

Type-approval requirements for the general safety of vehicles

Impact assessment (SWD(2018) 190, SWD(2018) 191 (summary) accompanying a Commission proposal for a regulation of the European Parliament and of the Council on type-approval requirements for motor vehicles and their trailers, and systems, components and separate technical units intended for such vehicles, as regards their general safety and the protection of vehicle occupants and vulnerable road users, amending Regulation (EU) 2018/... and repealing Regulations (EC) No 78/2009, (EC) No 79/2009 and (EC) No 661/2009

This briefing provides an initial analysis of the strengths and weaknesses of the European Commission's [impact assessment](#) (IA) accompanying the above-mentioned [proposal](#), adopted on 17 May 2018 and referred to the Committee on Internal Market and Consumer Protection (IMCO).

Road safety is a political priority the EU aims to achieve by means of legislation covering road users, vehicles and infrastructure in the framework of its [2011-2020 road safety programme](#) (IA, p. 7). Inter alia, legislation providing for harmonised rules on the construction of motor vehicles has helped to reduce accidents over recent decades (IA, pp. 10-12). However, the Commission observes that since 2013, the reduction in road casualties has stagnated. Against a backdrop of increasing traffic volumes, the IA notes that the EU objective of a 50 % reduction in road fatalities between 2010 and 2020 will probably not be achieved (IA, p. 13). A 2016 [report](#) from the Commission to the European Parliament and the Council on boosting car safety in the EU presented the potential of existing safety technologies and recommendations as to how best to improve safety for road users. These have been translated into several legislative proposals that address automotive safety through an integrated 'safe system' approach and aim to use major innovations in automotive safety, new vehicle systems and advanced technologies.

The proposal is part of the third mobility package and reviews and enhances vehicle safety requirements by amending the (recently updated) type-approval framework¹ and repealing three existing regulations: the General Safety Regulation, and the Pedestrian Safety and Hydrogen Safety Regulations. The IA indicates that it goes hand in hand with the proposals on road infrastructure safety management² and on safety requirements for tunnels, published at the same time (IA, p. 7).

Problem definition

Following a description of the political and legal context, the IA presents the main problem to tackle: **the persistently high number of road accidents leading to fatalities or severe injuries** (IA, p.13). According to EU accident data from the CARE database (Community road accident database), there were 25 300 road fatalities in the EU in 2017 (IA, p. 12). The IA highlights the rising trend of casualties between 2014 and 2015 in 16 Member States. At the same time it notes significant differences between Member States, ranging from 65 % fatality reduction in Spain and Lithuania to 26 % in Romania (IA, p. 13, 15). In the first part of this section, the IA describes a number of factors susceptible to cause accidents and to influence the differing accident levels in Member States. They relate to the degree of urbanisation in a region or a Member State, to the proportion of ageing populations, and drivers' behaviour, drivers' attention issues in general – including the use of smartphones or alcohol consumption –, the training of drivers and road maintenance (IA, pp. 13-16, 19). However, the IA

does not analyse the role and relevance of these factors for the problem in depth, citing a lack of detailed data (IA, pp. 13-16). They do not feature in the problem tree, which labels some of them as 'out of scope': road infrastructure, driver training, level of enforcement, mobility mix options and restrictions and cooperative, connected and automated mobility (IA, 23).

Instead, in a second part of this section, the IA 'transforms' the main problem into 'vehicle level problems' (IA, p. 16)³. Based on an analysis of 96 different accident scenarios, it identifies the main risks that affect *vehicle occupants* on the one side and *pedestrians and cyclists* on the other (IA, p. 18). For both, *frontal* impacts were found to contain by far the highest risk (63 % of occupant fatalities and 78 % of pedestrian and cyclist fatalities), with *side* impacts resulting in 17 % of all occupant and 8 % of all pedestrian and cyclist fatalities. *Rear* impacts result in 5 % of occupant and 11 % of pedestrian and cyclist fatalities. The IA explicitly places the protection of persons at the centre of the problem, without mentioning other stakeholders, for example vehicle manufacturers, at this stage. The problem drivers addressed in this IA are (IA, pp. 18-20):

1. outdated safety features of a significant proportion of the EU vehicle fleet, due to slow voluntary market uptake of new safety features;
2. outdated EU legislation for cars, vans, buses and trucks, not keeping up with new safety developments;
3. outdated safety exemptions for heavy passenger cars and light commercial vehicles regarding frontal and side crash testing.

The IA points out that they are due in part to transitional arrangements adopted by the co-legislators under current EU legislation (IA, p. 18). For the same reason, 'a comprehensive evaluation' of all current measures has not yet been completed, but according to the IA, former evaluations suggest that safety measures did contribute effectively to a significant decrease in road casualties up to 2013 (IA, pp. 10-12, 19). The IA concludes that current measures need to be updated to compensate for increasing traffic volumes (IA, p. 14). It quantifies (without however providing the evidence base) the societal costs of road casualties at as high as €100 billion per year (IA, p. 13).⁴ However, at the same time, the IA cites a recent study⁵ indicating that factors linked to vehicles influence accident severity by only 4 %, while factors related to road users or to road infrastructure influence it by 63 % and 33 % respectively (IA, p. 15). The IA stresses that 'traditional vehicle safety performance' is not to be confused with such 'vehicle factors', but it does not explain this distinction, so that the scale of the problem(s) addressed in this IA in relation to road safety and casualties is not precisely defined.

Objectives of the initiative

Corresponding to the main problem defined, the IA's *general* objective consists of contributing to a further reduction of traffic accident fatalities and severe injuries (IA, p. 24). The two *specific* objectives derive from the transformed problem definition described above and aim at

- protecting occupants of vehicles involved in collisions;
- protecting pedestrians and cyclists hit by vehicles.

In addition, the IA specifies these (specific) objectives in an elaborate 'objective tree', mirroring the three above defined problem drivers (IA, p. 25): a) to upgrade EU vehicle fleet safety performance, b) to upgrade EU legislation to keep up with new developments and c) to remove exemptions for sport utility vehicles (SUVs) and vans. However, these specified *specific* objectives do not seem specific enough to be measurable, as required by the better regulation guidelines. This is important for effective monitoring (and, later on, evaluation) of the achievement of the objectives. Nonetheless, the objectives are in line with the Commission's 2018 [strategic action plan on road safety](#), the other initiatives of the third mobility package of May 2018 and with the completion of the internal market.

Range of options considered

To achieve the two specific objectives, the IA assesses three policy options that are packages of cumulative combinations of policy measures, in addition to the baseline (IA, p. 26). Over 50 possible vehicle safety measures were initially analysed in a preparatory [study](#) in 2015,⁶ but the IA retained 'around 20 measures' (called 'actions' in the first part of the section) for consideration for mandatory implementation. Even though the screening of the actions as such is concise, it is difficult to follow, as they are neither named, nor numbered or otherwise classified (IA, pp. 27-38). Fourteen actions address the first specific objective and six address the second, but some do not feature in any option.

Table 1 – Summary of mandatory safety measures retained for consideration by the IA

List of mandatory actions/measures	Policy options <i>(applicable vehicle categories: passenger cars, light commercial vehicles, buses and trucks/trailers)</i>		
	Policy option 1	Policy option 2	Policy option 3
Autonomous emergency braking for vehicles	For passenger cars and light commercial vehicles (from 9/2021) ⁷		
Autonomous emergency braking for pedestrians and cyclists		For passenger cars and light commercial vehicles (from 9/2023)	
Alcohol interlock installation facilitation	For all vehicle categories (from 9/2021)		
Drowsiness and attention detection		For all vehicle categories (from 9/2021)	
Distraction recognition			For all vehicle categories (from 9/2023)
Event (accident) data recorder	For passenger cars and light commercial vehicles (from 9/2021)		
Emergency stop signal	For all vehicle categories (from 9/2021)		
Full-width frontal occupant protection crash test	For passenger cars (from 9/2021)		For passenger cars and light commercial vehicles (from 9/2021)
Full-width frontal occupant crash test with lower appropriate injury criteria		For passenger cars (from 9/2021)	For passenger cars and light commercial vehicles (from 9/2021)
Head-impact zone enlargement for pedestrians and cyclist protection		For passenger cars and light commercial vehicles (from 9/2023)	

Intelligent speed assistance		For passenger cars, buses, trucks and trailers (from 9/2021)	For all vehicles (from 9/2021)
Lane keeping assist	For passenger cars and light commercial vehicles (from 9/2021)		
Pole side impact occupant protection	For passenger cars (from 9/2021)		For passenger cars and light commercial vehicles (from 9/2021)
Reversing camera or detection system			For all vehicles (from 9/2021)
Tyre pressure monitoring system			For light commercial vehicles, buses, trucks and trailers (from 9/2021)
Vulnerable road user detection, warning on front and side of vehicle		For buses, trucks and trailers (from 9/2021)	
Vulnerable road user improved direct vision from driver's position		For buses, trucks and trailers (from 9/2025)	

Source: Author, based on the IA

The IA refers only briefly to the baseline scenario (no new policy action), but it explores it in more depth in Annex 4 (IA, pp. 34, 58-96). It builds on the 2016 EU reference scenario, a regularly updated projection of EU and Member States' energy, transport and emission-related developments up to 2050, with the addition of some policy measures after its cut-off date (end of 2014). Despite considerable growth in road transport activity and vehicle fleets, the IA expects road fatalities to decrease by 18 % in an optimistic and 6 % in a pessimist baseline owing to other national and EU initiatives (IA, pp. 34, 90-96). The *voluntary* uptake of safety measures is (for most) expected to be as long as around 14 years (IA, p. 89). As the above table shows, the options share the same approach (mandatory application as of a certain date) and differ (only) by the addition of more safety features and the extension to other vehicle categories. With three options (apart from the baseline) there is one more than the minimum two requested by the better regulation guidelines. Option 3 is the preferred option. The IA notes that the option of self-regulation by the automotive industry was discarded at an early stage of the IA process, because there would be no guarantee of covering enough manufacturers and all categories of vehicles and because this option was not supported by stakeholders, Parliament or the Member States. Also, such an attempt failed in 2001 (IA, p. 39).

Scope of the impact assessment

The IA uses both qualitative and quantitative methods to assess the options' economic, social and environmental impacts (IA, pp. 39-45). Potential effects on employment are not explored, but could have benefited the completeness of the IA, especially considering the importance of the auto industry for the EU economy. A closer look at potential effects on the competitiveness of the EU automotive industry beyond the brief section provided could have been interesting as well (IA, p. 44). The implications of the withdrawal of the United Kingdom (UK) from the EU are not

mentioned, although they are expected to affect both national authorities and private parties dealing with type approvals of cars from the UK.⁸

The IA focuses on the costs for vehicle manufacturers on the one side, assuming that each proposed safety measure would create one-off and ongoing costs, and on the benefits of reduced fatalities on the other (IA, pp. 41-45).⁹ However, it does not assess the impact of each measure (action), but only the three packages (for each vehicle category). The IA justifies the grouping of measures by pressure from stakeholders who insisted that the measures' costs and benefits were influenced by overlaps, for instance the use of common technologies for forward looking cameras, lane keeping and speed assistance (IA, p. 26). As a result, it is not always clear if the impacts and quantifications discussed relate to the baseline, all options or the preferred option (IA, pp. 39-45). Neither is it clear whether the significantly different risk levels of frontal, side and rear accidents were taken into account.

Concretely, the additional **costs** for manufacturers are estimated at €516 per passenger car, €521 per light commercial vehicle, €970 per bus and €1 013 per truck (IA, p. 43) under the preferred policy option. The IA does not expect a price increase for consumers, assuming the market's high competition prevents the direct passing on of costs (IA, p. 43). It substantiates this assumption with the decreasing trend in real car prices between 2002 and 2011 (year of last report on car prices within the EU), but without checking the trend in more recent years.¹⁰ Enforcement and implementation costs for public authorities and other potential indirect effects, for example higher costs for repairing or benefits like congestion or emission reduction, are not quantified, but considered overall 'negligible' (IA, pp. 42, 73). The assumption that the increase in sophisticated technology in vehicles would not lead to higher costs for consumers, for instance by more frequent and expensive controls and maintenance deserved better substantiation. Also, potential indirect implications for driver behaviour (and possibly distraction) could have been considered in the assessment.

The IA quantifies the **social benefits** of reducing the costs of casualties by monetising the number of prevented or mitigated casualties (IA, p. 42).¹¹ **Total costs and benefits** are not provided in the main text, but Annex 3 indicates total direct costs of the preferred option for vehicle manufacturers of €57.4 billion, exceeded by expected total direct benefits of €72.8 billion (IA, pp. 72-73). The IA underlines that the compulsory addition of safety features would allow all social groups, not only the owners of high-end segment cars, to profit from improved safety (IA, p. 39). It addresses briefly challenges raised by consumers regarding data privacy in cases of mandatory accident data recorders or other new technologies.¹² The IA states that the recorder will not be linked to the vehicle identification or chassis number, without providing further details though (IA, pp. 23, 40, 67). Finally, the IA considers (positive) **environmental** impacts, anticipating a reduction in waste, CO₂ emissions and fuel consumption, for example through tyre pressure monitoring, based on stakeholder input, Commission reports and national data (IA, p. 40).

Despite lower efficiency compared with options 1 and 2, the IA prefers option 3 as it offers higher potential for reducing fatalities and serious injuries between 2021 and 2037 (IA, pp. 48-49, 102-103).¹³ It also anticipates additional cost reduction possibilities for manufacturers through economies of scale (IA, p. 52). For light and heavy commercial vehicles, it stresses the need to provide for the same safety level as for passenger cars, pointing out that heavy and light vehicles are mostly produced by the same manufacturers, limiting additional costs (IA, pp. 52-53).

Subsidiarity / proportionality

The IA stresses that type approval for vehicles needs to be addressed at EU level in order to avoid obstacles to the free movement of vehicles and fragmentation of health and safety standards in the internal market (IA, p. 23). It also argues that harmonised EU-rules support the rapid uptake of new safety features. The IA takes the proportionality of the options into account and explains why it expects the costs of option 3 to be more proportionate than the figures of the analysis suggest (IA, p. 52). No reasoned opinions from national parliaments have been received, the subsidiarity deadline expired on 25 July 2018.

Budgetary or public finance implications

The IA does not mention budgetary implications. The explanatory memorandum of the proposal states that it will have no budgetary implications for the Union budget (p. 9).

SME test / Competitiveness

The IA does not expect major impacts on SMEs, as very few manufacturers fall in this category and if so, they are considered 'ultra small volume manufacturers' (IA, p. 41). Their impact on the safety of the overall vehicle fleet is considered 'negligible' which is why the IA suggests addressing them with flexibility, as under the existing legislation (exemptions for 'small series vehicles'). Moreover, the IA expects them, as well as over 3 000 suppliers, to benefit from additional demand, without substantiating this claim. The IA highlights the importance of innovation for the competitiveness of the EU automotive industry in the global market, citing up to 67 % of total company sales of EU-based vehicle manufacturers to be produced and sold overseas (IA, pp. 44-45). In that sense, according to the IA, the further sophistication of the auto industry through the preferred option would allow the EU automotive industry to remain a 'leader of automotive intellectual property and technology' and to use automated safety driving features in a cost-efficient way (IA, pp. 44-45).

Simplification and other regulatory implications

According to the IA, the initiative helps to simplify EU legislation by repealing three current regulations (the General Safety Regulation, and the Pedestrian and Hydrogen Safety Regulations) (IA, p. 22). Although it is considered a REFIT initiative, the IA does not provide the REFIT cost savings table for the preferred option, requested by the better regulation toolbox (tool 12). The IA does not expect significant impact on the regulatory burden for manufacturers or national governments, stressing cooperation between the EU and the United Nations Economic Commission in Europe (UNECE) as crucial for streamlining approaches to technical progress and urgent safety needs (IA, p. 21, 33).

Quality of data, research and analysis

The IA is based on internal and external research, in particular two major studies carried out in [2015](#) and [2017](#) (IA, pp. 57-58). While it refers to solid data sources, it acknowledges a lack of data in some areas (IA, pp. 13, 24, 134-135). It is notable that the simulations and quantifications of prevented casualties have some limitations, as, by the Commission's own admission, they are based on an accident data analysis of national road accident data from Great Britain and were scaled up to EU28 level using weighting factors based on the CARE database (IA, pp. 111-112, 134). The intervention logic of the IA, from the definition of the problem and objectives to the selection of the actions/measures and the assessment of the options, could have been more coherent. The clarity and transparency of the wealth of information and data processed in over 60 figures and 95 tables would have benefited from additional explanations.

The IA uses four different models, starting with the PRIMES-TREMOVE model for the development of the EU reference scenario (IA, pp. 76-77, 84-85). The cost-benefit calculations are based on the COWI model and the TRL model, the latter specifically developed for this purpose in the programming language Python (IA, pp. 76-84). As indicated above, it is not always clearly indicated which option the assessment or quantifications are referring to, and the measures are difficult to trace. In the annexes, the IA is transparent about the uncertainty of some assumptions, for instance the future evolution of fatalities and injuries, reflected in an optimistic and a pessimistic baseline. However, these limitations are not always evident in the main text. Some aspects could also have been discussed in greater detail, for instance the sensitivity analysis (IA, pp. 93-97). Finally, the accessibility of the IA is not improved by the fact that the policy measures (actions) are not only not classified, but the numbering of the chapters (from 1.1 to 1.24) does not correspond to the numbering in the table of contents, nor to the frequent cross-references throughout the text (IA, pp. 24, 29, 30, 32, 39, 41, 42, 53).

Stakeholder consultation

According to the IA, the position of stakeholders had decisive influence, namely their wish to group the measures' assessment and their support for option 3 for all vehicle categories (IA, pp. 26, 35). As requested by the better regulation guidelines, the Commission ran an open public consultation between 31 July and 22 October 2017, consisting of three targeted questionnaires (IA, pp. 61-69). It received 118 replies (55 from road users, 48 from companies and organisations and 15 from public authorities). The Commission complemented it with input from earlier stakeholder consultations in 2014, 2015 and 2017, the latter two in the framework of the two above-mentioned studies. Further consultations followed publication of the second study (IA, pp. 58-59). According to the IA, most stakeholders (without providing any breakdown) supported the mandatory introduction of new safety measures (IA, p. 69). Notable objections concerned data privacy risks (which the IA assures can be 'adequately addressed') and the potential cost implications for SMEs (avoided by flexible implementation according to the IA) (IA, pp. 40-41).

Monitoring and evaluation

The IA highlights the need to continuously monitor technical progress and amend the relevant legislation accordingly (IA, p. 53). Instead of proposing concrete provisions in this sense, though, it argues that the constant review of vehicle safety rules will be triggered automatically by adaptations of international rules by UNECE. The IA also reacts rather weakly to the currently missing reliable EU-wide accident data, stressing mainly the importance of accident data recorders for the collection of much more accurate data (IA, p. 53). Moreover, it suggests encouraging Member States to carry out more in depth accident analyses and to 'make available comprehensive reporting', in parallel to further national activities and knowledge sharing to enhance road safety.

Commission Regulatory Scrutiny Board

The Regulatory Scrutiny Board (RSB) issued a positive [opinion](#) with reservations on the draft IA on 17 May 2018. It criticised, inter alia, the structure and lack of coherence of the assessment and required additional information on related initiatives of the third mobility package and the simplification perspective of the proposal. While the latter two aspects were somewhat addressed in the final IA, the issues regarding the coherence of the intervention logic and the lack of explanation as regards the selection and assessment of the measures and options persist.

Coherence between the Commission's legislative proposal and the IA

The proposal appears to follow the preferred option package, including provisions for rapid updates of technical progress (in delegated acts) and the flexibility for 'small series vehicles' manufacturers. However, it does not propose the autonomous braking systems for pedestrians and cyclists for trucks and buses that are part of the IA's preferred option, as it considers these may not work at slow speeds where most accidents with vulnerable road users occur (explanatory memorandum p. 11).

Conclusions

The IA defines the problem thoroughly and presents mandatory measures to tackle it. However, the factual relevance of the measures for the general objective of reducing road casualties appears uncertain, as their individual effects are not assessed. The link between problem definition and assessment of the options is not straightforward. Furthermore, efforts to strike a balance between an accessible analysis and complex research, including numerous simulations and quantifications based on four different models, lead in some parts of the analysis to a lack of transparency and clarity. While the IA focuses on the cost for manufacturers on the one hand and the societal benefits of prevented or mitigated casualties on the other, it excludes (or touches only briefly on) other aspects, such as macroeconomic or indirect impacts, or specific implications of the new technologies for data privacy. The priority of the IA lies in the prevention or mitigation of casualties, choosing the most effective package of measures in this sense over the most efficient option.

ENDNOTES

¹ Regulation (EU) 2018/858 of the European Parliament and of the Council of 30 May 2018 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, amending Regulations (EC) No 715/2007 and (EC) No 595/2009 and repealing Directive 2007/46/EC.

² See M. Remac, Improving road infrastructure safety management, EPRS, European Parliament, 2018.

³ It seems that the main problem was 'transformed' into vehicle problems in the draft IA following criticism by the RSB.

⁴ Annex 4 of the IA, pp. 81-82 briefly presents four calculation steps for the quantification of fatalities under the COWI model, based on two referenced studies that 'include almost all evidence available', but does not provide more details.

⁵ This study, conducted for the IA accompanying the revision of the directives on road infrastructure safety management and safety requirements for road tunnels, has not yet been published (IA, p. 15).

⁶ Transport Research Laboratory (TRL), [Benefit and feasibility of a range of new technologies and unregulated measures in the field of vehicle occupant safety and protection of vulnerable road users](#), 2015.

⁷ The IA explains that the mandatory introduction dates for the different measures were selected in line with the high level group on competitive automotive regulatory systems for the 21st century (CARS21) and the United Nations Economic Commission in Europe (UNECE) principles (IA, p. 36). CARS 21 participants are representatives of the EU Member States, EU institutions, automotive industry, trade unions, NGOs and users.

⁸ European Commission, Notice to stakeholders, 8 February 2018.

⁹ For the costs, the IA provides a breakdown of costs per individual measure in Annex 4 (IA, pp. 175-179).

¹⁰ It points also to CO₂ emissions legislation, which has not led to increased vehicle retail prices (IA, p. 42).

¹¹ The IA assigns societal costs of €1.87 million per casualty in the simulations (€243 100 for serious and €18 700 for slight injuries) (IA, p. 42). This is based on the unit cost values as featured in the 2014 update of the handbook of external costs of transport, prepared for the Commission (IA, pp. 125). Furthermore, the IA (p. 42) notes that the simulations took into account interactions of safety measures to avoid double-counting.

¹² The IA, p. 40, notes that the Fédération Internationale de l'Automobile (FIA) requested an impact study on this issue.

¹³ The expected reduction under option 3 is 21 337 for passenger cars, 227 for buses, 1 283 for vans and 1 947 for trucks.

This briefing, prepared for the IMCO committee, analyses whether the principal criteria laid down in the Commission's own Better Regulation Guidelines, as well as additional factors identified by the Parliament in its Impact Assessment Handbook, appear to be met by the IA. It does not attempt to deal with the substance of the proposal.

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