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COMMISSION STAFF WORKING DOCUMENT

EU Road Safety Policy Framework 2021-2030 - Next steps towards "Vision Zero"

Staff Working Paper

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1. Introduction

In the “**Europe on the Move**” package in May 2018, the European Commission put forward a new approach to EU road safety policy¹, along with a medium term **Strategic Action Plan**². The purpose of this Staff Working Document is to set out how the new policy is being translated into action.

The number of people killed in road crashes around the world continues to increase. According to the World Health Organisation’s “Global Status Report on Road Safety”³, it reached 1.35 million in 2016 alone. This means that, worldwide, more people die as a result of road traffic injuries than from HIV/AIDS, tuberculosis or diarrhoeal diseases. And road crashes are now the **most common cause of death for children and young people** between 5 and 29 worldwide.

Compared to the global situation, Europe is doing relatively well, thanks to determined action at EU, national, regional and local level. Between 2001 and 2010, the number of road deaths in the EU decreased by 43%, and between 2010 and 2018 by another 21%. However, **25,100 people still lost their lives on EU roads** in 2018 and about **135,000 were seriously injured**⁴. This is an unacceptable and unnecessary human and social price to pay for mobility. In monetary terms alone, the yearly cost of road crashes in the EU has been estimated in a new study to be around EUR 280 billion, equivalent to about 2% of GDP⁵.

Moreover, progress in reducing EU-wide road fatality rates has **stagnated in recent years**. It appears highly unlikely that the EU's current medium term target, to halve the number of road deaths between 2010 and 2020⁶, will be reached. Even less progress has been made in preventing serious injuries.⁷

In some well-performing countries, fatality figures have even risen again in recent years. Whilst certain fluctuations are to be expected especially if the absolute figures and sample sizes are small, these cases need further analysis at national and EU level, along with analysis of shifts in the accident types and user groups involved, in order to allow a timely and effective policy response.

¹ European Commission (2018), Communication “Europe on the Move - Sustainable Mobility for Europe: safe, connected, and clean”, COM(2018) 293 final.

² Annex I to the Communication (https://eur-lex.europa.eu/resource.html?uri=cellar:0e8b694e-59b5-11e8-ab41-01aa75ed71a1.0003.02/DOC_2&format=PDF)

³ World Health Organisation (2018), “Global Status Report on Road Safety”:
https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/

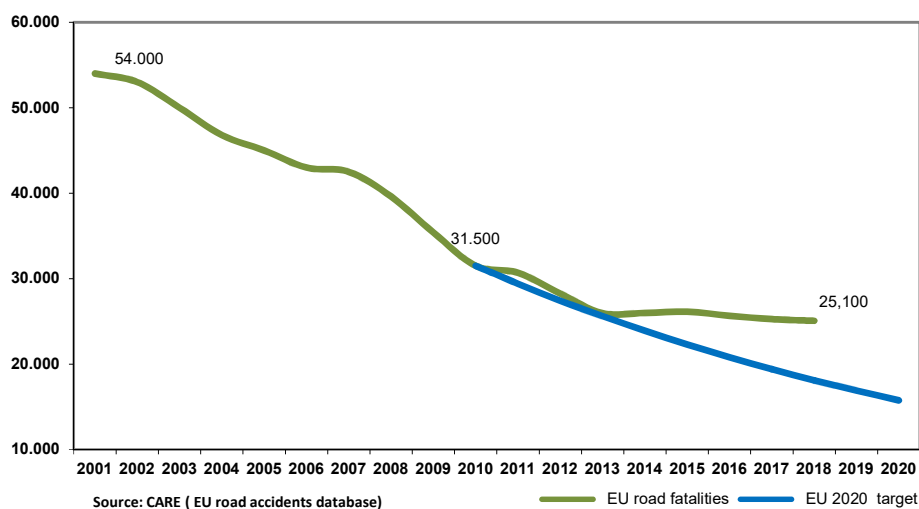
⁴ European Commission (4 April 2019), Publication of preliminary road safety statistics 2018: http://europa.eu/rapid/press-release_IP-19-1951_en.htm

⁵ European Commission (2019), Handbook on the External Costs of Transport
(https://ec.europa.eu/transport/themes/sustainable/studies/sustainable_en)

⁶ European Commission (2010), Communication “Towards a European road safety area: policy orientations on road safety 2011-2020”, COM(2010) 389 final.

⁷ Whereas fatalities decreased by 20% between 2010 and 2017, serious injuries (as reported by the police) decreased by only about 5% in the same period.

Figure 1: Evolution of EU road fatalities and targets for 2001-2020



The EU has reaffirmed its ambitious long-term goal, to move close to zero deaths by 2050⁸ ("Vision Zero"). By endorsing the **Valletta Declaration on road safety**⁹ of March 2017 in Council conclusions, EU transport ministers also, for the first time, set a **target for reducing serious injuries**, namely to halve the number of serious injuries in the EU by 2030 from a 2020 baseline.

To move towards these goals, a **new approach** is set out in the "Europe on the Move" Communication.

First of all, the **mindset** of "Vision Zero" needs to take hold more than it has so far, both among policy makers and in society at large. Road crashes are "silent killers", in that they often go virtually unnoticed in the public sphere, even though, taken together, they kill as many people – around 500 – as fit into a jumbo jet every week, in Europe alone. We do not accept deaths in the air, and we should no longer accept them on the road – the premise that no loss of life is acceptable needs to inform all decision making on road safety.

Secondly, we need to implement the **"Safe System"** at EU level. This is set out in more detail in Chapter 3 below. The core elements are ensuring safe vehicles, safe infrastructure, safe road use (speed, sober driving, wearing safety belts and helmets) and better post-crash care, all long established and important factors in the Safe System approach.

Thirdly, we have to be ready to confront **new trends**, such as the growing phenomenon of distraction by mobile devices. Some technological advances, first and foremost in **connectivity and automation**, will in future create new road safety opportunities by reducing the role of human errors. However, the best machines are not yet nearly as good as their human counterparts, and at least in the transition phase, new risks are emerging, for example related to the presence of vehicles with a wide range of different automated/connected capacity in mixed traffic with "traditional" vehicles and vulnerable road users such as motorbike riders, cyclists and pedestrians.

⁸ European Commission (2011), White Paper "Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system", COM(2011) 144 final.

⁹ Council of the European Union (2017), Council conclusions on "Road safety endorsing the Valletta Declaration (Valletta, 28 – 29 March 2017), 9994/17, <http://data.consilium.europa.eu/doc/document/ST-9994-2017-INIT/en/pdf>

Automation as well as the **sharing economy** (for example car and bicycle sharing schemes) and the constant evolution of new forms of personal mobility (for example – at least in 2019 – electric scooters) also provide new opportunities to tackle congestion especially in urban areas. But while these are exciting and more environmentally friendly transport options, we also need to ensure they are safe. Towns and cities in particular are well placed to develop the **synergies between safety and sustainability measures**: for example, less car use in cities combined with safer environments for pedestrians and cyclists will reduce CO2 emissions, improve air quality, reduce congestion – and help develop a more active and healthy population. Similar synergies can be found in enabling safe and affordable access to mobility to **all members of society**, in particular for the disabled and the growing share of elderly people. Last but not least, more attention is now being paid to the **gender** aspects of road safety (for example, a new crash test with focus on restraint systems coming into effect in 2022 also features a female crash test dummy).

The Commission will continue to legislate, as before, where necessary. We will complement these efforts with more intensive and **cooperative efforts** to develop strong European road safety policies with all stakeholders and use research and innovation support to prepare and test new policy-based solutions.

Finally, these EU level reflections are also intended as a contribution to the **global debate on road safety**, at a pivotal moment in the UN “Decade of Action for Road Safety” 2010-2020, with preparations for the 3rd Global Ministerial Conference on Road Safety in Stockholm (19-20 February 2020) in full swing. This is not just about setting up a fresh framework and targets for death and injury prevention on the world’s roads for the decade ahead, but about embedding road safety further into the Sustainable Development Goals.

2. Assessment of the EU Road Safety Policy Orientations 2011-2020

The “Policy Orientations on Road Safety 2011-2020”¹⁰ formed the **framework of EU level action** on road safety throughout this decade, bearing in mind that **competence for road safety policy is shared** between the EU and Member States. The Policy Orientations set the strategic target of reducing road fatalities by 50% between 2010 and 2020 and put forward actions in **seven focus areas** (education and training of drivers, enforcement of traffic rules, safer road infrastructure, safer vehicles, modern technologies, injuries and emergency response, vulnerable road users).

In 2015, an **interim evaluation**¹¹ concluded that EU road safety work was generally on the right track. EU level action showed added value and was likely to have accelerated change, in particular in Member States with relatively low levels of road safety. Continued efforts were needed to reach the strategic target, as several actions remained to be completed and followed up. However, action at Member State level had the highest potential for achieving quick improvements, for example better enforcement of traffic rules, especially targeting speeding offences. Seeing that serious injuries were not decreasing as quickly as fatalities (partly

¹⁰ European Commission (2010), Communication “Towards a European road safety area: policy orientations on road safety 2011-2020”, COM(2010) 389 final.

¹¹ European Commission (2015), Interim evaluation of the Policy orientations on road safety 2011-2020, https://ec.europa.eu/transport/road_safety/sites/roadsafety/files/pdf/interim_eval_2011_2020/interim_eval.pdf

because some fatalities prevented e.g. by safer vehicles and better post-crash care then boost the serious injury statistics), the evaluation suggested that a specific reduction target for serious injuries could complement the fatality target. It also recommended paying specific attention to measures for vulnerable road users, as well as ensuring coherence with other policy objectives especially as regards environmental, economic, health and social issues.

A **technical study** completed in early 2018¹² updated this interim evaluation and analysed the range of activities that were carried out throughout the strategy period. It highlighted the expected impact of EU initiatives on advanced and anti-lock braking for motorcycles and on the cross-border enforcement of traffic offences as well as on the automated emergency call system eCall. But it also noted that many actions were still ongoing and unlikely to show major effects before 2020, and that implementation at Member State level was variable. In conclusion, the study found “considerable scope for the further development of EU road safety goals, targets and evidence-based strategy” as part of an overall Safe System approach. It recommended a **sharpened focus** “on death and serious injury prevention and mitigation, an inclusive delivery framework and a broadening of scope to align with other societal objectives to scale-up capacity and investment in road safety”. It also recommended the setting of new interim objectives on the way to “Vision Zero” and the establishment of a range of **key performance indicators** for road safety (**KPIs**) at European level directly related to the prevention of death and serious injury to provide focus for intervention strategy and delivery.

3. The Safe System approach at EU level

In view of the above, the Commission decided to base its **road safety policy framework for the decade 2021 to 2030** on the Safe System approach. This approach, derived from European best practice and now recommended globally by the World Health Organisation, reframes road safety policy by focussing it on preventing deaths and serious injuries.

3.1 The Safe System

According to the Safe System approach, death and serious injury in road collisions are not an inevitable price to be paid for mobility. While collisions will continue to occur, **death and serious injury are largely preventable**. The Safe System approach aims for a more forgiving road system. It accepts that people will make mistakes, and argues for a layered combination of measures to prevent people from dying from these mistakes by taking the physics of human vulnerability into account. Better vehicle construction, improved road infrastructure, lower speeds for example all have the capacity to reduce the impact of crashes. Taken together, they should form layers of protection that ensure that, if one element fails, another one will compensate to prevent the worst outcome. This approach involves multi-sectoral and multi-disciplinary action and management by objectives, including timed targets and performance tracking.

¹² Jeanne Breen Consulting (2018), Study “Preparatory work for an EU road safety strategy 2020-2030”, <https://publications.europa.eu/en/publication-detail/-/publication/bd17c6de-6549-11e8-ab9c-01aa75ed71a1>

3.2 Targets and performance tracking

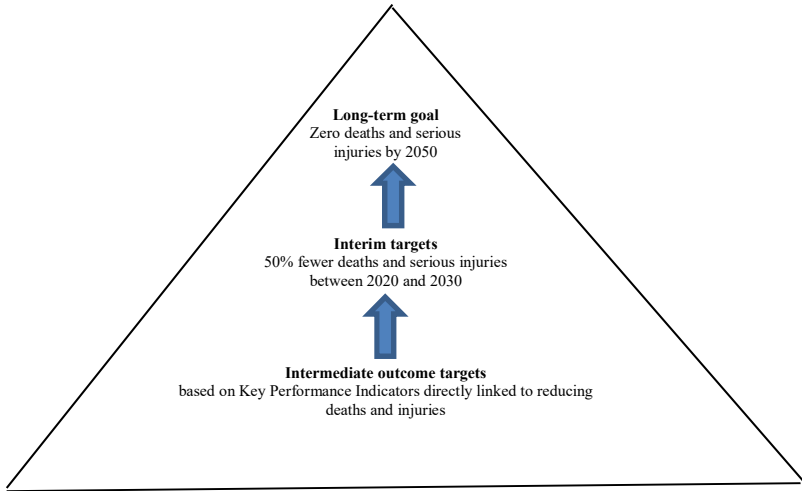
All Safe System work is based on a performance framework with a hierarchy of targets. The Communication “Europe on the Move – Sustainable Mobility for Europe: safe, connected and clean”¹³ of May 2018 **confirmed the EU’s long-term goal** of moving close to zero fatalities in road transport by 2050 and added that the same should be achieved for serious injuries. It also proposed **new interim targets** of reducing the number of road deaths by 50% between 2020 and 2030 as well as reducing the number of serious injuries by 50% in the same period, as recommended in the Valletta Declaration.

To measure progress, the most basic – and important – indicators are of course the result indicators on deaths and serious injuries, which will continue to be monitored closely. But as the Safe System approach relies on gaining a much clearer understanding of the different issues that influence overall safety performance, the Commission has elaborated, in close cooperation with Member State experts, **a first set of key performance indicators** (see chapter 4 and annex 1), which will be completed and refined further over time.

Reporting the necessary data to the Commission is voluntary for Member States. So the success of this exercise will rely on Member States’ wholehearted participation, in line with the level of ambition expressed by EU Transport Ministers in the Valletta Declaration. Indeed, a number of Member States already use some or even all of these indicators for their national policies. In any case, to ease implementation, different options are offered for certain indicators. Where existing national approaches differ widely, we want to preserve the best national practices, and so it is left as much as possible to Member States to decide on precise methodology, bearing in mind however that the aim is to collect comparable data. In addition, **the Commission is providing financial support to Member States** to facilitate work on methodology and measurements.¹⁴

The initial list of KPIs is only a starting point. This will be a living exercise - work will continue on further development of some of the indicators and on adding additional indicators over time.

Figure 2: Safe System results hierarchy at EU level



¹³ European Commission (2018), Communication “Europe on the Move - Sustainable Mobility for Europe: safe, connected, and clean”, COM(2018) 293 final.

¹⁴ The Connecting Europe Facility (CEF) Committee agreed to allocate Programme Support Action up to a total of EUR 5 million to this task.

3.3 Shared responsibility

For the Safe System approach to work, experience shows that **all actors need to play their part** in a coordinated manner. Public authorities in all sectors relevant for road safety objectives, including transport and infrastructure, environment, education, the police, public health, justice and tourism need to work together closely at all levels. In addition, all stakeholders have crucial roles to play: industry (including insurance companies), user associations, NGOs, schools, researchers and many more.

The same is of course true for a Safe System approach at EU level. The implementation of the framework is being overseen by the **High Level Group on Road Safety**, a group constituted of high ranking representatives from each of the national administrations, whose role has been enhanced to include **strategic advice** and frequent feedback, based on revised, transparent working methods. One meeting of the group per year is now open to stakeholders, and in addition, the Commission is planning to hold results conferences every two years (see chapter 6).

The Commission is also coordinating more systematically at senior management level, involving all of its Directorates-General with policies relevant to road safety objectives, to steer the operation of the framework and any future additional policy initiatives that derive from it.

To bring the different strands of work together and to advance road safety both inside the EU and worldwide, the EU Transport Commissioner has nominated a **European Coordinator for road safety and related aspects of sustainable mobility**.

In its Communication “Europe on the Move”, the Commission also called for **voluntary commitments from all sectors** to match the EU's level of ambition. As examples, it suggested possible contributions from manufacturers (e.g. in their development and marketing of new vehicle models), insurers (e.g. by changing the structure of premiums), the education sector (e.g. making road safety part of regular curricula), driving schools (e.g. training new and existing drivers and motorcyclists in new vehicle safety features), hauliers, professional drivers and car rental and other companies (e.g. by creating a safety-at-work corporate culture) and cities (e.g. through public procurement).

In response to this call, a **coalition of vehicle manufacturers, automotive suppliers and automobile clubs already signed a pledge¹⁵** to contribute to “Vision Zero” by 2050, with measures including targeted awareness campaigns, research efforts aiming to bring technologies to the market and informing drivers on the effective use of vehicle safety technologies.

The Commission will give visibility to such commitments as part of the **European Road Safety Charter¹⁶**, the biggest civil society platform for road safety in the world, which is currently being revamped.

¹⁵ <https://www.acea.be/press-releases/article/broad-road-safety-coalition-commits-to-work-towards-zero-traffic-fatalities>

¹⁶ <http://erscharter.eu>

The Commission has also started, in cooperation with the European Transport Safety Council (ETSC), the programme “**EU Road Safety Exchange**”, a capacity building and twinning programme focusing initially on six EU Member States¹⁷ with the most scope to improve their road safety performance, made possible by a European Parliament pilot project.

The Commission

- has established a list of KPIs to be connected to target outcomes, in close cooperation with Member States;
- has enhanced the mandate of the High Level Group on Road Safety to include strategic advice and frequent feedback;
- has nominated a European Coordinator for road safety and related aspects of sustainable mobility; and
- is setting up a Safe City award.

Throughout the framework period, the Commission will engage proactively with Member States and all stakeholders to monitor and accelerate progress, for example by organising biennial results conferences and by promoting voluntary commitments, in particular in the context of an enhanced European Road Safety Charter.

3.4 EU funding

EU funding is an **important lever to prepare future road safety solutions and accelerate the delivery of road safety results** across the EU and in particular in countries that are lagging behind in their road safety performance. The EU Research and Innovation Framework Programmes have been addressing road safety challenges, and research projects have been contributing significantly to shaping new solutions¹⁸. Relatively small-scale investment in deployment measures can make a big difference, as shown recently by the Slovakian Motorway Corporation, which upgraded 327 km of motorway with a programme of low-cost measures worth €40 million with an estimated benefit of avoiding about 355 deaths and serious injuries over 20 years¹⁹.

Various funding solutions already exist, such as **regional funds** (European Regional Development Fund (ERDF), Cohesion Fund) and the **Connecting Europe Facility (CEF)**. However, up to now these possibilities have been used only to a limited extent. Awareness of the different instruments is low, a situation that is exacerbated by the complexity of the funding environment. In the longer run, it will be important to provide stability and coherence in funding solutions for infrastructure upgrades, other road safety actions as well as capacity building.

In March 2019, as a first concrete initiative, the Commission and the European Investment Bank (EIB) launched the “**Safer Transport Platform**”, a one-stop-shop for road safety

¹⁷ The participating Member States are Romania, Bulgaria, Portugal, Greece, Poland and Lithuania.

¹⁸ Between 2002 and 2017, about EUR 172 billion were spent on road safety R&I. A comprehensive list of projects and their results is available in the TRIMIS report on transport safety: <https://trimis.ec.europa.eu/content/trip-research-theme-analysis-report-transport-safety>

¹⁹ <https://www.eurorap.org/portfolio-items/before-and-after-study-of-motorway-upgrading-in-slovakia-2016/>

investment under the auspices of the European Investment Advisory Hub (EIAH)²⁰. Specific tasks of the platform include raising awareness for existing funding and financing instruments among potential beneficiaries, providing tailored technical advice and assistance to investment proposals as well as tracking programmes and identifying further investment needs in the area of road safety.

In addition, EU co-legislators have agreed to make road safety actions more clearly eligible in future instruments (the **InvestEU²¹** and the **CEF2 regulation**). The Commission has also proposed that road safety is included as an enabling condition in the common rules for **regional funds** (under negotiation at the time of writing).

Funding will also be made available for **further research** under the new Research and Innovation Framework Programme Horizon Europe (e.g. further research on safe transition to automated mobility, on vehicle and infrastructure safety or on new detection technologies for drugs).

As regards **enabling and funding**, the Commission

- has elaborated new measures to support capacity building at Member State level, for example related to Safe System strategies (KPI measurement methodology) and in a twinning programme (EU Road Safety Exchange);
- continues to encourage the use of EU financial support from the European Structural and Investment Funds for road safety upgrades of infrastructure, especially in Member States with comparatively poor road safety performance, and encourages the use of the Connecting Europe Facility (CEF);
- has established, in cooperation with the European Investment Bank, the “Safer Transport Platform”;
- is streamlining and strengthening funding support for road safety actions (including, for example, joint cross-border road traffic enforcement operations organised in cooperation between police bodies and international cooperation) in the next Multiannual Financial Framework bearing in mind the complementarity of the different funding instruments; and
- is strengthening Research and Innovation needed for the development and implementation of Safe System strategies, especially in the context of the new EU Research and Innovation Framework Programme Horizon Europe.

4. Main intervention areas and measurement

The principle of **management by objectives** provides a well-defined focus for action. The Commission will facilitate the spreading of knowledge and best practice, and where necessary, contribute with recommendations and/or legislation.

²⁰ <https://www.eib.org/en/press/all/2019-088-safer-transport-platform-eib-and-european-commission-join-forces-to-support-investments-in-transport-safety-with-special-focus-on-roads>

²¹ https://ec.europa.eu/commission/publications/investeu-programme_en

Based on advice from leading experts and after extensive stakeholder consultation, the “Europe on the Move” Communication and Strategic Action Plan put forward a **set of themes** to tackle the biggest road safety challenges, namely: (1) infrastructure safety, (2) vehicle safety, (3) safe road use including speed, alcohol and drugs, distraction and the use of protective equipment, (4) emergency response. Crucial horizontal issues that come into play within all of these themes are enforcement and training.

4.1 Infrastructure - safe roads and roadsides

It is estimated that road infrastructure and road surroundings are a contributing factor in more than 30% of crashes.²² Well-designed and properly maintained roads can reduce the probability of road traffic accidents, while **"forgiving" roads** (roads laid out on Safe System principles e.g. with median safety barriers to ensure that driving errors do not need to have serious consequences) can reduce the severity of accidents that do happen.

Systematic **risk mapping and safety rating**, meaning *proactive* assessments in addition to the more traditional *reactive* analysis of high accident concentration sites (“accident hot spots”), provide useful tools to assess the safety quality of the road network and to target investment. The European Road Assessment Programme (**EuroRAP**), an international non-profit organisation of automobile clubs, road authorities and researchers, has carried out road assessment programmes across many EU Member States. These programmes result in safety ratings for roads and stretches of road of between 1 and 5 stars. Some Member States have developed their own assessment methodology.

In a recently agreed revision of EU infrastructure safety rules²³, the EU has mandated risk mapping and safety rating for roads of the strategic Trans-European Transport Network (TEN-T), motorways and primary roads, without prescribing a specific methodology. The Commission will however work closely with Member State experts towards a common methodology.

In addition, the revised rules prepare the way for higher levels of automation in vehicles, by launching work towards specifications for the **performance of road signs and markings**, including their placing, visibility and retro-reflectivity. This is important already today for the functioning of driver assistance systems like Intelligent Speed Assistance (in the case of speed limit signs) and Lane Keeping Assistance (in the case of road markings), and will become more important as the level of automation increases. According to the Commission’s impact assessment, these new rules have the potential to save up to 3200 lives and avoid 20.700 serious injuries by 2030.

²² Danish Road Traffic Accident Investigation Board (2014), "Why do road traffic accidents happen?"; Elvik, Hove et al (2012), "The Handbook of Road Safety Measures".

²³ Revision of Directive 2008/96/EC on road infrastructure management (not yet published): http://europa.eu/rapid/press-release_MEX-19-1377_en.htm

As regards **infrastructure safety**, the Commission

- is establishing an expert group to elaborate a framework for road classification that better matches speed limit to road design and layout in line with the Safe System approach;
- will facilitate exchange of experience on Safe System methodologies between practitioners (e.g. in a Forum of European road safety auditors);
- will publish the results of the network-wide safety assessment (safety ratings) to be carried out by Member States by end 2024 in accordance with the revised EU Road Infrastructure Safety Management Directive; and
- will analyse the need for further research and innovation on infrastructure safety e.g. on new technology for monitoring infrastructure conditions.

A KPI for road infrastructure should show the **safety quality of a road network** independent of road user behaviour or vehicle technology. Ahead of the network-wide safety rating required under new EU rules (with a first complete assessment expected by end 2024), and in the absence of an agreed common rating methodology, such an indicator has proved difficult to establish, and further work is needed to shape it.

The Commission services will work with Member States to define an infrastructure indicator on the following basis:

KPI for infrastructure:

Percentage of distance driven over roads with a safety rating above an agreed threshold.

The indicator will be based on a network rating or assessment methodology and take into account distance driven²⁴ or other proxy for exposure. This will be reviewed in ongoing work at expert level and eventually replaced by the network-wide safety rating under the new EU infrastructure safety rules.

²⁴ Many Member States do not yet have data on “distance driven”. The European Statistical Office Eurostat is working on gathering such data.

4.2 Safe vehicles

The EU has had a big impact in the last few decades on improving vehicle safety, thanks to successive iterations of the vehicle General Safety Regulation²⁵ and the Pedestrian Safety Regulation²⁶ that contain mandatory and essential safety requirements for vehicles sold in the EU. Innovations in **vehicle technology** can help both mitigate the severity of crashes and reduce the likelihood of crashes through on the one hand passive safety features such as safety belts, airbags, and general crashworthiness of vehicles that protect occupants when a collision is inevitable, and on the other hand active safety features, such as Advanced Emergency Braking, Intelligent Speed Assistance, Stability Control and Lane Departure Warning that may prevent accidents from happening altogether.

It should however also be noted that apart from demanding EU vehicle safety legislation, vehicle manufacturers have been further encouraged to make vehicles even more safe and to fit state-of-the-art advanced safety technologies through consumer new car assessment and rating programmes, notably as carried out by the European New Car Assessment Programme (Euro NCAP). **Euro NCAP**, run by automobile clubs, research institutes and transport administrations, provides a valuable means of assessing whole car safety quality, and a good correlation exists between Euro NCAP test results and crash outcomes. Research found 5-star rated Euro NCAP cars to have a 68% lower risk of fatal injury and a 23% lower risk of serious injury than 2-star rated cars²⁷.

The revision of the vehicle **General Safety Regulation**, agreed in early 2019²⁸, which mandates a range of new advanced safety features (including Intelligent Speed Assistance, Emergency Lane Keeping System, Direct Vision requirements for buses and lorries), is conservatively estimated to save at least 7 300 lives and avoid 38 900 serious injuries by 2030, but bringing the expected number of lives saved to 25 000 and 140 000 serious injuries by 2037. This regulation will also help for accident analysis, as all new vehicles will be required to be fitted with event data recorders.

It is also important to underline that the industry needs to fulfil its duty to provide safe products to consumers and, in case a safety problem arises, needs to take appropriate remedial measures.²⁹ As safety problems often appear after the placing on the market, regular roadworthiness checks are important to ensure that consumers are protected through the lifetime of the vehicles.

²⁵ Regulation (EC) No 661/2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor.

²⁶ Regulation (EC) No 78/2009 on the type-approval of motor vehicles with regard to the protection of pedestrians and other vulnerable road users.

²⁷ Kullgren, Lie, Tingvall (2010), Comparison between Euro NCAP test results and real-world crash data, Traffic Injury Prevention, 2010 Dec 11(6):587-93; cited in Jeanne Breen Consulting (2018), Study “Preparatory work for an EU road safety strategy 2020-2030”, <https://publications.europa.eu/en/publication-detail/-/publication/bd17c6de-6549-11e8-ab9c-01aa75ed71a1>. The study’s results remain relevant although Euro NCAP ratings have changed in the meantime.

²⁸ http://europa.eu/rapid/press-release_IP-19-1793_en.htm

²⁹ For the last three years, more than 400 relevant notifications per year have been received through the rapid alert system RAPEX:

http://81.247.254.96/QvAJAXZfc/opendoc.htm?document=Rapid_Alert_System_statistics.qvw&host=QVS@vsrv1463&anonymous=true

Vehicle procurement also presents an interesting opportunity to positively influence road safety. This holds for private owners of large vehicle fleets and companies requiring logistics services, but also for public procurement. The EU is exploring how it can financially assist initiatives for fleet safety upgrades in the context of the “Safer Transport Platform” (see chapter 3.4 above).

As regards **vehicle safety**, the Commission

- is assessing whether retrofitting the existing fleet (particularly buses and trucks) with Advanced Driver Assistance Systems is feasible and cost-effective;
- is working with Member States, stakeholders and the UN Economic Commission for Europe (UNECE) on the implementing rules for the new vehicle General Safety Regulation;
- is working with Member States to enable necessary conditions for the proper functioning of the overridable Intelligent Speed Assistance, as mandated through the revised General Safety Regulation, including regarding the availability of speed limits in a digital format, and may consider for the future the feasibility and acceptability of non-overridable Intelligent Speed Assistance; and
- encourages Member States to consider, whilst preserving competition in the internal market, national incentives to fast-track proven technologies by a range of means including procurement, safe travel policies, tax and insurance incentives.

The Commission will evaluate the need for further action, including as regards tyre regulations to test grip performance on end-of-life tyres, as regards the legal framework for vehicle roadworthiness testing, including actions to tackle potential vehicle tampering by owners/holders, and as regards making safety considerations more prominent in EU public procurement legislation.

Major investment is now being devoted to developing connected and automated vehicles and their interaction with other road users and with the digital and physical road infrastructure. A specific **EU strategy on connected and automated mobility** was adopted as part of the “third Mobility Package”³⁰. These developments offer tremendous potential in reducing and eventually eliminating driver errors, but also create new challenges, such as cyber-security and the interaction with “traditional” vehicles and other road users.

The new vehicle **General Safety Regulation** is now providing a clear legal framework for the approval of automated/connected vehicles, the first one in the world. Since the new regulation will only apply to automated vehicles from 2022, the Commission services developed with Member States guidelines for the approval of such vehicles in the meantime.³¹

The Commission is also setting up an EU platform for the coordination of large scale testing and pre-deployment activities of automated/connected mobility which could be used for road safety topics. The results of this work will feed into the European Partnership for Safe and

³⁰ European Commission (2018), Communication “On the road to automated mobility: An EU strategy for mobility of the future”, COM/2018/283 final.

³¹ https://ec.europa.eu/growth/content/guidelines-exemption-procedure-eu-approval-automated-vehicles_en

Automated Road Transport that has been identified as a priority in the strategic planning process of the future Horizon Europe research and innovation programme.

Taking into account the complexity of automated driving functions, Member States authorities will require access to in-vehicle data to determine liability in case of an accident. Moreover, it needs to be considered if and how the collection of anonymised data on the safety performance of automation technologies should be regulated in order to allow for road safety research and development. This involves important data access and protection issues. Another factor is more and more complex **human-machine interfaces** (HMI). It will be important to ensure that training and qualification are brought up to date to enable drivers to drive automated vehicles as they emerge onto the market in the coming years.

As regards **preparing for connected and automated mobility**, the Commission

- is implementing the EU strategy on automated/connected mobility.
- has adopted specifications on cooperative intelligent transport systems (delegated act under the Intelligent Transport Systems Directive), including vehicle-to-vehicle and vehicle-to-infrastructure communication (https://ec.europa.eu/transport/themes/its/news/2019-03-13-c-its_en); and
- will work closely with stakeholders to launch a process towards developing a code of conduct for the safe transition to the higher levels of automation, to make sure that requirements and procedures take road safety considerations (mixed traffic, interaction with other road users, transition of control, skills degradation, platooning, shuttles etc.) fully into account, in particular ensuring coherence among national traffic rules and avoiding contradiction with EU vehicle rules.

Throughout the framework period, the Commission will evaluate the need for further complementary actions, such as in promoting the harmonisation of human-machine interfaces fitted to vehicles to ensure all drivers and users can interact with vehicles without compromising safety and addressing access to in-vehicle data. The Commission will evaluate whether to review legislation on driving licences, roadworthiness, training of professional drivers and driving time to take developments in cooperative, connected and autonomous mobility into account.

Furthermore, the Commission will encourage and support research and innovation within the new EU Research and Innovation Framework Programme Horizon Europe as regards the interaction between humans and technology, in particular human-machine interfaces and the safe transition towards automation, taking into account enforcement and security as well as the further development of passive safety for automated vehicles and the fail-safety of critical vehicle components.

Following the discussion with Member State experts, the Commission services will collect data for a vehicle safety KPI based on Euro NCAP ratings.

KPI for vehicle safety:

Percentage of new passenger cars with a Euro NCAP safety rating equal or above a predefined threshold (e.g. 4-star) – to be specified further.

As discussed with Member State experts, an indicator based on the age of the fleet would be a useful additional indicator, particularly in the interim. The Commission services will continue to work with Member State experts to consider also the use of roadworthiness testing data as a basis for another complementary indicator.

4.3 Safe road use

Safe road use (speed, driving without alcohol and drugs, undistracted driving, safety belt and child restraint use, helmet use) is the third pillar for the prevention and mitigation of fatalities and serious injuries in collisions. In relation to all these issues, the human factor in road safety plays a crucial role, and the Commission will work closely with Member States as these matters have traditionally been dealt with at national level. The focus on general education and awareness has been shown to be generally less effective and has less prominence in modern Safe System approaches, but driver licensing, targeted education and awareness raising, supported by strong and sustained compliance and enforcement regimes, all have an important role to play in giving road users the **capability and willingness to use roads and vehicles safely**.

The EU driving licence directive³², which established a harmonised EU licence model and introduced minimum requirements for obtaining licences, is one of the most tangible and well-known instruments of EU road safety policy. Together with the recently modernised directive on professional drivers' training³³, it forms a licencing and training framework that will have to be kept up to date with developments in vehicle and infrastructure technology.

Rules like speed and alcohol limits, as well as enforcement, are a competence of the Member States, although the responsibility for setting speed limits on non-motorway or urban roads is often left to regions or municipal authorities. However, there can also be an important EU dimension - the EU has developed legislation to facilitate the pursuit of traffic offenders from another Member State to the one where they committed the offence. Non-resident drivers in the EU represent about 5% of traffic, but about 15% of traffic offences. Current **cross-border enforcement** legislation³⁴, which tackles the biggest offences including speeding, running red lights, failure to use safety belts and drink driving, is limited to the exchange of information between authorities on traffic offences committed abroad. The Commission services are currently assessing how it could be made more effective. Another question to examine is whether the mutual recognition of driving disqualifications and of penalty points between countries (where a penalty point system exists) could also be feasible and add value.

³² Directive 2006/126/EC on driving licences.

³³ Directive 2003/59/EC of the European Parliament and of the Council of 15 July 2003 on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods or passengers, amending Council Regulation (EEC) No 3820/85 and Council Directive 91/439/EEC and repealing Council Directive 76/914/EEC, OJ L 226, 10.9.2003

³⁴ Directive (EU) 2015/413 facilitating cross-border exchange of information on road-safety-related traffic offences.

4.3.1 Safe speed

About one third of fatal crashes are (partly) caused by **excessive or inappropriate speed**³⁵. According to research, the risk to be involved in a crash when speeding is 12.8 times higher than for non-speeders³⁶. And higher speed crashes cause far more damage than lower speed ones. Based on research results,³⁷ the European Transport Safety Council (ETSC) has calculated that if mean speeds were to drop by only 1 km/h on all roads across the EU, more than 2200 road deaths could be prevented every year.

The rate of compliance with speed limits cannot be easily compared between different Member States, but given the importance of speed limit compliance and based on the results of the work with Member States experts, the Commission services will collect data for a KPI for speed which is based on objective observations.

KPI for speed:

Percentage of vehicles travelling within the speed limit.

4.3.2 Sober driving (alcohol and drugs)

The problem of **drink-driving** is difficult to quantify (data collection methods vary widely), but it is realistic to estimate that alcohol is involved in around 25% of all road deaths³⁸.

The magnitude of the **influence of drugs** is even more difficult to ascertain, as no harmonised test methods exist and data is not yet collected systematically. However, it has been shown that driving under the influence of some prescription drugs and illegal drugs can multiply the risk of accident by a factor of 2 to 7³⁹.

Currently, the Commission recommends a **maximum permitted blood alcohol content (BAC)** of 0.5% for the general driving population⁴⁰. Some Member States and safety organisations have called for this to be revised, to enable stronger harmonisation and perhaps also to address key risk groups such as professional drivers or young drivers.

A KPI on driving under the influence of drugs is generally agreed to be very important, but not yet feasible. More work is needed on drug testing procedures because of the various psychoactive substances (both legal and illegal) to be detected. There are also issues around cost, as well as wide divergences in Member State practices. So while work should continue, the Commission has not established a KPI at this stage.

A KPI for driving under the influence of alcohol seems to be more feasible, but there are still wide divergences in methodology. A KPI based on random blood alcohol content testing is

³⁵ OECD/ECMT (2006): Speed management.

³⁶ Dingus et al (2016): Driver crash risk factors and prevalence evaluation using naturalistic driving data.

³⁷ Elvik et al. (2019): Elvik R, Vadeby A, Hels T and van Schagen I (2019) Updated estimates of the relationship between speed and road safety at the aggregate and individual levels.

³⁸ Resulting from accidents where at least one of the involved parties was under the influence of alcohol; European Commission (2014), Study on the prevention of drink-driving by the use of alcohol interlock devices Final Report.

³⁹ Final report of DRUID project (2012) (http://www.emcdda.europa.eu/publications/thematic-papers/druid_en)

⁴⁰ Commission recommendation of 17 January 2001 on the maximum permitted blood alcohol content (BAC) for drivers of motorised vehicles.

the preferred option, as this is generally regarded to deliver an accurate picture of the situation. However, as random testing is costly and not allowed in some Member States, breath testing results from enforcement actions is considered the second best option. If neither of these two options is feasible for objective reasons, data from self-reported behaviour based on anonymous surveys may also be accepted.

KPI for sober driving:

Percentage of drivers driving within the legal limit for blood alcohol content (BAC).

4.3.3 Preventing driving whilst distracted

A growing amount of evidence suggests that **distraction** whilst driving, in particular by mobile devices like smartphones, but also by electronic systems integrated in vehicles, is a major factor in causing crashes. Research found that the risk of being involved in a crash is increased by 12.2 times when dialling and 6.1 times when texting⁴¹. Distraction has been found to be a factor in 10 to 30% of road crashes, and the Spanish authorities reported that it had overtaken speed and alcohol as highest risk factors in 2017⁴². However, more research on the magnitude of the problem (and on ways to tackle it) is needed. First steps however are being made. On technical level, the revised vehicle General Safety Regulation will introduce driver drowsiness and distraction warning technology, assessing the driver's alertness and warning the driver if needed, to be installed in vehicles on a mandatory basis.

As the increased use of **mobile devices**, mainly smartphones, and in particular the use of texting applications, has led to a big increase in the importance of distraction as a crash factor, the use of a handheld mobile device while driving was chosen as a simple and measurable proxy to assess the driver distraction problem for the purposes of defining a KPI⁴³.

KPI for driver distraction:

Percentage of drivers not using a handheld mobile device.

4.3.4 Use of safety belts, child restraint systems and protective equipment

An estimation based on data from the European CARE database⁴⁴ revealed that about 5700 lives are already saved by safety belts and child restraints in the EU per year, and that about 2800 lives could additionally be saved if all car occupants wore their safety belts. The use of

⁴¹ Dingus et al (2016): Driver crash risk factors and prevalence evaluation using naturalistic driving data.

⁴² <http://www.dgt.es/Galerias/prensa/2018/09/NP-campana-de-distracciones.pdf>

⁴³ A negative formulation (% of drivers NOT using a handheld mobile device) was chosen to avoid confusing results in comparison to other indicators.

⁴⁴ https://ec.europa.eu/transport/road_safety/specialist/statistics_en

safety belts in coaches is mandatory as established by EU law⁴⁵; however, compliance is very low as some studies show⁴⁶.

The use of **crash helmets** by motorcyclists and moped riders can reduce fatal injury to a very large extent. It is estimated that increasing helmet use to 100% could save the lives of 206 riders of powered two-wheelers per year⁴⁷.

Opinions on whether or not the wearing of a **helmet for cyclists** should be mandatory differ, including between Member States. Some Member States have made helmets compulsory for children. However, there is solid evidence supporting its effectiveness: research showed that helmets can reduce serious and fatal head injury by around two thirds (65% reduction in death and 69% reduction in serious head injury)⁴⁸.

The following two KPIs will be used in this area:

KPI for the use of safety belts and child restraint systems:

Percentage of vehicle occupants using the safety belt or child restraint system correctly.

KPI for protective equipment:

Percentage of riders of powered two-wheelers and of cyclists wearing a protective helmet.

5.3.5 New mobility patterns and demographic change

Mobility patterns are in a process of profound change. More and more people opt to **cycle** (including on electric bicycles) **and walk**, be it for environmental considerations or for reasons of personal health and fitness, which means that there are more vulnerable, unprotected users on the roads. Stronger active mobility policies especially in urban areas can be a major game changer in reducing CO2 emissions, improving air quality, and reducing congestion. But measures that encourage these mobility choices also need to take safety considerations into account systematically.

Shared forms of individual transport (car or bicycle sharing schemes) increase mobility choices and – particularly as car sharing increasingly focuses on electric vehicles – will have beneficial environmental effects. However, there are challenges: shared cars may be equipped with safety features with which drivers are not familiar, which will have an effect on safety that is yet to be determined. And their uptake by certain user groups (mainly families) is hampered if cars are not equipped with child restraint systems. Conversely, shared car fleets that are newer and better maintained than average private cars support road safety objectives.

A new challenge especially in urban environments is the proliferation of **“free floating” sharing schemes** for (electric and conventional) bicycles and electric scooters – allowing users to leave the bicycles and scooters where it is convenient for them. Whilst they enrich the

⁴⁵ Directive 2003/20/EC on the approximation of the laws of the Member States relating to the compulsory use of safety belts in vehicles of less than 3.5 tonnes.

⁴⁶ Fundación MAPFRE (2017), Report on the use of the safety belt in buses (only in Spanish), <https://www.fundacionmapfre.org/documentacion/publico/i18n/consulta/registro.cmd?id=159788>.

⁴⁷ Jeanne Breen Consulting (2018).

⁴⁸ Olivier, Creighton (2016), Bicycle helmets and helmet use: a systematic review and meta-analysis, International Journal of Epidemiology.

mobility mix in cities, Member States and municipal authorities are currently struggling to find the right basis for their use in a way that promotes innovative forms of urban mobility, but also ensures safety. There is currently no concrete EU initiative in this area, but the Commission is facilitating the exchange of experience between Member State authorities and is considering how to ensure a safe framework for their use.

Demographic change leads to a growing percentage of **elderly people** who need safe forms of mobility. Safe mobility also has to be inclusive to cater for the needs of disabled people.

Last but not least, **safety at work** is an important aspect, with relevance in particular for hauliers and other transport-related businesses.

As regards **safe road use**, the Commission

- has spearheaded the update of the UNECE regulation making safety belt reminders mandatory for all front and rear seats in passenger cars and vans as well as on all front seats in lorries and buses;
- is assessing options to improve the effectiveness of the directive on cross-border enforcement of traffic offences, on the basis of an evaluation carried out in 2016;
- is assessing a possible revision of the European driving licence directive and a possible legislative initiative on the mutual recognition of driving disqualifications;
- is assessing how to strengthen the EU recommendation on permitted blood alcohol content, e.g. recommending stricter limits for professional drivers and/or novice drivers and giving guidance on the use of alcohol interlocks.

The Commission will also seek to encourage and support research under the future EU Research and Innovation Framework Programme Horizon Europe on developing testing methods and cheaper tools for drug detection as well as on automatic assessment of fitness to drive and on avoiding inattention including distraction by electronic systems integrated in vehicles. It will assess whether to mandate individual electronic safety belt reminders in coaches and to develop a code of good practice with industry to ensure that in-car information systems and phones are designed in a way to allow safe use. The Commission will identify the need for further action, for example in relation to the definition and implementation of the notion of "safe speed"; protective wear for two-wheeler riders including cyclist helmets and protective clothing for motorcyclists; and/or graduated licencing for novice drivers.

Furthermore, the Commission will explore road safety aspects of urban mobility planning, safety at work, fitness to drive and ride and new business models in personal transport. The Commission will also encourage and support research and innovation under the next EU Research and Innovation Framework Programme Horizon Europe with the aim of informing road safety policy, including as regards new mobility patterns and societal changes.

4.4 Fast and effective emergency response

About 50% of deaths from road traffic collisions occur within minutes at the scene or in transit and before arrival at hospital. For those patients who are taken to hospital, 15% of deaths occur within the first 4 hours after the crash, and 35% occur after 4 hours⁴⁹. Post-crash (trauma) care or trauma management refers to the initial medical treatment provided after a crash, whether it is administered at the scene, during the transportation to a medical centre or indeed subsequently. **Effective post-crash care**, including fast transport to the correct facility by qualified personnel, reduces the consequences of injury. Research indicates that reducing the time between the crash and the arrival of emergency medical services from 25 to 15 minutes could reduce deaths by one third⁵⁰ and that systematised training of rescue and ambulance teams may reduce the extrication time of entrapped car and truck crash victims by 40-50%⁵¹.

In this context, the Commission is closely monitoring the effects of the roll-out of **eCall**⁵², the automated emergency call in the event of a crash.

As regards **post-crash care**, the Commission

- is assessing the effect of eCall and will be evaluating the possible extension to other categories of vehicles (heavy goods vehicles, buses and coaches, motorcycles, and agricultural tractors);
- is facilitating closer contacts between road safety authorities and the health sector to assess further practical and research needs (e.g. how to improve on-scene diagnosis as well as communication systems and standards for emergency services, further develop rescue procedures, ensure matching injuries with qualified staff and appropriate medical facilities, how to transport injured persons to emergency facilities or medical care to accident sites more quickly, e.g. by drones).

As a result of the technical work of the Commission services with Member State experts, the following KPI will be used:

KPI for post-crash care:

Time elapsed in minutes and seconds between the emergency call following a collision resulting in personal injury, and the arrival at the scene of the emergency services.

⁴⁹ European Commission (2018), ERSO Synthesis on post-impact care.

⁵⁰ Sánchez-Mangas, García-Ferrer, de Juan, Arroyo (2010), The probability of death in road traffic accidents. How important is a quick medical response? Accident Analysis and Prevention 42 (2010) 1048.

⁵¹ European Commission (2018), ERSO Synthesis on post-impact care.

⁵² https://ec.europa.eu/transport/themes/its/road/action_plan/ecall_en

5. The wider global picture and the EU's role

The EU has the safest roads in the world with just 2% of the estimated 1.35 million fatalities worldwide. Although much remains to be done, it is important to reflect on where initiatives at all levels have had the biggest impact over the past decades and where European experience could be most useful to other regions in the world. This includes the management approach chosen for the EU's road safety framework as well as the choice of KPIs and the underlying metrics.

The Commission's focus has tended to be on its **immediate neighbours**, in particular the countries of the Western Balkans and of the Eastern Partnership. Both regions have signed Road Safety Declarations in 2018, and the EU is supporting them in their implementation. But we are now increasingly cognizant of our global role. Road safety is one of the fields chosen for **intensified cooperation with the African continent** in the framework of an EU-Africa Transport Taskforce⁵³, organised jointly by the European Commission and the African Union Commission. Three meetings of the road safety cluster are being held in 2019, which should result in concrete recommendations for further cooperation. In line with the EU-Asia connectivity strategy, the Commission is promoting road safety by sharing best practices and the most suitable solutions to reduce road fatalities and injuries in its engagement with Asian countries⁵⁴. 2019 has seen close collaboration with the **ASEAN countries** through the E-READI project⁵⁵.

The EU is a contributor to the newly created **UN Road Safety Trust Fund** and holds a seat on its Advisory Board.

In addition, reflecting on the EU's road safety role also means assessing its role vis-à-vis the United Nations and in particular the **United Nations Economic Commission for Europe (UNECE)**. The EU already speaks with one voice on vehicle regulations (World Forum for Harmonization of Vehicle Regulations, Working Party 29), is Contracting Party to two agreements on vehicle regulations⁵⁶ and was very active in setting up a dedicated working party on automated and connected vehicles (Working Party on Automated/Autonomous and Connected Vehicles, GRVA). It should be assessed how the EU's role can be reinforced, in particular as a potential amendment of the Vienna and Geneva Conventions on Road Traffic in relation to the deployment of automation is currently being discussed in the Global Forum for Road Traffic Safety (WP1) of UNECE.

The **Global Ministerial Conference on Road Safety** in Stockholm in February 2020 offers an important opportunity to take stock of the current “UN Decade of Action for Road Safety” and to develop guidance for the next decade, including on global targets. In the framework of the Sustainable Development Goals (SDG), SDG target 3.6 seeks to halve road traffic deaths and injuries by 2020 and SDG target 11.2 includes a focus on providing safe, sustainable transport systems for all in the urban context, improving road safety and with special attention to key groups such as children and the vulnerable.

In view of the magnitude of the road safety problem worldwide, an ambitious new global medium term target is going to be needed. Another key question will be how to link road

⁵³ https://ec.europa.eu/transport/modes/air/news/2019-01-24-africa-europe-alliance_en

⁵⁴ https://ec.europa.eu/sites/eeas/files/joint_communication_-_connecting_europe_and_asia_-_building_blocks_for_an_eu_strategy_2018-09-19.pdf

⁵⁵ https://ec.europa.eu/europeaid/enhanced-regional-eu-asean-dialogue-instrument-e-readi-action-document_en

⁵⁶ See Council decisions 97/836/EC and 2000/125/EC.

safety objectives with other development goals, in particular as regards sustainability and human health, just to name two examples.

As regards **road safety activity outside the EU**, the Commission

- is contributing to the newly established UN Road Safety Trust Fund and holds a seat on the Advisory Board;
- is co-organising with the African Union Commission the road safety cluster of the EU-Africa Transport Taskforce;
- will further develop road safety cooperation with the EU's neighbours, in particular the Western Balkans and the Eastern Partnership, building on Road Safety Declarations adopted in 2018, in particular by sharing best practice and supporting capacity building;
- will continue pushing the agenda on vehicle regulations in UNECE as needed by the new vehicle General Safety Regulation;
- is evaluating how the coordination of traffic rules (UN Geneva and Vienna Conventions) could be strengthened, including at EU level, so that traffic rules can be adapted to cooperative, connected and autonomous mobility in a harmonised way; and
- will analyse what research and innovation within the next EU Research and Innovation Framework Programme Horizon Europe can contribute to radically improve road safety outside the EU particularly in developing countries.

6. Monitoring and review

The initial eight KPIs described above, together with the results indicators on deaths and serious injuries, will form the **basis for monitoring progress** in the joint road safety work at EU, Member State, regional and local level. Member States will be able to start collecting data in 2020, which will be taken as the baseline year for the value of the indicators. As of 2020, the Commission will analyse the data together with Member State experts and will report on it as of 2021. And work will carry on to **strengthen the existing KPIs** and to develop additional ones.

As a next step, the Commission will also work with Member States on **outcome targets** based on the indicators, in as far as this is possible. This work needs to take into account that outcomes will not be comparable across Member States where national rules differ (e.g. different blood alcohol content limits or whether or not it is mandatory for cyclists to wear a helmet).

Progress will be monitored first and foremost in the **High Level Group on Road Safety**. The Commission has started to open one meeting per year of the group to **stakeholders**, to ensure

transparency and inclusiveness of the group's work and to benefit from the widest possible input in its decision-making.

In addition, the Commission will organise – every two years – **results conferences** open to all public and private stakeholders that will provide the occasion to take stock of progress achieved and that will offer participants a forum for analysis and exchange.

ANNEX: List of KPIs and basic methodology

Indicator		Definition
1	Speed	Percentage of vehicles travelling within the speed limit
2	Safety belt	Percentage of vehicle occupants using the safety belt or child restraint system correctly
3	Protective equipment	Percentage of riders of powered two wheelers and bicycles wearing a protective helmet
4	Alcohol	Percentage of drivers driving within the legal limit for blood alcohol content (BAC)
5	Distraction	Percentage of drivers NOT using a handheld mobile device
6	Vehicle safety	Percentage of new passenger cars with a EuroNCAP safety rating equal or above a predefined threshold*
7	Infrastructure	Percentage of distance driven over roads with a safety rating above an agreed threshold*
8	Post-crash care	Time elapsed in minutes and seconds between the emergency call following a collision resulting in personal injury and the arrival at the scene of the collision of the emergency services

* Complementary definitions are foreseen for this KPI.

General considerations

A number of methodological considerations set out below apply to all indicators:

- Geographical coverage: In principle the indicator should be representative of the whole Member State territory. If there are exceptions (e.g., for islands) they should be precisely defined and communicated by the Member States concerned to the Commission.
- Sampling: when sampling is used to derive the value of the indicator, Member States can define their own sampling methodology. Obviously over time it would be helpful for Member States to work together with the Commission to come up with common bases for sampling. And in the meantime, it should be based on well-established statistical techniques aimed at achieving a properly representative result - for example:
 - Sampling should as far as possible be random (precise methodology would remain for Member States to decide)
 - Sample size: Member States to decide on the size needed.
 - If aggregation methods are used they should aim at weighting the results by distances travelled.

- Relationship of the indicators with traffic rules:

It is worth pointing out that some indicators refer to behaviour which is regulated by traffic laws while in a number of cases the laws differ amongst Member States. For example, Blood Alcohol Content (BAC) limits are different and this should be born in mind when looking at the results. The use of cycling helmets is a similar case, as it is generally not an obligation except in some cases for children. Other areas, such as safety ratings of vehicles above the type approval minima, are not related to legal obligations.

In all cases a methodological note will be attached to the indicator results to clarify this situation.

KPI 1. Key Performance Indicator for speed

Rationale

Speed is very regularly cited as one of the most common collision causation factors and is related to both collision occurrence and severity.

Definition

- **Percentage of vehicles travelling within the speed limit.**

Methodology

Methodological aspects	
Aspect	Minimum methodological requirements
Road type coverage	The indicator should cover motorways, rural non-motorway roads and urban roads. The results should be presented separately for the three different road types.
Vehicle type	The indicator should include at least passenger vehicles (cars). Buses and goods vehicles (light [less than 3.5t] and heavy [more than 3.5t]) and powered two-wheelers are optional in a first phase (results should be presented separately for each vehicle type if possible).
Location	Member States to decide on the locations of the measurements, but measurements should not take place near safety cameras whether fixed or mobile. The choice of locations should be based on random sampling if this is possible, and in any case done with the objective of ensuring a representative sample.
Time of day	All Member States should elaborate the indicator for day hours in free flow traffic; the night indicator should be optional due to its higher cost. The results should be shown separately for day and night.
Day of the week	Measurements to be carried out on Tuesdays, Wednesdays or Thursdays. Weekend measurements also possible but optional, and again should be shown separately if carried out.
Month	Measurements to be carried out preferably in late spring and/or early autumn.
Weather	Measurements should not be taken in bad weather conditions (e.g. heavy rain, snow, ice, strong winds or fog). Member States will define the exclusion criteria and report them together with the data.
Tolerance	No tolerance (beyond the error margin of the measuring device), i.e. the values recorded should be those measured by the instrument.

KPI 2. Key Performance Indicator for the use of safety belts and child restraint systems

Rationale

The use of the safety belt and child restraint systems is an essential element of passive safety. A significant proportion of fatally or seriously injured vehicle occupants have not used the safety belt or child restraint system correctly.

Definition of the KPI for safety and child restraint systems

- **Percentage of vehicle occupants using the safety belt or child restraint system correctly.**

Methodology

Methodological aspects	
Aspect	Minimum methodological requirements
Data collection method	Direct observation (if appropriate, using cameras).
Road type coverage	The indicator should cover motorways, non-urban roads and urban areas. The results could be presented separately for the three different road types if available.
Vehicle type	The indicator should include passenger cars as a minimum and goods vehicles (results shown separately) where possible.
Front and rear seats	For passenger cars the results should be presented separately for front and for rear seats.
Safety belts vs. child restraints systems	Safety belt and child restraint systems to be differentiated in the data collection.
Location	Random sample (methodology for Member States to decide).
Time of day	Observations to take place during daylight.
Day of week	Separate observations for week days and weekend and data to be shown separately.
Month	Late spring, early autumn.

KPI 3. Key Performance Indicator for the use of protective equipment

Rationale

The use of a protective helmet is often cited to be an essential passive safety measure for powered two-wheeler riders (for whom it is mandatory) and for cyclists.

Definition of the KPI protective equipment

- **Percentage of riders of powered two-wheelers and bicycles wearing a protective helmet.**

Methodology

Methodological aspects	
Aspect	Minimum methodological requirements
Data collection method	Direct observation, if appropriate using cameras.
Road type coverage	The indicator should cover motorways, rural non-motorway roads and urban areas. The results could be presented separately for the three different road types.
Vehicle type	The indicator should include riders (also passengers) of powered two-wheelers (motorcycles and mopeds) and cyclists (including those riding power-assisted bicycles). Results should be disaggregated for driver and passengers. The results for bicycles should be presented separately. Where available, data for children should be shown separately, to take into account any legal requirements.
Location	Random sampling (methodology for Member States to decide).
Time of day	Observations to take place during daylight.
Day of week	Separate observations for week days and weekend and shown separately.
Month	Late spring, early autumn.

NB: A note should accompany the results for cyclists stating the existing state of the legal requirements (or the absence of requirements) concerning helmet use.

KPI 4. Key Performance Indicator for driving under the influence of alcohol

Rationale

Driving under the effect of alcohol is frequently cited as a major collision causation factor.

Definition of the KPI for alcohol

- **Percentage of drivers driving within the legal limit for blood alcohol content (BAC).**

Methodology

Methodological aspects	
Aspect	Minimum methodological requirements
Data collection method	Random breath testing. If random testing is not possible: Breath testing results from enforcement actions (even if not random) and / or Self-reported behaviour through anonymous surveys.
Road type coverage	Motorways, rural non-motorway roads and urban roads to be covered.
Vehicle type	Passenger cars as a minimum; goods vehicles, buses and motorcycle if possible (results disaggregated by vehicle type).
Location	Random sample (methodology for Member States to decide).
Time of day	Any time for testing (not relevant for self-reporting).
Day of week	Separate results for week days and weekends.
Month	Late spring, early autumn.
Tolerance	Measurement instrument error.
Sampling methods	Random (methodology for Member States to decide).
Sample size	Member States to decide.

NB: A note should accompany the results explaining the applicable legal provisions, e.g, maximum BAC permitted.

KPI 5. Key Performance Indicator for driver distraction by handheld devices

Rationale

Driver distraction is considered as a collision factor of growing importance due to the increased use of mobile devices, mainly smartphones - during the past years, the widespread use of texting applications has aggravated the existing problem of phone calls. This is why the use of a handheld mobile device while driving is proposed as a proxy to assess the driver distraction problem.

Definition of the KPI for driver distraction

- **Percentage of drivers NOT using a handheld mobile device.**

Methodology

Methodological aspects	
Aspect	Minimum methodological requirements
Data collection method	Direct observation by trained observers on roadside or from moving vehicles. Other alternatives could be used if available, e.g. automatic detection. To be decided by Member States.
Road type coverage	The indicator should cover motorways, rural non-motorway roads and urban areas. The results may be presented separately for this three different road types.
Vehicle/user type	Cars, light goods vehicles, buses/coaches as a minimum. Other user types if possible (disaggregated by user type).
Location	Random sample (methodology for Member States to decide).
Time of day	Observations to take place during daylight.

KPI 6: Key Performance Indicator for vehicle safety

Rationale

Vehicle active and passive safety performance is an essential element of road safety. Vehicle technology can help both reduce the likelihood of crashes and to mitigate severity of crashes through:

- Passive safety features such as safety belts, airbags, and general crashworthiness of vehicles, and
- Active safety features, such as ABS, ESC, Advanced Emergency Braking, Intelligent Speed Assistance, or Lane Departure Warning.

Definition of the KPI for vehicle safety:

- **Percentage of new passenger cars with a Euro NCAP safety rating equal or above a predefined threshold** (eg. 4-star).

In order to facilitate the rating task, the Commission services have sought the cooperation of Euro NCAP, which has agreed to provide guidance on the process of assigning the rating to new vehicles. The additional technical work needed will be carried out in additional meetings in the CARE group.

Methodology

Methodological aspects	
Aspect	Comments suggestions
Vehicle type	Passenger cars for the indicator based on Euro NCAP safety rating.

Complementary KPIs for vehicle fleet

Some Member States have argued that the rating is not available for all vehicles, not even for newly registered vehicles, and that their authorities could not, based on their registration data, assign a EuroNCAP rating to each vehicle.

In order to address these difficulties, two complementary KPIs are proposed based on the age of the fleet and on roadworthiness data. The details of these KPIs will be defined together with experts in the CARE group.

KPI 7: Key Performance Indicator for infrastructure safety

Rationale

Layout, design (including signals) and maintenance are aspects of infrastructure that determine its 'road safety' quality.

A safety performance indicator for road infrastructure is intended to provide a quantified representation of the safety quality of a road network, which is independent of road user behaviour or vehicle technology. However, further work is needed to shape the indicator.

Definition of the KPI for infrastructure

The Commission services will work with Member States to define an infrastructure indicator on the following basis:

- **Percentage of distance driven over roads with a safety rating above an agreed threshold (still to be defined)**

leaving the rating methodology to the choice of Member States until an agreement on the threshold is reached.

However, this indicator is technically challenging. Many Member States do not yet have the data available for distance travelled, so as a first (and necessary) step it is proposed to gather data for the % of network length that is above the agreed safety rating threshold.

Temporarily, a simplified version of the KPI may be used where no rating methodology is available which is defined as follows:

- Percentage of distance driven over roads either with opposite traffic separation (by barrier or area) or with a speed limit equal to or lower than xx km/h (limit left to the discretion of MS) in relation to total distance travelled.

Work with experts will continue in the CARE expert group or in another appropriate set-up to define the data collection procedures and the rating methodology.

In the first phase, urban areas could be excluded by Member States to reduce the overall complexity of this KPI, but we should not exclude the infrastructure question for urban areas in the future.

KPI 8: Key Performance Indicator for post-crash care

Rationale

Post-crash (trauma) care or trauma management refers to the initial medical treatment provided after a crash, whether it is administered at the scene, during the transportation to a medical centre or indeed subsequently. The time elapsed between the accident and the initial medical attention together with the quality of this initial treatment is often cited as playing an essential role to minimise the consequences of the crash.

Definition of the KPI for post-crash care:

- **Time elapsed in minutes and seconds between the emergency call following a collision resulting in personal injury and the arrival at the scene of the collision of the emergency services (to the value of the 95th percentile).**

Methodology

Methodological aspects	
Aspect	Minimum methodological requirements
Data collection method	Sample of response rates to emergency calls resulting in an intervention by emergency services at the scene of traffic collisions resulting in personal injuries.
Road type coverage	All roads – though if available, data could be presented separately for motorways, rural non-motorway roads, and urban roads.
Type of crash	Involving any vehicle and resulting in personal injury.
Location	Random sample (methodology for Member States to decide).