-call, Event Data Recorders and possible other sources can help to increase knowledge about the occurrence of crashes in the future. This requires a process of step-by-step innovation that takes the boundaries of the privacy laws into account.

From reactive to proactive policy

The registration of crashes is improving, but responding to crashes does not always produce the desired results, since crash concentrations dilute and are much more widespread across the network.[55] By only responding to crashes, the underlying problems, such as, for example, high driving speeds and insufficiently user-friendly verges, continue to exist.

[55] SWOV – Fact sheet 'The high risk location approach' (2010).

Moreover, if something can go wrong, one day it will go wrong. It is beside the point to wait for crashes and prematurely ended lives.

The challenge for the next years is to steer crash-based policies in the direction of proactive policy. This policy is based on risk indicators, for example for the quality of the (bicycle) infrastructure, driving speed and driving under the influence.

Risk-based policies require data to identify risk indicators so that public authorities can determine where problems occur and thus can prioritise. New technology and the development of key registers such as the Key Register of Large-Scale Topography (Basisregistratie Grootschalig Topografie, BGT), can help with the collection of data. An example of relatively new technology for data collection is Floating Car Data (FCD), giving insight into driving speeds thanks to data from navigation systems and apps, for example. The fact that these data are available does not mean they are also accessible to road authorities or that they can be applied immediately for road safety purposes. FCD is still in private hands and the data are so extensive that they have to be processed before they can be used. Smaller municipalities in particular lack the time and resources to examine and process data. It is therefore a task for central government to develop practical expertise in cooperation with knowledge institutions such as SWOV and CROW.

Preconditions for data deployment

Legal challenges

On 25 May 2018, the General Data Protection Regulation (GDPR) came into force. The new law ensures the expansion and reinforcement of the privacy rights of individuals. In addition, organisations working with this information are given more responsibilities. The information sources regarded as most relevant for traffic hazards contain personal data referred to in the GDPR or other laws. This places high demands on the organisations processing this information.

Data may be provided only if the information is necessary for the formal duties of a recipient public authority or if the information is sufficiently anonymised. Moreover, the data minimisation principle requires that for road crash registration no more data be processed than are strictly necessary to improve road safety policies. Current and new information sources will always have to be subject to scrutiny in the light of this law and information security measures are necessary before it is appropriate to process or transfer data.

Conclusion

Road crash registration has again greatly improved. Crash data can help shape road safety policies, especially when combined with risk indicators such as driving speeds and infrastructure quality.

Not all risk factors manifest themselves in crash concentrations, while they do give rise to a substantial proportion of the fatal and serious crashes. That is why the risk-based approach should be should be put into practice in the next few years, so that work can be carried out not only reactively, but also proactively.

Police registration is still the most important source for crash registration. In addition, for years hospital data have been used to estimate the actual number of serious road injuries (national figures and some breakdowns). By expanding the information with ambulance records, it is expected to gain a more complete picture of the locations of fatal and serious crashes.

It may be possible to expand the crash information in the future with information from insurance companies and data from smart mobility, such as floating car data, event data recorders and E-call. Access to these sources is currently limited; therefore they do not yet substantially improve current crash registration.

Privacy protection is a major asset in the Netherlands. Current and new information sources will always have to be subject to scrutiny in the light of the law before it is appropriate to process or transfer data.

Appendix C

Which process has been followed?

From system to implementation

The RSSP 2030 has been established during a process that has taken almost two years. Public authorities have expressly started working together to formulate this vision. This is why the public authorities explicitly chose to lay the foundation for a risk-based approach on the basis of a comprehensive exploration of all problems and environmental factors in this domain.

Four reasons make the process followed from the beginning of 2017 until the end of 2018 special:

1. system approach for the entire road safety environment;
2. broad and intensive commitment from the field;
3. a joint vision of all road authorities who jointly bear responsibility and want to give concrete form to this;
4. a total overview of known risks.

The system approach for a comprehensive road safety analysis.

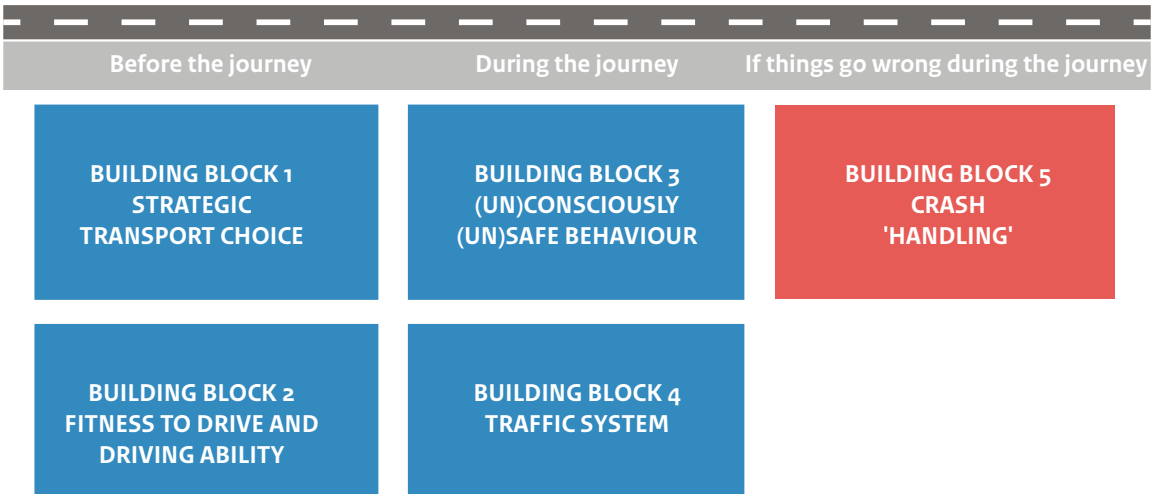
To develop a new approach, an inventory of the road safety system was made in the first half of 2018. Together with public authorities, scientists and civil society organisations it was examined how road safety is generated or how it is actually declining. This analysis helped form a comprehensive picture of the causes of road safety or the lack of this. This resulted in a system analysis that identified all known links concerning road safety and hazards.

First, a joint core message was prepared on the basis of the analysis of the road safety system that the RSSP 2030 had to convey. This message served as the common thread for the story. Subsequently, a clustering was made of the different themes within the scope of road safety. Some of these themes formed part of the previous strategic plan. Other developments, such as smartphones and pedelecs, have emerged relatively recently. The basis of the RSSP 2030 is therefore a comprehensive exploration of trends and developments.

Broad commitment from the field by working groups

After the system analysis per theme, the working groups identified the major risks. The working groups were arranged on the basis of the road user's journey in order to explore the problems. Not from the system, but from the risks experienced by the road user. Each working group developed one of the building blocks below. More than one hundred people from nearly fifty different organisations contributed to these working groups.

Figure 11: RSSP 2030 building blocks



For their building blocks, the working groups identified:
- the present state of affairs;
- the relevant developments;
- which policies are currently being implemented;
- which road safety risks arise.

Subsequently, a broad inventory of possible solutions and measures was prepared. Reasoning on the basis of risks was in keeping with the intended transition towards risk-based thinking and working. In addition to the working groups, two national meetups were organized. Both sessions were attended by more than one hundred representatives of national and local parties to provide input about the key points of attention and possible solutions in the RSSP 2030.

The division into building blocks was recognisable for the parties involved in road safety. At the same time, the format encouraged a new perspective on themes, because topics were interlinked, which was not the case in the past. The results of the building-block working groups provide a reference work for the current state of affairs on road safety in the Netherlands.

The RSSP 2030 key focus areas also became clear from the working groups, which led to the establishment of the RSSP 2030:
- substantive line arranged by key themes;
- proposals for measures for the risks identified;
- elaboration of the governance to take joint action.

A joint plan from all road managers

The results from the working groups have been translated into concrete results per theme that put the 'spot on the horizon'. These are fine-tuned based on stakeholder dinners and consultations with partners in civil society. The main line of the RSSP 2030 has been translated by a writing team into the plan that now lies before you. The main text contains the strategy for the policies for the next few years: where do want to go together? The main ideas are then translated into concrete implementation plans of central government and (local) public authorities. Preconditions were set by the public authorities in an initial agreement.

In 2019, public authorities are working on the implementation of the RSSP 2030. Where possible, they will immediately take action in the form of concrete measures. In addition, the governance structure is being worked out and established so that all road authorities can together take shared responsibility.

A total overview of the known risks

The extensive research of the working groups has been translated in this plan into a clear but complete overview of the known road safety risks. This is clustered in themes for targeted and unilateral policies to ensure that public authorities talk about the same topics in a clear format and that joint policies can be better designed.

Appendix D

Which documents underpin the RSSP 2030?

The RSSP 2030 uses information from several documents. This Appendix provides an overview of the key documents.

Reference works developed during the RSSP 2030 process

During the establishment of the RSSP 2030, broad-based working groups (see Appendix D) carried out explorations and inventories of underlying trends, developments and risks. In this context, reference works were prepared in the form of building blocks, risk assessments and inventories of ideas and possible solutions. These documents are publicly available on the website Verkeersveiligheid 2030.nl. The key documents are:

- **Road safety wall chart**

A comprehensive analysis of the road safety system. The key links regarding road safety and hazards are visualised in one overview. This overview forms the basis for a systematic approach to the major risks structured in the RSSP 2030.

- **Building block documents**

Working groups with the key stakeholders made an inventory of the key themes per building block (see Appendix B for an explanation). In one document per working group, the following elements appear:

- the key social trends and developments;
- recent policy measures;
- influencing factors and risks for road safety;
- available data and information;
- interfaces with other themes and policy areas.

- **Overview of possible solutions**

Expert groups of stakeholders and scientists were asked what they considered potentially the most promising solutions to include in the RSSP 2030. This has resulted in a summary of the key points of attention per possible solution (categorised according to the 3 Es: Education, Engineering, Enforcement). In addition to an analysis of the main lines, the key product was an overview table per possible solution with all possible measures. These tables have provided an overview of promising solutions to improve road safety per theme.

External documents and studies

The RSSP 2030 also uses a wide range of external knowledge and information. If direct source references are relevant, these are mentioned in the text. Below is an overview of the main external documents that served as inspiration.

- **Traffic Safety Coalition Manifesto**

The manifesto 'Road safety, a national priority' is a product of the road safety coalition, an initiative of the ANWB with a large group of partners in civil society aimed at making road safety more visible. The Manifesto and the RSSP 2030 both have the ambition to break the trend of the rising number of road injuries.

- **Sustainable Safety 3**

Sustainable Safety is a vision on the optimal approach to improving road safety. In 2018, SWOV published an update of the vision, called Sustainable Safety 3 (DV3). The starting point is 'the human dimension'. The vision is based on the needs, competences, limitations and vulnerabilities of road users.

- **Studies on key road safety themes**

Studies by SWOV into specific themes related to road safety are the most important source for the substantive analysis in the RSSP 2030. These studies identify, for example, the risks of target groups such as senior citizens.

- **SWOV Outlook**

In the autumn of 2018, SWOV carried out a preliminary outlook and made baseline forecasts for the number of fatalities and serious road injuries in the event of unchanged policies. At the end of 2018, estimates on the effectiveness of solutions from the RSSP 2030 will be added to these data. For each theme from the RSSP 2030 (in accordance with Chapter 4), an estimate is made of the effect on the number of fatalities and serious road injuries. These are further broken down into effectiveness of specific measures, if current insights allow this. The document serves as a tool for making policy choices.

Appendix E

Which parties are involved in the RSSP 2030?

Structures

- Core team/steering group
- Building block working groups
- National meetings (kick-off, meetups)

Andersson Elfers Felix (AEF) has supported the process of the establishment of the RSSP.

Core team (policy advisors public authorities)

Organisation		
Municipality of Alkmaar	Ministry of Infrastructure and Water Management	Institute for Road Safety Research (SWOV) (occasional member)
Municipality of The Hague	Ministry of Justice and Security	Union of Water Authorities (occasional member)
Municipality of Tilburg	Metropolitan Region Rotterdam The Hague	Association of Netherlands Municipalities
Association of Provincial Authorities	Directorate-General for Public Works and Water Management	Transport region Amsterdam

Steering group (directors of public authorities)

Organisation		
Association of Provincial Authorities	Ministry of Justice and Security	Transport region Amsterdam
Ministry of Infrastructure and Water Management	Metropolitan Region Rotterdam The Hague	Association of Netherlands Municipalities

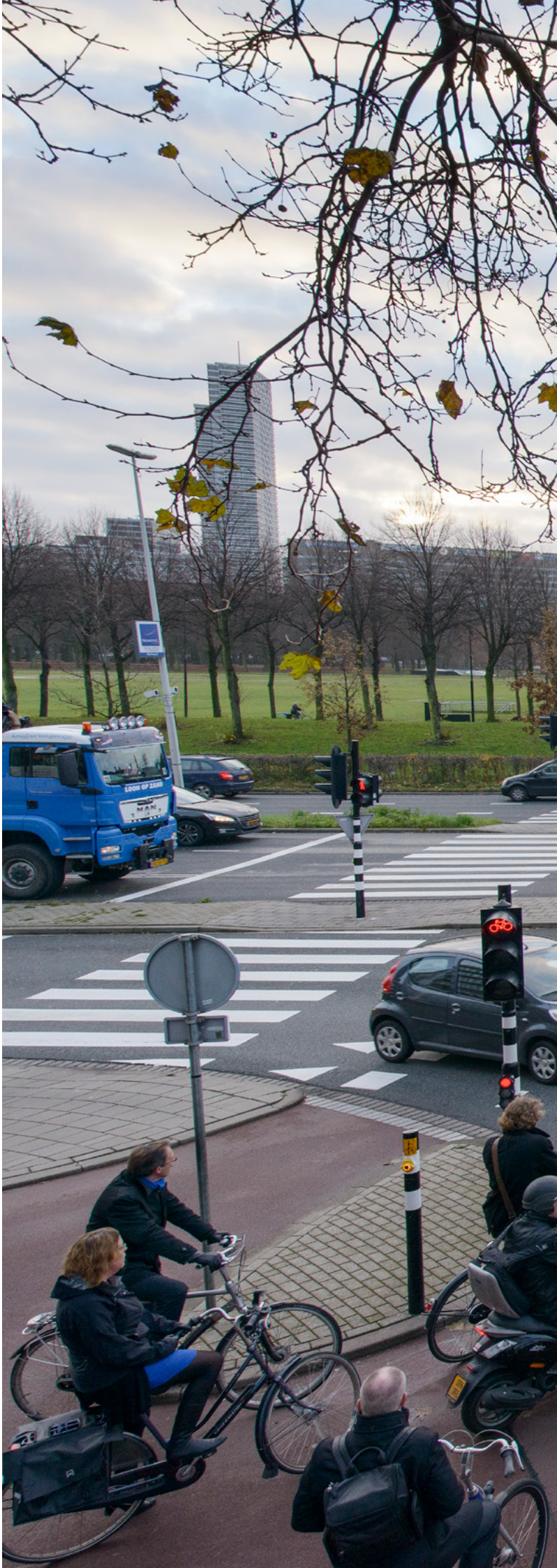
Building block working groups

Organisation		
Arcadis	Ministry of Justice and Security	Province of South-Holland
BOVAG trade organisation	Ministry of Public Health, Welfare and Sports	RAI Association
Central Driving Licence Agency (CBR)	Rotterdam-The Hague Metropolitan Area	Netherlands Vehicle Authority (RDW)
CROW (knowledge platform)	Dutch National Police	Royal HaskoningDHV
Cycling Federation	Public Prosecutor	TNO (Applied Scientific Research)

Organisation		
Municipality of Amsterdam	Police Academy	Institute for Road Safety Research (SWOV)
Municipality of Delft	Province of Brabant	Union of Water Authorities
Municipality of Houten	Province of Friesland	VeiligheidNL
Municipality of Nissewaard	Province of Gelderland	Dutch traffic safety association Veilig Verkeer Nederland
Municipality of Rotterdam	Province of Groningen	Dutch Association of Insurers
Municipality of Utrecht	Province of Limburg	Verkeer Studio
Municipality of Zoetermeer	Province of Noord-Holland	Brabant Traffic Centre
Hastig	Province of Overijssel	Association of Netherlands Municipalities (VNG)
Keypoint Consulting	Province of Zeeland	Walraad Advies
Ministry of Infrastructure and Water Management	Directorate General for Public Works and Water Management	
NLIngenieurs	TeamAlert	

National meetings

Large group of parties with representatives from the above organisations and other civil society organisations, interest groups, scientists, consultants.



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