
Final report

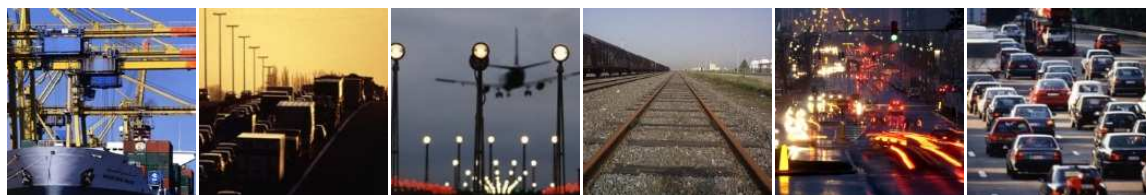
SPECIFIC CONTRACT MOVE/A3/350-2010 IMPACT ASSESSMENTS AND EVALUATIONS (EX-ANTE, INTERMEDIATE AND EX-POST) IN THE FIELD OF TRANSPORT

Study on the effectiveness and on the improvement of the EU legislative framework on road infrastructure safety management (Directive 2008/96/EC)

Ex-Post Evaluation

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Glossary

ADT	Average Daily Traffic
BSM	Black Spot Management
CEDR	Conference of European Directors of Roads
EFTA	European Free Trade Association
EIA	Environmental Impact Assessment
IFIs	International Financial Institutions
ITS	Intelligent Transport System
MS	Member State
NSM	Network Safety Management
RISM	Road Infrastructure Safety Management
RSA	Road Safety Audit
RSIA	Road Safety Impact Assessment
RSM	Road Safety Management
TIN	Trainer's International Network project
TRL	Transport Research Laboratory
VMS	Variable Message Signing
VRU	Vulnerable Road User

1 Summary

Context and objective

The overall objective of this study is to assist the European Commission with the evaluation of Directive 2008/96/EC on road infrastructure safety management and to investigate possible changes in the light of new technological developments. The specific objectives of the study are:

- 1) To carry out an ex-post evaluation of the application of Directive 2008/96/EC. What were the main impacts of its application on road safety? What steps were taken to implement the Directive? What is the relevance of the Directive?
- 2) To provide a preliminary analysis of the possible areas of improvement with regards to road safety and the safety of road infrastructure in particular.

Important elements within the study were the stakeholder survey to collect the necessary data and the organisation of a stakeholder conference.

This report focuses on the ex-post evaluation, including the results of the stakeholder survey and conference. Minutes of the stakeholder conference can be found on the Commissions' website and a separate report discusses the main findings of the second task – the preliminary analysis of possible areas of improvement with regards to road safety and safety of road infrastructure in particular. This summary discusses the results of both reports: the ex post evaluation **and** the results of the preliminary analysis of possible areas of improvement.

Ex-post evaluation

The ex-post evaluation seeks to gauge the extent or degree to which the Directive has been put into practice across the countries of the EU during the five years after it was adopted. The evaluation also seeks to meaningfully identify the main impacts generated by its implementation by considering a wide range of evaluation criteria. Together, these criteria were used to determine how the Directive has been able to responded to the initial needs and problems of its target beneficiaries and European citizens, the extent to which positive changes that can be attributed to the Directive may be expected to continue to have an effect and whether or not EU level interventions have led to benefits that exceed those that would have been achieved had Member State acted independently. One of the issues considered was whether the objectives of the Directive continue to be relevant to the needs, problems and issues they were designed to target. Finally, the extent to which the Directive can be coherent with the deployment of ITS was a central question.

Methodology

In order to carry out the evaluation, we developed an intervention logic and a methodological framework on the basis of the evaluation criteria of implementation, relevance, effectiveness, sustainability, coherence, utility, efficiency, and EU added value of the legislation. Guided by a set of specific evaluation questions, we used a combination of research tools. These tools included a review of relevant documents and publications, collection and analysis of data from published sources, analysis of the responses provided by Member States and stakeholders to the online

survey, analysis of the outcomes of the stakeholder conference and, finally, an interview programme. The latter ones provided additional information and evidence that supported the identification of the main evaluation findings and the development of the main conclusions.

Results of the ex post evaluation

As a whole, the Directive has certainly triggered a different way of thinking about and dealing with road safety management. Firstly, this is because it has encouraged a generalized use of the Road Safety Infrastructure Management (RISM) procedures which are now established in all Member States and which are based on a minimal set of compulsory rules in the management of the TEN-T roads (in many cases also applied to non-TEN-T roads). It is equally important that the Directive provides a “common language” for carrying out road infrastructure safety management which relies upon a harmonized legislative framework. At a national level, the Directive has instigated a normative and operational process that would not have happened in such a widespread manner without EC intervention.

The main weakness of this Directive, by contrast, relates to the limited scope of its application, i.e. this piece of EU legislation only applies to the TEN-T road network and not to non-TEN-T roads. The possibility of extending the requirements stipulated by the Directive to non-TEN-T roads was left to the discretion of Member States and, accordingly, the national legislative settings have been developed by most Member States

Focussing on **implementation**, all Member States (with the exception of Croatia) have transposed Directive 2008/96/EC and, significantly, many of them have not encountered difficulties in the application of the Directive. Furthermore, evidence suggests that Member States with poorer pre-Directive levels of road safety performance are those where the application of the Directive has been more robust. Also important, the RISM procedures are applied to non-TEN-T roads (national roads, dual carriageways and motorways), thus beyond the scope of the Directive although the degree of compulsion of such application is variable. However, the RISM procedures were not found to have a significant impact in the planning phase in those EU countries where they were already in place, while in those Member States where they were not established the overall impact is also expected to be low. Finally, Member States do not earmark funds to carry out the RISM procedures and costs for the latter are generally incorporated in the overall costs of the road project investments.

Concerning **relevance**, the objectives of the Directive remain fit-for-purpose when considering the overall EU objectives in terms of improved road safety. The Directive has led to an improved and much more consistent regulatory framework compared with the prior system of national legislation. The relevance, however, could be further improved by being more prescriptive. This would also increase the effectiveness of the Directive. For uniformity can be read more on a formal level than on a substantial one as the Directive does not provide any detailed guidance on the application of the RISM procedures, nor harmonisation between Member States is prospectively foreseen.

The **effectiveness** of the Directive can be observed in the changes it has encouraged towards a more systematic approach in dealing with the operational management of infrastructure-related road safety. The Directive has increased the use of cost-effective procedures (e.g. RSAs and RSIs) and has initialled a process that can prospectively produce positive results in terms of correction of the detected road infrastructure deficiencies both on new roads and existing roads. On the other

hand, no modification has been triggered on the approach followed by road managers in selecting safety equipment and components. Similarly, no specific improvements in national practices and procedures have been reported as a result of the exchange of best practices between Member States. We also did not observe that the Directive has provided an incentive to a greater degree of exchange of good practices. Equally, despite that training programmes and curricula are established in the larger part of Member States hence suggesting that training and certification process is effectively set up, the Directive has not favoured the mobility of road safety professionals across Member States and, at present, there is no evidence indicating that such mobility is taking place.

The changes propped by the Directive in the operation of the Member States' RISM national practices are expected to last in the long run (**sustainability**). However, differences in their application still remain within the current detail of the Directive. Also sustainability of funding sources for undertaking these procedures is key.

As far as the interlinking with ITS is concerned the Directive (**coherence**), which in itself does not really focus on ITS, does not really influence the deployment of ITS in a negative or in a positive way.

In the light of the EU road safety objectives, the Directive can be considered an adequate instrument since a correlation was observed between having lower fatality rates and having road safety procedures (**utility**). This indicates that the Directive will most probably positively impact road safety and certainly in countries which did not have these procedures in place before.

On **efficiency**, the application of the Directive is still considered to be too recent to acquire an understanding of whether it has led to a more efficient and cost saving planning and management of the network. Also, Member States do not collect evidence on costs and benefits of the application of the procedures. Costs associated with the follow-up of safety assessment have been reported as the most significant cost category, while no evidence has shown a direct effect on road users of costs generated by the Directive. Concerning benefits, in general terms, the reduction in the number of road victims/injuries can be considered the main benefit of the application of the Directive, but a quantification of them is still not possible. Finally, administrative costs account for nearly one-fifth of the global cost involved in the application of the RISM procedures and are largely borne by national authorities which keep the primary responsibility role for administering the RISM procedures on along the road network.

Lastly, Directive 2008/96/EC had the clear benefit (**EU added value**) to request Member States to have all RISM procedures established in their national law systems and to comply with its requirements within a clear time line. Though contents and practices might be different at national level, a common framework and a common approach is applied. This outcome could not have been achieved through Member States acting independently in developing (or not) their own comparable legislation which would had led to disparities in their application.

Areas for further development

The following paragraphs summarize the results of the work done on the areas for further development. This is discussed in more detail in a separate report.

Methodology

We first discussed the starting points for the further analysis. We based ourselves on a data analysis of the location in which accidents happen and the types of road users that are involved. We also took into account the data that was available on the TEN-T network. Another point of departure was the input which we received by consulting the stakeholders. As previously mentioned, we consulted them by way of a survey and a stakeholder conference. Finally, we added the information which came out of the ex post evaluation of the Directive to this. Given this analysis, we elaborated the eight themes which proved most promising. We established a baseline that predicts the expected evolution in fatalities and seriously injured victims, per road type until the year 2030. Next, we presented a first analysis of the eight themes which came out of the starting points. This analysis includes a definition of the scenarios, an estimation of the size of the target groups, an identification of positive and negative effects, including unintended side-effects. If and when possible, we calculated the effects on road safety, the economic impact as well as the costs.

Results the work done of areas for further development

Potentially, a large number of lives could be saved if the Directive was to be **extended to other roads**. However, the costs and the administrative burden this would entail cannot be underestimated. Given that many countries have already extended the current provisions on a voluntary basis this might be a better option than the decision to enforce the extension to all roads and make it mandatory. A possible compromise, in this respect, could be a mandatory extension to all motorways. This would also create more consistency for road users who do not know whether they are travelling on a TEN-T motorway section or not. Including all roads which receive an EU contribution will have a relatively low effect on road safety, but it also comes at a low cost. The benefits in terms of safety and support for, the extension of the Directive to the tunnels that fall under the Tunnel Directive appear to be small. On the other hand, including the provisions of the tunnel Directive within the RSIM Directive would improve the overall coherence and leads to an integrated approach to road infrastructure safety.

Focussing more on VRU, without extending the Directive to other roads comes down to focussing more on PTW and the effect on road safety in general remains limited. In a scenario in which the Directive is extended, the target group becomes much wider as it now also includes cyclist and pedestrians and the expected safety effect is much larger. However, as discussed above, extending the Directive to other roads would come at a substantial cost.

The **measurement of safety performance of roads and the possibility of linking a certification** to this process would make it easier to benchmark countries and might give an incentive to policy makers to improve their performance. This process of certification would require a shared methodology. This would not be in line with the current spirit of the Directive, since the Directive leaves the countries a lot of freedom with respect to the actual implementation.

In general, the literature agrees that the direct safety effect of **providing more information to citizens and road users** is very limited. However, the costs in doing so are relatively low and it will increase general awareness. Specific message signing that draw attention to points that are especially dangerous can have a direct safety effect.

Information exchange between professionals may be an effective way to improve road safety at a limited cost and there is a demand from the stakeholders for this type of exchange. However, a lot of information is available today and information exchange does take place. It would be of utmost importance not to duplicate existing work. Therefore a first step should be a thorough analysis of what is already available in the field, its effectiveness and the ways in which effectiveness could be improved. A closer **monitoring** of the resources that are spent and the effectiveness of the Directive would make it easier to evaluate the Directive and would provide relevant information which can also be used in other projects. Still, this would require a lot of efforts from the administrations as data will not be readily available.

The **obligation to accept road safety auditor certificates from other Member States** may potentially increase the efficiency of the RSA since it would lead to an exchange in information and a possible saving in training costs. However, even without this obligation the majority of the Member States accept certificates from other Member States. To oblige Member States to accept road safety auditor certificates from other Member States would require the certification of the training centres and this might require a shared training structure.

The matter of **better integrating ITS systems** and services is a very broad topic. If we focus on a scenario such as explicitly including the requirement to assess ITS infrastructure within the different procedures, it is clear that this is a low cost measure which would improve the efficiency of the ITS itself. Including information about specific ITS systems as a form of remedial actions risks being rapidly outdated. In general, there is little interest in this area among the stakeholders and it is unsure if this Directive is the right place to be targeting ITS measures. There could however be a role for the Directive focussing on the support road infrastructure can give to the deployment of ITS applications. Related to this is the question of **standardisation** of the road infrastructure itself. Today, following the provisions of the European Construction Products Regulation (3005/2011/EU-CPD) different norms apply to road equipment and road materials. These norms provide great improvements to harmonise the European practices in terms of test methods, but they leave each country free to specify the requirement level in terms of performance on its own national network. These differences in norms have an important impact on the potential health outcomes of an accident and, as such, establishing standards for certain road infrastructure elements or making their use mandatory could help improve road safety and deserves more research.

The demand for **clearer definitions** was raised within the stakeholder consultation and the ex post evaluation which showed that there are differences in the actual implementation of procedures in real life that might hinder the efficiency of procedures. On the other hand this freedom also allowed the Member States to adapt procedures to their own needs. It would be a good starting point to first investigate the differences in implementation in the field to find out if these differences are beneficial for road safety (as they are more likely to be adapted to the local situation) or negative (as the procedures that are used are very far away from what could be considered as best practice).

The analysis above focusses on the different, separate areas individually, even though there are in fact some interlinkages between them. For example extending the provisions to other roads will automatically better bring VRU into the picture. An explicit mutual recognition of the certificates for auditors will also lead to an exchange of information and might decrease the need for a separate series of workshops, guidelines, etc. This explicit recognition will also lead to a more streamlined definition of the RSA, making the last area less relevant for this procedure. Better integrating ITS systems in an informative way can also be taken as a specific topic that relates to information exchange, as can the topic of VRU.

Policy discussion and conclusions

From the ex post evaluation

In the light of the main findings of the study, a general recommendation may be put forth to support the decision making of EU institutions in their assessment of the effectiveness of Directive 2008/96/EC. This, consequently, will improve the overall implementation across the Member States.

As is noted in the course of the study, the main obstacle in evaluating the application of the Directive is the poor quantity and quality of available data. Efforts should be made towards improving the EU common accident database and accessibility, in particular as far as accident data on the TEN-T network is concerned. Moreover, data collection of costs and benefits should also be improved. At the EU level, harmonized procedures for gauging the cost-benefit ratio of road safety treatments are to be developed. In this respect, benchmarking methodologies should be put forth to track the performance of the Directive as a whole and of each single road infrastructure safety management procedure individually.

From the analysis of areas of further improvements

In light of the main findings of this study and the ex post evaluation the following recommendations can be made.

- A mandatory extension to all motorways would improve traffic safety and create more consistency for the road users. At the same time, it avoids the large costs associated with an extension of the Directive to all roads. The extension to tunnels falling under the Tunnel Directive will probably not have a large impact on road safety but it would lead to a more coherent approach towards safer road infrastructure.
- Given that it does not seem feasible to extend the Directive to all road users, it makes sense to focus more on PTW. This can be done within the framework of a series of workshops/guidelines which should be developed to facilitate the exchange of information. Note that the decision to set up workshops in order to facilitate the exchange of information should be preceded by a thorough analysis of current practices and the information that is currently available.
- The measurement of safety performance of roads might provide incentives to policy makers, but should probably not be linked to a certification since there is little support for this. It would also require a common methodology which would not be in line with the spirit of the current Directive.

- The Directive could emphasise the role that infrastructure plays to support the deployment of ITS applications. Linked to this is the issue of establishing standards for certain road infrastructure elements or making their use mandatory. This could help improve road safety and deserves more research.

2 Résumé

Contexte et objectif

L'objectif global de cette étude consiste à épauler la Commission européenne dans l'évaluation de la Directive 2008/96/CE concernant la gestion de la sécurité des infrastructures routières et à examiner les changements possibles compte tenu des nouveaux progrès technologiques. Les objectifs spécifiques de l'étude sont :

- 1) Mener une évaluation ex post de l'application de la Directive 2008/96/CE. Quels ont été les principaux impacts de son application sur la sécurité routière ? Quelles mesures ont été prises pour mettre en œuvre la Directive ? En quoi la Directive est-elle pertinente ?
- 2) Livrer une analyse préliminaire des éventuels domaines à améliorer en matière de sécurité routière et de la sécurité des infrastructures routières en particulier.

L'étude a comporté deux éléments importants: le sondage mené auprès des parties prenantes afin de recueillir les données nécessaires et l'organisation d'une conférence réunissant les parties prenantes.

Le présent rapport est consacré à l'évaluation ex post, y compris les résultats du sondage et de la conférence destinés aux parties prenantes. Le procès-verbal de la conférence est disponible sur le site Internet de la Commission. Il y a aussi un rapport distinct sur les principaux résultats du second volet de l'étude – l'analyse préliminaire des éventuels domaines à améliorer en matière de sécurité routière et de la sécurité des infrastructures routières en particulier. Ce résumé s'attarde sur les résultats de deux rapports: l'évaluation ex post **et** les résultats de l'analyse préliminaire des éventuels domaines à améliorer.

Évaluation ex post

L'évaluation ex post est destinée à estimer dans quelle mesure et à quel degré la Directive a été mise en pratique dans les différents pays de l'UE au cours des cinq années qui ont suivi son adoption. L'évaluation cherche également à identifier de façon significative les principaux impacts générés par la mise en œuvre de la Directive en examinant un large éventail de critères d'évaluation. Tous ces critères ont servi à déterminer comment la Directive a pu répondre aux besoins et aux problèmes initiaux des bénéficiaires visés et des citoyens européens, dans quelle mesure les changements positifs pouvant être attribués à la Directive sont susceptibles de se montrer durables et si oui ou non les interventions au niveau de l'UE ont apporté des bénéfices supérieurs à ceux qui auraient été obtenus si chaque État membre avait pris des mesures de manière indépendante. L'une des questions abordées était de savoir si les objectifs de la Directive sont toujours pertinents quant aux besoins, problèmes et questions qu'ils étaient destinés à cibler. Enfin, le degré de cohérence de la Directive avec le déploiement de systèmes de transport intelligents (STI) a fait l'objet d'une attention particulière.

Méthodologie

Afin de procéder à l'évaluation, nous avons développé un cadre d'intervention logique et méthodologique basé sur les critères d'évaluation suivants : mise en œuvre, pertinence, efficacité,

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durabilité, cohérence, utilité, rendement et valeur ajoutée de la législation de l'UE. Guidés par un ensemble de questions spécifiques d'évaluation, nous avons eu recours à une combinaison d'outils de recherche, à savoir l'analyse des documents et publications pertinents, la collecte et l'analyse de données issues de sources publiées, l'analyse des réponses fournies par les États membres et les parties prenantes dans le cadre du sondage en ligne, l'analyse des résultats de la conférence des parties prenantes et enfin, un programme d'interviews. Celui-ci nous a livré des informations et des preuves supplémentaires qui ont contribué à l'identification des principaux résultats de l'évaluation et à l'élaboration des conclusions essentielles.

Résultats de l'évaluation ex post

Dans l'ensemble, la Directive a assurément suscité un changement dans la manière de considérer et d'aborder la gestion de la sécurité routière. Tout d'abord, elle a encouragé un recours généralisé aux procédures de Gestion de la Sécurité des Infrastructures Routières (GSIR) qui sont à présent établies dans tous les États membres et sont basées sur un ensemble minimum de règles obligatoires en matière de gestion des routes appartenant au RTE-T (dans de nombreux cas, elles sont également appliquées aux routes ne faisant pas partie du RTE-T). Élément tout aussi important, la Directive fournit un « langage commun » pour la gestion de la sécurité des infrastructures routières qui repose sur un cadre législatif harmonisé. Sur le plan national, la Directive a été l'instigatrice d'un processus normatif et opérationnel qui n'aurait pas pu s'étendre avec une telle ampleur sans l'intervention de la CE.

En revanche, la principale faiblesse de cette Directive est liée à la portée limitée de son application. En effet, cette mesure législative de l'UE s'applique uniquement au réseau routier RTE-T et non aux routes n'appartenant pas au RTE-T. La possibilité d'étendre les exigences stipulées dans la Directive aux routes non RTE-T a été laissée à la discrétion des États membres et, en conséquence, le cadre législatif national a été développé par la plupart des États membres.

En matière de **mise en œuvre**, tous les États membres (à l'exception de la Croatie) ont transposé la Directive 2008/96/CE et, chose importante, beaucoup d'entre eux n'ont rencontré aucune difficulté à l'appliquer. En outre, tout porte à croire que les États membres dont les performances en matière de sécurité routière étaient plus faibles avant la mise en œuvre de la Directive sont ceux où l'application de la Directive s'est révélée la plus solide. Autre élément important, les procédures GSIR sont appliquées aux routes non RTE-T (routes nationales, chaussées à deux voies de circulation et autoroutes), donc au-delà du cadre de la Directive, même si le degré d'obligation d'une telle application est variable. Cependant, nous avons constaté que les procédures GSIR n'exercent pas d'influence majeure sur la phase de planification dans les pays de l'UE où elles étaient déjà en place, tandis que dans les États membres où elles n'étaient pas appliquées, l'impact global devrait également être faible. Enfin, les États membres ne prévoient pas de fonds destinés à la mise en place des procédures GSIR et les coûts de ces dernières sont généralement incorporés dans les coûts globaux des projets d'investissement dans le secteur routier.

En ce qui concerne la **pertinence**, les objectifs de la Directive demeurent adaptés aux finalités poursuivies lorsque l'on tient compte des objectifs globaux de l'UE en matière d'amélioration de la sécurité routière. La Directive a permis d'améliorer le cadre réglementaire et l'a rendu bien plus cohérent par rapport au système antérieur de législation nationale. Cependant, la pertinence pourrait être encore améliorée en étant plus prescriptive comme cette uniformité peut toutefois être davantage interprétée au niveau formel que substantiel. Dans la mesure où la Directive ne fournit

aucune orientation détaillée quant à l'application des procédures GSIR et qu'une harmonisation entre les États membres n'est potentiellement pas envisagée non plus, cela permettrait également d'accroître l'efficacité de la Directive.

L'**efficacité** de la Directive peut se traduire par les changements qu'elle a encouragés vers une approche plus systématique en matière de gestion opérationnelle de la sécurité routière liée aux infrastructures. La Directive a augmenté l'utilisation de procédures rentables (par exemple, ASR et ISR) et a enclenché un processus pouvant potentiellement entraîner des résultats positifs concernant la façon de pallier les manquements constatés sur les nouvelles routes et les routes actuelles. D'autre part, aucune modification n'a été apportée à l'approche adoptée par les gestionnaires des routes pour sélectionner les équipements et le matériel de sécurité. De la même manière, aucune amélioration spécifique des pratiques et procédures nationales n'a été signalée par suite de l'échange de bonnes pratiques entre les États membres. Nous n'avons pas non plus constaté que la Directive avait contribué à inciter les États membres à accroître les échanges de bonnes pratiques. De même, bien que des programmes de formation soient établis dans la majeure partie des États membres – ce qui laisse penser qu'un processus de formation et de certification est effectivement mis en place – la Directive n'a pas encouragé la mobilité des professionnels de la sécurité routière à travers les États membres et, à l'heure actuelle, aucun élément probant n'indique que cette mobilité a lieu.

Les changements soutenus par la Directive en matière de gestion des pratiques nationales GSIR des États membres devraient se poursuivre à long terme (**durabilité**). Toutefois, il subsiste des différences d'application de ces pratiques au sein des dispositions actuelles de la Directive. Le caractère durable des sources de financement nécessaires à l'exécution de ces mesures est également primordial.

En ce qui concerne l'interconnexion avec les STI (**cohérence**), la Directive, qui en elle-même n'aborde pas vraiment les STI, n'influence pas réellement le déploiement des STI de manière négative, ni positive.

À la lumière des objectifs de l'UE en matière de sécurité routière, la Directive peut être considérée comme un instrument adéquat étant donné qu'une corrélation a été observée entre la diminution du taux de mortalité et l'existence de procédures de sécurité routière (**utilité**). Ceci indique que la Directive produira plus que probablement des effets positifs sur la sécurité routière et certainement dans les pays qui ne disposaient pas de telles procédures auparavant.

Sur le plan du **rendement**, l'application de la Directive est jugée encore trop récente pour que l'on puisse déterminer si elle a entraîné une gestion et une planification plus efficaces et rentables du réseau. En outre, les États membres ne recueillent pas d'éléments probants relatifs aux coûts et aux bénéfices liés à l'application des procédures. Les coûts associés au suivi de l'évaluation de la sécurité ont été considérés comme la plus importante catégorie de coûts, tandis qu'aucun élément concret n'a démontré que les coûts générés par la Directive avaient un impact direct sur les usagers de la route. En ce qui concerne les bénéfices, globalement, la réduction du nombre de victimes/blessés dans des accidents de la route peut être considérée comme étant le principal bénéfice de l'application de la Directive, mais il n'est pas encore possible de les quantifier. Enfin, les coûts administratifs représentent près d'un cinquième du coût global lié à l'application des procédures GSIR et sont en grande partie supportés par les autorités nationales qui demeurent les principales responsables de l'administration des procédures GSIR le long du réseau routier.

Enfin, la Directive 2008/96/CE a eu le net avantage (**valeur ajoutée de l'UE**) de demander aux États membres de transposer toutes les procédures GSIR dans leur propre système législatif national et de se conformer à leurs exigences dans un délai clairement défini. Même si le contenu et les pratiques comportent sans doute des différences sur le plan national, un cadre commun et une approche commune sont en vigueur. Ce résultat n'aurait pas été possible si les États membres avaient agi de manière indépendante lors de l'élaboration (ou non) de leur propre législation comparable, une situation qui aurait débouché sur des disparités dans son application.

Domaines pouvant être améliorés

Les paragraphes suivants résument les résultats du travail effectué concernant les éventuels domaines à améliorer. Ce sujet est abordé en détail dans un rapport séparé.

Méthodologie

Nous avons d'abord discuté des points de départ de cette analyse plus approfondie. Nous nous sommes basés sur une analyse de données relatives aux endroits où se produisent les accidents et aux types d'usagers de la route impliqués. Nous avons également tenu compte des données disponibles concernant le réseau RTE-T. Les renseignements obtenus en consultant les parties prenantes ont constitué un autre point de départ. Comme indiqué précédemment, nous les avons consultées au moyen d'un sondage et d'une conférence. Enfin, nous avons ajouté les informations issues de l'évaluation ex post de la Directive. Compte tenu de cette analyse, nous avons déterminé les huit thèmes qui s'avéraient les plus prometteurs. Nous avons établi un niveau de référence prévoyant l'évolution attendue du nombre de décès et de blessés graves par type de route jusqu'en 2030. Ensuite, nous avons livré une analyse des huit thèmes issus des points de départ. Cette analyse comporte une définition des scénarios, une estimation de la taille des groupes cibles, une identification des effets positifs et négatifs, notamment les effets secondaires involontaires. Le cas échéant, nous avons mesuré les effets sur la sécurité routière, l'impact économique et les coûts.

Résultats du travail effectué concernant les éventuels domaines à améliorer

Potentiellement, de nombreuses vies pourraient être sauvées si la Directive était **élargie à d'autres routes**. Il convient toutefois de ne pas sous-estimer les coûts et la charge administrative que cette mesure impliquerait. Étant donné que beaucoup de pays ont déjà étendu les dispositions actuelles de manière volontaire, il pourrait s'agir d'une meilleure option que celle qui consisterait à imposer l'élargissement à toutes les routes et à le rendre obligatoire. À cet égard, une extension obligatoire à toutes les autoroutes pourrait constituer une solution de compromis. Cela renforcerait également la cohérence pour les usagers de la route qui ne savent pas s'ils circulent ou non sur une section d'autoroute RTE-T. Le fait d'intégrer toutes les routes qui bénéficient d'une intervention de l'UE aura un impact assez faible sur la sécurité routière, mais le coût de l'opération est lui aussi relativement faible. Les avantages en termes de sécurité et de soutien liés à l'extension de la Directive aux tunnels qui relèvent de la Directive sur les tunnels semblent être minimes. D'un autre côté, le fait d'incorporer les dispositions de la Directive sur les tunnels au sein de la Directive GSIR améliorerait la cohérence globale et déboucherait sur une approche intégrée de la sécurité des infrastructures routières.

Accorder plus d'attention aux usagers vulnérables de la route (UVR) sans étendre la Directive à d'autres routes revient à se focaliser sur les DRM (deux-roues à moteur) et l'impact sur la sécurité

routière en général demeure limité. Dans un scénario où la Directive est élargie, le groupe cible devient beaucoup plus vaste, car il englobe alors les cyclistes et les piétons et l'impact attendu sur la sécurité est bien plus important. Cependant, comme évoqué plus haut, l'extension de la Directive à d'autres routes impliquerait un coût non négligeable.

L'évaluation des bilans de sécurité des routes et la possibilité d'associer une certification à ce processus simplifieraient l'étude comparative entre les pays et pourraient inciter les décideurs politiques à améliorer leurs performances. Ce processus de certification nécessiterait toutefois une méthodologie partagée, ce qui ne serait pas conforme à l'esprit actuel de la Directive, étant donné que la Directive laisse une grande liberté aux États membres en matière de mise en œuvre effective.

En général, les spécialistes reconnaissent que le fait de **fournir plus d'informations aux citoyens et aux usagers de la route** a un impact direct très limité sur la sécurité. Néanmoins, cette opération peut s'effectuer à moindre coût et accroître la sensibilisation générale. Des messages spécifiques attirant l'attention sur des zones particulièrement dangereuses peuvent avoir un impact direct sur la sécurité.

L'échange d'informations entre professionnels peut s'avérer efficace pour améliorer la sécurité routière à moindre coût et les différents intervenants sont demandeurs de ce type d'échange. Cela dit, une grande quantité d'informations est déjà disponible aujourd'hui et des échanges d'informations ont effectivement lieu. Il est donc primordial de ne pas faire double emploi avec les efforts existants. Dès lors, une première étape serait de réaliser une analyse rigoureuse des informations déjà disponibles dans le domaine, de leur efficacité et des moyens d'améliorer leur efficacité. Une **surveillance** plus étroite des ressources consacrées et de l'efficacité de la Directive faciliterait l'évaluation de la Directive et fournirait des informations pertinentes qui pourraient être utilisées dans le cadre d'autres projets. Cela demanderait toutefois beaucoup d'efforts de la part des administrations, en raison d'un accès difficile aux données.

L'obligation d'accepter des certificats d'auditeurs en sécurité routière venant d'autres États membres pourrait augmenter l'efficacité des ASR puisque cela favoriserait un échange d'informations et d'éventuelles économies en matière de coûts de formation. Cependant, même en l'absence d'une telle obligation, la majorité des États membres accepte des certificats d'autres États membres. Obliger les États membres à accepter des certificats d'auditeurs en sécurité routière venant d'autres États membres impliquerait la certification des centres de formation, ce qui pourrait nécessiter la création d'une structure de formation partagée.

La meilleure intégration des systèmes et services de STI est un sujet très vaste. Si l'on imagine un scénario qui exige expressément qu'on évalue l'infrastructure des STI au sein des différentes procédures, il est évident qu'il s'agit d'une mesure peu coûteuse qui améliorerait l'efficacité des STI eux-mêmes. Intégrer des informations relatives à des STI spécifiques en tant que mesures correctives risque d'être rapidement obsolète. En général, les parties prenantes manifestent peu d'intérêt pour ce domaine et il n'est pas certain que la Directive soit l'endroit approprié pour se pencher sur les mesures STI. La Directive pourrait toutefois jouer un rôle en s'intéressant particulièrement au soutien que les infrastructures routières peuvent apporter au déploiement d'applications STI. La **standardisation** de l'infrastructure de la route même est en relation avec cette question. Aujourd'hui, suivant les dispositions du Règlement sur les produits de construction européenne (3005/2011 / UE-DPC) des normes différentes s'appliquent aux équipements routiers et matériaux routiers. Ces normes fournissent des grandes améliorations afin d'harmoniser les

pratiques européennes en ce qui concerne les méthodes d'essai, mais ils laissent la liberté à chaque pays de spécifier le niveau nécessaire en termes de performance sur son propre réseau national. Ces différences dans les normes ont un impact important sur les conséquences de santé potentiels en cas d'accident et, à ce titre, sur l'établissement des normes pour certains éléments de l'infrastructure routière. Rendant leur utilisation obligatoire peut contribuer à améliorer la sécurité routière et de ce fait, mérite plus des recherches

La demande de **définitions plus claires** est apparue lors de la consultation des parties prenantes et de l'évaluation ex post, qui ont montré qu'il existe des différences en matière de mise en œuvre des procédures sur le terrain, différences qui pourraient desservir l'efficacité des procédures. D'un autre côté, cette liberté a également permis aux États membres d'adapter les procédures à leurs propres besoins. Il serait opportun de commencer par analyser les différences de mise en œuvre dans le domaine afin de savoir si ces différences sont bénéfiques pour la sécurité routière (car il est plus probable qu'elles soient adaptées aux circonstances locales) ou préjudiciables (car les procédures utilisées sont encore très loin d'être ce que l'on considère comme étant de bonnes pratiques).

L'analyse ci-dessus se consacre aux différents domaines séparément, bien qu'il existe en réalité certains liens entre eux. Par exemple, étendre les dispositions à d'autres routes mettra automatiquement l'accent sur les UVR. Une reconnaissance explicite mutuelle des certificats pour auditeurs entraînera également un échange d'informations et pourrait réduire la nécessité de disposer d'une gamme distincte d'ateliers, de lignes directrices, etc. Cette reconnaissance explicite permettra aussi d'harmoniser la définition de l'ASR, rendant ce dernier domaine moins pertinent pour cette procédure. La meilleure intégration des STI de manière informative peut également être considérée comme un sujet spécifique lié à l'échange d'informations, de même que la question des UVR.

Discussion sur la politique et conclusions

D'après l'évaluation ex post

Eu égard aux principaux résultats de l'étude, une recommandation générale peut être proposée afin de soutenir le processus de décision des institutions européennes dans le cadre de leur évaluation de l'efficacité de la Directive 2008/96/CE. Ceci améliorera par conséquent la mise en œuvre globale de la Directive à travers les États membres.

Comme mentionné dans l'étude, le principal obstacle à l'évaluation de l'application de la Directive consiste en la faible quantité et qualité des données disponibles. Des efforts devraient être entrepris afin d'améliorer la base de données de l'UE sur les accidents courants ainsi que l'accès à ces données, particulièrement en ce qui concerne les données sur les accidents qui ont lieu sur le réseau RTE-T. En outre, la collecte de données relatives aux coûts et aux bénéfices devrait également être améliorée. Au niveau de l'UE, des procédures harmonisées visant à estimer le ratio coûts-bénéfices des mesures prises en matière de sécurité routière doivent être élaborées. À cet égard, des méthodologies d'évaluation comparative devraient être proposées afin d'assurer le suivi des résultats de la Directive dans son ensemble et de chacune des procédures de gestion de la sécurité des infrastructures routières.

D'après l'analyse des domaines pouvant être améliorés

Eu égard aux principaux résultats de l'étude et de l'évaluation ex post, les recommandations suivantes peuvent être formulées :

- Une extension obligatoire de la Directive à toutes les autoroutes améliorerait la sécurité routière et assurerait une meilleure cohérence pour les usagers de la route. Parallèlement, cela permettrait d'éviter de dépenser des sommes considérables en cas d'extension de la Directive à toutes les routes. L'extension aux tunnels relevant de la Directive sur les tunnels n'aura probablement pas d'impact réel sur la sécurité routière, mais pourrait générer une approche plus cohérente axée sur une sécurité accrue des infrastructures routières.
- Étant donné que l'extension de la Directive à tous les usagers de la route semble irréaliste, il est plus logique de se focaliser sur les DRM. Ceci peut se faire au moyen d'une série d'ateliers/lignes directrices qui devraient être mis en place afin de faciliter l'échange d'informations. La décision d'élaborer des ateliers destinés à faciliter l'échange d'informations devrait toutefois être précédée d'une analyse minutieuse des pratiques en vigueur et des informations déjà disponibles.
- L'évaluation des bilans de sécurité des routes pourrait inciter les décideurs politiques à améliorer leurs performances, mais ne devrait probablement pas être associée à une certification, étant donné le peu de soutien dont bénéficie cette proposition. En outre, ce processus de certification nécessiterait une méthodologie commune, ce qui ne serait pas conforme à l'esprit de la Directive actuelle.
- La Directive pourrait mettre l'accent sur le rôle joué par les infrastructures routières dans le cadre du soutien qu'elles peuvent apporter au déploiement d'applications STI. La standardisation de l'infrastructure de la route même est en relation avec cette question. Rendant leur utilisation obligatoire peut contribuer à améliorer la sécurité routière et de ce fait, mérite plus des recherches

3 Introduction

3.1 Background

The overall objective of this study is to assist the European Commission with the evaluation of the current Directive 2008/96/EC on road infrastructure safety management and to investigate possible changes in the light of technological developments. The specific objectives of the study are:

- 1) To carry out an ex-post evaluation of the application of Directive 2008/96/EC. What were the main impacts on road safety? How was the Directive implemented? What is the relevance of the Directive?
- 2) To make a preliminary analysis of the possible areas for improving road safety and of the safety of road infrastructure in particular. Some of these areas have been suggested in the terms of reference.
- 3) To conduct a broad stakeholder survey to collect the necessary data and to organize a stakeholder conference.

This report focuses on the ex-post evaluation, including the results of the stakeholder survey and conference. A separate report will discuss the main findings of the second task.

Road infrastructure as a key element to road safety

Alongside drivers and vehicles, infrastructure is widely acknowledged to be the third element of any comprehensive road safety programme based on the principle of the integrated approach. The role of a safe road infrastructure in reducing the toll of road deaths is, therefore, pivotal and sound road engineering and effective road management can greatly contribute to the reduction of the frequency and severity of road traffic accidents.

Road infrastructure related safety measures offer a large potential that could be exploited in view of a significant reduction of road accidents and their consequences.

Effective safety assessment and audit processes in the design and build phases of new road projects can pay dividends in the longer term, in terms of reduced accidents, reduced congestion, lower repair and maintenance costs, and lower health costs.

EU policy efforts in the area of road infrastructure

A strong focus on road safety infrastructure management has been recommended at the EU policy level since the adoption of the White Paper on Transport policy in the year 2001¹ and the European Road Safety Action Programme 2003-2010,² when the EC launched an ambitious objective in its

¹ WHITE PAPER “European transport policy for 2010: time to decide” (COM(2001) 370 final)

² Communication from the Commission “European road safety action programme - Halving the number of road accident victims in the European Union by 2010: a shared responsibility” (COM(2003) 311 final)

efforts to improve road safety that aimed to halve the number of fatalities in the EU15³ from over 40,000 to 20,000 by 2010 (EC, 2001). This objective was confirmed by the adoption, in 2010, of the new Policy Orientations on Road Safety⁴ that, in coordination with the overall policy efforts to increase road safety as established by the White paper 2011,⁵ reaffirmed the target of halving the overall number of road deaths in the European Union by 2020 starting from 2010 (EC, 2010).

Accomplishing such an objective requires the implementation of a large spectrum of safety measures, not least to increase the potential that road infrastructure safety measures have in significantly reducing road deaths. According to the ROSEBUD project,⁶ 1,300 lives could be saved annually if safety management were to be applied to the main road safety network in the EU, while estimations made in preparation of the White Paper 2001 suggest that 600 fatalities and 7,000 injuries could be prevented per year if effective safety management instruments were to be applied to the TEN-T roads with a financial benefit amounting to € 5 billion per year.

The EU⁷ has long acknowledged a number of problems affecting road infrastructure. These include, among others:

- A tension between decreasing available public funds against a greater attention paid to the level of road safety;
- The poor ability of existing roads to absorb increasing traffic flows;
- The persistent presence of black spots not only on old roads but also on new ones; and lastly,
- An inefficient organization caused by various levels of administration and responsibility within each Member State.

In this respect, a threefold purpose has provided the rationale for the EU to take action in this area:⁸

- To ensure that road safety is integrated in all phases of planning, design and operation of the road infrastructure;
- To bring about a common level of safety of roads across Member States;

³ Member States in the European Union as of 30 April 2004. The EU15 comprised the following: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

⁴ Communication from the Commission “Towards a European road safety area: policy orientations on road safety 2011-2020” (COM(2010) 389 final).

⁵ Communication from the Commission “WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system” COM(2011) 144 final.

⁶ ROSEBUD is an acronym for Road Safety and Environmental Benefit-Cost and Cost-Effectiveness Analysis for Use in Decision-Making. Calculations were made for EU25 plus Bulgaria, Romania and Switzerland. Cited in Communication from the Commission “Proposal for a Directive of the European Parliament and of the Council on road infrastructure safety management” (COM(2006) 569 final).

⁷ DG MOVE (2006). Presentation given on the issue of “ROAD SAFETY: Directive 2008/96/CE on road infrastructure safety management”.

⁸ WHITE PAPER “European transport policy for 2010: time to decide” (COM(2001) 370 final)

- To use the limited funds for more efficient construction and maintenance of roads.

Adoption of Directive 2008/96/EC (“Infrastructure safety management Directive”)

The process described above resulted in the adoption of Directive 2008/96/EC on road safety infrastructure management (also known as “Infrastructure safety management Directive” – hereinafter “the Directive”). As also recommended by the High Level Group on Road Safety (2003),⁹ the provisions stipulated in the Directive address projects for the construction of new road infrastructure or substantial modifications to the existing network, which affects the traffic flow within the TEN-T road network.

Specifically, the Directive introduces the general principle of safety impact assessment at pre-design stage, of safety audit at the design stage, regular inspections at operation stage and the ranking of high accident concentration sections, and establishes a comprehensive system of road infrastructure safety management and, therefore, a coherent package of measures for:

- Road Safety Impact Assessments (hereinafter referred to as RSIA¹⁰), covering new roads and applicable at the pre-design stage of the planning process;
- Road Safety Audits (hereinafter referred to as RSAs), covering new roads and applicable at the design, construction and early operational stages of planning process;
- Road Safety Inspections (hereinafter referred to as RSIs), covering existing roads; and lastly
- Network Safety Management (hereinafter referred to as NSM) targeting the management of the so-called accident “black spots”.

The table below gives an overview of these different procedures explaining their definition and scope.

Table 1: Overview of the RISM procedures

RISM procedure	Definition and scope
Road Safety Impact Assessment (RSIA)	The road safety impact assessment is a strategic comparative analysis of the impact of a new road or a substantial modification to the existing network on the safety performance of the road network, at the initial planning stage before the infrastructure project is approved.
Road Safety Audit (RSA)	A road safety audit is an independent detailed systematic and technical safety check relating to the design characteristics of a road infrastructure project and covering all stages from planning to early operation in order to identify, in a detailed way, unsafe features of a road infrastructure project.
Road Safety	A road safety inspection is an ordinary intermittent verification of the characteristics

⁹ DG MOVE, High Level Group Road Safety (2003); Road Infrastructure Management: Report of the Working Group on Infrastructure Safety

¹⁰ It is worth underlining that the Directive does not include any specific acronyms to identify each procedure. Acronyms are derived from the existing literature on this topic and used to refer the single procedures within this report.

RISM procedure	Definition and scope
Inspection (RSI)	and defects that require maintenance work for reasons of safety as a preventive tool. RSIs aim to identify potential problems so countermeasures can be taken to remove or minimize the chance of an accident occurring.
Network Safety Management (NSM)	The ranking of high accident concentration sections is a method to identify, analyse and rank sections of the existing road network upon which a large number of accidents in proportion to the traffic flow have occurred. In addition, the network safety ranking is a method to identify, analyse and classify parts of the existing road network according to their potential for safety development and accident cost savings.

Source: Gerlach, 2012¹¹

This piece of EU legislation aims, therefore, to ensure that safety and safety management procedures (RSIAs, RSAs, RSIs and NSM) are integrated in all phases of planning, design and operation of the road infrastructure in the TEN-T road network, though it also encourages Member States to apply its provisions to the rest of the network constructed using EU funding in whole or in part.

Member States were requested to bring into force the provisions laid down in the Directive by 19 December 2010, either by adopting or updating pre-existing national laws, regulations and administrative provisions in order to comply with this Directive. Member States were also supposed to have ensured that national guidelines were adopted by 19 December 2011.

To date, the Directive has been transposed into the national law systems of all Member States; although the European Commission took the following actions:

- In May 2011 a reasoned opinion was sent to 11 Member States (Belgium, Bulgaria, Ireland, Greece, France, Lithuania, Luxembourg, Austria, Poland, Slovenia and Slovakia) under the EU infringement procedure requesting the establishment of appropriate procedures to improve the safety of the TEN-T road network in accordance with their obligations under the Directive;¹²
- In June 2012 Finland was referred to the EU's Court of Justice for failure to completely transpose the directive into national law.¹³

¹¹ Gerlach, J. (2012). Road infrastructure safety management as part of the Decade of Action for Road Safety - preconditions, instruments and examples from Europe.

¹² EU Press release database (2011). Road infrastructure safety: Commission requests action from eleven Member States (IP/11/587 of 19/05/2011, available at http://europa.eu/rapid/press-release_IP-11-587_en.htm).

¹³ EU Press release database (2012). Road safety: Commission takes Finland to Court for failure to implement EU rules on safety of road infrastructure (IP/12/641 of 21/06/2012, available at: http://europa.eu/rapid/press-release_IP-12-641_en.htm).

Relationship between Directive 2008/96/EC and the national frameworks

At present, each Member State has adopted guidelines on meeting the key legal requirements concerning road safety impact assessments, road safety audits, safety rankings, management of the road network in operation and road safety inspections. These national guidelines lay down the practical steps to be followed by national authorities or infrastructure managers in assessing the safety of roads, so as to ensure a proper application of the Directive at the national level.

Nevertheless, the Directive does not provide for a unique and uniform method to conduct road infrastructure safety management, nor does it stipulate specific requirements on the form of the guidelines. Therefore, the stipulation of national specific regulatory frameworks has been left to Member States, which already possess road infrastructure safety management systems and shall continue to use their existing methods, in so far as they are consistent with the aims of the Directive.

The main reasons¹⁴ for that have been identified in the need to:

- Avoid unsuitable and expensive solutions that are not tailored to the specific context of each Member State;
- Secure coherence and consistency with pre-adopted approaches for road safety infrastructure management, primarily through the adoption of national guidelines that are appropriate to the organizational and administrative structure of each Member State;
- Reduce the timing required to adopt the procedures included in the Directive and, subsequently, to make their implementation and use effective;
- Create an opportunity for identification and exchange of best practices among Member States, ideally with a view to a possible extension of the scope of the Directive beyond the TEN-T road network.

Analysing the legislative text of the Directive, the concrete and effective application of the road safety management system set up by the Directive relies, therefore, upon the national frameworks along with a voluntary exchange of best practices among Member States.

It is equally noteworthy, however, that the Directive does not foresee an obligation to communicate curricula of road safety auditors to the European Commission, nor defines any conditions or procedures for the mutual recognition of training or training certificates. Furthermore, the provisions included in the Directive do not impose the obligation for Member States to inform the European Commission about the application of the Directive, and which thereby prevents any possible monitoring of the implementation of its provisions.

¹⁴ European Commission (2006). Commission Staff Working Document Accompanying document to the Proposal for a Directive of the European Parliament and of the Council on road infrastructure safety management (SEC(2006) 1232, and DG MOVE (2006). Presentation given on the issue of “ROAD SAFETY: Directive 2008/96/CE on road infrastructure safety management”.

Furthermore, the Directive appears to have left significant room to the EU countries to adapt the road safety management procedures to their own methodologies. The Member States' national guidelines hence lack harmonization. Moreover, the Directive does not ensure the homogeneity of its application in the Member States in certain respects, such as for instance the independence of audits and the mutual recognition of certificates issued before the implementation of the Directive. Finally, implementation is not followed and accompanied by any monitoring mechanisms.

3.2 Structure of the report

This report deals with the ex-post evaluation and is structured as follows. Chapter 4 presents the methodology. It includes the different evaluation questions and the analytical framework. Chapter 4 also briefly discusses the approach towards the survey and the stakeholder conference. Chapter 5 provides the analysis of the evaluation questions. Finally, the main conclusions and recommendations of the study are presented in Chapter 6. The annexes contain further details on the approaches as referred to in the main text and include the different country reports (Member States' factsheets).

A separate report discusses task 2 – the preliminary analysis of areas for further improvement of road safety, while two technical reports were also drafted: one on the survey and one on the stakeholder conference.

4 Methodological approach

4.1 Background and scope of the evaluation

The ex-post evaluation provides a response to the request of the European Commission to gain an independent assessment of the state of implementation of, and impacts produced by Directive 2008/96/EC five years after its adoption and three years after its implementation. In particular, the ex-post evaluation has a number of priorities that can be summarized as follows in Table 2 below.

Table 2: List of evaluation criteria and evaluation questions

Evaluation criteria	Evaluation question
Implementation	<ol style="list-style-type: none"> 1. To what extent were Road Safety Impact Assessments (RSIAs) and Road Safety Audits (RSAs) integrated into the planning, designing and construction phases of Member States? 2. Is there any difference in the implementation between best performing and worst performing EU Member State? 3. To what extent and how did member states carry out the directive provisions concerning roads in operation (safety ranking and inspections)? 4. How has the presence of black spots been effectively communicated to road users? 5. How has information from accident reports and methodologies for calculating the average social cost influenced road safety ranking and inspections? 6. How were inspections implemented? 7. Did the aforementioned procedures influence the planning phases? 8. Were the procedures applied beyond the trans-European road network? 9. What were the factors that hampered the implementation of the Directive? 10. Do Member States have a specific budget allocated to implementing the procedures stipulated in the Directive? 11. Which authority was responsible before the implementation of the Directive and which authority is now responsible for administering RISM procedures? 12. What are the criteria (for RSA) applied with respect to the definition of the infrastructure project to be audited on non-TEN-T roads?
Relevance	<ol style="list-style-type: none"> 13. To what extent is the obligation for Member States to define procedures for road infrastructure safety management necessary to address the road safety issues, considering that the Directive does not include specifics about the procedures?
Effectiveness	<ol style="list-style-type: none"> 14. To what extent has the Directive modified the practises and procedures in Member States for the management of Road Safety? Is this change an improvement? 15. To what extent have the provisions on road safety ranking and management and inspections improved safety maintenance of roads and thus contributed to enhanced road safety? 16. To what extent have provisions linked to data management contributed to an improved ranking and safety management? 17. To what extent are these provisions sufficient, in the sense that they allow for a uniform consideration of social costs, to ensure a high and consistent level of safety across the TEN-T? 18. To what extent has the Directive improved the safety of new roads and affected the

Evaluation criteria	Evaluation question
	planning, design and construction of these new roads? 19. To what extent has the Directive modified the selection of safety equipment and components (pavement, road signals, lights, barriers, etc.) by road managers? 20. To what extent has the exchange of good practises contributed to the realization of effects? To what extent did the Directive favour the exchange of good practises? 21. To what extent is the training and certification of auditors set up in an effective manner in order to allow audits to be conducted? 22. Have the training provisions impacted the mobility of auditors across Member States?
Sustainability	23. To what extent are the safety procedures set up by the Member States in accordance with the provisions of the Directive likely to remain in the event that intervention ceases at the European level?
Coherence	24. Is the current framework of the Directive adequate in the long run to ensure the deployment of ITS technology in particular for the communication between the vehicle and the infrastructure?
Utility	25. In light of the target of halving road traffic fatalities established in the Policy Orientation for road safety, and with a view to a future similar target for the seriously injured, can the current Directive be considered an adequate instrument?
Efficiency	26. To what extent has the Directive generated benefits and costs for road users, road managers and public authorities? 27. What is the administrative burden generated by the Directive distinguishing between costs for the national administrations and costs for road authorities? 28. Is there room for a further reduction of these costs? 29. Did the implementation of the Directive lead to a more efficient and cost saving planning and management of the network in operation? 30. Have the network safety ranking and black spot management generated additional cost advantages?
EU added value	31. What is the EU added value of the obligation to establish the same practices and procedures in road safety infrastructure management? 32. Is there a widely recognized exchange of good practices and how does this contribute to the EU added value? 33. Would it have been possible to obtain the same results in terms of safety management without intervention at the European level?

To answer these questions, the research fieldwork completed during the evaluation used a number of different research tools: a continuing desk research, a Member States and stakeholder online survey, a stakeholder consultation process including a dedicated workshop and an interview programme for further analysis with a range of Member States, stakeholders and experts in the light of comments and responses to the online survey and the stakeholder workshop. After the description of the analytical framework in Chapter 4.2, these tools are described briefly in the following Chapter 4.3.

4.2 Description of the analytical framework

The ex-post evaluation aimed to establish the current degree of practical application of the Directive 2008/96/EC across the EU countries five years after its adoption, as well as to meaningfully identify the main impacts generated by its implementation. The assessment was carried out from the point of view of a number of evaluation criteria and, markedly, employed a number of different research tools as described in the following sections of Chapter 4 of this report.

Box 1: Constraints in assessing the impact of Directive 2008/96/EC

It is important to note initially a number of challenges that the research team had to overcome in evaluating the impact of Directive 2008/96/EC and that have resulted in certain limitations of this study. The most important challenges were as follows:

Relatively recent timeframe of application. A longer timeframe is required to have a comprehensive assessment of the implementation of the Directive and a proper acknowledgement of its results. The Directive was brought into force only recently (December 2011) and the level of actual implementation differs across Member States although a regulatory framework for all RISM procedures has been established. In addition, the provisions of the Directive deals with road infrastructure, e.g. an area where interventions have long life-cycles and their subsequent changes take time to occur and to produce their effects. In particular, this holds true given the current economic situation in which budget constraints limit the number of newly undertaken road investments and therefore preventing the possibility to evaluate the effectiveness of certain RISM measures such as RSAs and RSAs that are applied to new roads.

Data constraints. There is a lack of available data covering the period after the requirements of the Directive have entered into force. During the fieldwork period the evaluation team conducted an extensive search of available sources and requested Member States and stakeholders (through the online survey and the subsequent follow-up) to come forward with any relevant data that would provide direct or indirect indications of how the Directive is applied and of its effects (e.g. recent national trends of the number of road accidents on the TEN-T network). Moreover, benchmark indicators do not exist and there is little scientific literature discussing the (quantitative) effects of the different procedures.

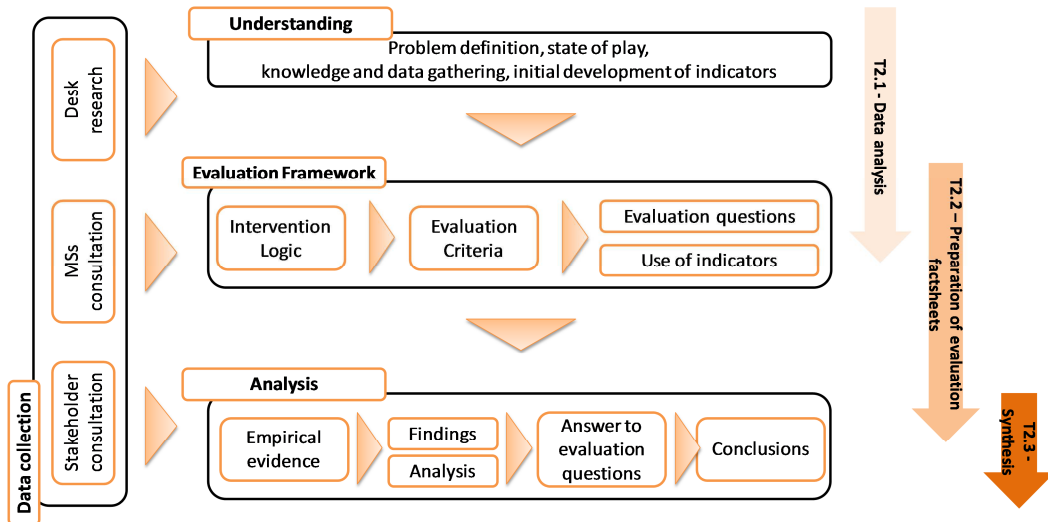
Absence of provisions facilitating data collection. The Directive does not impose data collection mechanisms for ex-post evaluation purposes. Consequently, data is often scarce, not always centrally held (for example in federal States) or simply not available. This means that the analysis of the state of the Directive's implementation had to rely to greater extent on estimates based on the available quantitative and qualitative data collected through the survey.

Despite the difficulties above the Contractor believes that the ex-post analysis performed is sound and complete as it has vetted in the most comprehensive manner all the information that was collected during the course of the study. We anticipated the possible data constraints and were aware that we would need to rely to a great extent on the online survey. In this respect, it is noteworthy to say that high degree of detail featured the questions posed to Member States and stakeholders. Also, the present analysis has combined to the largest extent possible the data pulled together through the survey and any additional source of evidence found. The analysis offers then a comprehensive understanding of the current application of the Directive and provides useful insights to support the decision-making and legislative process of the Commission for improving and assessing its further implementation.

The evaluation exercise was organized around structured stages (Figure 1), in order to develop evidence-based conclusions on the current state of play in terms of the concrete application of the

Directive in each Member State and specifically of the four RISM procedures and the data management provisions it establishes, together with their associated impacts.

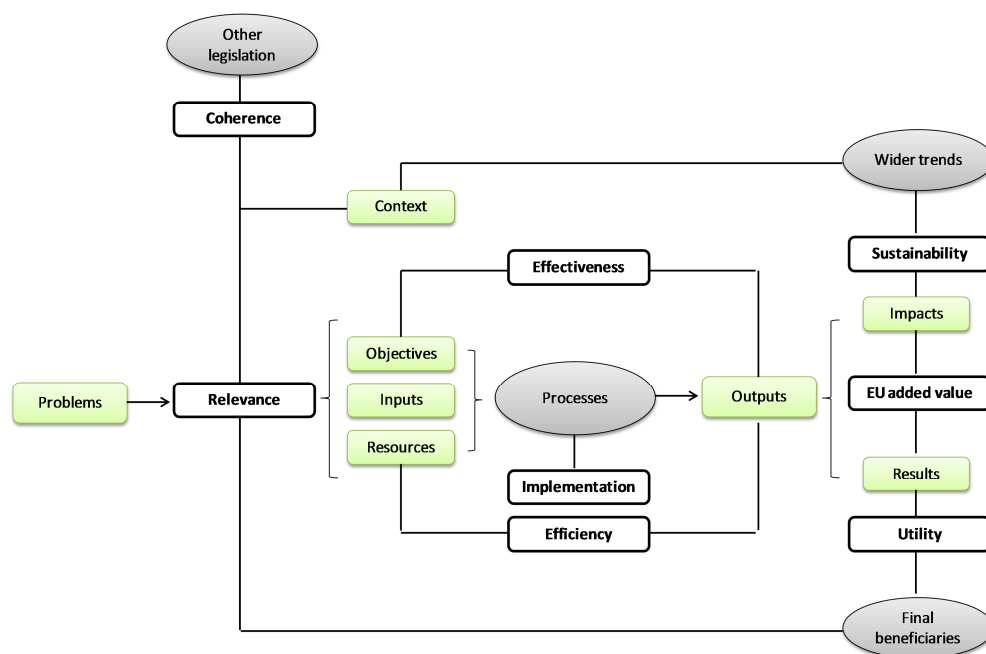
Figure 1: Structured evaluation approach



The first stage of the evaluation focused on observing, obtaining and outlining a comprehensive overview of the subject of the evaluation itself, so as to provide a robust grounding for subsequent research activities. The purpose of the second step was to define precisely the issues to be investigated, structuring therefore the evaluation framework that developed the intervention logic against which expected and actual effects of the legislation in question were measured and assessed. Hence, the intervention logic helped structuring the evaluation framework in which the specific criteria that were needed to judge each evaluation question were identified, as well as the relevant indicators and data to provide the evidence were listed. Figure 2 underneath shows our understanding of how the evaluation criteria explored in this study were placed within and linked to the different aspects of the intervention logic. Thirdly, the last step was dedicated to the analysis of the data and findings developed in the two previous stages. This allowed answers to be formulated to the set of evaluation questions and sub-questions that cover the whole range of evaluation topics.

It is also worth noting that as part of the analysis phase, the ex-post evaluation produced a dedicated factsheet for each Member State. These factsheets present the application of the Directive as a whole and each individual RISM procedure by looking at objectives, the state of implementation and achieved results, in order to easily define a qualitative/quantitative evaluation in terms of effectiveness, efficiency and sustainability of the activities carried out. The entire set of factsheets is provided in Annex 1 of this report.

Figure 2: Overview of the intervention logic for placing the evaluation framework



This intervention logic clearly shows the link with the following standard evaluation criteria:

- **Relevance** - the extent to which the objectives and implementing measures of the Directive are appropriate to address the identified needs of the intended beneficiaries.
- **State of implementation** - the extent to which the provisions and requirements stipulated in the Directive are applied by Member States.
- **Effectiveness** - the extent to which the operational, specific and global objectives of the Directive have been achieved, i.e. to what extent the effects correspond to the objectives.
- **Efficiency** - the relationship between financial inputs and identifiable outcomes, i.e. whether the effects have been achieved at a reasonable cost.
- **Utility** – the extent to which the Directive’s impacts respond to the initial needs and problems of the target beneficiaries.
- **Sustainability** - the extent to which positive changes attributable to the implementation of the Directive may be expected to last beyond the period of their implementation.
- **Coherence**: the extent to which the intervention logic is not contradictory with other interventions with similar objectives.
- **EU added value** – the extent to which intervention or activities supported at the EU level bring about changes that would not have occurred through Member States acting independently or cooperating bilaterally.

These evaluation criteria also organize the structure in which the thematic analysis of the Directive as a whole is elaborated and presented in Chapter 5. To assess the different evaluation criteria, within this chapter we reply to the different evaluation questions which are linked to these criteria.

4.3 Tools

4.3.1 Desk research

The ex-post evaluation was primarily based on a continuing desk research that collected information on developments in the area of road infrastructure safety management along with information on relevant practices across the different EU countries. The desk research involved a review of a wide range of documents, a bibliography of which is provided in Annex 2. The documentation reviewed includes the national guidelines that Member States were obliged to adopt to ensure a proper application of the provisions and requirements stipulated in the Infrastructure safety management Directive.

Globally, the various sources of information provided distinctly different but complementary perspectives on the central issues of the evaluation although, as a general point, most of the literature currently available focuses more on describing the road infrastructure safety management instruments than on discussing their benefits and costs in quantitative ways. Moreover, the literature often predates the adoption of the Directive, thereby hindering a comprehensive assessment of its results.

4.3.2 Member States and Stakeholder survey

An online questionnaire-based survey was widely disseminated with the purpose of collecting information and assessing responses from Member States and a broad range of stakeholders. Importantly, their opinions largely informed the analysis of the evaluation questions and supported most of the findings and conclusions that were respectively developed and drawn in this study.

Two dedicated questionnaires were designed: the first questionnaire was designed specifically to target Member States authorities with the aim of collating evidence on the functioning of the Directive and the second questionnaire was designed to gather the views from, and to involve the interested stakeholders in the examination of possible shortcomings and improvements. Both questionnaires can be found in Annex 4. This extensive consultation was announced in March 2014 and conducted in April and May 2014 and featured respectively a total of 29 responded questionnaires for the “Member State Survey” (27 Member States,¹⁵ including two responses for Belgium,¹⁶ plus two non-Member States¹⁷ (response rate of 90% of all contacted Member States) and a total of 28 responded questionnaires from stakeholder representatives (response rate of 43%). Additional information was provided also on specific issues by some of the Member States¹⁸ during follow-up contacts.

As a whole, the information provided by the online survey provided a comprehensive understanding of the way in which the procedures are implemented in the various EU Member States. More information can be found in Annex 3, which discusses the stakeholder consultation.

¹⁵ Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom. Questionnaires were not completed by Germany and Greece.

¹⁶ Belgium-Wallonia and Belgium-Flanders.

¹⁷ Switzerland and Iceland.

¹⁸ Austria, Bulgaria, Denmark, Estonia, Ireland.

4.3.3 Stakeholder workshop

Next to the survey, the direct interaction with stakeholders was a central component of the evaluation. Stakeholders were invited to participate in a workshop that took place in Brussels on 13 June 2014. In total, the conference was attended by a total of 63 participants representing Member State ministries and relevant organizations operating in Member States or EU-wide. The list of participating Member States and stakeholder organisations is given in Annex 6.

The main function of the stakeholder conference was to present and validate the preliminary results and findings attained in the evaluation. This was intended to support the finalization of the evaluation itself and, consequently, to prepare the ex-post evaluation report. A background briefing document was made available before the conference and supported the technical discussion covering the ex-post evaluation of the Directive (preliminary results from the survey) and the following three topics: (i) Vulnerable Road Users, (ii) the role of ITS and (iii) Certification & Measurement of Safety Performance of a road.

Each section of the briefing document was accompanied by questions that guided the participants' preparation and assisted them in framing their expectations. The first part of the meeting provided an opportunity to gain understanding of the objectives and methodology of the evaluation, to illustrate the preliminary results from the online survey and to invite comments and complementary information. The second part of the workshop was dedicated to discussing the three thematic sessions where expert speaker, Professor George Yannis of the National Technical University Athens, introduced the session's topic and the identified problems. Subsequently, participants were given the opportunity to express their views and comment. The introductory speaker rounded off each session with concluding remarks.

The ex-post evaluation report takes into consideration all comments made during the workshop as well as the additional feedback provided by the stakeholders. The agenda of the workshop is enclosed in Annex 7; the briefing document can be found in Annex 8;

4.3.4 Interview programme

Subsequent to the online survey and the stakeholder workshop, an interview programme was carried out with the purpose of throwing further light on the implementation of Directive 2008/96/EC. The interview programme operated in a complementary way to the survey and the workshop and provided an appropriate range of additional information and evidence that supported the identification of the main evaluation findings and the development of main conclusions. In total, seven interviews were conducted. In some cases¹⁹, this involved stakeholders that participated in the survey in order to take up their comments and information provided with a view of discussing them in further detail. In other cases, interviews were conducted either to cover Member States²⁰ that had not participated in the survey or to gather additional insights on regional

¹⁹ Interviews with EU stakeholders: Mr. Per Mathiasen from the EIB and Mr. Marcial Bustinduy from the EBRD.

²⁰ Interview with Dr. Hagen Schueller from PTV Group to collect insight for Germany.

experience²¹ of the implementation of the Directive or, finally, to clarify questions on the technical aspects of the legislation as well as on the broader policy framework²².

²¹ Interview with Ms. Lala Poi i Reguent from the regional Government of Catalonia.

²² Interviews with the following experts: Mr. Maxime Fament from ERTICO, Mr. Luca Studer from the Politecnico of Milan (Italy) and Mr. Roberto Arditi from the Italian Società Iniziative Nazionali Autostradali (SINA).

5 Analysis of the evaluation questions

5.1 Introduction

The objective of this Chapter is to present the overall high-level assessment of the implementation and application of Directive 2008/96/EC on the basis of the evaluation criteria that were described in the previous Chapter. All these evaluation criteria provided the guidance and structure according to which the results and findings of the evaluation questions were elaborated and presented. For some of the evaluation criteria, we first discuss the general findings and then turn to the evaluation questions.

According to the analysis of the evaluation questions, some performance comparisons were carried out between Member States that did and did not have a formal safety management system in place before Directive 2008/96/EC was in place. In this respect, Member States/Regions **with** pre-Directive procedures are the ones with at least two procedures²³ (either RSIA, RSA, NSM or RSI) provided in the national road infrastructure safety management system before the Directive was introduced. Out of 28 Member States/Regions, 17 were identified to have pre-Directive procedures, while 11 did not. Out of these 11, 5 Member states had however one procedure in place, while 6 had none.

Table 3: Member States/Regions with and without pre-Directive procedures

EU MSs/Regions <u>with</u> pre-Directive procedures		EU MSs/Regions <u>without</u> pre-Directive procedures	
Member State/Region	Number of pre-Directive procedures	Member State/Region	Number of pre-Directive procedures
Germany, United Kingdom	4	Croatia, Poland, Slovakia, Slovenia, Spain	1
Denmark, Finland, France, Italy, Latvia	3	Belgium-Flanders, Bulgaria, Lithuania, Luxembourg, Romania, Sweden	0
Austria, Belgium-Wallonia, Cyprus, Czech Republic, Estonia, Hungary, Ireland, Malta, Netherlands, Portugal	2		

Note: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders) and CEDR (2008). Information for Germany is included and it was extracted from literature (CEDR, 2008).

²³ The threshold (2 procedures) has been identified as an intermediate value between the possible options, considering that only two Member States (Germany and United Kingdom) had all of the four procedures in place before the Directive was introduced; this permitted to identify two homogeneous groups of Member States/Regions and to consequently obtain a statistical relevance of the analysis.

Information for Greece is missing as neither a response to the survey was provided, nor evidence was found in the literature.

In the following sections we examine the key evaluation questions for each of the evaluation criteria listed in Table 2 above and present findings based on the analysis of the views of Member States and stakeholders, expressed via the online survey (see section 4.3.2), stakeholder workshop and written submissions/interviews, as well as based on the data and other information collected.

5.2 Implementation

5.2.1 General findings

Under this criterion the evaluation aims to assess the extent to which the provisions and requirements stipulated in the Directive are applied by Member States.

Transposition of the Directive

On the basis of the collected responses, all Member States²⁴ with the exception of Croatia have transposed Directive 2008/96/EC and, to date, its provisions are embedded in the single national law systems of almost all EU countries. Transposition has either taken place by adjusting the pre-existing national legislation in order to make it consistent with EU requirements, or by creating a new normative framework ex-novo. A total of 14 responses out of 27 reported that the pre-existing national legislation was integrated and adjusted with the requirements stipulated by the Directive. In almost all of them (13 responses out of 14), some of the procedures were already in place before the Directive was adopted.

Conversely, 9 responses commented that the pre-existing national legislation was totally replaced by a new legal framework in line with the provisions of the Directive, even though in 4 cases some of the procedures were already in place.²⁵ Details on specific legislative contexts of some Member States are given in the ensuing Table 4.

Box 2: Transposition of Directive 2008/96/EC outside the EU

Replies (Iceland and Switzerland) to the online questionnaire have shed light on the transposition of Directive 2008/96/EC in non-EU member European countries.

In Iceland, the Directive was formally transposed on 1 October 2011, while on 30 January 2014 the transposing regulation was amended following clarifications requested from the EFTA Surveillance Authority (ESA). In this respect, it is worth pointing out that RSAs, NSMs and NSM were already in place before the Directive was adopted.

RSAs and NSMs procedures were also established in Switzerland before the adoption of the Directive. Therefore, the initial regulatory framework was already extensively consistent with the Directive's requirements and minor adjustments or a simple broadening of the scope of the procedures were needed.

²⁴ 4 Member States have not provided information on this particular topic.

²⁵ Upon implementation, a comment made by the grouping of IFIs (interview of 19 June 2014) has underlined that a point of strength of the Directive is its flexibility. This should remain in case a revision will occur to avoid red tape (current requirements were already challenging to implement).

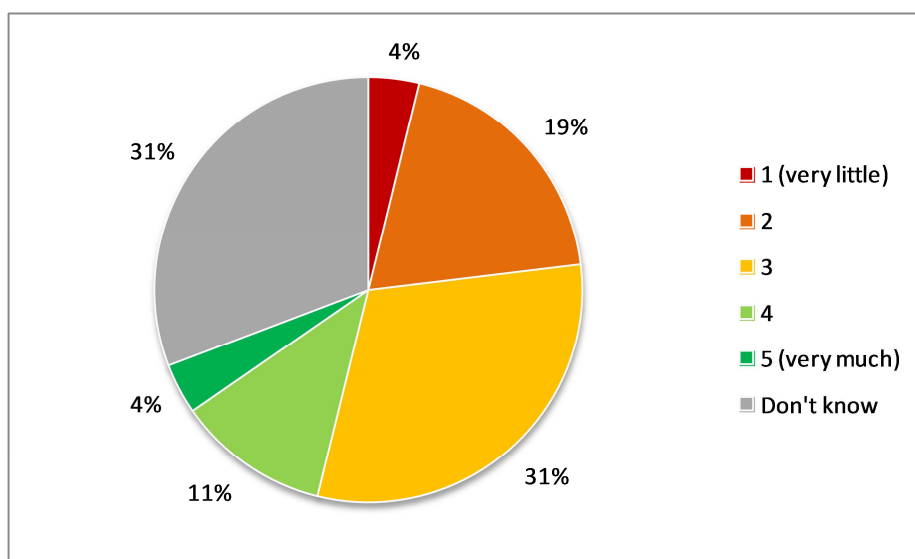
Implementation of the Directive

Whilst on the whole, the national laws regulating the procedures stipulated in the Directive have been issued in all EU Member States and specific guidelines have been developed, the level of implementation of the Directive and the level of compliance differ in their details from country to country and the potential road safety effects may vary.²⁶

In this respect, a range of stakeholders believe that some Member States still appear to have difficulties in implementing the procedures effectively, although the Directive is formally transposed into their national legislation.²⁷ These EU countries may require capacity and operational procedures, or they lack understanding of the need for and contents of the procedures. As a result, they appear to seek to deliver minimum levels of activity²⁸. Also, stakeholders recognize a need to require road authorities to allocate a dedicated percentage of their budget to the application of the RISM procedures in the Directive²⁹ and to better define the implementation process of some procedures such as RSIA and RSI, as they are often misinterpreted or interpreted in completely different ways in different EU countries.³⁰

As displayed in the following Figure 3, stakeholders have indicated that the level of compliance with the basic requirements of Directive 2008/96/EC is limited.

Figure 3: Stakeholders' views about level of implementation of the basic requirements stipulated by Directive 2008/96/EC



Source: Data based on Stakeholders' questionnaires responses (28 Stakeholders)

²⁶ Comment made by the grouping of road safety research stakeholders (online survey).

²⁷ Comment made by the grouping of IFIs (online survey).

²⁸ Comment made by the grouping of road safety research stakeholders (online survey).

As far as the main barriers encountered to secure the effective implementation of the Directive are concerned, 45% of Member States commented that they did not have to face or cope with any particular hindrances. The remaining Member States/Regions commented mainly on:

- The administrative burden requested to set up the procedures;
- The lack of clear definitions concerning responsibilities between different agencies;
- Difficulties tied to the different approaches in use between the pre-existent procedures and requirements stipulated by the Directive; or even
- The time requested to reorganize the existing procedures (as in the case of RSIs and Black Spot Management-BSM) at the institutional level.

In terms of administrative costs for implementing the Directive, insights provided by the EIB on suggest that these may be estimated as follows:

- a one-off cost of maximum 18-24 man-months, or € 18,265-€ 24,353³¹ to develop RSIA, RSA and RSI manuals and procedures (possibly outsourced to external consultants);
- 6-12 man-months/year or € 6,088-€ 12,176 to cover the introduction, continuous maintenance and promotion of the procedures (borne by the responsible authority);
- 6-12 man-months or € 6,088-€ 12,176 per year for training courses and certification for specialists and road safety auditors (costs shared by authorities and private consultants).

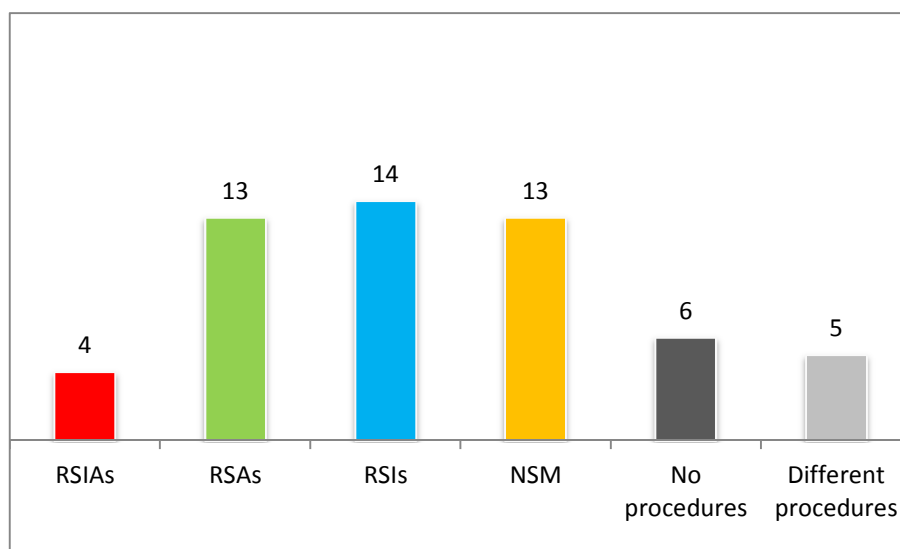
Overall, road safety management may require approximately 12-24 man-months or €12,176-€ 24,353 per year per country (at the responsible authority).

Procedures in place

Before the adoption of the Directive, RSAs, RSIs and NSM were the procedures most commonly applied in the Member States, while only a small proportion (4 responses) applied RSIA as well. The average number of procedures in place in Member States/Regions before the adoption of Directive 2008/96/EC is 1,6. Equally, it is noteworthy to say that in 5 responses Member States declared to apply procedures others than RSAs, RSIs and NSM before the adoption of the Directive. For all these Member States such procedures involved detection of high accident concentration sections (Black Spot Management) without any ranking of the inspected roads. According to the data, the geographical position of the Member States is not relevant in terms of the use of the procedures before the adoption of the Directive, as reported in Table 3.

³¹ For labour we assume an hourly wage of 7.3 euro (calculated based on data available from Eurostat on the average gross annual earnings in the business economy (2008-2011) and an average of 139 working hours/month (calculated based on data available from oecd.stat on the average for the EU).

Figure 4: Number of Member States / Regions where procedures were used in the safety management of TEN-T roads before the implementation of the Directive



Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

A different perspective emerged after the Directive entered into force. Given the compulsory nature of all road safety management procedures, it comes as no surprise that all answered questionnaires, with the only exception of Croatia, declared that all procedures are now fully foreseen in the national regulatory frameworks. A particular note should be made about RSIAs: though its degree of application has almost doubled compared to the pre-Directive scenario, RSIAs still remains the least used by Member States; one reason is the limited type of newly funded road projects for which the use of this procedure is foreseen.

Costs

Unfortunately, the largest proportion of respondents does not measure the costs and the benefits for Directive 2008/96/EC procedures (respectively, 18 and 17 responses out of 27). Evidence indicates that costs following from the assessment (e.g. costs associated with the remedial actions adopted following the completion of the RISM procedures) account for the greatest portion of total costs (on average 45% of total costs according to the responses), followed by the costs for performing the audits (on average 33% of total costs).

Coverage of roads

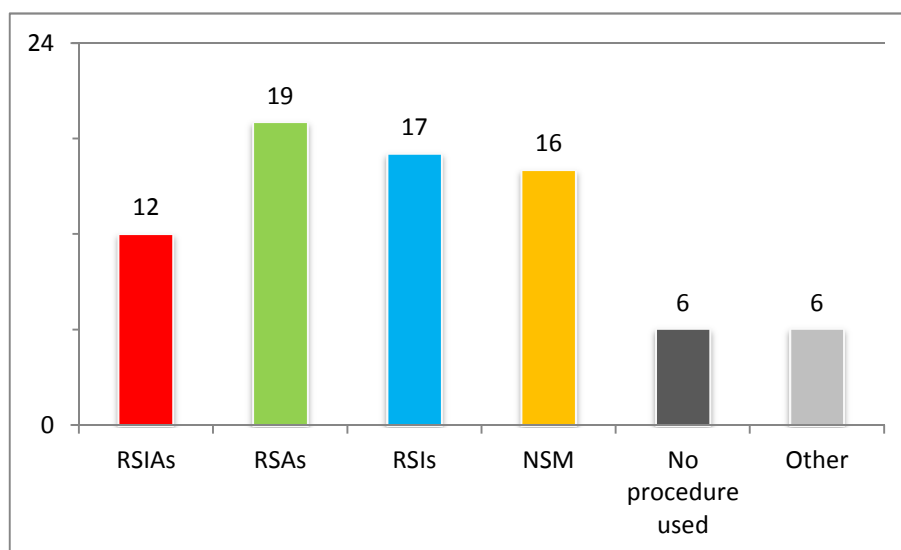
While the Directive applies only to the TEN-T road network, it also encourages Member States to extend its application to non-TEN-T roads and the evidence collected suggests that this happens in the majority of cases (see Figure 5 underneath). In particular, RSAs are the procedures most applied to non-TEN-T roads (19 responses out of 27), again followed by RSIs, NSM and, finally, RSIA's with respectively 17, 16 and 12 responses.

In 6 cases, Member States and Regions pointed out that other types of procedures are in place and applied on the non-TEN-T road network; almost all of them apply the Black Spot Management procedure (detection of high accident concentration sections).

Interestingly, 11 Member States/Regions apply (or do not apply) to non-TEN-T roads the same procedures as those applied before the introduction of Directive 2008/96/EC, while a larger group of Member States (13) applies to non-TEN-T roads an increased number of procedures; only 3 Member States reduced the number. The general trend is reflected in the average number of procedures applied to the non-TEN-T road network (2,4) compared to the average value registered for the TEN-T roads before the Directive entered into force (1,6).

Stakeholders commented that, on a scale from 1 (not at all relevant) to 5 (very relevant), it is relevant to improve road safety by applying the procedures listed in Directive 2008/96/EC to (i) main single carriageway roads outside urban areas not in the TEN-T and main roads in urban areas (mean 4.38 each) and (ii) motorways and expressways not in TEN-T (mean 4.15).

Figure 5: Number of Member States / Regions where procedures were used in the safety management of roads not belonging to the TEN-T

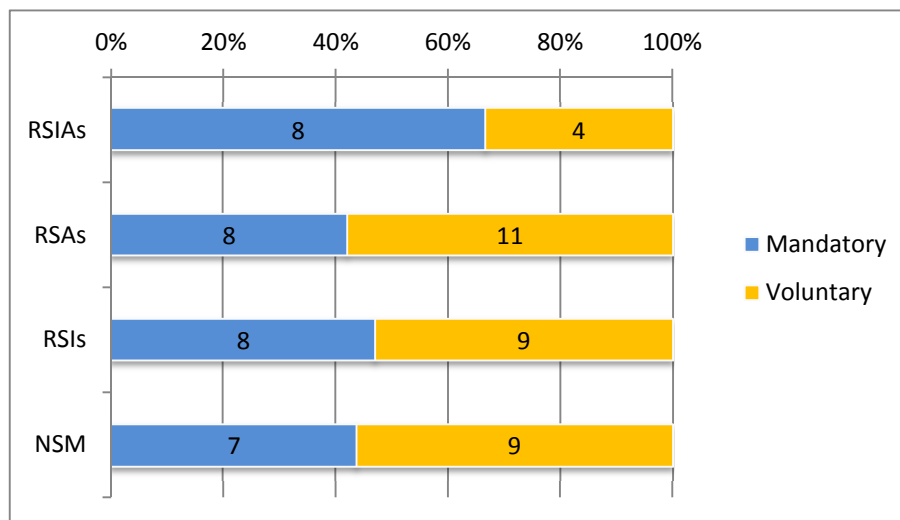


Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

Finally, the information provided in Figure 5 above can be further analysed in combination with the findings illustrated in Figure 6 below, which considers whether the application of the road infrastructure safety management procedures to non-TEN-T is ensured on a compulsory or

voluntary basis. On this point, RSIA are mandatorily applied in the majority of responses to non-TEN-T roads. By contrast, a more balanced perspective is given for RSAs, RSIs and NSM.

Figure 6: Share of Member States / Regions where procedures are compulsory on roads not belonging to the TEN-T network



Source: Data based on Member States' questionnaires responses (21 out of 27 Member States/Regions)

In support to the reading of the quantitative and qualitative feedback supplied by Member States relating to the implementation of Directive 2008/96/EC (see Figure 4 above), stakeholders commented that the procedures stipulated in this piece of EU legislation are not new and were already applied in a number of Member States before the Directive was adopted even on non-TEN-T roads.

5.2.2 Analysis of the evaluation questions

Evaluation question #1: *To what extent were Road Safety Impact Assessments (RSIAs) and Road Safety Audits (RSAs) integrated into the planning, designing and construction phases of Member States?*

Evaluation question #3: *To what extent and how did Member States carry out the directive provisions concerning roads in operation (safety ranking and inspections)?*

All RISM procedures are fully established in the national law systems of the Member States. As explained in the general findings above, a high share of responses (14 out of 27) indicate that RSIA and RSA procedures have been integrated in pre-existing national schemes while, on the other hand, in 9 cases the new procedures have entirely replaced pre-existing regulatory settings. Analogously, the same reasoning applies to procedures that are in use on the road network in operation (NSM and RSIs). This confirms that national systems were already broadly in line with the requirements set by the Directive.

As illustrated in Table 4, nearly all countries that have integrated their national frameworks with the new requirements stipulated by Directive 2008/96/EC are countries where some of the procedures were already established. This is because such Member States have already had a coherent

legislation in force in which the provisions laid down in the Directive could have been integrated with no particular efforts³².

Table 4: Comparison between procedures (RSIAs, RSAs, RSIs and NSM) in place before the Directive and implementation methods

MS/Region	RSIA and/or RSA procedures in place before Directive's adoption	RSIs and/or NSM procedures in place before Directive's adoption	Integration with pre-existing national schemes	Replacement of pre-existing national schemes
Austria	Yes	Yes	Data not available	Data not available
Belgium-Flanders	No	No		✓ ³³
Belgium-Wallonia	No	Yes		✓
Bulgaria	No	No	✓	
Croatia	No	No	Not implemented	Not implemented
Cyprus	No	Yes	✓	
Czech Republic	Yes	Yes	Data not available	Data not available
Denmark	Yes	Yes	✓	
Estonia	Yes	Yes		✓
Finland	Yes	Yes	✓	
France	Yes	Yes	Data not available	Data not available
Germany	Data not available	Data not available	Data not available	Data not available
Greece	Data not available	Data not available	Data not available	Data not available
Hungary	No	Yes	✓	
Italy	Yes	Yes	✓	
Ireland	Yes	Yes	✓	
Latvia	Yes	Yes	✓	
Lithuania	No	No		✓ ³⁴
Luxembourg	No	No	New regulatory setting established following transposition of Directive 2008/96/EC	
Malta	Yes	Yes	✓	
Netherlands	Yes	Yes	✓	
Poland	Yes	No	✓	

³² The exception is Bulgaria, which has integrated the new procedures within the existing national regulation concerning road infrastructure standards and safety.

³³ In the case of Belgium-Flanders, notwithstanding that no RISM procedures were in place before the adoption of the Directive, single initiatives on road safety (e.g. data collection in the event of injury accidents or the existing practice of reviewing projects on the regional network) were regulated by national law, later replaced by the provisions of Directive 2008/96/EC.

³⁴ For Lithuania, the answer to the questionnaire returns the existence of a national legislative framework in the area of road infrastructure safety before the adoption of Directive 2008/96/EC. However, further details on such normative setting were not provided though the responded questionnaire clearly stated that no RISM procedures were in place before the Directive was adopted. The answer also suggests that the pre-existing legislative framework has been later replaced by the transposition of the new provisions of the Directive.

MS/Region	RSIA and/or RSA procedures in place before Directive's adoption	RSIs and/or NSM procedures in place before Directive's adoption	Integration with pre-existing national schemes	Replacement of pre-existing national schemes
Portugal	Yes	Yes	✓	
Romania	No	No		✓ ³⁵
Slovakia	No	Yes		✓
Slovenia	No	Yes	✓	
Spain	No	Yes		✓
Sweden	No	No	New regulatory setting established following transposition of Directive 2008/96/EC	
United Kingdom	Yes	Yes	✓	

Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

When looking at the percentage of TEN-T networks projects assessed by RSIA and RSA, answers collected indicate that, since the adoption of Directive 2008/96/EC in each Member State, nearly 100% of new road infrastructure projects have been subject to the application of the two procedures.³⁶ This globally corresponds to an amount of (at least³⁷) 52 RSIA and 627 RSAs conducted over the last three years (2011-2013). It is important to note that 7 Member States (Austria, Bulgaria, Cyprus, Latvia, Luxembourg, Portugal, Spain) responded that, considering the lack of road infrastructure projects to be assessed, no RSIA have been performed hitherto in their administrated territories, while all of them performed at least one RSA. As stated before, Croatia has not implemented the Directive hitherto.

As far as NSM and RSI are concerned, answers collected indicate that:

- 95% of roads in operation have been subject to the application of a RSI procedure; this means that all 15 responses collected (out of 27 – the remaining Member States/Regions have not provided an answer) declare a full application of RSI on their competent TEN-T road network with the exception of Lithuania, where only the 30% of the network in operation has been assessed;
- all Member States that responded to the questionnaire fully apply NSM requirements on the whole TEN-T road network. Among all the responses collected, one country (Portugal)

³⁵ For Romania, the answer to the questionnaire returns the adoption of a national legislation just before Directive 2008/96/EC was adopted. The answer suggests that such pre-existing legislative framework has been then replaced by the transposition of the new provisions of the Directive.

³⁶ More precisely, a mean value of 99.2% for RSIA, based on 12 responses (out of 27), and of 99.8% for RSA, based on 20 responses (out of 27); all respondents declare a percentage of 100% for both, except the Netherlands which answered 90% and 95%.

³⁷ Respectively 9 and 13 Member States have not been able to provide specific data on the number of RSIA and RSA conducted.

informed that they do not perform safety ranking but only detect high accident concentration sections; Latvia has not provided data.

Evaluation question #2: *Is there any difference in the implementation between best performing and worst performing EU Member States?*

Information is not sufficiently available to conclude about a correlation between the degree of implementation of the Directive and the road safety performance in a specific Member State. However, as described in the analysis below, evidence suggests that the Member States that presented poorer levels of road safety performance were those where the application of the requirements set by the Directive was more robust (only 33% of the best performing Member States in terms of road safety are also strong implementers of the Directive). A balanced repartition applies, conversely, to grouping of light implementers.

This conclusion derives from the comparison of two different groupings of countries: the first based on their safety level, defined in terms of road deaths considered per million inhabitants in the year 2013, and the second based on the level of implementation of the Directive.

The information required to construct the first group is obtained from the 8th PIN Report released by the ETSC,³⁸ which helps to identify the best and worst performing Member States. The average EU rate of 51 road fatalities per million inhabitants is taken as the threshold for the classification.

Table 5: Member States grouped as best and worst performers (road fatalities per million inhabitants)

Below EU average (best performers)	Above EU average (worst performers)
CY, DK, ES, FI, FR, IE, MT, NL, SE, SK, UK	AT, BE, BG, CZ, EE, HR, HU, IT, LT, LU, LV, PL, PT, RO, SI

Source: 8th PIN Report (ETSC, 2014)

The second level of analysis entails the grouping of Member States and Regions as strong and light implementers³⁹ of the procedures stipulated by Directive 2008/96/EC. The selected criteria used to classify countries in the two groups of implementers are the following: (i) compulsion of remedial actions identified in follow-up of the procedures; (ii) compulsion of the application of the procedures to the non-TEN-T road network and (iii) adoption of specific training programs for auditors. A point has been assigned to each procedure that has proven to satisfy each selection criterion and given a maximum score of 12 points.⁴⁰ Countries which obtain a score equivalent or higher than 7 are considered “strong implementers”. Table 6 shows the results of the categorization, while the scoring details are presented in Annex 10.

³⁸ ETSC (2014). Ranking EU Progress on Road Safety. 8th Road Safety Performance Index Report. Available at: http://etsc.eu/wp-content/uploads/ETSC-8th-PIN-Report_Final.pdf

³⁹ This categorization refers uniquely to the level of implementation of the Directive 2008/96/EC in each Member State/Region and does not include any references from other international/national/local initiatives and programs in the field of road safety.

⁴⁰ The maximum score has been calculated as for each selection criterion all four RISM procedures would have been implemented.

Table 6: Member States/Regions grouped as strong and light implementers of Directive 2008/96/EC

Strong implementers	Light implementers
AT, BE-Wallonia, BG, CZ, EE, HU, IE, LT, MT, SI	BE-Flanders, CY, DK, ES, FI, FR, IT, LU, LV, PL, PT, RO, SE, SK, UK

Note: classification obtained through a combination of criteria (see text); the data is based on Member States' questionnaires responses

As illustrated in the following Table 7, the comparison between these two groupings indicates that only 33% of the best performing Member States in terms of road safety are also strong implementers of Directive 2008/96/EC. The bearings of this reasoning is that the Member States that presented poorer levels of road safety performance (in number of road deaths per million inhabitants, e.g. worst performers) were those where the application of the requirements set by Directive 2008/96/EC has been more robust. A balanced repartition applies, conversely, to the grouping of light implementers.

Table 7: Comparison between best and worst performing Member States and strong and light implementers

Groups of Member States/Regions	Road deaths per million inhabitants (2013)	
	Below EU average (best performers)	Above EU average (worst performers)
Strong implementers (9)	33%	67%
Light implementers (16)	50%	50%

Source: Data based on Member States' questionnaires responses (25 out of 26 Member States; Belgium is here counted as a country; Croatia has not been included since the implementation of Directive 2008/96/EC has yet to occur) and 8th PIN Report (ETSC, 2014).

Evaluation question #4: How has the presence of black spots been effectively communicated to road users?

Countries already had experience with BSM before the Directive was implemented (some countries such as the United Kingdom and the Netherlands had already been using BSM since the seventies), as documented by CEDR (2008). In fact, with the only exception of Sweden and Finland (the latter using a network approach⁴¹ to black spot management) all CEDR Member States made use of this road infrastructure safety procedure, though mostly on a voluntary basis. In this respect, it is interesting to note as well that the large majority of CEDR Member States official rules and reference documents were established for carrying out this procedure. Also, according to CEDR (2008) in some countries (France, Netherlands, Sweden and United Kingdom) the use of this technique has been transformed to prioritise a route or network approach. An overall overview of the insights gathered by CEDR is given in Annex 11.

⁴¹ A "network approach" involves that a road infrastructure safety procedure is applied not at specific locations or sites in isolation but considering the wider network, as its application can potentially create negative network effects that could be overlooked when solely considering the single road section.

Currently, almost all responses (23 out of 27) confirmed that information to road users about the presence of black spots is actually provided. Such communication is chiefly channelled through the internet websites of the road authorities or of the Ministries of Transport (15 responses out of 26). However, insights were not given by respondents whether such information is specifically devoted to informing users about black spots, or whether it is provided as part of the broader assessment of road safety. For the latter one, these websites provide in fact the possibility to download annual reports which are usually presented to medias or summarised in articles published in general newspapers or in dedicated information bulletins made publicly available by the road authorities. Finally, a number of Member States (6 responses) also responded that information on black spots is provided through signposts and variable message signs (VMSs) as part of the overall traffic information provided to road users.

A conclusion of the latter kind implies that the effectiveness of the communication tools used can be, therefore, variable. While signposting and the use of VMSs is an incisive method for communicating black spots because the information given to road users is punctual and situational, internet and paper based communication may be considered as less effective because a) the audience is not targeted and is not limited to road users, b) the information has to be looked up (awareness and effort is required from the reader) and c) the information is not put in relation with the situation. For this reason, it can be concluded that only the few (6) Member States/Regions which communicate through signposts and VMSs effectively inform road users about high accident concentration sections.

Regarding the effectiveness of communication in terms of safety impacts, opinions are mixed. Half of the Member States authorities (50% out of 26 responses excluding Croatia) are of the opinion that increasing the information communicated to citizens and road users (for example with respect to black spots and general recommendations) would improve the effectiveness of road infrastructure safety management. Stakeholders shared a more mixed perception about the concrete benefits that could be achieved in this area.

Indeed, though responses from stakeholders have generally argued that communication is important to increase the understanding of problems, solutions and good behaviour,⁴² they have also highlighted that communication is effective only if information and awareness lead to a change in users' behaviour. Achieving this permanently and sustainably through communication is difficult and requires a very targeted and sustained effort to complete a complex process consisting of various steps (road users receive information, road users understand the information, road users' attitudes start to change, road users' behaviour starts to change) before finally seeing that behaviour has changed on a sustainable basis.⁴³

Specifically on black spots, responses from the stakeholders have stressed that the RISM instruments are too technical and consequently information to citizens should only focus on issues that concern them directly (for example, recommended behaviour in certain traffic situations),⁴⁴ and that in the case of installed signs warning of the existence of a black spot, there is no evidence

⁴² Comment made by the grouping of IFIs (online survey).

⁴³ Comment made by the grouping of IFIs (online survey).

⁴⁴ Comment made by the grouping of road safety research stakeholders (online survey).

about the possible benefits while, after some time, the black spot sign becomes almost “invisible” to users.⁴⁵

Evaluation question #5: *How has information from accident reports and methodologies for calculating the average social cost influenced road safety ranking and inspections?*

Evidence collected suggests that information from accident reports, rather than the calculation of the average social costs have influenced road safety ranking and inspections. Information from accident reports (number of injuries and fatalities) is usually collected from police forces and transferred to road authorities. Information is used for general statistical processing but it is also part of the black spot or network safety management. Importantly, the information is reported to provide a statistical basis for updating frequency of accidents and therefore adapting or completing the redesign of infrastructure.

Looking at the data provided by the survey, the majority of responses (17 out of 27) commented that the methodology adopted for carrying out the road safety ranking and for determining road sections subject to inspections is based on accident reports; out of these 17 Member States/Regions, only 8 also report the calculation of average social costs of accidents. In 10 cases, neither the information on accident reports nor the methodology for calculating social costs are taken into account.

Analysing the qualitative knowledge (comments) collected from Member States’ representatives, it can be summarized that the information on accident reports is mainly used for: (i) statistics and studies on accident data (8 cases); (ii) input for the management of the road safety ranking procedure (NSM), through the analysis of black spots and related accident frequency (6 cases); (iii) setting up the prescription of road safety treatments or proposing road-safety-enhancing measures (3 cases).

Regarding average social costs, only a few countries calculate them and no direct influence between the calculation of social costs and the management of safety rankings and inspections on the road network in operation can be observed at this stage. On this, evidence has been collected only from four EU countries (Ireland, Spain, United Kingdom and Austria), while for a fifth Member State (Malta) it has been found that the values estimated for Spain are adopted.

In Ireland, the average social cost is extracted from the 2004 “Cost Benefit Parameters and Application Rules for Transport Project Appraisal” report.⁴⁶ In the report, the cost values for 2002 are inflated to obtain 2011 values. The cost estimations are € 2,612,420 and € 349,010 for fatal and serious accidents respectively.

For Spain, accident costs are those estimated in the EU-funded HEATCO project (Bickel, P. ea 2006⁴⁷) and amount at € 1,122,000 and € 138,900 for fatal and serious accidents respectively in non-built-up areas and € 729,300 and € 90,285 respectively in built-up areas⁴⁸.

⁴⁵ Comment made by the grouping of road stakeholders (online survey).

⁴⁶ This report was commissioned by the Irish Department of Transport to Goodbody Economic Consultants. Available at: <http://www.roadhaulage.ie/upload/general/5830-1.pdf>.

⁴⁷ Bickel, P. ea (2006). HEATCO deliverable 5. Proposal for Harmonised Guidelines. EU-Project developing harmonized European approaches for transport costing and project assessment. Stuttgart.

In the United Kingdom, the Transport Appraisal Guidance (TAG) provides the reference for the calculation of the average social cost of fatal and serious accidents. For the year 2010 (latest available data), the average value is estimated at £ 1,838,058 (approximately € 2,307,000) and £ 209,939 (approximately € 263,500) for fatal and serious accidents respectively.

In Austria, the actualisation for the year 2011 (latest available data) of the accident cost calculation is based on these accident data and on the accident cost calculation published in 2008. The update considers the values estimated by the EU-funded HEATCO project and on that basis accident costs have been estimated as follows (prices 2011): € 3,016,194 for a fatality⁴⁹, € 381,480 for a severe injury⁵⁰, € 26,894 for light injuries and € 5,245 for material damage (e.g. costs for property damage, insurance, costs for repair, depreciation).⁵¹

Finally, as said above, Malta makes use of the same values estimated for Spain by the HEATCO project. As data is not currently available, the choice of the Maltese authorities for using the same values of Spain is motivated by the fact that the monthly minimum wages for these two countries are very similar to each other (€ 633.5 for Spain compared to € 634.75 for Malta) (FedEE, 2010).⁵²

Evaluation question #6: How were inspections implemented?

As reported by CEDR (2008), RSIs were already in use in 16 countries (out of which 13 are EU Member States) before the Directive was set up. According to CEDR, the longest running programmes, of which some go back to the late seventies, are those in Belgium, Finland, Germany, Hungary and the Netherlands. Denmark, Iceland, Italy, Latvia, Lithuania and Norway began in the 1990s.

More recently, information collected by the ERAnet project⁵³ documented that inspections started in 2003 in Austria, while in the United Kingdom inspections are carried out since 2004 after the adoption of the Road Inspection Manual. According to ERAnet, inspection were originally not applied on a large scale in Ireland and were limited to analysis of high collision locations, while in Switzerland no periodic RSIs were implemented. Finally, in Portugal no explicit legal basis existed for RSIs external to the National Road Administration (ERAnet, 2011; Lutschounig et al., 2005⁵⁴).

In their review, CEDR reported that inspections were mostly undertaken on a voluntary basis, as this technique was a mandatory requirement in only six countries (Germany, Hungary, Latvia, Norway, Portugal and United Kingdom). As concluded by CEDR, inspections vary from country to country and are often related to maintenance programmes; nearly 50% of their member countries had a guideline or a directive on RSI and a standardised approach (Belgium, Denmark, Finland, Germany, Hungary, Italy, Lithuania, Norway, Switzerland and United Kingdom). In nearly

⁴⁸ The average cost of an injury collision for built-up areas is taken to be 35% less than that for a non-built-up area (TMS Consultancy, 2011. Road Safety Engineering and Road Safety Audit. Coventry).

⁴⁹ Expected cost of death due to an accident for the person exposed to risk (Korzhenyevych, A. ea (2014).

⁵⁰ Expected cost of death injury due to an accident for the person exposed to risk, (Korzhenyevych, A. ea, 2014).

⁵¹ Sedlacek, N. ea (2012) Unfallkosten rechnung Strasse 2012, Forschungsarbeiten des österreichischen verkehrssicherheits fonds 016.

⁵² FedEE Services Ltd., 2010. Review of Minimum Wage Rates. London.

⁵³ ERAnet project (2011). D 3.1 Road Safety Inspection Schemes Review.

⁵⁴ Lutschounig, S., Nadler, H. and Mocsari, T. (2005). Description of the current practice of RSI. RiPCORD-iSEREST Project.

all the countries the decision for undertaking RSI was under the responsibility of the road administration. A global overview of how RSIs were applied in CEDR Member States before the adoption of Directive 2008/96/EC is offered in Annex 11.

Further to the adoption of the Directive, as described in answer to evaluation question #3, RSI schemes are established in all Member States and, as is clear from the survey evidence collected, a large proportion of responses (16 out of 27) confirm public authorities or agencies as the subjects that also today are primarily responsible for administering inspections along the road network. In a more limited number of responses, responsibility lies with the central or the regional governments (respectively 5 and 4 responses), while it is also worth noting that some responses (5 out of 27) indicate private consultants as actors playing a direct role in the management of the inspections; the call upon private consultants for conducting inspections is sometimes linked to the presence of a highway concessions system in Member States.

The frequency with which inspections are carried out differs significantly. The Directive does not impose any obligation or even give any recommendation in this respect as it only mentions “*periodic inspections of the road network*”. On average, inspections recur every three years but it has been found that their frequency varies greatly, from an annual basis up to every seven years.⁵⁵ The type of road (motorways and dual carriageways, main or complementary routes), the level of average daily traffic (ADT), the accident rate and the types of collisions emerge as the main criteria that guide the definition of a timeframe for inspections. Member States are however also inclined to carry out inspections in function of other specific needs arising on certain roads or sections, for instance, in case inadequate characteristics of infrastructures are discovered or suspected, or in case of roads that are subject to road works.

Therefore, accident reports are in many cases taken into account when selection sites subject to an inspection, while associated social costs are considered in less than one third of the responses collected.

Evaluation question #7: Did the aforementioned procedures influence the planning phases?

Information is not sufficiently available to conclude about the influence that RISM procedures had on the planning phases for the EU as a whole. Evidence was only collected from 4 Member States (Austria, Denmark, Estonia and Ireland).

The 4 respondents declared that the changes in planning, design and construction of new roads are very limited (Austria, Estonia) or absent completely (Denmark); this is because RISM procedures were already applied in these countries before the adoption of the Directive. Only Ireland stressed that a change occurred only in relation to RSIs, since the results obtained with this technique on the road sections inspected so far have already fed into some changes in national design standards.

Given this result, we do believe that the different procedures did not have a significant impact in the planning phase in those countries (16 Member States/Regions) which already had procedures in place. Moreover, in countries which did not have the procedures in place the overall impact on

⁵⁵ This is the case of Luxembourg, where the extensive timeframe (7 years) to inspect the whole highway network (TEN-T and non-TEN-T) has been motivated by procedural, financial, organizational, human resources and administrative reasons. According to these reasons, in this particular Member State one highway per year is inspected.

timing is also expected to be low. The reasoning behind this expectation is that we are dealing with larger projects which already have a relatively larger time frame, a higher time buffer and for which other procedures (e.g. EIA) are also in place. Some of the procedures, such as the RSA, can be done simultaneously with these other procedures.

Insights were only collected concerning the registration of safety deficiencies and the follow-up remedial process definition. As illustrated in the table below, while deficiencies (e.g. poor pavement maintenance, inadequate road markings, inadequate safety of guardrail) of infrastructures in terms of safety are extensively registered for RSA, RSI and NSM procedures, a lower degree of application has been found for RSIA. Conversely, approximately only half of the responses indicated that the subjects responsible to carry on remedial actions (e.g. correcting incorrect signs, adding guardrails along embankments, providing clear recovery zones, removing sight obstacles) are defined and that deficiencies registered are then used to introduce action plans. In this respect, it is important to say that also in Iceland and Switzerland the processing of the remedial actions is not binding either.

Table 8: Deficiencies registration and follow-up remedial process definition

	RSIAs	RSAs	NSM	RSIs
Deficiencies registered	16	25	23	26
Definition of responsible subjects on remedial actions	11	14	14	19
Actions plans registered	7	14	14	19
None of the above	11	2	4	1
Total MSs/Regions	27	27	27	27

Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

Once produced, approximately half of all responding Member States/Regions have reported that for all RISM procedures recommendations have to be followed mandatorily by the competent road authorities. In the remaining half of respondents, where this follow-up process is not binding, the national schemes of the Member States usually allow the competent authority to ask for alternative remedial options that can differ from the measures suggested to correct or mitigate deficiencies (for example, because the proposed measures are not suitable given the relevant economic and environmental constraints). However, any alternative remedial intervention that is put forth must rely on robust evidence that shows the rationale for not implementing the recommendations, while in parallel soundly demonstrating the justification for the replacement intervention that is taken forward.

This is confirmed by the studies conducted by the RiPCORD-iSEREST project (2007)⁵⁶, where the (usual) reporting process for a RSA is depicted. The road administration, after receiving the report drawn up by the appointed auditor, should decide how the listed hazards will be treated; for this

⁵⁶ Matena, S. et al (2008). Road Safety Audit - Best Practice Guidelines, Qualification of Auditors and "Programming". RiPCORD-iSEREST Project.

reason, the report has to be intelligible and convincing, with a clear description of dangers and potential hazards. The report also contains information on how the mentioned problems can be solved but, since for most hazards usually more than one solution exists, the decision on the remedial measure has to be made by road administration.

Based on evidences collected and the literature reviewed, as well as considering the typical iterative process of RSAs, it can be asserted that the possibility that findings of RSAs might not be followed up is very low.

Evaluation question #8: Were the procedures applied beyond the trans-European road network?

A large majority of responses (21 out of 27) confirm that at least one of the procedures is applied beyond the TEN-T network; moreover, 2 more respondents indicate that the application of RISM procedures beyond the TEN-T network is foreseen in the near future. In particular, respondents commented that RSAs are the most applied procedure to non-TEN-T roads (19 responses), followed by RSIs, NSM and, finally, RSIA with respectively 17, 16 and 12 responses having confirmed their application to non-TEN-T roads.

Also important, when the national legislative framework foresees the application of the RISM procedures to non-TEN-T roads, this application is on a mandatory basis for RSAs, RSIs and NSM procedures in half of the Member States, while it is mandatory for RSIA in two-thirds of the Member States. In remaining countries (half of the Member States for RSAs, RSIs and NSM procedures, one-third of the Member States for RSIA) the application of the RISM procedures is on a voluntary basis.

The following Table 9 summarizes the different procedures applied to the various types of non-TEN-T roads in Member States/Regions, both in a voluntary or in a mandatory basis: in the vast majority of cases, the application of the procedures stipulated in the Directive is carried out on the triad established by national roads, dual carriageways and motorways. Few responders declare that the criterion for the selection of road infrastructure projects to be assessed on the non-TEN-T road network has been identified in the presence of EU financing.

Table 9: Number of Member States indicating which RISM procedures are used on which type of non-TEN-T road

	RSIAs	RSAs	NSM	RSIs
Motorways	1 MS	3 MSs	1 MS	2 MSs
Motorways + Dual carriageways	2 MSs	1 MS	-	-
Motorways + Dual carriageways + National roads	8 MSs	11 MSs	9 MSs	11 MSs
Motorways + Dual carriageways + National roads + Regional or other local roads	1 MS	1 MS	2 MSs	3 MSs
<i>- of which: EU (co-)financed roads</i>	<i>1 MS</i>	<i>3 MSs</i>	-	-
Total MSs/Regions	12	16	12	16
No information	-	3 MSs	4 MSs	1 MS

Source: Data based on Member States' questionnaires responses (21 out of 27 Member States/Regions)

The number of roads (projected or in operation) that are part of the non-TEN-T network that were assessed by each procedure (RSIAs, RSAs and RSIs) is quite substantial yet very variable, both in terms of procedure and of Member State/Region; this variation is primarily due to the different application requirements to the non-TEN-T road network. Based on data provided by Member States on the share of projects or kilometers of roads in operation subject to the procedures, it is estimated⁵⁷ that:

- 62.5% of eligible projects has been assessed applying RSIAs; also, 2 more respondents (Austria and Cyprus) declared that no RSIAs have hitherto been performed on non-TEN-T roads in their administrated territories due to dearth of road projects (their values have not been included in the presented average);
- 67.5% of eligible projects has been assessed applying RSAs; the value provided by Poland (100% of the projects) only refers to the ones financed by the EU and has not been included in the statistic;
- 84.0% of the eligible network in operation has been subject to RSIs.

It is interesting to note that both in Iceland and Switzerland RSIM procedures are applied⁵⁸. The nature of such application differs between the two countries: in Switzerland it is mandatory for all procedures, while it remains on a voluntary basis in Iceland.

Evaluation question #9: What were the factors that hampered the implementation of the Directive?

Lack of institutional, administrative, financial or technical capacity or pre-existing normative framework not in line with the new requirements set by the Directive were the main barriers identified by Member States. However, these barriers were highlighted by a minority of Member States only (lack of institutional, administrative, financial or technical capacity to apply the Directive was referred to by 11 responses, while differences between the pre-existing normative framework and the new requirements of the Directive were highlighted by 11 responses alike). This has required significant procedural and organizational efforts in appropriately reorganising and assigning new management and administrative responsibilities between the existing road authorities and agencies. For these countries, this has resulted in an increased complexity of the overall alignment process.

Conversely, approximately half of the Member States/Regions (12 out of 27) has not encountered particular barriers in transposing and consequently implementing the obligations stipulated by the Directive. One of the reasons here for is because in some instances, procedures were already in place and well-functioning before the Directive was adopted, so only minor changes were introduced to align pre-existing legislation to the Directive (e.g. possible normative conflicts with new requirements were thereby avoided). In particular, 60% of Member States that have not faced

⁵⁷ Non-weighted average values calculated on the basis of 4 collected responses for RSIAs, 7 for RSAs and 10 for RSIs. Most of the Member States/Regions have not provided data. Please note that the percentages refer to the total network extent of non-TEN-T roads selected by each Member State/Region to be covered by the extended scope of the Directive and not to the total extent of the overall Member States' non-TEN-T road network.

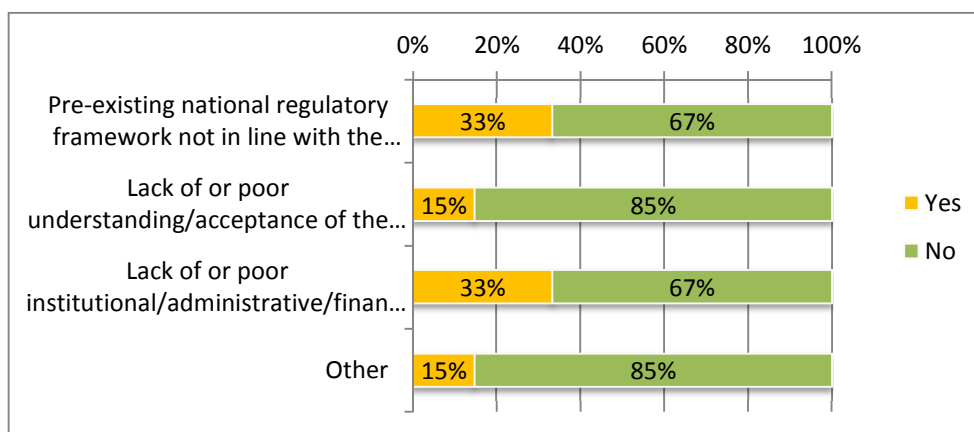
⁵⁸ Please note that Iceland and Switzerland are not part of the EU and therefore do not have TEN-T roads (even though one of the corridors runs through Switzerland).

any particular hindrance in transposing the Directive had two or more RSIM procedures in place before the Directive entered into force (this share rises to 75% if we consider the presence of at least one procedure in place).

Some responses (4) have also indicated either a lack of acceptance among involved policy makers/authorities or an improper or insufficient understanding of the new requirements (for example, on the scope and purpose of the audit system).

The following figure quantifies the share of Member States/Regions that encountered (or not) one of the listed barriers in the process of implementing the Directive.

Figure 7: Obstacles or barriers for the effective implementation of the Directive (share of MSs/Regions)



Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

Evaluation question #10: *Do Member States have a specific budget allocated to implementing the procedures stipulated in the Directive?*

Member States do not earmark funds to carry out the RISM procedures and costs for the latter are generally incorporated in the overall costs of the road project investments. Evidence for earmarking was given by only a small proportion of Member States (4 responses⁵⁹ out of a total 27). As an example, the lack of data on costs is due to the fact that the budget for these procedures is generally integrated into the global budget that is allocated to a specific road project investment, making practically unfeasible to isolate the amount of funds earmarked.⁶⁰

⁵⁹ Responses were provided by Ireland, Lithuania, Luxembourg and the Netherlands. With the exception of Ireland, budget allocation was provided as a whole and not measured per km of roads. In the case of Ireland, given the length of the assessed road network of 5,600 km and given that evidence was supplied for only RSIs and NSM, the annual budget allocation per km of road can be estimated at € 59 and € 45 for RSIs and NSM respectively.

⁶⁰ This is valid for the procedures dealing with new road infrastructures (RSIAs and RSAs).

Where responses confirmed the existence of a dedicated budget for the RISM procedures, the collected information showed that, at national level, an annual budget allocation (for both TEN-T and non-TEN-T roads, where relevant) generally ranges between:

- € 30,000 and € 100,000 for RSAs;
- € 100,000 and € 330,000 for RSIs;
- € 100,000 and € 250,000 for NSM.

No information has been made available for RSIA. As for the procedures (RSIAs and some of the RSAs) dealing with new road infrastructures, it should be noted that the values could be quite different depending on the size of the projects. With regard to the procedures assessing the road network in operation, the values depend on the extent of the TEN-T road network in each Member State. These statements have been confirmed by replies collected through the additional interviews.

Evaluation question #11: Which authority was responsible before the implementation of the Directive and which authority is now responsible for administering RISM procedures?

National road authorities are the primary responsible body for administering the RISM procedures. Their responsibilities cover all three phases of launching the administrative process, financing and performing a specific RISM technique. In the Member States where the RISM procedures were applied before the adoption of the Directive, this central role has been kept although a certain dynamics can be observed, either towards an increase of responsibilities of regional authorities or towards a greater involvement of other subjects (such as the concessionaires).

As described in the following table 10, before the implementation of the Directive, national road authorities played a primary role in all procedures, followed by regional authorities and, lastly, by other types of organizations (for example concessionaires). Non-governmental subjects seem to more often play a role in inspections than in other procedures. The data obtained from Member States is also confirmed in CEDR (2008), which describes the situation for RSIA, RSA, RIA and NSM in 2008, i.e. before the implementation of the Directive.

The same table shows the current responsible subjects for administering the procedures laid down in the Directive. National road authorities (e.g. Ministries of Transport, national agencies, etc.) still play a primary role in all procedures, while regional authorities and non-governmental subjects are equally represented. In terms of evolution of the responsibilities for administering the RISM procedures, it can be said that, globally, the bodies that were responsible before the Directive have kept such role in the Member States where the RISM procedures were already applied.

It is noteworthy, however, to highlight that a certain dynamics can be observed, either towards an increase of responsibilities of regional authorities (e.g. Denmark, Estonia, Finland) or towards a greater involvement (e.g. Ireland, the Netherlands, Hungary) of other subjects (such as the concessionaires).

Table 10: Responsible subjects for administering the procedures before and after the implementation of the Directive

Responsible subjects	RSIAs		RSAs		RSIs		NSM	
	Before	After	Before	After	Before	After	Before	After
National road authorities	5	17	12	21	12	20	12	22
Regional authorities	3	7	6	10	6	9	5	8
Other subjects/organizations	1	7	5	10	7	10	2	10

Source: Data based on Member States' questionnaires responses (20 out of 27 Member States/Regions). Please note that each procedure can be administered by more than one subject.

Looking more specifically into the share of responsibilities, the administration of RISM procedures across the EU after the implementation of Directive 2008/96/EC can be detailed as follows:

- *Launching.* As a whole, almost all responses (on a range⁶¹ between 24 and 26 responses out of 27) have confirmed that national road authorities and regional authorities are usually identified as the responsible bodies for launching the administration process of the RISM procedures. Conversely, concessionaires have a very limited role in this area.
- *Financing.* In more than half of the responses, delegated public authorities are responsible for financing. A minor role is noticed for the central or regional governments (on average one-third of the total of number of respondents for all procedures), while only very few responses (a maximum of 3 out of 27, depending on the procedure) indicate a role for concessionaires in this area of intervention.
- *Performing.* Performing the RISM procedures on the operational level is once more a responsibility that largely lies with delegated public authorities (at least half of all responses collected). Analogously, central and regional governments as well as concessionaires play a limited role, while in comparison to the situations described under “administering” and “financing”, the role of external independent consultants (auditors and inspectors) significantly emerges for this phase. These external consultants are usually hired by the concessionaires, must be certified and must demonstrate no relationships to the roads to be inspected or audited.

Evaluation question #12: What are the criteria (for R.S.A) applied with respect to the definition of infrastructure project to be audited on non-TEN-T roads?

Based on the evidence collected, Member States/Regions that perform Road Safety Audits on non-TEN-T road networks mainly select infrastructure projects to be audited according to the type and/or the hierarchical level of the roads.

In this regard, the largest proportion of non-TEN-T roads subject to audit are motorways (16 responses out of 16 provided answers), followed by dual carriageways roads (13 responses out of

⁶¹ The number of responses varies according to the procedure considered.

16) and national roads (12 responses out of 16). Only a few responses (respectively 1 and 3 responses out of 16) commented that road safety audits are also applied to regional/local roads or to EU co-funded roads (Hungary, Poland and Spain).

Moreover, in only a few cases, the selection of non-TEN-T roads to be audited is related to the size and the complexity of the projects or on the forecasted ADT.

5.3 Relevance

5.3.1 General findings

One of the key themes of the evaluation framework is to determine the relevance of the Directive for tackling the needs of users and other beneficiaries and the nature and scope of activities that it has been designed to address. In particular, the approach seeks to uncover whether the implementing measures of the Directive are fit to address the key policy objectives it aims to realise.

Directive 2008/96/EC has been introduced to address the identified shortcomings and disparities in the manner in which safety of road infrastructure was managed, so to ensure a generalised application of the RISM procedures across all Member States. As mentioned, prior to the Directive being introduced, not all procedures were established in all Member States.

However, under the current circumstances, the scope of the Directive is only limited to the TEN-T road network, while its application to the rest of the road network is at present only a voluntary option in the Directive, although the analysis developed for the implementation criterion (section 4.2) has indicated that these procedures are also applied to roads not belonging to the TEN-T network and, importantly, in at least half the responses, this occurs on a mandatory basis.

Further on this point, the majority of the stakeholders (73%) is of the opinion that the RISM procedures should also mandatorily apply to non-TEN-T roads (e.g. all main roads while also entailing lower classified roads such as urban, secondary and rural roads) as these roads provide the highest potential for improving road safety as the majority of accidents occur on these roads. Consequently, stakeholders would see beneficial any possible revision of the Directive in this direction.⁶²

Additionally, this should be accompanied by a categorization of the roads on the basis of their degree of risk that should enable a prioritization (and therefore a cost-effective use of the available resources) of the interventions foreseen with the distinct procedures established by the Directive (need to understand where the critical situation occurs before implementing an intervention that may be directed to a specific section of the road or to a specific situation – for example, weather conditions, nightlight, etc.).⁶³

⁶² Comment made by the grouping of road safety research stakeholders (interviews on 16 June 2014 and on 25 June 2014).

⁶³ Comment made by the grouping of road safety research stakeholders (interview on 25 June 2014).

5.3.2 Analysis of the evaluation question

Evaluation question #13: To what extent is the obligation for Member States to define procedures for road infrastructure safety management necessary to address road safety issues, considering that the Directive does not include specificities about the procedures?

Compared with the prior system of national legislation, the Directive has led to an improved and much more consistent regulatory framework for spreading the use of the RISM procedures. Despite the challenge of establishing the procedures in all Member States, the Directive, at this stage of maturity, has now made it possible for road administrations to execute an approach to the road infrastructure safety management with a higher level of uniformity. This strengthens the adoption at EU level of the “Safe System Approach”⁶⁴ to road safety by combining interlinked and complementary actions on roads, vehicles and drivers.

Such uniformity can be, however, be read more on a formal level than on a substantial one. Formally, all procedures are established in the regulatory setting of all Member States, but the latter still need to be extensively secured across the EU Member States, given that the Directive does not provide any detailed guidance on the application of the RISM procedures, nor harmonisation between Member States is prospectively foreseen.

This conclusion is first motivated by a shortcoming of the Directive that it is open to national interpretation as the use of terminology is not rigorously defined. This has given Member States significant room to adapt the procedures to their own methodologies and practices when already existing and, consequently, created a lack of harmonisation. Moreover, the process is often considered more formal than substantial. For example, the RSIA process ought to be better defined as this procedure is less consolidated if compared with the other RISM techniques and often its scope and final objective are misinterpreted. The concept of RSIs is also differently understood across Member States (routine inspection by internal staff of the competent authority or assessment by a team of trained and independent inspectors). Lastly, safety ranking and management of the road network in operation ought also to be better defined.

Also, the adequacy of the Directive can be questioned in relation to how Member States organise training and the certification of road safety auditors. The Directive obliges Member States to adopt training curricula for road safety auditors but leaves open for them how to comply with the Directive’s provisions. This has resulted in applying training and curricula requirements not homogeneously and, therefore, in not securing that a common level of skills and competences is secured.

This motivates why the objectives of the Directive are still relevant and fit-for-purpose when considering the overall EU objectives in terms of improved road safety. However, as the provisions

⁶⁴ The ‘Safe System’ approach advocates for a safe road system, better adapted to the physical tolerance of its users. It recognises the need for responsible road user behaviour, but it also accepts that human error is inevitable. It therefore aims to create a road transport system that makes allowance for errors and minimises the consequences. By taking a total view of the combined factors involved in road safety, the Safe System approach encourages a better understanding of the interaction between the key elements of the road system: road users, roads and roadsides, vehicles and travel speeds. (Roads and Traffic Authority of New South Wales (2011), Speeding – Did you know? Factsheet 6, July 2011) and ITF (2008), Towards Zero. Ambitious Road Safety Targets and the Safe System Approach.

are not sufficient to fully secure a common playing ground across all Member States, the relevance could be further improved if the Directive would be more prescriptive. This would also increase the effectiveness of the Directive.

5.4 Effectiveness

5.4.1 General findings

The following section will explore the effectiveness of Directive 2008/96/EC. The aim in considering effectiveness is to determine in what ways a particular Directive achieves its operational, specific and global objectives, in terms of outputs, results and longer-term outcomes. With these criteria in mind, the performance of Directive 2008/96/EC has been explored and its effects assessed.

Generally speaking, practices and procedures for the management of road safety, as introduced by the Directive in the EU Member States, are considered to be an improvement in comparison to the pre-Directive situation. More particularly, the majority of the Member States/Regions (21 out of a total of 27) have indicated that the Directive has triggered a change in the operational management of road safety.

On the contribution to improved road safety, one should be aware that it is difficult to isolate and allocate the reduction in the number of road victims to the use of, and subsequent impacts, produced by the RISM procedures, chiefly because road accidents often result from a spectrum of causes (firstly, driving behaviour) and are not always directly linked to deficiencies of the road infrastructure. Nevertheless, it can be argued that the Directive has led operators to look at road safety in a more comprehensive way.⁶⁵ However, it is interesting to note that in 2010 (pre-Directive accident scenario), out of a total of 11 Member States where the RISM procedures were totally absent or where only a single procedure was in place, 9 (Belgium-Flanders, Bulgaria, Croatia, Lithuania, Luxembourg, Poland, Romania, Slovakia and Slovenia) registered a fatal accident rate (road deaths per million inhabitants) above the EU average value⁶⁶ (ETSC, 2014). This data allows to say that those countries not having the procedures before the Directive was implemented are, on average, less performing in terms of road safety. Therefore, to the extent the better performance of the other countries is due to implementation of the procedures, their application in the former can be potentially beneficial.

⁶⁵ Comment made by the grouping of road stakeholders (interview of 19 June 2014). On this point, comments submitted by Austria, Estonia, Ireland and Denmark have confirmed that it is very difficult, in part because it is too early, to know and assign the RISM measures to the specific reduction in the number of road victims. It may be stated, nevertheless, that the Directive has raised the profile of road safety.

⁶⁶ In 2010, the EU average value was estimated at 63 road deaths per million inhabitants. Member States reporting values lower than the EU average have been considered as best performers; on the contrary, Member States reporting values higher than the EU average have been considered as worst performers.

Table 11: Comparison of fatal accidents rates in Member States having/not having the procedures in place before the Directive

Groups of Member States/Regions	Road deaths per million inhabitants (2010)	
	Below EU average (best performers)	Above EU average (worst performers)
EU MSs/Regions with pre-Directive procedures (16)	50%	50%
EU MSs/Regions without pre-Directive procedures (11)	18%	82%

Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders and 8th PIN Report (ETSC, 2014)

Assessing the effectiveness of the Directive includes identifying to what extent the operational management of the RISM procedures is able to improve road safety levels on TEN-T road infrastructures. This implies that, after the application of the RISM procedures, specific actions are defined and, subsequently, implemented to address the deficiencies observed in road projects or on the road network in operation. Member States fully register⁶⁷ deficiencies observed during audits and inspections, but the identification of action plans and responsibilities on remedial actions is only done in a smaller number of countries.

Remedial actions included in action plans, together with the designation of a responsible subject, are often only recommended, since half the Member States do not foresee any mandatory intervention process; this characteristic has been registered for all four procedures. In this respect, future development of the Directive should also focus more on measuring outcomes (such as levels of risk being achieved on road sections) as well as inputs (such as inspections; safety audit). This should be accompanied by a requirement for Member States to develop public reports that monitor results both before and after, which are linked to the application of the RISM procedures. This could also involve the development of a Europe-wide bench-marking assessment tool.

With regard to the selection of safety components and equipment (e.g. pavement, road signals, lights, barriers) the largest proportion of Member States has not reported any particular change in their practices following the application of the Directive.

The exchange of good practices is another area where the effectiveness of the Directive applies. In this area, Member States seem to favourably respond to this goal and the majority are indeed engaged in exchanging good practices either with other Member States or with international organizations. As revealed by the responses collected, the majority of Member States/Regions considers that the Directive provides an incentive for the exchange of good practices among Member States (road administrations, road authorities), as well as between them and international associations. Nevertheless, such interaction does not systematically result in improvements in national practices and procedures.

According to Article 9 of the Directive, Member States were supposed to ensure the adoption of training curricula for competent road safety auditors carrying out functions under the Directive itself. The survey confirmed that the compulsory presence of certified auditors is foreseen for the

⁶⁷ With the exception of Croatia (Directive 2008/96/EC not yet implemented).

management of RSAs, while respectively 15, 11 and 10 responses declared that analogous requirements have been introduced for RSIs, NSM and RSAs. Correspondingly, similar proportions have also been observed regarding the adoption of specific training (curricula and certification system) for safety professionals at the Member States level.

The issue of training is also linked to the mutual acceptance of training certificates. While Member States/Regions do largely accept certificates issued in other Member States, the acceptance processes differ across Member States. The equivalence of training certificates is normally investigated or verified by Member States taking into account their national legislation and a set of minimum requirements related to the auditors' skills; one Member State reported that a national register has been created in order to collect the names and roles of trained experts.

A qualitative analysis of the responses collected allows us to confirm that the process of checking the certificates' conformity appears to be generally non-standardized and carried out on a case-by-case basis.

5.4.2 Analysis of the evaluation questions

Evaluation question #14: *To what extent has the Directive modified the practises and procedures in Member States for the management of Road Safety? Is this change an improvement?*

The evidence collected indicates that Directive 2008/96/EC has promoted changes in the operational management of infrastructure-related road safety across Member States, which in particular perceived a more systematic approach in dealing with road safety as the main advantage following the application of the Directive. On this point, the large majority of the responding Member States/Regions (22 responses out of 27) has registered improvements (see figure below) in practices and procedures following the implementation of Directive 2008/96/EC, while 4 subjects out of 27 have responded that the Directive has not resulted in any change. Importantly, none of the respondents observed unintended negative effects on the national practices and procedures caused by the Directive and its implementation⁶⁸.

As shown in Table 12, improvements have been equally reported both in Member States/Regions that had the procedures in place before the implementation of the Directive and Member States/Regions that did not. Please note that the answers given by Member States through the questionnaire and the interviews are mostly based on their perception of changes in the operational management of road safety; moreover, the implementation of the Directive is recent and such improvements are still to be effectively registered.

⁶⁸ On this point, a comment submitted by Ireland has stressed that Directive 2008/96/EC has aided the prioritization of expenditure based on RSI and NSM. Also, the Directive has given greater weight to the call for expenditure on road safety while leading to money being spent where it is most needed.

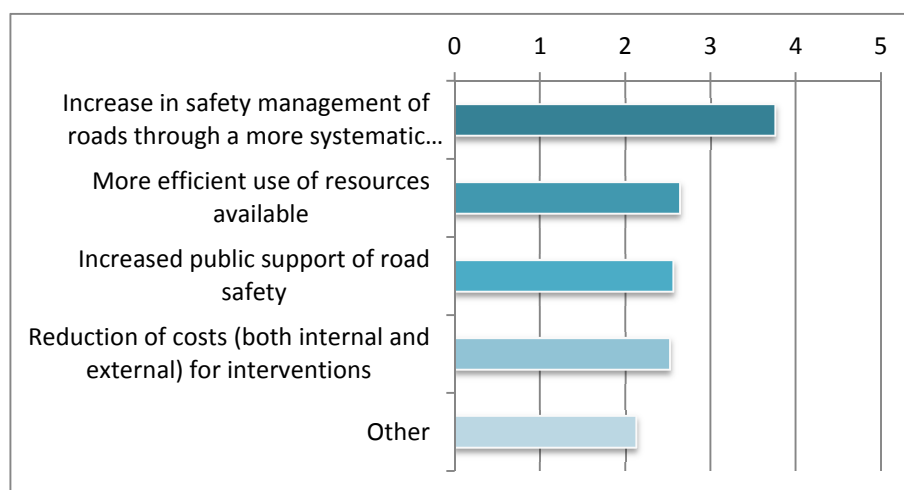
Table 12: Registered improvements of practices and procedures after the implementation of the Directive

Groups of Member States/Regions	Improvements of the national practices and procedures after Directive		
	Yes	No	No info
EU MSs/Regions with pre-Directive procedures (16)	13 MSs (87%)	2 MSs (13%)	1 MS
EU MSs/Regions without pre-Directive procedures (11)	9 MSs (82%)	2 MSs (18%)	-

Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

According to the responses of Member States/Regions surveyed (see Figure 8), the increase in safety management of roads through a more systematic approach emerge as the primary benefit (average score of 3.75 out of 5). It appears that the more efficient use of resources available, the increased awareness (and the subsequent support) of the users and the possibility of reducing the costs for implementing the procedures have a more moderate importance (with respectively an average score of 2.64, 2.56 and 2.52 out of 5).

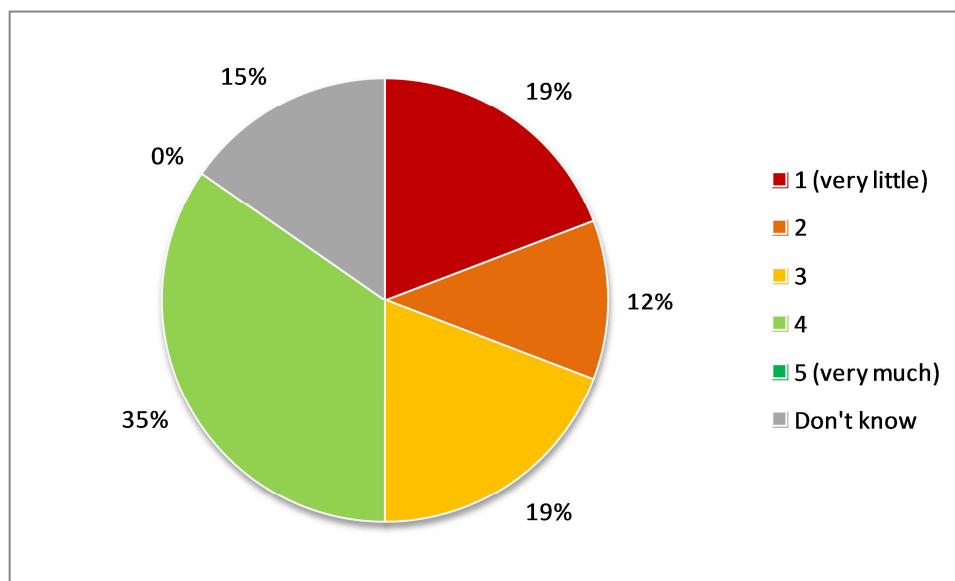
Figure 8: Main (perceived) benefits obtained using the procedures on the TEN-T road network



Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

A mixed perspective was, conversely, provided by the stakeholders on this point. While there is a general recognition that the Directive represents an important first step towards achieving a more systematic discipline on infrastructure safety management, as displayed in Figure 9 below, only one-third of them positively commented that the Directive has triggered some improvements in the way road infrastructure safety management is handled by Member States. On the contrary, the majority (50%) indicated that the contribution was minimal to moderate. Main explanation for that is because the Directive is not innovative as it deals with RISM procedures already in use years before its adoption, though it encourages formalization in the way the procedures are in use.

Figure 9: Stakeholders' views about whether Directive 2008/96/EC has triggered improvements to road infrastructure safety management



Source: Data based on Stakeholders' questionnaires responses (28 Stakeholders)

Evaluation question #15: *To what extent have the provisions on road safety ranking and management and inspections improved safety maintenance of roads and thus contributed to enhanced road safety?*

Directive 2008/96/EC applies to new roads and improvements that may affect the safety of road users. Maintenance schemes are, therefore, not included. Safety maintenance is, however, supported by RSIs as this technique verifies the characteristics and defects of specific road section that requires maintenance work for reasons of safety.

As seen in the previous answer to evaluation question #3, RSIs are established in all Member States and are periodically undertaken (though with a different frequency across Member States). Also, answer to evaluation question #5 has enabled to observe that information from accident reports has an influence on road safety ranking and inspections and provides a statistical basis for updating frequency of accidents and, therefore, adapting or completing the maintenance or redesign of the infrastructure. In general, asset condition data (from inspections) is used to inform maintenance intervention, while accident data is used to inform road improvements. Finally, response to evaluation question #7 has highlighted that safety deficiencies of road infrastructures are registered for all RISM procedures, and firstly for RSIs.

As a whole, it can be concluded that the process initialled by the Directive contributes to a proper maintenance of roads. Where well-maintained, roads result in avoidable death, bodily injury and damage while improving the connectivity on which jobs, the economy and society depend. Also, over the long period this process allows for an optimal budget allocation, allocating resources where they are more needed.

Finally, in the majority of Member States (15 responses out of 27) a link is established between the road safety ranking and the road sections to be inspected, in the sense that results of the ranking of high accident concentration road sections serves to identify road sections which should be inspected in priority.

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Evaluation question #16: *To what extent have provisions linked to data management contributed to an improved ranking and safety management?*

Evaluation question #17: *To what extent are these provisions sufficient, in the sense that they allow for a uniform consideration of social costs, to ensure a high and consistent level of safety across the TEN-T?*

Article 7 of Directive 2008/96/EC requires Member States to ensure that for each fatal accident occurring on a road subject to the Directive an accident report is drawn up, including each of the elements listed in its Annex IV. According to the provisions laid down in this article, Member States shall also calculate the average social cost of a fatal accident and the average social cost of a severe accident occurring in its territory.

As answered to previous evaluation question #5, information on the number of injuries and fatalities derives from the accident reports that are drawn following accidents, and this information used not only for general statistical processing but also part of the black spot or network safety management.

However, though the majority of Member States/Regions (22 responses out of 27) has declared that a reference to the use of road accident data for safety management is established in their national guidelines on road infrastructure safety management procedures, only 8 responses also provided evidence that this data is also used for the ranking of the road network and has triggered improvements in this respect. In conclusions, evidence collected suggests that Directive's provisions on data management have improved ranking and safety management in a number of Member States; however, evidence is not inasmuch to conclude that such improvements have extensively occurred across all Member States. With regard to the social costs and the possibility of a uniform consideration of these costs, evidence collected suggests that on this issue, the majority of EU countries did not use them and even in cases where they did, the values are not uniform. Consequently, the Directive's provisions on social costs appear not having been sufficient to allow for a uniform consideration of social costs.

Evaluation question #18: *To what extent has the Directive improved the safety of new roads and affected the planning, design and construction of these new roads?*

This evaluation question actually implies two questions. The first one focuses on the planning and construction phases, while the second one focuses on the safety benefits. In the paragraphs below we put the attention on the first question, while we refer to Utility for more discussion on the safety benefits.

In general terms, RSAs and RSAs procedures deal with the planning and early operation phases of new road infrastructures, thus not allowing the empirical measurement of the possible improvements in terms of road safety (e.g. the reduction in the number of accidents/injuries/fatalities); in other words, the procedures have an effect on the intrinsic safety level of each new infrastructure assessed.

Directive 2008/96/EC has undoubtedly improved the safety level of new roads, since (at least) 52 RSAs and 627 RSAs have been conducted across EU over the last three years (2011-2013). Although the extent of this improvement cannot be counted, it can be reasonably argued that these interventions have resulted in improved road safety conditions of the roads put under assessment or auditing.

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The contribution of the Directive in influencing the planning, design and construction phases of new roads is somehow limited. As described in the answer to evaluation question #7, information is not sufficiently available to conclude about the influence that the Directive's provisions and the RISM procedures it covers had on the planning phases. Evidence was only collected from 4 Member States (Austria, Denmark, Estonia and Ireland) which declared that the changes in planning, design and construction of new roads are very limited (Austria, Estonia) or absent completely (Denmark), while only Ireland reported a change in the influence that RSIs' results had on national design standards.

Evaluation question #19: *To what extent has the Directive modified the selection of safety equipment and components (pavement, road signals, lights, barriers, etc.) by road managers?*

With regard to the selection of safety equipment and components, it has been found that the Directive has not modified the approach followed by road managers in this area, neither in the Member States where the procedures were in use before the adoption of the Directive, nor in those where the latter were not in use.

Motivation is the presence in pre-existing well-functioning national regulations or procedures dealing with the safety performance of products (sometime supported by a quality management system as in the case of Austria, or compliant with the CEN standards as in the case of Portugal. In more general terms, Member States/Regions do not recognize, therefore, the need to modify such components

This is supported by observing the evidence collected with the survey. In this respect, the widest proportion of Member States (18 responses out of 27) did not report any particular change in the selection approach of safety components and equipment following the application of the Directive. Only seven responses out of 27 conversely declared that such changes have occurred. Looking specifically at the comparison between Member States that had the RISM procedures in place before the adoption of Directive 2008/96/EC and those that did not, the first group reported almost no changes in the selection approach of safety components and equipment, while on the other hand, such changes have occurred in half of the EU countries belonging to the second group.

Table 13: *Registered changes in the selection approach of safety components and equipment after the implementation of the Directive*

Groups of Member States/Regions	Changes in the selection approach of safety components and equipment after Directive		
	Yes	No	No info
EU MSs/Regions with pre-Directive procedures (16)	2 MSs (13%)	13 MSs (87%)	1 MS
EU MSs/Regions without pre-Directive procedures (11)	5 MSs (50%)	5 MSs (50%)	1 MS

Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

Evaluation question #20: *To what extent has the exchange of good practises contributed to the realization of effects? To what extent did the Directive favour the exchange of good practises?*

Exchange of good practices between Member States has little supported the application of the Directive and the realisation of its effects as no specific improvements in national practices and

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procedures have been claimed to reported as a result of such interaction, as reported by the majority of Member States/Regions that provided insights on this issue (12 responses out 20).

Exchange of best practices on the procedures covered by the Directive already occurred before this piece of legislation was adopted. This is confirmed by the wide number of Member States/Regions (21 responses out of 27⁶⁹) that have declared that they were engaged in such cooperation with other Member States/Regions, either bilaterally, regionally or multilaterally⁷⁰ or within external organizations such as CEDR Task Group Road safety, World Bank, IRTAD-OECD or even EU-funded programmes and projects (e.g. TIN, Pilot4Safety, BALTRIS, Partners for Roads, RiPCORD-iSEREST, SAFESTAR, ROSEE, SENSOR).

Therefore, notwithstanding the Directive fosters the exchange of good practices, no direct influence was observed that this piece of legislation has provided an incentive to a greater degree of exchange of good practices. In the only eight respondents where enhancements were observed⁷¹ it is remarkable to note that six Member States/Regions show higher values of road deaths per million inhabitants than the EU average (year 2013; ETSC, 2014). This may suggest that the Directive may help increase road safety in countries where accident rate was higher.

Also, it is however worth noticing that some EU countries not having the procedures in place before the adoption of Directive 2008/96/EC initially made reference to guidelines and practices of other Member States in implementing the RISM procedures.

Evaluation question #21: *To what extent is the training and certification of auditors set up in an effective manner in order to allow for audits to be performed?*

After the coming into effect of Directive 2008/96/EC, following the provisions set in Article 9 Member States are requested to ensure that, if not already existing, a curriculum for road safety audit professionals is adopted by 19th December 2011. In addition, road safety auditors are requested to undergo basic training and they are to be awarded a certificate of competence which is periodically renovated.

Therefore, the Directive marks a progress in comparison with the situation before its adoption as it now provides a common framework and guidance on the general levels of training, skills and experience that are expected of road safety auditors. The Directives aims then at overcoming those barriers in terms of different levels of knowledge, experience and requirements that the IRF (2007) identified in the pre-Directive context. By setting common requirements of road safety auditors with harmonised background (and supported by exchange of best practices and continuous update of knowledge) similar road safety solutions can therefore be adopted for similar road safety problems.

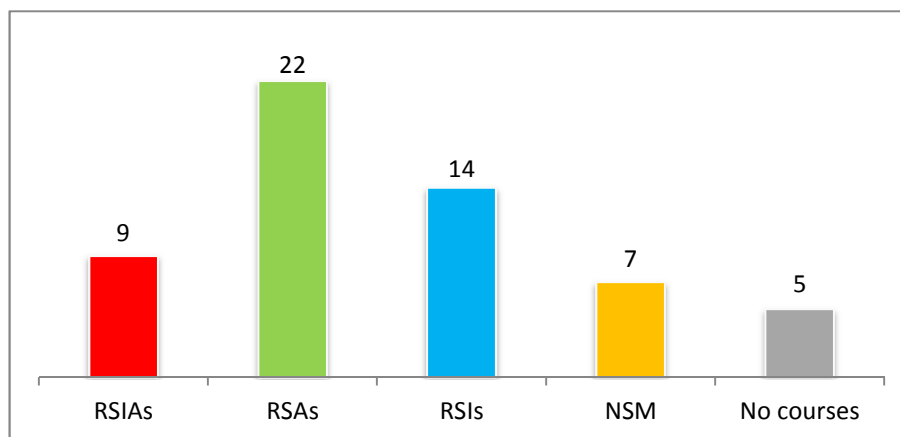
⁶⁹ Including Croatia, even though the implementation of Directive 2008/96/EC has yet to occur.

⁷⁰ A relevant example is the Trainer's International Network (TIN) project, supported by the Dutch government and focused on the preparation of national guidelines, as well as on the setting up of training programmes.

⁷¹ Please note that such information has not been collected in 7 cases out of a total of 27.

The majority of Member States/Regions surveyed (24 responses out of 27 as well as Iceland and Switzerland⁷²) declared that formal training and examination procedures are delivered. More specifically related to the procedures, training course are especially established for RSAs (22 responses out of 27) and RSIs (14 responses out of 27), while training programmes are delivered for RSAs and NSM only in 9 and 7 cases respectively (out of 27 responses).

Figure 10: Presence of specific training for road safety auditors (number of MSs/Regions)



Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

The number of educations and trainings in road infrastructure safety management throughout Europe shows a big variety. There are variations between countries but also between trainings regarding content, length, focus and certification process.

According to the findings produced by the IRF-led Euro-Audit project (2007)⁷³ half of the 20 Member States/Regions⁷⁴ surveyed declare to have mandatory training schemes. Courses are reported to be specific to safety auditing and, when mandatory, they are part of the requirements for qualification of auditors. In the remaining half of the Member States/Regions training schemes for audits were found to be voluntary or not existing. According to IRF, when mandatory, they are part of the requirements for qualification of auditors. However, no further information on this point is given within this IRF document.

The IRF study also found that duration and quality of the courses vary greatly, but the majority was observed between 2 and 5 days. All of the courses a mixture of theory and practice and assessment of knowledge and competence is done by means of a formal exam or course work at the end of the training activity. Finally, half of the Member States/Regions surveyed declared to have the training certified by an independent body, while in some of them some form of minimum requirements for admission to a safety audit course. This may take the form of previous academic qualifications (as in Spain and Denmark) and/or previous road safety engineering experience (as in United Kingdom and Ireland).

⁷² In this respect, it is important to say that figures displayed in Figure 10 only considers the responses provided by the EU Member States/Regions.

⁷³ IRF (2007). Safety audits of the road network - a cost effective way of saving lives on our roads. EuroAudits project.

⁷⁴ Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Romania and the United Kingdom (IRF, 2007).

Research work conducted by the RiPCORD-iSEREST project Matena ea (2008⁷⁵), acknowledges two different philosophies on training courses. The first one comprises short training programmes (from two up to five days) which mainly deal with the audit procedures and requires beforehand experienced candidates in road safety to enter the course. The second comprises, conversely, longer training programmes which entail general road safety issues, general audit procedures and practical training that ends up with self-study phases and examinations. Therefore, both length and contents of the training courses influence whether an audit can bear the direct responsibility for carrying out audit schemes or whether he/she can only participate as member of the audit team.

Table 14 summarizes, for example, the frequency applied by Member States/Regions for updating the training programs and curricula as reported through the survey. As for respondents that have declared regular updates based on a fixed time frame, the average frequency of the update (elaboration of the data collected through the survey) is 3 years and 7 months for RSIA, 3 years for RSA, 3 years and 11 months for RSI, 4 years and 2 months for NSM.

Table 14: Updating methods of training programs and curricula (number of MSs/Regions)

Update frequency	RSIAs	RSAs	RSIs	NSM
Regular update (fixed time frame)	6 MSs	10 MSs	7 MSs	5 MSs
Continuous update	1 MSs	1 MSs	2 MSs	2 MSs
Discretionary update (i.e. when needed)	14 MSs	10 MSs	11 MSs	14 MSs
No information	6 MSs	6 MSs	7 MSs	6 MSs
Total MSs/Regions	27	27	27	27

Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

Also, the requirements for the qualification of auditors are quite different between Member States/Regions though, looking at the national criteria for assessing qualification, a common set of criteria that are requested in order to perform audits in an effective manner can be identified; these are:

- The possession of a degree, preferably in civil engineering;
- In a few cases, registration with a professional association or a national register of auditors;
- A certain level of experience in the field of road traffic and road safety; requirements vary from 1 to 10 years of experience;
- The attendance of a specific training course and the passing of the related exam.

Only a minority of the Member States/Regions require their safety auditors to maintain their skills either through on-site experience or a refresher course. In only two cases, Member States/Regions

⁷⁵ Matena, S. ea (2008). Road Safety Audit - Best Practice Guidelines, Qualification of Auditors and "Programming". RiPCORD-iSEREST Project.

explicitly report the presence of a predetermined time validity (expiry date) for the certificates and an obligation for auditors to reacquire them through specific training courses.

In conclusion, the Directive is certainly a step forward in the direction providing a common framework for professional requirements and competence of road safety auditors or other road safety professionals. Training programmes and curricula are established in the larger part of the Member States/Regions surveyed. This suggests that training and certification process of auditors is effectively set up in an effective manner in order to allow for audits to be performed.

However, as described above, training programmes and certification requirements still widely differs in terms of duration and contents. This can hinder the possibility to implement coherent safety procedures on the whole road network, at Member State level, as well as at EU level.

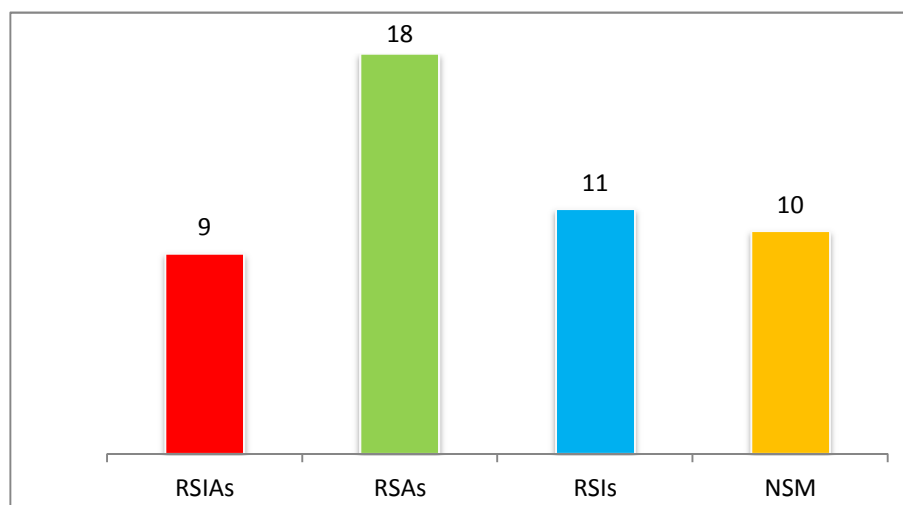
Evaluation question #22: *Have the training provisions impacted the mobility of auditors across Member States?*

Directive 2008/96/EC does not provide for an explicit mutual recognition of the Certificates of Competence among Member States to undertake RSA work. This recognition is based on national practices (which entails a case-by-case analysis) and it is not linked to the type of road being audited. Consequently, it is a responsibility of the competent national authorities in Member States to determine the equivalence of a certificate of competence issued by another Member State and based on procedures and requirements established in their national law.

On this issue, as indicated in the number of responses collected through the survey (18 out of 27), the largest part of Member States/Regions surveyed declared to accept Certificates of Competence for road safety auditing or other procedures issued by other Member States. In only 8 responses it was reported that such mutual acceptance does not occur⁷⁶, while the acceptance of foreign curricula is a requirement in those Member States/Regions that no specific training courses/procedures are in place. In more detail, the most accepted training certificates are the ones allowing qualified experts to manage RSA procedure (18 Member States/Regions out of 26), followed by RSIs (11 out of 26), NSM (10 out of 26) and RSIA's (9 out of 26). This is shown in Figure 11.

⁷⁶ 1 Member State out of 27 has not provided an answer.

Figure 11: Number of Member States which accept auditor training certificates from other Member States, per procedure



Source: Data based on Member States' questionnaires responses (26 out of 27 Member States/Regions)

Nevertheless, it is noteworthy to say that the absence in the Directive of an explicitly stated mutual recognition negatively impacts mobility of road safety professionals across Member States. At present, there is no evidence that indicates an actual mobility across Member States of certified personnel that carries out road safety auditing or inspections in other Member States⁷⁷. Conversely, mobility is observed towards third European countries or overseas and involves certified professionals originating from Member States with a long-standing experience in the field of road safety auditing (prior to the adoption of the Directive), such as for example United Kingdom and Denmark.

The only example of mobility of road safety auditors and inspectors across the EU is provided by the DG MOVE co-funded Pilot4Safety project⁷⁸. As part of this project, cross-border audits and inspections with certified professionals were undertaken in the five Member States covered by the project. This has occurred through an international agreement⁷⁹ between the road authorities of the Member States participating to the project, with which the certificates of professional competence issued in one Member States were mutually recognised and accepted in the others. The experts involved in the projects acknowledged that in absence of such type of agreement, relying first on the assessment of training courses and certificates issued by the distinct Member States, an actual mobility of road safety professionals cannot take place.

Two factors play than a role. A first factor refers to the pre-qualification requirements that a Member State might impose on auditors actually undertaking the Certificate of Competence; a second factor concerns the post-qualification standards adopted by Member States. The manner in which Member States manage these pre- and post-qualification requirements (including the degree

⁷⁷ Personal communications from an Italian association of road safety professionals and from an UK road safety auditing firm (both dated 1st December 2014).

⁷⁸ <http://pilot4safety.fehrl.org/>

⁷⁹ The text of the agreement is available at: http://pilot4safety.fehrl.org/?m=3&mode=download&id_file=11372

of rigorousness of process to release the certificates) determines how a “restrictive practice” could emerge when Certificates of Competence need to be recognized.

This can result in a restriction of the free movement of services (and professionals that undertake them) within the EU, as this implies that RSAs can only be carried out on the TEN-T road network (as this type of roads fall under the scope of the Directive) in a Member State if the required RSA Certificate of Competence has been obtained in that particular Member State.

Box 3: Examples of pre- and post-qualification requirements from Ireland and United Kingdom⁸⁰

1. **Pre-qualification in Ireland:** in order to take the certificate of competence in Ireland (a 2-week Road safety engineering/Road Safety Audit course, with exams at the end and two written assignments) the only requirement is a degree in Civil Engineering. Working in the field or having any relevant experience is not required, but that degree must be hold. This means that previously experienced road safety auditors who do not have a degree cannot take the qualification.
2. **Pre-qualification in the United Kingdom:** in order to take the certificate of competence in the United Kingdom professionals must have previous RSA experience, but no specific academic qualifications are required. Professional must have at least two years of (recent) working experience in collision investigation and/or road safety engineering, along with five RSAs completed in the past 2 years and ten days of formal collision investigation/road safety engineering training. Professionals then undergo a 2-day training course with exam, plus assignments. (There is also a portfolio of evidence option). This means that would be new start auditors cannot get a certificate of competence, regardless of their academic background, until they have completed this (2-year) process.
3. **Post-qualification in Ireland:** Once professionals hold a certificate of competence, in order to become a Team Leader, they must be a chartered engineer (or equivalent professional). All team members must have at least five audits of a similar type and similar stage to the one they are applying to work on. This means that only professionally qualified, suitably experienced engineers (with certificates of competence) can audit their schemes.
4. **Post-qualification in the United Kingdom:** no further specifications compared to the pre-qualification requirements.

In conclusion, it seems that the EU legislator has decided not to seek for a common market of these professional practitioners given that, as explained above, the recognition of RSA Certificates of Competence is discretionally left to the Member States’ national practices. Therefore, the Directive’s provisions in this area seem not having been sufficiently set up to allow audits to be performed in an effective manner. Equally, they even not favor a mobility of road safety professionals across the Member States.

5.5 Sustainability

5.5.1 General findings and analysis of the evaluation question

This section assesses the sustainability of the Directive in terms of the lasting changes it has brought about.

⁸⁰ Personal communication from road safety auditing firm (date 1st December 2014).

As specified by **Evaluation question #23** *To what extent are the safety procedures set up by the Member States in accordance with provisions of the Directive likely to remain in the event intervention is ceased at European level?*, this criterion aims to assess the possibility that the RSIM procedures remain in place even without European Commission enforcement.

As evidenced by the data collected through the survey and the interviews, the Directive has encouraged the introduction of a European-wide approach to the road safety management of infrastructure and the changes brought about in the operation of the national practices of Member States are expected to last in the long run (even in case intervention is ceased at EU level).

Also, the capacity of national authorities is strengthening and a more systematic approach to the safety management of roads has been encouraged. As confirmed by Member States in both the questionnaire and the interviews, all procedures are now part of the road infrastructure safety management system applied at the national level and, remarkably, they are streamlined, more frequent and standardized.

In addition, it has been seen that the procedures foreseen in the Directive are also applied beyond the TEN-T network, and that for some of them (RSAs and RSIs) the majority of responses have confirmed their compulsory application.

Finally, the efforts made in the area of training and mutual acceptance of training certificates are worth mentioning for this criterion. These efforts can be seen as potentially being an important asset for the national authorities' capacity to appropriately and effectively implement the RISM procedures, including possible competition of training centres that, as it will be described in the ex-ante evaluation report, could lead to a further cost reduction. Training makes possible to have continuity and knowledge-building, while mutual acceptance provides an opportunity to exchange knowledge and transfer of experience from abroad about rules and practices. In the long run the cross-national sharing of knowledge and best practices can generate positive impacts by optimising the outputs due to the (independent) perspective of experts coming from different EU Member States and hence encouraging the take up a common level of road safety across the EU.

However, though a generalised use of the RISM procedures has been achieved with the Directive, differences in its application still persist across Member States. Therefore the sustainability of the Directive hinges upon stronger and more consistent harmonization with a view to establish a benchmark of knowledge and evaluation tools across all Member States use that will have a direct bearing on their future road safety strategies. These include:

- the need to collect data to inform road safety impact assessments;
- the need to undertake road safety audits on all infrastructure projects;
- the need to continue to identify road collision black spots and assess network safety ranking on a three year rolling basis;
- the need to implement a structural programme of road safety inspections;
- the need to collect data on the costs of the different procedures and the resulting safety benefits.

5.6 Coherence

5.6.1 General findings and analysis of the evaluation question

The coherence criterion analyses the extent to which the intervention logic does not contradict the deployment of ITS technology through a single question:

Evaluation question #24: *Is the current framework of the Directive in the long run adequate to ensure the deployment of ITS technology in particular for the communication between the vehicle and the infrastructure?*

The interpretation of this questions is as follows: to what extend can ITS develop given the current Directive? Does the Directive stimulate the deployment of ITS? In this respect, it is important to mention that Directive 2008/96/EC does not stipulate specific instructions on how ITS systems should be deployed across EU Member States. The Directive only provides a reference to ITS in Article 5 as part of the procedure for Network Safety Rankings. The general framework for ITS is, conversely, provided by Directive 2010/40/EU (known as the “ITS Directive”) which establishes what kind of specifications the Commission will have to prospectively adopt within a 7-year timeframe to address the compatibility, interoperability and continuity of ITS solutions across the EU.

ITS have taken a prominent place in EU transport policy, and more specifically in the road safety policy orientations for 2011-20, which aim to promote and accelerate deployment of innovative technology in order to improve road safety.

They cover any technology applied to transport and infrastructure to transfer information between systems for improved safety, productivity and environmental performance. At the road infrastructure level, ITS include stand-alone applications to detect incidents, support traffic supervision and manage or provide real-time information, as well as cooperative ITS applications involving vehicle to infrastructure and vehicle to vehicle communications. When integrated into road infrastructure, ITS can increase productivity of roads by finding innovative ways to increase the capacity of the infrastructure, reduce congestion and consequently fuel consumption and greenhouse gas emissions and, most importantly, limit the number of road traffic accidents and save lives.

In general factors which positively influence the use of ITS are⁸¹:

- Funding for state and local agencies
- Emphasis on regional architectures
- Research designed to produce evidence that better supports technology adoption
- Knowledge sharing among peers

Apart from the last factor – the sharing of knowledge – these factors are not linked to the Directive. Given these factors, the fact that there is still a demand for more exchange of

⁸¹ RITA (2011), An Analysis of the Factors Influencing ITS Technology Adoption and Deployment – Final Report

information, that the Directive itself does not really focus on ITS, that the Directive on road infrastructure safety management is yet not uniformly and fully applied across all EU Member States and that the industry believes that there is no strong link between the Directive and ITS⁸² we conclude that the Directive does not really influence the deployment of ITS in a negative or in a positive way. In general, other Directives such as the ITS Directive, the INSPIRE Directive⁸³ and the OPEN DATA Directive⁸⁴ would have a stronger impact on the deployment of ITS. Although it should be noted that the ITS Directive is still just a framework that needs to be fully developed.

Nevertheless, four areas can be envisaged where deployment of ITS can produce benefit on the infrastructure, e.g.: the information about infrastructure safety, the use and maintenance of infrastructures, safe design of infrastructures and traffic management. These areas confirm that ITS are an asset for the whole infrastructure development and the whole traffic system⁸⁵. Consequently, it should be envisaged that they should be part of the assessment that is performed when implementing the road infrastructure safety management procedures stipulated by the Directive. Moreover, any ITS intervention requires a sort of upgrading of the existing roads, which can be done in synergy with the procedures established by the Directive itself.⁸⁶

5.7 Utility

5.7.1 General findings

Under this criterion, the evaluation aims to assess whether the Directive is delivering identifiable benefits in terms of a reduced number of road accidents/fatalities/serious injuries across the different Member States.

In general it is difficult to assess these benefits directly for various reasons:

- There is no accident data readily available under the form of a time series for the TEN-T network. In terms of accidents, more than two-thirds of responding Member States (74% of responses, 20 Member States/Regions) have declared that there is no distinction between data gathering for accidents that occur on the TEN-T network and those occurring on other roads. This is a key point as it is an obstacle when assessing the concrete effect of the Directive in terms of its contribution to the reduction of road accidents on the TEN-T roads as a result of the implementation of the procedures that this piece of EU legislation regulates. However, Member States generally commented that separate accidents statistics for TEN-T and non-TEN-T roads could be derived, but that currently no data was readily available.
- The time series of accident data do not contain many years of post-implementation data, making a before and after analysis difficult.

⁸² Personal communication with ERTICO.

⁸³ Infrastructure for Spatial Information in the European Community (INSPIRE) Directive (2007/2/EC).

⁸⁴ Directive 2003/98/EC, known as the “PSI Directive”.

⁸⁵ The OECD (2003) claimed that ITS safety technologies can potentially reduce the total number of road crash injuries and fatalities by 40%.

⁸⁶ Comment made by the grouping of road safety research stakeholders (interview on 25 June 2014).

- The main effects of the procedures on road safety are not directly linked to the procedures themselves, but to what is done with the results of the procedures.
- Literature is scarce and focuses mostly on individual procedures.

To assess this criterion we rely on three sources: the results of the survey, literature and statistical analysis.

From the survey it was clear that Member States appreciated having a systematic approach to road safety infrastructure management. Countries that already had (some of) the procedures in place indicated that little has changed in terms of road infrastructure safety management. Countries without this experience indicated that the process is still very new, and that it was too early to assess the impacts. On the side of the non-Member States stakeholders, 17% (5 respondents) considered that the Directive has contributed very much or much to increasing road safety, while 43% of respondents (12 respondents) see only a moderate increase of road safety resulting from the Directive's contribution and 22% (6 respondents) see little and very little increase in road safety. The 5 remaining respondents have no opinion on this issue.

The literature that is about to be presented in the ensuing section mainly focuses on the effects of the individual procedures rather than on the Directive as a whole. Based on the literature – discussed below – the range in the reduction of total accidents would overall likely be between 10%-20% compared with a situation in which the procedures are not applied. This means that the effect on road safety of the Directive would be higher in countries that did not have procedures in place.

The results from the statistical analysis confirm that there is a high correlation between a lower fatality rate and having road safety procedures in place.

5.7.2 Analysis of the evaluation question

***Evaluation question #25:** In the light of the target of halving road traffic fatalities established in the Policy Orientation for road safety, and with a view to a future similar target for the seriously injured, can the current Directive be considered an adequate instrument?*

The Directive has led to the establishment of RISM procedures in all Member States, thus increasing their use in comparison with a pre-Directive context. In particular, it has increased use of cost-effective procedures (RSAs and RSIs) which have proven to yield positive results in terms of reduction of road casualties were applied.

Further, there is indication of a correlation between having lower fatality rates and having road safety procedures, indicating that the Directive will most probably positively impact road safety, and certainly in countries which did not have these procedures in place before.

Survey and follow-up feedback

From the survey it was clear that Member States appreciated having a systematic approach to road safety infrastructure management (see evaluation question #14). Countries that already had (some of) the procedures in place indicated that little has changed in terms of road infrastructure safety

management, while countries without this experience indicated that the process is still very new, and that it was too early to assess the impacts.

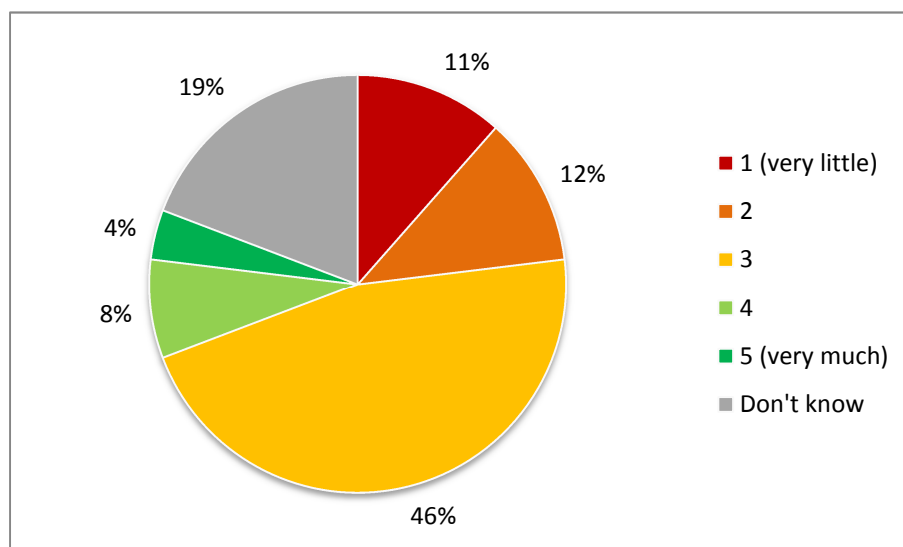
Regarding, on the other hand, the contribution on road safety as a general comment, corroborated by the feedback gathered from the Member States that were invited to provide supplementary information, it is argued that gaining a precise understanding of the contribution of RISM procedures to the decrease in road fatalities and injuries is highly difficult as it is not possible to determine the actual number of reduced fatalities and injuries as a direct result of the application of the Directive.

The stakeholders surveyed shared a similar perspective on this issue. As shown in Figure 12 below, only 12% of them considered that the Directive has been somewhat to highly effective in increasing road safety. This opinion is in particular expressed by the stakeholders gathering road infrastructure managers and is mostly grounded on the fact that the RISM are, to date, compulsory applied only to the TEN-T roads, while such application is left open regarding non-TEN-T roads which, on the other hand, provide the highest potential for improving road safety as it is on these roads that most of accidents occur (Adesiyun & Polidori, 2010⁸⁷). Also, these stakeholders are of the opinion that some Member States appear to seek to limit the scope of their activities to the strict minimum required. In addition, they further argued that the application of the Directive is still too recent to acknowledged improvements in the field of road safety. Equally in their view the level of implementation and compliance with the requirements of the Directive differ across Member States and the potential road safety effects can therefore vary.

The bearings of this reasoning imply that the impacts deriving from the application of the Directive can be more evident in the longer term. This can be motivated first by the fact that some of the procedures (RSIAs and RSAs) only apply to new roads and a limited number of new TEN-T roads have been built in the recent years. Also, given that these procedures apply on newer roads, they are less likely to be included in a 3-yearly inspections. A longer run will also enable Member States less accustomed to RISM procedures to get more experience in this area. Equally, a more uniform and standardised approach to RISM procedures will in the long run facilitate a more rational management of safety interventions on the road infrastructure and a common framework where evaluating the effectiveness of such interventions on road safety levels.

⁸⁷ Adesiyun, A. and Polidori, C. (2010). The Pilot4Safety project and its impact on secondary roads. Presentation given at the Road Infrastructure Safety Forum-New Challenges Ahead, Brussels, 14 December 2010.

Figure 12: Contribution of the Directive to increase road safety



Source: Data based on Stakeholders' questionnaires responses (28 responses)

Literature

Most of the literature focuses on the impact of the different procedures and not on the impact of the Directive as a whole. Therefore, given that the Directive only recently entered into force, it is difficult to estimate and assign to the RISM procedures a specific reduction in the number of road victims.

Before the implementation of the Directive, its impact assessment⁸⁸ made reference to the thematic network EURORAP II⁸⁹, which has shown that, even in a country with a good safety record, deaths could be reduced by approximately 20% through a suitable and comprehensive road safety programme. The ROSEBUD project (2006)⁹⁰ estimated that the reduction potential for implementing the 4 procedures to the TEN-T roads would be a reduction of more than 600 fatalities and about 7,000 injury accidents per year. This corresponded to 12%-16% of the fatalities and 7%-12% of the injury accidents.

In the following paragraphs we discuss the information gathered from the survey combined with the literature available on the safety impact of the four individual procedures.

Road Safety Audits

⁸⁸ Commission staff working document. Accompanying document to the Proposal for a Directive on road infrastructure safety management, Impact Assessment [SEC(2006)131].

⁸⁹ EuroRAP II is the acronym for European Road Assessment Programme (<http://www.eurorap.org/>).

⁹⁰ ROSEBUD is an acronym for Road Safety and Environmental Benefit-Cost and Cost-Effectiveness Analysis for Use in Decision-Making. Calculations were made for EU25 plus Bulgaria, Romania and Switzerland. Cited in Communication from the Commission "Proposal for a Directive of the European Parliament and of the Council on road infrastructure safety management" (COM(2006) 569 final).

TOI & ViaTrafik (2013)⁹¹ made a literature review of experiences and efficacy studies on RSAs from other countries and concluded that this technique can reduce the number of accidents by 50-70% or approximately 1 to 2.5 accidents per reviewed (audited) location. This review first relied upon the research work undertaken in the Norwegian Road Safety Handbook⁹², which has summarised national and international research in the field of road safety. In particular, to draw its conclusion on traffic accidents the review work undertaken by TOI & ViaTrafik (2013) looked at the following studies six studies.

The first study put under scrutiny was a research undertaken in 2002 by the German Federal Highway Research Institute (BASt) which evaluated a total of 49 pilot audits. This study estimated that traffic safety revisions can prevent up to 70% of all accidents on new roads.

The second study concerned a comparison of 38 traffic plans with and without successful RSAs performed in 1994 by the Surrey County Council in the UK⁹³. Result was that on audited reconstructed roads the number of casualties decreased by 60%, while on rebuilt roads where no audits were applied casualties only decreased by 10%. This study concluded then that on roads where audits took place the decrease in the number of road casualties was much higher than on the roads where road safety audits were not carried out.

Further evidence was extracted from a study focused on Ireland⁹⁴, which stated that 30% of the identified traffic safety problems that were instrumental factors to the occurred accidents could have been prevented if there had been an RSA while a study prepared in 2005 by the Lothian Regional Council⁹⁵ in Scotland estimated that the implementation of RSA in the region could reduce the annual number of injury accidents by 1%, or 3,000 lives.

Finally, the study from TOI & ViaTrafik (2013) also briefly considered the impacts that large road accidents can create in terms of settlement problems for traffic. The study argued that such reducing the likely occurring of such accidents through by making use of RSAs can have, albeit limited, also positive impacts on accessibility (travel time). On this issue, however, according to Elvik *et al.* (2013⁹⁶) there is no proven effect that RSA can improve either travel time or environmental conditions. Conversely, RSAs can produce specific long-term safety effects in terms of improved road safety practices and knowledge (Katkus, 2012⁹⁷).

Laurinavicius *et al.* (2012⁹⁸) state that it is difficult to quantify the benefits of an RSA. When an audit is carried out, the recommendations in the report may or may not be implemented. They cite a Danish experience from 1997 in which the first year rate of return for safety audits was estimated to be over 149% if recommendations were implemented accordingly; this figure was based on estimates for accident savings that might be made by introducing safety audit recommendations. A

⁹¹ TOI & ViaTrafik. (2013). Evaluation of Road Safety Audit in Denmark.

⁹² Elvik, R. *et al.* (2013). Trafikksikkerhetshåndboken, Chapter 10.8, in Trafikksikkerhetsrevisjon and inspeksjon.

⁹³ Surrey County Council (1994). Road Safety Audit: An investigation into casualty savings – Discussion report.

⁹⁴ Katkus, M. (2012). Cost-benefit analysis in Road Safety Audit. Procedure Baltris Road Safety.

⁹⁵ ETSC (2005). ETSC Factsheet – Road Safety Audit, No 05.

⁹⁶ TOI & ViaTrafik. (2013). Evaluation of Road Safety Audit in Denmark.

⁹⁷ Katkus, M. (2012). Cost-benefit analysis in Road Safety Audit. Procedure Baltris Road Safety.

⁹⁸ Laurinavicius, A. *et al.* (2012). Policy instruments for managing road safety on EU-roads. *Transport* 27:4, 397-404.

TRL study (Laboratory, 1999⁹⁹) of 22 audited schemes showed an 11,000 Gross Domestic Product (GDP) potential saving per audit.

The RiPCORD-iSEREST project¹⁰⁰ refers to the results of the ROSEBUD project as well as of other international studies conducted in the United Kingdom, Denmark and Australia regarding the effects and benefits of road safety audits, and concludes that conducting audits is inexpensive but highly effective.

Macaulay and McInerney (2002¹⁰¹) did a literature review on the benefits of RSA as a technique to improve road safety through formal independent review of designs and inspections of new and existing roads and traffic operation plans. The review states that most practitioners have accepted that RSA is a beneficial process and that there are numerous examples of safety audits that have achieved significant safety improvements (Jordan, 1994¹⁰²; Hoque et al. 1998¹⁰³). However, even though RSA represents a pro-active approach to reducing the total crash outcomes, the actual prediction of effects and benefits is difficult to achieve and quantification is not always possible.

Most of the studies in their literature review have attempted to quantify the benefits of RSA considering the savings in crashes. Silcock (cited in Sabey, 1993) suggests that safety audits might achieve a 2-3% reduction in casualties. A highway authority in Scotland has estimated that one-third of crashes at road improvements are preventable by RSA with an associated 1% reduction in casualty crashes that could be achieved across the region (ITE, 1995¹⁰⁴).

In conclusion, we can state that the literature is clear that there will be positive effects of performing RSA on road safety, although there are some differences in magnitude. Moreover, the effect will depend on the number of audits performed and the consequences given to the results. No information is available on the numbers of audits performed each year.

Road Safety Inspections

PIARC (2012¹⁰⁵) states that, to be effective, remedial actions must be identified and implemented as a result of the RSI. Reference is made to Elvik (2004¹⁰⁶ and 2008¹⁰⁷), which shows a significant expected accident reduction as a result of RSI and associated remedial works. Examples include:

⁹⁹ Transport and Road Research Laboratory, TRL (1999). The benefits of road safety audit. Paper presented at European road safety Conference in Malmö 1999.

¹⁰⁰ Weber, R. and Matena, S. (2008). RiPCORD-iSEREST Final Report.

¹⁰¹ Macaulay, J. and McInerney, R. (2002). Evaluation of the proposed action emanating from road safety audits. Sidney, Australian Road Research Board, AUSTRROADS, publication No. AP R209/02, 2002.

¹⁰² Jordan, P.W. (1994). Road Safety Audit: The AUSTRROADS Project. Road and Transport Research, Vol.3 No. 1, March 1994.

¹⁰³ Hoque, M.M., McDonald, M., Hall, R.D. (1998). Relevance and introduction of road safety audit in developing countries. Proceedings of the AustRoads International Road Safety Audit Forum, Melbourne, Australia, 1998.

¹⁰⁴ Institute of Transportation Engineers Technical Committee (1995). Road Safety Audit: A new tool for accident prevention. ITE Journal, No. 2, pp 15-22.

¹⁰⁵ PIARC (2012). Road Safety Inspection Guidelines for Safety Checks of Existing Roads. More details and expected accident reductions from various treatments and countermeasures are outlined in the "PIARC catalogue of design problems and potential countermeasures".

¹⁰⁶ Elvik, R., Vaa, T. (2004). The handbook of road safety measures. Elsevier.

¹⁰⁷ Elvik, R. (2008). Road safety inspections: safety effects and best practice guidelines. TOI Report 850/2006. Methodological Guide. Road Safety Inspections. SETRA (FRA), October, 2008.

- Correcting incorrect signs: 5-10% reduction in accidents
- Adding guardrails along embankments: 40-50% reduction in accidents
- Providing clear recovery zones: 10-40% reduction in accidents
- Removing sight obstacles: 0-5% reduction in accidents

This is also echoed by Laurinavicius (2012¹⁰⁸), which also states that some remedial actions will have greater impacts than others, after which it also lists some measures and their expected effect.

The RiPCORD-iSEREST¹⁰⁹ project states that there is no standardized procedure throughout Europe for how RSI should actually be carried out. Although the objective is the same, a wide range of definitions and methodologies are used. This is one of the reasons why RSI has not gained the same standing in (inter)national safety work as the more popular RSA. They do state – although based on very few studies – that RSI leads to the implementation of measures that can considerably improve road safety.

In conclusion, it appears that if RSI is followed up by the correct measures, it can have significant impacts on road safety although it is difficult to quantify these impacts in general terms.

Road Safety Impact Assessment and Network Safety Ranking

The RiPCORD-iSEREST project¹¹⁰ states that there are no evaluation studies available on the effect of performing RSIA. It does consider it likely, however, that an RSIA influences the choices that are made and that small changes can have enormous (safety and financial) effects, especially with regard to the enormous economic losses caused by accidents and the profitable cost-benefit ratios of many road safety measures.

Regarding NSM, the project also states that the use of NSM is so new that no effect studies have been made. It does see a great potential in NSM for saving lives.

Statistical analysis

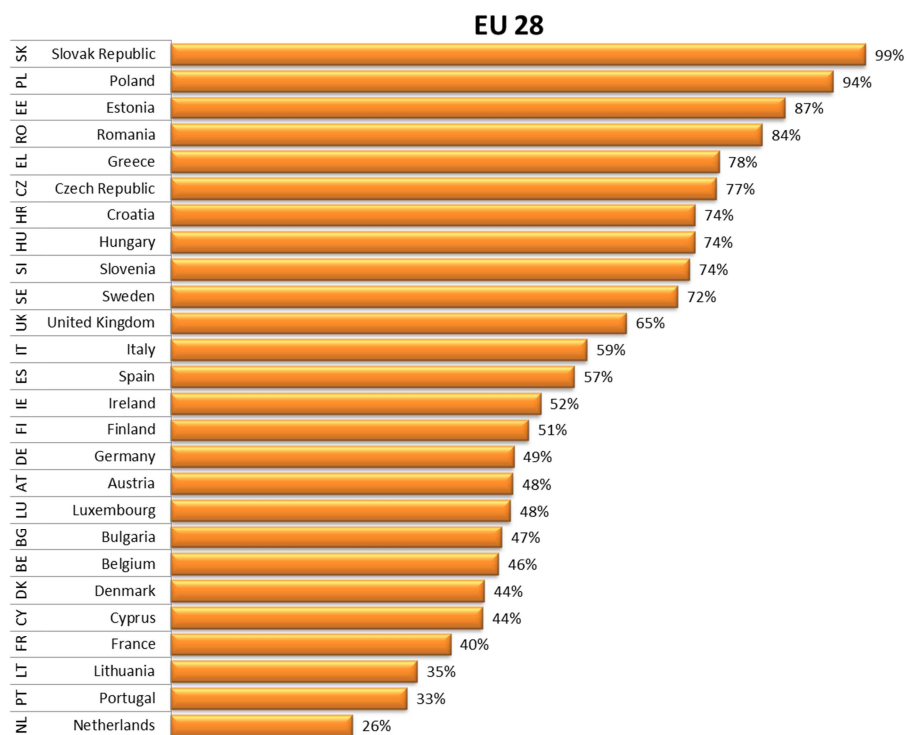
As a first step, we first discuss a preliminary statistical analysis of accident data to assess the effects of Directive 2008/96/EC on the safety conditions of the road infrastructures. Ideally, this should be done first on accident data for the TEN-T road network. Given that there is currently no statistical database of accidents on the TEN-T network, we use the number of fatalities on motorways as a first approximation (extracted from the CARE database) for a selection of countries. For some countries it is indeed the case that the TEN-T network represents a large share in the total length of motorways (e.g. 99% of the Slovakian motorways are part of the TEN-T core network) as shown in the figure below. On the other hand, for other countries this share is much lower (e.g. for the Netherlands it is only 26%).

¹⁰⁸ Laurinavicius, A. ea (2012). Policy instruments for managing road safety on EU-roads. *Transport* 27:4, 397-404.

¹⁰⁹ Laurinavicius, A. ea (2012). Policy instruments for managing road safety on EU-roads. *Transport* 27:4, 397-404.

¹¹⁰ Eenink, R. ea (2008). Accident Prediction Models and Road Safety Impact Assessment: recommendations for using these tools.

Figure 13: share of the TEN-T Core motorways by EU28 Member States (calculated on the total length of the modelled network of motorways for each EU28 country)

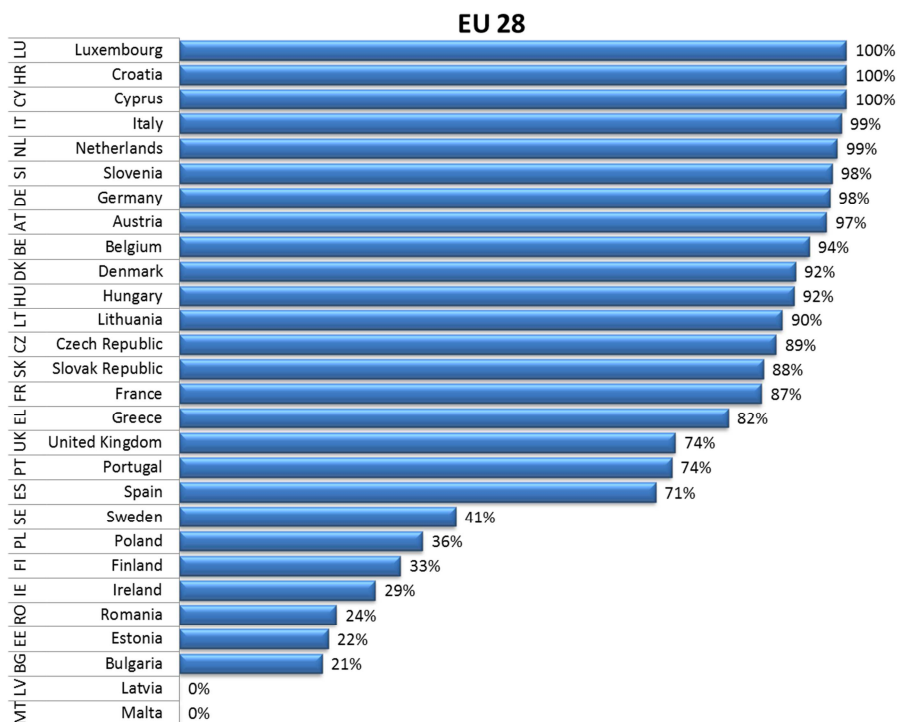


Note: in Malta and Estonia no motorways exist

Source: TRT analysis on the TRUST network model

Furthermore, while the TEN-T road network mainly consists of motorways (In Luxembourg 100% is motorway, in Italy and the Netherlands 99%), for some countries the share is much lower (21% in Bulgaria and 0% in both Latvia and Malta) as can be seen in the figure below.

Figure 14: share of the TEN-T Core motorways by EU28 Member States (calculated on the total length of the TEN-T Core road network for each EU28 country)



Source: TRT analysis on the TRUST network model

In this analysis, we restrict ourselves to those countries of which the TEN-T network forms a significant part of the motorways. More specifically, we only select countries where more than 70% of the TEN-T network consists of motorways. This means that Bulgaria, Croatia, Cyprus, Estonia, Latvia, Malta, Finland, Ireland, Poland, Romania and Sweden are discarded from the dataset because these countries either have no motorway or because a significant share of the TEN-T network is not a motorway.

Using this data, we calculated the fatality rate per vehicle-kilometre (vkm) by dividing the number of accidents on motorways by the number of vkm driven on motorways in a particular country. The vkm are taken from the TREMOVE database.¹¹¹ We have accident data for the period 1995-2012 and for 23 European countries, but for the purpose of this analysis we only use 8 years, i.e. the period between 2005 and 2012. We combine this with information on the road safety management procedures used in various countries before the implementation of the Directive at the end of 2011 (source: survey) and with the information on whether they extended the procedures to other non-TEN-T roads¹¹².

¹¹¹ We used the TREMOVE database as Eurostat does not provide a complete database of vkm for all countries and while the database of vkm of UNECE is more complete, this database does not distinguish between different road types.

¹¹² Belgium was excluded from this analysis as there is a difference between the two regions with respect to the use of procedures. Moreover, we do not have information for the Brussel region with respect to the use of the procedures.

The advantages of this approach are that the method is simple, that it requires little data and that if a measure significantly reduces the accident rate faster than would be predicted based on the general evolution, this can be detected. Examples of such measures are the seat belt wearing obligations and the introduction of alcohol limits. The main disadvantages of using this method are:

- the analysis is restricted to motorways;
- time series are short, in particular period after the measures were brought in: our time series cover the period 2005-2012, while the Directive was only implemented by the end of 2011;
- results are to be used with care: having a statistically significant coefficient can be interpreted as indicative of a linkage, but should not be taken as a formal proof of any causal effect of the Directive on accident rates. This is due to the fact that we do not include factors other than time as explainable variables into the regression¹¹³. This might lead to an omitted variable bias and explains why it is better to interpret the coefficients as a correlation rather than as causalities.

Within the statistical analysis, we first assess whether there is a change in the general evolution of the accident rate on motorways before and after implementation. The idea is that a time variable captures the on-going efforts that are being made to improve road safety and hence to decrease accident risk. If the Directive has a clear additional effect, which is greater than might be expected from the general trend, a dummy variable for the year 2012 (year after implementation) should account for it.

We found that there is a general negative trend in fatality rates over time. Also, when we compare the fatality risk up to 2011 and in the year 2012 we find a significant decrease. This means that the overall introduction of RSM at European scale seems to be associated with a reduction in fatality risk. As shown in the table below, we observe that, on average, there is a decrease of about 0.0001 to 0.0002 in fatality risk in European countries between 2011 and 2012. This decrease comes on top of the linear trend showing the reduction in fatality risk by 0.0005 to 0.0008 over the time period of our dataset. This result suggests that the introduction of RSM procedures at the end of 2011 has led to a reduction in the fatality risk.

¹¹³ Other factors might be changes in legislation with respect to alcohol limits, the limits themselves, the evolution in enforcement in the different countries, etc. Such factors were not included as data is not available to build a complete time series for them.

Table 15: Overview of estimation results to analyze the presence of a structural break in accident rates at the end of 2011¹¹⁴

		Linear model	Fixed effects model
1. Change in fatality rate (percentage point)	Time	-0,0008	-0,0005*
	Delta 2012	-0,0002	-0,0001
2. Percentage change in fatality rate	Time	-0,081*	-0,052**
	Delta 2012	-0,016	-0,009

However, as said above, we would need to estimate a more complete statistical model (also considering other potential explanatory variables for this reduction in fatality risk) to corroborate this result with a higher degree of certainty. There could be other reasons that could explain the drop in fatality risk, which we have not accounted for in our analysis. Our analysis merely suggests that the change in 2012 is larger than what would be expected considering the general time trend.

Second, we investigated whether significant differences exist in fatality rates between countries with extensive road safety management procedures in place before the directive, and countries with limited or no road safety management procedures. To this end, we divided the considered countries into 2 groups. One group consists of countries with 2 or more road safety management procedures in place before the directive. A second group consists of countries with less than 2 road safety management procedures in place before the directive. We analysed the difference in the average fatality rate (for the period 2005-2011) between these two groups of countries. We find that countries with 2 road safety management procedures or more in place (before the implementation of the directive) have a statistically and significantly lower fatality rate on motorways (0.007 fatalities/mio vkm) than countries with less than 2 road safety management procedures in place (0.016 fatalities/mio vkm).

We ran a regression to test the relationship between the motorway fatality rate (the dependent variable) and one additional road safety management procedure (the explanatory variable). This means that we want to estimate the impact of applying one more procedure. We find a significantly negative coefficient of -0.0044. This indicates that an “additional road safety management procedure” is associated with a decrease of 0.004 in the average fatality rate.

This suggests that there is a relationship between RSM procedures and the fatality risk. However, we should be cautious not to interpret this finding as a formal proof of as a causal relation between road safety management procedures and motorway fatalities.

These analyses are discussed in more detail in Annex 9. They show that there is indication of a correlation between having lower fatality rates and having road safety procedures, indicating that the Directive will most probably positively impact road safety, and certainly in countries which did not have these procedures in place before.

¹¹⁴ Statistical significance at 10% level, ** statistical significant at 5% level.

5.8 Efficiency

5.8.1 General findings

In this chapter, Directive 2008/96/EC is assessed against the criterion of efficiency. This aspect of the evaluation framework broadly investigates how efficiently the processes and procedures of a Directive operate and how the Directive is managed, as well as assesses the impacts of any regulatory burdens on national authorities, operators and users.

As seen with the analysis of the utility criterion, the preliminary consideration related to the efficiency of Directive 2008/96/EC is that it is still too early to acquire a precise understanding of its contribution to a more efficient and cost saving planning and management of the road network¹¹⁵.

The evidence collected suggests that the costs for carrying out the procedures represent the main categories of costs that are involved when the procedures governed by the Directive are applied. Nevertheless, little information is available about their level, not least because the majority of Member States does not estimate the costs for any of the procedures (in this respect there were only 5 positive responses that costs are measured for all procedures).

This is particularly the case of RSIA's, whose costs are not easily identifiable from the total cost of the infrastructure project, while for RSAs the costs largely differ according to size, scope and complexity of an infrastructure project, as well as on the basis of the composition of the RSA team and the level of detail of the audit. The same applies to benefits: these are measured for all procedures only in a limited number of Member States/Regions and they are therefore not easily quantifiable.

In conclusion, it should be remembered that the RISM procedures contribute within a broader set of measures and policies to the improvement of road safety. For this reason it is not always possible to clearly separate the changes in costs and benefits associated to the implementation of such procedures.

However, a more efficient use of the resources available has been indicated as the main benefit that road authorities perceive as a result of the application of Directive 2008/96/EC. The information gathered suggests that a higher level of administrative and operational efficiency along with a more rigorous application of the procedures are expected, thus allowing the competent authorities to reallocate the resources where they are most needed.

5.8.2 Analysis of the evaluation questions

Evaluation question #26: To what extent has the Directive generated benefits and costs for road users, road managers and public authorities?

The answer to this evaluation question explores the types of costs and benefits that the Directive has generated for three categories of subjects (road users, road managers and public authorities). An

¹¹⁵ On this point, a comment submitted by Estonia has stressed that Directive 2008/96/EC has rather increased costs for planning and management, while benefits chiefly rely on decreased accident costs and safer roads.

overview is anticipated in Table 16 below. Within this table the costs and benefits have been identified in common for both road managers and public authorities, but the distribution between these two categories of subjects varies according to the different role and responsibilities they bear in their respective Member States. In the case of road users, no costs generated by the Directive have been observed. With respect to the benefits, improved road infrastructures lead to improved road safety conditions and, therefore, to a reduction in fatal and serious accidents. This on its turn will also impact the congestion linked to accidents. The resulting improvements in safety are also distributed to the entire society via a decrease in costs related to the occurrence of accidents such as medical and policing costs.

Table 16: Overview of costs and benefits for road users, road managers and public authorities

	Road users	Road managers	Public authorities
Costs	None	Costs associated with the follow-up of safety assessment (main group of costs), administrative costs, costs for performing the procedures	
Benefits	Safety benefit, and possibly a positive effect on congestion	Improved safety management of roads, more efficient use of resources available, reduction of costs for interventions For public authorities: decrease in medical expenses, police, etc.	

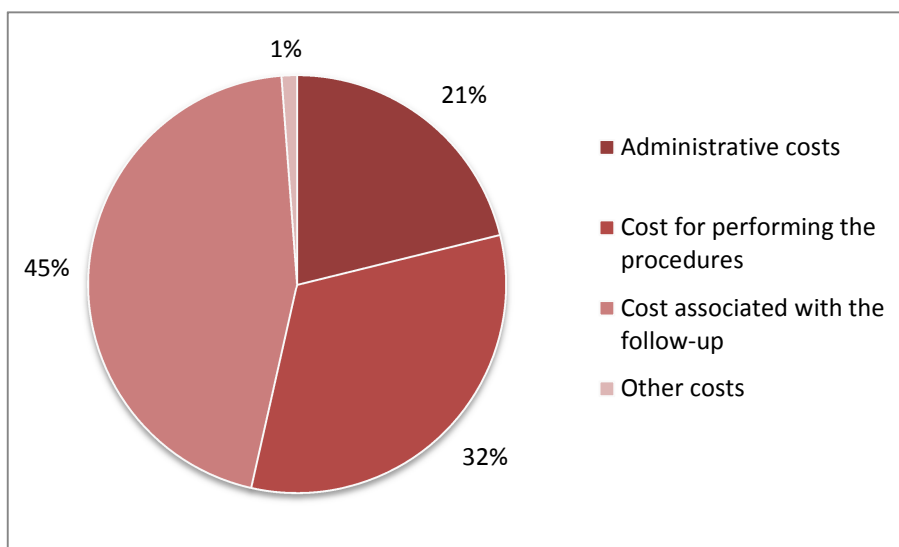
Costs

An initial insight may be formulated when the main cost categories that are involved in the application of the road infrastructure safety management procedures are investigated. These categories of costs are illustrated in Figure 15¹¹⁶, which allows us to observe that the costs associated with the follow-up of safety assessment (e.g. remedial actions adopted following the completion of the RISM procedures) has been reported as the most significant cost category. This cost category is predominant across all responding Member States, but more markedly in the EU13,¹¹⁷ while administrative costs (e.g. costs for setting up, managing or administering procedures; for outsourcing/ordering procedures, if carried out by an external body) have a higher incidence in the EU15. No evidence has shown a direct effect on road users of costs generated by the Directive. Since the role of the concessionaires in managing the procedures stipulated in the Directive is very limited (see evaluation question #11), it can be supposed that tolls would not have been influenced by the application of the European legislation.

¹¹⁶ The share of each category of cost is obtained as a non-weighted average value considering the values provided by Member States/Regions. In the survey, Member States were asked to provide percentages and not absolute values.

¹¹⁷ Member States acceding to the European Union from 1 May 2004 to date. The EU13 comprised the following: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia.

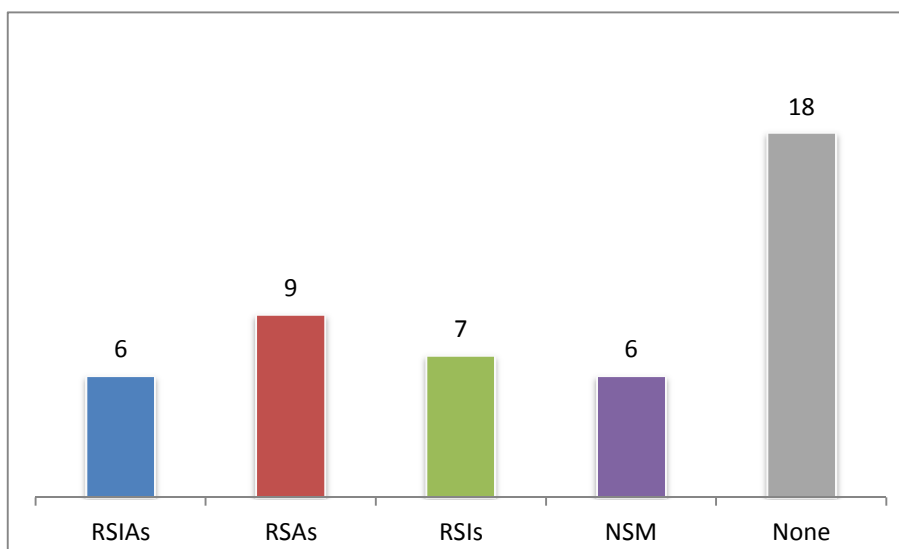
Figure 15: Overview of main involved cost categories (EU28, average values)



Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

Furthermore, as made clear by the information collected, only a small number of Member States measures the costs for all procedures (5 responses out of 27) or for some of them (4 responses out of 27). This means that the majority of Member States (18 responses out of 27) does not estimate the costs for any of the procedures (Figure 16). Costs are not calculated either in Switzerland, while in Iceland they are calculated for all procedures.

Figure 16: Member States/Regions calculating costs by RISM procedure



Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

On this issue, specific comments raised by the Member States/Regions explained what follows:

- In Ireland, regarding RSIA, only small marginal costs are associated with reviewing the reports that each project has to be accompanied with and as per Annex 1 of the Directive¹¹⁸, while the greater part of the costs to undertake a RSIA are already covered by the overall budget allocated to the planning, traffic and transport assessment.
- In Denmark, costs are not calculated for RSIA and RSAs because these procedures are part of the budget for each specific infrastructure project. In addition, it is difficult to isolate the cost for the single procedure from the rest of the construction budget, especially when it comes to RSIA, not least because many of the assessments made in the RSIA would have been done as part of the Environmental Impact Assessment (EIA) as well. For NSM, construction costs are calculated since these improvements are prioritized by cost/benefit, but it is done for the entire national road network, not particularly for the TEN-T road network.
- In Bulgaria the exact cost estimation of carrying out RSIA is currently not available, mostly because no new infrastructures have been built yet. This similarly applies to RSAs for which evidence on cost estimation is not available as no new road sections have been constructed so far. RSIs and BSM are carried out by the staff of national road infrastructure agency as part of their routine activities, so no additional costs have been reported observed for these two techniques. .
- In the Catalonia region, costs for RSIA and RSAs are calculated only as part of the project costs as a whole. This means that no specific costs are estimated for these two procedures.

Looking closely at the costs for each individual procedure, it is important to highlight that only a small proportion of Member States (4 responses out of 27) have declared that they earmark specific resources to undertake the road infrastructure safety management procedures. In these Member States (Ireland, Lithuania, Luxembourg and the Netherlands), a budget between € 200,000 and € 330,000 is allocated on a yearly basis to RSIs, while the one assigned to NSM is in the order of between € 100,000 and € 250,000 and the one for RSAs amounts roughly to between € 30,000 and € 100,000.

On the whole, the evidence collected suggests that information on the costs for performing the RISM procedures is not extensively available, not least because the majority of Member States does not estimate the costs for any of the procedures. Nonetheless, some estimates can be found in the literature which can help shed light on their extent.

Concerning benefits, as also discussed under the utility criterion, they are difficult to assess chiefly because it is difficult to estimate and assign the RISM procedures to a specific reduction in the number of road victims, given that the Directive only entered into force recently. However, the literature reviewed indicates that these procedures are cost effective.

¹¹⁸ In Ireland, these reports need to be submitted to the National Roads Authority as well, so to primarily secure that the report is up to the required standard.

Evidence on costs for Road Safety Impact Assessments

Indication of costs is hardly available in the case of RSIA's. Indeed, these latter procedures have been implemented only very recently or not implemented at all primarily because no new infrastructure projects have been funded over the last few years. Equally, isolating the costs for RSIA's from the total cost of the infrastructure project is not achievable with ease given that many assessments undertaken as part of an RSIA have to go through the planning process and the transport assessment or are carried out as part of the EIA. The costs for the EIA could be used as a reference to calculate the costs associated with RSIA's. Usually, costs for an EIA approximately amount to less than 1% of the overall capital cost of a construction project, but smaller projects it can be even less. EIA are conducted in two stages: the planning and the project phase. For the planning phase and for larger projects on motorways, the costs of an EIA are around 300,000 euro, while for other roads the costs of an EIA are in the range of 100,000 to 150,000 euro.¹¹⁹ Within the project phase, most EIA cost between 60,000 and 100,000 euro.

Evidence on costs for Road Safety Audits

As found in the literature, the estimation of costs for audits normally includes: (i) time required for the auditor, (ii) increased time for designers for the case management and redesign and, finally, (iii) changes in construction costs.

However, as argued by TOI & ViaTrafik (2013)¹²⁰ figures on costs for this technique derive from secondary sources and, therefore, it is not always clear how they are estimated and which type of cost components they include. In addition, it is worth underlining that costs vary greatly according to the size, scope and complexity of an infrastructure project, as well as on the basis of the composition of the RSA team and the level of detail of the audit. It can be stated that the approximate cost for the RISM procedures ranges between € 1,000 and € 25,000 per project¹²¹.

Estimations across a sample of Member States have been documented in the research work undertaken by Matenea (2005). According to this study, in Austria the costs for audits were estimated at between € 700 and € 2,500 per km or road length, or 0.1% to 0.15% of the construction costs. In the Czech Republic costs for audits range between € 1,000 and € 3,000 while in Denmark audits cost less than 0.5% of the construction costs. Finally, in Portugal, audits costs between 4% and 7% of the construction costs, whilst in the United Kingdom costs between € 700 and € 1,400 or 0.5% of the construction costs can be expected. Generally, the study concluded that the estimations indicate that audit costs are less than 1% of the construction cost of the whole project. Conversely, higher percentages are reported by the EIB¹²² with estimations of audit costs varying between 2% and 15% of the total projects costs.

¹¹⁹ Source: Personnel Communication ANTEA group – based on Belgian experience.

¹²⁰ TOI & ViaTrafik. (2013). Evaluation of Road Safety Audit in Denmark.

¹²¹ EIB, Personal communication from dated 7th November 2014.

¹²² EIB, Personal communication from dated 7th November 2014.

Evidence on costs for Road Safety Inspections and Network Safety Management

RSIs generally involve three groups of costs, i.e. (i) costs related to the execution of the inspection and drafting the corresponding report, (ii) design and construction costs of the safety interventions and (iii) costs incurred by monitoring and evaluating results.

As reported by the RiPCORD-iSEREST project (Cardoso *et al.*, 2007¹²³) information about costs of RSI is scarce, mainly due to the fact that the corresponding activities are carried out by road authorities, being part of the normal activities of the inspectors. According to Schermers (2011)¹²⁴, planning the execution and monitoring of RSIs can easily be accommodated within the daily functions of an experienced road administration and the additional costs for carrying out the inspections is relatively low, especially when such inspections are undertaken periodically (for example, every year or every five years).

Finally, organizational costs for NSM are generally assumed to be comparable to costs of routine RSIs.

Table 17: Overview of costs for undertaking RSAs, RSIs and NSM

EU Member States	Audit costs		RSIs costs (in €/km)	NSM costs (in €/km)
	(in €/km of road length)	(as % of construction costs)		
Austria	500 to 700* 700 to 2.500** 1,070 to 6,700***	0.1%-0.15%*	500 to 700 * 1,000****	500 to 700*
Czech Republic	1,000 to 3,000**	n/a	n/a	n/a
Denmark	5,365 to 48,955***	<0.5%**; 1.35%***	n/a	n/a
Estonia	300*	n/a	n/a	<100*
Germany	800 to 5,000**	<1%**	n/a	n/a
Ireland	Minimum 2,500 ¹²⁵ *	n/a	150 to 200*	400
Italy	1,500 to 80,000*	n/a	200*	100*
Lithuania	500*	n/a	n/a	100*
Luxembourg	n/a	n/a	4,000*	n/a
Netherlands	1,000* 3,620 to 7,240**	n/a	n/a	<100*

¹²³ Cardoso, J.L., Stefan, C., Elvik, R., Sørensen, M. (2007). Road Safety Inspections: best practice and implementation plan. RiPCORD-iSEREST Deliverable D5.

¹²⁴ Schermers, G. E. (2011). Deliverable Nr. 7 - Recommendations for the development and application of evaluation tools for road safety infrastructure management in the EU. RISMET - Road Infrastructure Safety Management Evaluation Tools.

¹²⁵ The maximum cost (€/km) has not been provided. However, Ireland also declares costs of >4,000,000 € for completing some RSAs; the cost differs according to the type of roads audited and the complexity of the project.

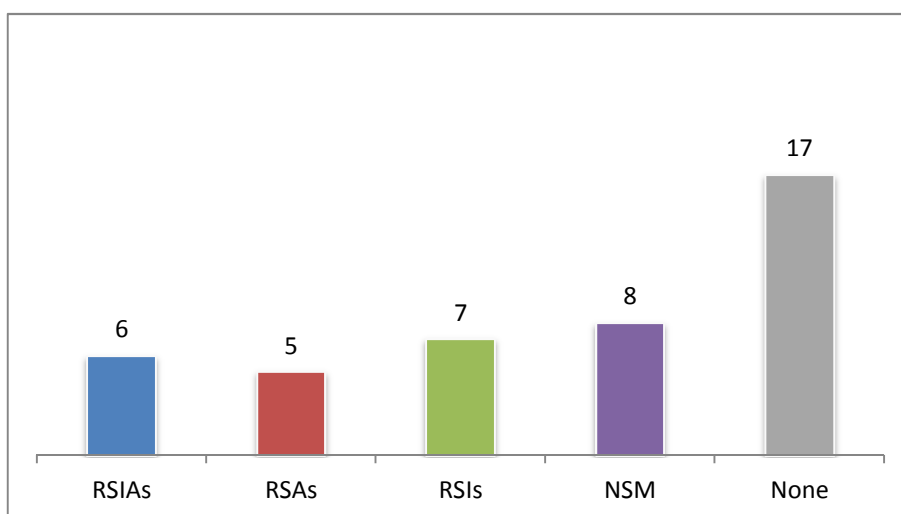
EU Member States	Audit costs		RSIs costs (in €/km)	NSM costs (in €/km)
	(in €/km of road length)	(as % of construction costs)**		
Portugal	n/a	4%-7% (of planning costs)**	3 man-days/40 km****	n/a
Romania	5,000 to 50,000*	n/a	5,000 to 50,000*	n/a
Spain	700 to 1,000*	n/a	n/a	n/a
United Kingdom	700 to 1,400**	0.5%**	5,000 to 50,000*	n/a

Source: *Member States' online survey, ** Matena et al. (2005)¹²⁶, *** TOI and ViaTrafik (2013)¹²⁷, **** Lutschounig et al. (2005)¹²⁸, n/a: not available

Benefits

Only a limited number of Member States measures the benefits for all procedures (3 responses out of 27) or for some of them (8 responses out of 27). This implies that the large majority of Member States does not estimate the benefits for any of the procedures (Figure 17). Similarly, this position has been also expressed by Iceland and Switzerland in their replies to the survey.

Figure 17: Number of Member States which calculate benefits, per procedure



Source: Data based on Member States' questionnaires responses (25 out of 27 Member States/Regions)

¹²⁶ Matena, S., Löhe, U. and Vaneerdewegh, P. (2005). Road Safety Audit. Current Practice.

¹²⁷ TOI & ViaTrafik. (2013). Evaluation of Road Safety Audit in Denmark.

¹²⁸ Lutschounig, S., Nadler, H. and Mocsari, T. (2005). Description of the current practice of RSI.

Evidence on benefits for Road Safety Impact Assessments

As found by the research work conducted by the RiPCORD-iSEREST Project, yet it is not possible to give an estimation of the effects and benefits of applying a RSIA. Nevertheless, a few important elements need to be considered (CEDR, 2008), e.g.:

- Applying a RSIA is useful, because there are a lot of improvements for road safety possible in a regional road network, because the new road (or substantial modification) will give another distribution and consistency of traffic.
- A RSIA should result in practical recommendations to be implemented in the subsequent design stages.

Evidence on benefits for Road Safety Audits

Taking into account the research work carried out by the BALTRIS Project, the benefits (e.g. throwaway costs and reconstruction costs to correct safety deficiencies identified, reduction in lifecycle costs, reduction in societal costs of collisions, better understanding and documentation of road safety engineering, eventual safety improvements to standards and procedures) of the road safety audit process should be considered as the combination of the direct reductions in road trauma from design and site specific treatments and the qualitative improvements to the road safety performance of a road agency and associated organisations.

Results of the ROSEBUD project (ROSEBUD, 2003¹²⁹) as well as of other international studies made in the United Kingdom (Surrey County Council Survey, 1994¹³⁰) and Australia (Austroads, 2002¹³¹) regarding the effects and benefits of road safety audits generally show that conducting audits is inexpensive and highly effective. Finally, TOI & ViaTrafik (2013)¹³² refer to a German study (BAST, 2002¹³³) which claims that RSA may prevent up to 70% of all accidents on newly constructed roads.

Evidence on benefits for Road Safety Inspections

As concluded by the BALTIS Project (BALTRIS, 2012¹³⁴), systematic RSIs are an approved tool to improve the road safety and to reduce the number and the severity of traffic accidents by improving the road safety performance of existing roads. Thus, the benefits of RSI can be summarised as follows:

- identification of potential road safety concerns for all road users;

¹²⁹ ROSEBUD (2003). Report “State of the art” – WP1 – Screening of efficiency assessment experiences.

¹³⁰ Surrey County Council (1994). Road Safety Audit: An investigation into casualty savings – Discussion report.

¹³¹ Macaulay, J. and McInerney, R. (2002). Evaluation of the proposed action emanating from road safety audits. Sidney, Australian Road Research Board, AUSTRROADS, publication No. AP R209/02, 2002.

¹³² TOI & ViaTrafik. (2013). Evaluation of Road Safety Audit in Denmark.

¹³³ BAST (2002). Sicherheitsaudit fuer Strassen (SAS) in Deutschland.

¹³⁴ BALTRIS Project (2012). Road Safety Inspection Guidelines and Checklists.

- minimisation of the risk and severity of road accidents that may result from the existing situation of a road section;
- minimisation of unsustainable losses to health and economy.

Only a few studies are available on the cost-benefit results of RSIs. Yet, most of them still show substantial benefits of this procedure and support the conclusion that such measures can improve road safety (Elvik & Vaa, 2004¹³⁵; Elvik, 2008¹³⁶). In addition, in an analysis made in Australia to the results obtained, it was concluded that the majority (78%) of the proposed interventions following RSIs had benefit-cost ratios greater than 1.0 and 35% had a benefit-cost ratios greater than 10. Over 250 interventions were analysed (Macaulay ea, 2002).

Evidence on benefits for Network Safety Management

NSM allows detecting those road sections within the network where an improvement of the infrastructure or other measure is expected to be highly efficient. These sections are ranked by their potential savings in accident costs in order to provide a priority list of sections to be treated and where accident cost is potentially reduced. However, as NSM does currently not include the implementation of countermeasures, it is difficult to quantify its benefits and no evidence is currently available in the literature (CEDR, 2008).

Evaluation question #27: What is the administrative burden generated by the Directive distinguishing between costs for the national administrations and costs for road authorities?

The administrative burden generated by the Directive is essentially related to the costs for administering (launching and performing) the procedures under the provisions of Directive 2008/96/EC. As previously stated (see evaluation question #26), administrative costs account for nearly one fifth (more precisely, an average value of 21%) of the global cost involved in the application of the road infrastructure safety management procedures.

The distribution of costs between national (or regional/local, where this is applicable) and road managers can be assessed by looking at the responsibilities defined for administering the procedures in each Member State/Region (as shown in Table 18)

illustrate this distribution, calculated as an average value of all Member States (except Croatia and France) and Regions that replied to the questionnaire; this is an estimate based on the data related to the distribution of responsibilities as well as on the additional qualitative information provided by respondents. In this regard, it is valuable to note that in just one case a Member State explicitly declared that the administrative burden has been perceived as unexpectedly high.

¹³⁵ Elvik, R., Vaa, T. (2004). The handbook of road safety measures. Elsevier.

¹³⁶ Elvik, R. (2008). Road safety inspections: safety effects and best practice guidelines. TOI Report 850/2006. Methodological Guide. Road Safety Inspections. SETRA (FRA), October, 2008.

Table 18: Distribution of administrative costs between national administrations and road managers

Distribution of administrative costs	
National administrations (or Regional/Local administrations, where applicable)	Road managers
~80-85%	~15-20%

Source: Data based on Member States' questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

Evaluation question #28: *Is there room for a further reduction of these costs?*

Evaluation question #29: *Did the application of the Directive lead to a more efficient and cost saving planning and management of the network in the operation?*

Taken together, the evidence collected suggests that there is a substantial and broad agreement that the implementation of the Directive is still too recent to gain understanding of whether it has led to a more efficient and cost saving planning and management of the network.

Importantly, it should also be remembered that the procedures regulated by the Directive are only a part of the broad spectrum of tools to continuously improve road safety. This implies that it is not always possible to clearly separate the changes in costs and benefits associated with all RISM procedures or even with some of them.

The following Table 19 compares the significance of the cost categories (presented in answering the evaluation question #26) between Member States/Regions having and those not having pre-Directive procedures in place. The cost for performing the procedures is higher in countries without previous experience on RISM procedures. Moreover, an assessment of the cost savings (in terms of reduction of costs for interventions) is provided; this is presented as a qualitative evaluation based on Member States' perception.

Table 19: Comparison of main cost categories and degree of cost saving

Groups of Member States/Regions	Categories of costs			Cost savings for interventions
	Administrative costs	Cost for performing the procedures	Costs Cost associated with the follow-up	
EU MSs/Regions with pre-Directive procedures (15)	Low	Low	Medium	Moderate
EU MSs/Regions without pre-Directive procedures (10)	Low	Medium	Medium	Moderate

Source: Data based on Member States' questionnaires responses (25 out of Member States/Regions; no information for 2 Member States).

Answers collected appear to indicate that, in countries having pre-Directive RISM procedures in place, the (low – see Table 19 above) administrative costs have remained the same throughout the years, both before and after the implementation of the EU legislation (see also evaluation question #30). Therefore, it is reasonable to infer that, in the mid-term, the application of the Directive does not lead to a further reduction of costs.

The supplementary evidence gathered by interviewing the individual Member States/Regions appears to indicate that a higher level of operational efficiency can be expected, thus allowing the competent authorities to allocate the resources where they are most needed. In this respect, the representative of Ireland asserted that the NSM procedure, unlike the pre-Directive scenario, is now centrally managed, thus leading to a more impartial and rigorous identification of sites as well as to a better correspondence between the allocation of funds and actual needs. On the other hand, the representative of Austria pointed out that the operating costs of the Directive are likely to remain practically unchanged, while Estonia registered a slight increase of them.

Evaluation question #30: *Has the network safety ranking and the black spot management generated additional cost advantages?*

On the basis of the observation of the accidents that occur on the road network, NSM and BSM are useful to detect and inventory those sections within the network where an improvement of the infrastructure or other measures are expected to be highly efficient. These sections are ranked by their potential savings in accident costs in order to provide a priority list of sections to be treated (CEDR, 2008). The improved understanding of the road sections featuring the highest critical levels in terms of accidents potentially supports the possibility to plan the interventions to be undertaken in advance and in a cost-effective manner in order to define and implement the best countermeasures.

The majority of Member States/Regions (23 responses out of 27) register the identified deficiencies on the road network, but only approximately half of them (14 responses out of 27) define responsible subjects for addressing the remedial actions. Similarly, less than half the Member States/Regions (12 responses out of 27) confirm that the resulting recommendations are binding for the competent authority to be followed.

On the whole, it seems that no particular cost advantages have been triggered. Comments received from Member States indicate that operating costs for the planning and management of the road network have remained practically unchanged. This applies for all the Member States that have been able to provide an answer on this topic (Austria, Bulgaria, Denmark, Estonia and Ireland); accidentally, most of them (4 out of 5) are countries where the RISM procedures were in place before the implementation of Directive 2008/96/EC.

Evidence derived from the analysis of the utility criterion also appears to demonstrate that there is an average 0.1% difference in fatality rates between European countries when NSM is taken into consideration. The resulting saving in social costs is therefore limited.

5.9 EU added value

5.9.1 General findings

This criterion aims to determine the extent to which intervention supported at an EU level has brought about changes that would have occurred as a result of Member States acting independently.

Before the introduction of the road safety infrastructure Directive, application of road safety procedures was not systematic and not widespread across EU Member States. The EU added value in terms of the justification for initial formulation of the Directive was clear: propping a generalized use of the RISM procedures backed up by a harmonized legislative framework would have the greatest impact on improving the functioning of the road infrastructure management system.

Given the results of the evaluation, it appears that the European added value of the Directive has been realized. The Directive had the clear benefit to force all Member States to establish a common set of RISM procedures and, importantly, within a clear timeframe. Though differences still persist in terms of implementation across, the Directive has encouraged their generalised use and paved the way for developing a common, harmonised approach for their implementation.

Stakeholders recognized that the Directive has encouraged a higher degree of attention towards road safety and has promoted a positive dynamic in doing more things to foster road safety. Not least, for those EU countries where the procedures were not in place, the Directive has provided with a reference framework to comply with the RISM procedures and, importantly, within a precise timeframe. This could not have been achieved through Member States acting alone or bilaterally.

Box 4: Directive's added value beyond the EU Member States

It is remarkable saying that the Directive has proved having an added value also beyond its application in the EU Member States. This is corroborated by the replies to the survey provided by Iceland and Switzerland. The Nordic country pointed out that the Directive has helped improving the use of RISM practices, especially because it has provided an incentive to adopt a more systematic approach.

A similar view was expressed by Switzerland, where following-up the implementation of the Directive's requirements new norms and procedures have been established. This has encouraged raising the profile of road infrastructure safety at all different governance levels, although it was argued that concrete benefits can be observable only taking into account a long-term horizon.

As already mentioned in the evaluation criterion on implementation (see section 5.2), the RISM procedures were not applied in all EU Member States before the Directive was adopted. The transposition of the Directive into the national legislative frameworks and the subsequent fulfilment of its requirements have certainly fuelled a normative and operational process that, for some EU Member States, would not have happened without EC intervention.

The positive outcome is not only due to the fact that all RISM procedures are now established in all Member States¹³⁷ and rooted on a minimum set of compulsory rules in the management of the TEN-T roads (in many cases also extended to the not TEN-T roads), but also because the Directive has encouraged the implementation within a given timeframe of a more holistic and

¹³⁷ With the exception of Croatia (new Member State).

standardized approach to road infrastructure safety management at the EU level. Indeed, procedures are now better established and more clear, and they are applied in a more coherent framework.

Remarkably, another merit that can be ascribed to the Directive is that this piece of legislation has stimulated the diffusion of consolidated RISM practices and experiences across all Member States by means of the exchange of best practices. In this respect, a number of Member States have called for the Directive to ensure more incentives claiming that the current level of cooperation did not result in particular improvements in their national practices.

This perspective is shared by the large majority of consulted stakeholders (92%), that have indeed underlined the value and importance of increasing the transfer of knowledge and information between Member States in the application of the RISM procedures. This would not only result in a more standardized and harmonized approach in the manner in which RISM procedures are applied,¹³⁸ but would also raise the level of homogeneity of the application of certain key aspects of the Directive in the EU Member States (i.e. independence of audits and the mutual recognition of certificates issued before the entry into force of the Directive).¹³⁹

Exchange of communication should also be incentivized as far as the cost effectiveness evaluation of the RISM procedures is concerned, and the results should be broadly disseminated across the Member States.¹⁴⁰ Furthermore, given that the evidence on the effectiveness of treatments under different circumstances is still relatively poor, sharing such information could potentially be very useful to enable the selection of effective treatments in the future.¹⁴¹

5.9.2 Analysis of the evaluation questions

Evaluation question #31: What is the EU added value of the obligation to establish the same practices and procedures in road safety infrastructure management?

Directive 2008/96/EC is certainly a major step forward in promoting a change in the way RISM procedures are applied in the Member States. Before its introduction, application of road safety procedures was not systematic and not widespread across EU Member States. Their establishment was left upon decisions taken nationally which led to disparities in their application across EU countries.

The EU added value in terms of the justification for initial formulation of the Directive was clear. To improve the functioning of the road infrastructure safety system a harmonised legislative framework would have the greatest impact. Given the results of the evaluation, it appears that the EU added value of the Directive has been realised. Member States and stakeholders recognised that the Directive has played its role in moving the establishment of RISM procedures towards a more generalised use based on a common approach. This could not have been achieved through Member States acting alone or bilaterally.

¹³⁸ Comment made by the grouping of road operators and road safety research stakeholders (online survey).

¹³⁹ Comment made by the grouping of road safety research stakeholders (online survey).

¹⁴⁰ Comment made by the grouping of road safety research stakeholders (online survey).

¹⁴¹ Comment made by the grouping of road safety research stakeholders (online survey).

This viewpoint is confirmed in a large proportion of the responses collected (22 responses out of 27), which responded affirmatively on the potential of the Directive to trigger a change in national practices and procedures for the safety management of road infrastructure.

On this issue, feedback from the Member States/Regions focus for example on the fact that: (i) the existence of formal standards has encouraged road authorities to improve their effectiveness in implementing RISM procedures (for example, with regard to RSIs, the RiPCORD-iSEREST¹⁴² project has observed that a standardized procedure does not exist across EU countries to perform RSI, while definition and methodologies largely differ even though the objective is the same), (ii) a pro-active approach can now be introduced with more ease instead of post-treatments of identified road safety problems, hence prospectively accomplishing a reduction in costs and a more efficient use of resources, (iii) the efficient use of available resources and a high level of road user awareness can lead to a high level of road safety.

Despite all this, it should be equally stressed that the process started with the Directive is still in its initial stages, so results are not clearly identifiable as yet. Moreover, in cases where they were already in use before the Directive, no substantial changes to the procedures or to the frequency of their application was reported.

Evaluation question #32: *Is there a widely recognized exchange of good practices and how does this contribute to the EU added value?*

As seen in the answer to evaluation question #20, Member States declare (i) to be engaged in exchanging good practices either with other Member States or with international organizations and that (ii) the Directive provides an incentive for such the exchange of good practices. Nonetheless, in their views such cooperation has little supported the application of the Directive and the realisation of its effects, thus had little contributed to its added value at EU level.

Against this backdrop, however it can be concluded that exchange of best practices complies with the objective of contributing to the EU added value, as it allows cross-sharing of national practices and knowledge, optimises the outputs coming from different EU areas, supports the implementation of common road safety standards for the EU road network (both TEN-T and non-TEN-T), highlights that safety issues are not limited without national boundaries. This is somewhat confirmed by the fact that the majority of Member States/Regions (20 responses out of 27) commented that the Directive should provide more incentives for the monitoring and exchange of information between them. A similar perspective is echoed by the stakeholders surveyed (92%).

Evaluation question #33: *Would it have been possible to obtain the same results in terms of safety management without intervention at the European level?*

As previously stated, Member States/Regions highly appreciated having a systematic approach to road safety infrastructure management; this can be observed crosswise, without marked differences between countries having the procedures in place before the implementation of the Directive and countries that did not have these procedures.

¹⁴² Weber R. and Matena, S. (2008). RiPCORD-iSEREST Final Report.

The Directive had indeed the clear benefit to force all Member States to establish a common set of RISM procedures and, importantly, within a clear timeframe. Though it holds true that differences emerge in terms of implementation across the distinct Member States, the Directive has provided a prop for a generalised used of such procedures, hence encouraging a common “language” for their take-up.

Then, it can be concluded that this result on safety management of road infrastructures would not had been achieved leaving the Member States acting alone, in particular those that had not the procedures established before the adoption of the Directive. As understood in the answer to the evaluation question #25 (utility), the effects of the procedures (and, by extension, of the whole Directive 2008/96/EC) on the enhancement of road safety vary within a range of 10% to 20% compared to a situation in which the procedures are not applied. This means that, as illustrated in Table 20 below (compact reiteration of Table 3), 11 Member States/Regions out of 27 have taken moderate advantage of the Directive and its impact on road safety. Moreover, looking at the average number of procedures in place per Member State, values varied from 1.6 in the pre-Directive scenario to 3.8 after the implementation of the EU legislation.

Table 20: Member States/Regions with and without pre-Directive procedures

EU MSs/Regions <u>with</u> pre-Directive procedures	EU MSs/Regions <u>without</u> pre-Directive procedures
AT, BE-Wallonia, CY, CZ, DK, EE, FI, FR, HU, IE, IT, LV, MT, NL, PT, UK	BE-Flanders, BG, ES, HR, LT, LU, PL, RO, SE, SI, SK

Note: Data based on Member States’ questionnaires responses (25 Member States plus Belgium-Wallonia and Belgium-Flanders)

Therefore, the EU added value of the Directive can be further corroborated by the conclusion that spreading a harmonised use of the RISM procedures across the EU offers a large potential that could be prospectively exploited for a significant reduction of road accidents and their consequences. This applies not only to those procedures that have proven to be so far cost-effective (e.g. RSIs and RSAs) but also to a more complex and strategic tool as it is the RSIA. All this certainly received a prop both in regulatory and implementation terms after the EU intervention.

6 Conclusions and overall synthesis of the evaluation

This final section provides the evaluation's main findings and conclusions. These summarize the key issues that have been examined in the previous sections.

This evaluation has considered a wide range of issues relating to the implementation of Directive 2008/96/EC on road infrastructure safety management, as well as the efficiency and effectiveness of mechanisms and structures to support its implementation. Among the crosscutting themes examined were the criteria of utility, sustainability and European added value. Collectively, these criteria have aimed to determine the extent to which the Directive has really responded to the initial needs and problems of the target beneficiaries and European citizens, the extent to which positive changes attributable to the Directive may be expected to continue to have an effect and whether EU level interventions have brought benefits exceeding those that would have occurred through Member States acting independently. Among the issues considered was whether the objectives of the Directive are still valid (relevant) to the needs, problems and issues that they were designed to target. Lastly, the question of the extent to which the Directive can be coherent with the regulatory framework for ITS stipulated by Directive 2010/40/EU was also central.

The evaluators would like to point out that while it has been in force for only five years since its adoption, Directive 2008/96/EC appears to be a substantially successful directive and represents an important step in the direction of a more systematic discipline on infrastructure safety. As a whole, the Directive has triggered a different way of thinking and dealing with road safety management. This is first because it has encouraged a generalized use of the RISM procedures which are now established in all Member States and rooted on a minimum set of compulsory rules in the management of the TEN-T roads (in many cases also extended to the not TEN-T roads). Equally important, the Directive sets out a “common language” for carrying road infrastructure safety management which relies upon a harmonized legislative framework that, at national level, has steered a normative and operational process that would not have happened without EC intervention. The main weakness of this Directive relates, conversely, to the limited scope of its application, i.e. this piece of EU legislation only applies to the TEN-T road network and not to non-TEN-T roads which provide the highest potential for improving road safety as the majority of accidents occur on these roads.

General recommendation

In the light of the main findings of the study, a general recommendation may be put forth to support the decision making of EU institutions in their assessment of the effectiveness of Directive 2008/96/EC. This, consequently, will improve the overall implementation across the Member States. As is noted in the course of the study, the main obstacle in evaluating the application of the Directive is the poor quantity and quality of available data. Efforts should be made towards improving the EU common accident database and accessibility, in particular as far as accident data on the TEN-T network is concerned. Moreover, data collection of costs and benefits should also be improved. At the EU level, harmonized procedures for gauging the cost-benefit ratio of road safety treatments are to be developed. In this respect, benchmarking methodologies should be put

forth to track the performance of the Directive as a whole and of each single road infrastructure safety management procedure individually.

Summary of conclusions

That being said, below we set out the conclusions that have been drawn for each evaluation questions on the issues covered by the analysis developed in the main body of the report.

Table 21: Summary of conclusions to each evaluation questions

No	Evaluation Questions	Conclusions
Implementation		
EQ1	To what extent were Road Safety Impact Assessments (RSIAs) and Road Safety Audits (RSAs) integrated into the planning, designing and construction phases of Member States?	RSIA and RSA procedures are fully established in the national law systems of the Member States. Preferred pathway was found to be the integration of the provisions laid down by the Directive on these two techniques with pre-existing national streams; only a minority of Member States have entirely replaced pre-existing regulatory settings. This confirms that national systems were already broadly in line with the requirements set by the Directive.
EQ2	Is there any difference in the implementation between best performing and worst performing EU member State?	Information is not sufficiently available to conclude about a correlation between the degree of implementation of the Directive and the road safety performance in a specific Member State. However, as described in the analysis below, evidence suggests that the Member States that presented poorer levels of road safety performance were those where the application of the requirements set by the Directive was more robust (only 33% of the best performing Member States in terms of road safety are also strong implementers of the Directive). A balanced repartition applies, conversely, to grouping of light implementers.
EQ3	To what extent and how did member states carry out the directive provisions concerning roads in operation (safety ranking and inspections)?	RSI and NSM procedures are fully established in the national law systems of the Member States. Preferred pathway was found to be the integration of the provisions laid down by the Directive on these two techniques with pre-existing national streams; only a minority of Member States have entirely replaced pre-existing regulatory settings. This confirms that national systems were already broadly in line with the requirements set by the Directive.
EQ4	How has the presence of black spots been effectively communicated to road users?	Given the variety of means (for example websites of road authorities, VMSs, ex-post accident reports) to communicate information on black spots to road users, the effectiveness of such communication differs from Member State to Member State.
EQ5	How has information from accident reports and methodologies for calculating the average social cost influenced road safety ranking and inspections?	Information from accident reports, rather than the calculation of the average social costs, has found to influence road safety ranking and inspections.
EQ6	How were inspections implemented?	RSIs were in use in a consistent number of Member States before Directive 2008/96/EC was adopted. In some of them, RSI programmes dated back to the late seventies. In the pre-Directive context, RSI schemes were established on a voluntary basis, while they were mandatory in only a limited number of Member States. Nearly half of Member States had a guideline or a directive on RSI and a standardised approach, while in almost all countries the decision for undertaking RSI was under the responsibility of the road administration. Further to the adoption of the Directive, as described in answer to EQ3, RSI schemes are established in all Member States and public road authorities or delegated agencies continuous to play a primarily responsible role for administering inspections along the road network. The frequency with which inspections are carried out differs significantly. The Directive does not impose any obligation or

No	Evaluation Questions	Conclusions
		even give any recommendation in this respect. On average, inspections recur every three years but it has been found that their frequency varies greatly, from an annual basis up to every seven years. The type of road (motorways and dual carriageways, main or complementary routes), the level of average daily traffic (ADT), the accident rate and the types of collisions emerge as the main criteria that guide the definition of a timeframe for inspections.
EQ7	Did the above mentioned procedures influence the planning phases?	The different RISM procedures were not found to have a significant impact in the planning phase in those countries where the procedures were already in place, while in those Member States where they were not established the overall impact on timing is also expected to be low. The reasoning behind this expectation is that we are dealing with larger projects which already have a relatively larger time frame, a higher time buffer and for which other procedures (for example) are also in place. Some of the procedures, such as the RSA, can indeed be done simultaneously with these other procedures.
EQ8	Were the procedures applied beyond the trans-European road network?	RISM procedures are applied also on non TEN-T roads and RSA is the most extensively applied technique. The degree of compulsion is variable. In the vast majority of Member States, the application to the non TEN-T roads considers national roads, dual carriageways and motorways.
EQ9	What were the factors that hampered the implementation of the Directive?	The large majority of Member States has reported not having encountered any difficulties in applying the requirements set by Directive 2008/96/EC,. This was chiefly because procedures were already in place and well-functioning before the Directive was adopted. In those Member States where such difficulties were identified, these referred to a lack of administrative or technical capacity, scarce resources or pre-existing normative framework not in line with the new requirements set by the Directive.
EQ10	Have Member States a specific budget allocated to carry out the procedures laid down in the Directive?	Member States do not earmark funds to carry out the RISM procedures and costs for the latter are generally incorporated in the overall costs of the road project investments. Evidence for earmarking was given by only a minority of Member States.
EQ11	Which authority has been responsible before the implementation of the Directive and which authority is now responsible for administering RISM procedures?	National road authorities are the primary responsible body for administering the RISM procedures. Their responsibilities cover all three phases of launching the administrative process, financing and performing a specific RISM technique. In the Member States where the RISM procedures were applied before the adoption of the Directive, this central role has been kept although a certain dynamics can be observed, either towards an increase of responsibilities of regional authorities or towards a greater involvement of other subjects (such as the concessionaires).
EQ12	Which are the criteria (for RSA) applied with respect to the definition of infrastructure project to be audited on non-TEN-T roads?	Infrastructure projects to be audited on non TEN-T roads are selected according to the type and/or the hierarchical level of the roads and, to a lesser extent, to the size and the complexity of the projects or to the forecasted traffic volumes.
Relevance		

No	Evaluation Questions	Conclusions
EQ13	To what extent is the obligation for Member States to define procedures for road infrastructure safety management necessary to address the road safety issues, considering that the Directive does not include specificities about the procedures?	Directive 2008/96/EC has led to an improved and much more consistent regulatory framework for spreading the use of the RISM procedures, compared with the prior system of national legislation and has brought the road infrastructure safety management process to a higher level of uniformity across Member States. Such uniformity can be, however, be read more on a formal level than on a substantial one as the Directive does not provide any detailed guidance on the application of the RISM procedures, nor harmonisation between Member States is prospectively foreseen. Hence, the relevance could be further improved if the provisions of the Directive would leave less room for interpretation. This would also increase the effectiveness of the Directive.
Effectiveness		
EQ14	To what extent has the Directive modified the practices and procedures in Member States for the management of Road Safety? Is this change an improvement?	Directive 2008/96/EC has promoted changes in the operational management of infrastructure-related road safety across Member States, which in particular perceived a more systematic approach in dealing with road safety as the main advantage following the application of the Directive. On this point, however, the stakeholders surveyed had a more mixed perception as in their views the contribution of the Directive's requirements on the operation management of the RISM procedures are minimal to moderate. This is because, in their opinion, the Directive is not innovative since it deals with procedures that were already in use years before its adoption.
EQ15	To what extent have the provisions on road safety ranking and management and inspections improved safety maintenance of roads and thus contributed to enhanced road safety?	Directive 2008/96/EC applies to new roads and improvements that may affect the safety of road users. Maintenance schemes are, therefore, not included. However, it can be concluded that the process initiated by the Directive contributes to a proper maintenance of roads given that procedures like RSIs (if periodically undertaken as envisaged by the Directive) produce positive effects in terms of correction of the detected road infrastructure deficiencies.
EQ16	To what extent have provisions linked to data management contributed to an improved ranking and safety management?	The large majority of Member States has established a reference to data management in their national guidelines. However, only a few of them reported that this data is also used for the ranking of the road network and that has triggered improvements in safety management.
EQ17	To what extent are these provisions sufficient, in the sense that they allow for a uniform consideration of social costs, to ensure a high and consistent level of safety across the TEN-T?	There is no uniform consideration of social costs. The majority of EU countries did not use them and even in cases where they did, the values are not uniform. Consequently, the Directive's provisions on social costs appear not having been sufficient to allow for a uniform consideration of social costs.
EQ18	To what extent has the Directive improved safety of new roads and affected the planning, design and construction of these new roads?	Directive 2008/96/EC has improved the safety level of new roads, given the important number of RSIA and RSA assessment that have been conducted across the EU over the last three years (2011-2013). Although the extent of such improvement cannot be quantified in terms of accident reduction, it can be reasonably argued that these interventions have resulted in improved road safety conditions of the roads put under assessment or auditing. Conversely, on

No	Evaluation Questions	Conclusions
		planning, design and construction of new roads information is not sufficiently available to conclude whether and to what extent the provisions of Directive 2008/96/EC produced an influence in this respect. Where collected, evidence reported, however, that such impact is very limited or absent.
EQ19	To what extent has the Directive modified the selection of safety equipment and components (pavement, road signals, lights, barriers, etc) by road managers?	Directive 2008/96/EC has not modified the approach followed by road managers in selecting safety equipment and components, neither in the Member States where the procedures were in use before the adoption of the Directive (in compliance with the Construction Products Directive 89/106/EEC), nor in those where the latter were not in use. Motivation is the presence in pre-existing well-functioning national regulations or procedures dealing with the safety performance of products.
EQ20	To what extent has the exchange of good practises contributed to the realisation of effects? To what extent did the Directive favour the exchange of good practises?	No specific improvements in national practices and procedures have been claimed to be reported as a result of the exchange of best practices between Member States. Such interaction on the procedures covered by Directive 2008/96/EC already occurred before it adoption. Therefore, notwithstanding the Directive fosters the exchange of good practices, no direct influence was observed that this piece of legislation has provided an incentive to a greater degree of exchange of good practices.
EQ21	To what extent is the training and certification of auditors set up in an effective manner in order to allow for performing audits?	Directive 2008/96/EC is a step forwards in the direction of providing a common framework for professional requirements and competence of road safety auditors or other road safety professionals. Training programmes and curricula are established in the larger part of Member States. This suggests that training and certification process of auditors is effectively set up in order to allow for audits to be performed. However, training programmes and certification requirements still widely differs in terms of duration and contents. This can hinder the possibility to implement coherent safety procedures on the whole road network, at Member State level, as well as at EU level.
EQ22	Have the training provisions impacted the mobility of auditors across Member States?	Directive 2008/96/EC does not provide for an explicit mutual recognition of the Certificates of Competence among Member States to undertake RSA work. This recognition is based on national practices and it is not linked to the type of road being audited. Nor it seems that the EU legislator has decided not to seek for a common market of these professional practitioners. The majority of Member States/Regions declared to mutually accept certificates issued by other Member States/Regions. Nevertheless, the absence in the Directive of an explicitly stated mutual recognition negatively impacts mobility of road safety professionals across Member States and at present there is no evidence indicating that such mobility is taking place.
Sustainability		
EQ23	To what extent are the safety procedures set up by the Member States in accordance with provisions of the Directive likely to remain in the event intervention is ceased at European level?	Directive 2008/66/EC has encouraged the introduction of a EU-wide approach to road infrastructure safety management and the changes brought about in the operation of the Member States' national practices are expected to last in the long run . However, despite having achieved a much more generalised use of the RISM procedures, differences in their application still persist which motivates why the Directive hinges upon stronger and more

No	Evaluation Questions	Conclusions
		consistent harmonization with a view to establish a benchmark of knowledge and evaluation tools across all Member States. Also sustainability of funding sources for undertaking these procedures is key.
Coherence		
EQ24	Is the current framework of the Directive in the long run adequate to ensure the deployment of ITS technology in particular for the communication between the vehicle and the infrastructure?	The Directive itself does not really focus on ITS and the industry believes that there is no strong link between the Directive and ITS. Hence, we conclude that the Directive does not really influence the deployment of ITS in a negative or in a positive way. In general, other Directives such as the ITS Directive, the INSPIRE Directive and the OPEN DATA Directive would have a stronger impact on the deployment of ITS. Nevertheless, the four areas of information about infrastructure safety, the use and maintenance of infrastructures, safe design of infrastructures and traffic management can be envisaged where deployment of ITS can produce benefit on the infrastructure and where synergies with Directive 2008/96/EC can apply.
Utility		
EQ25	In the light of the target of halving the road traffic fatalities established in the Policy Orientation for road safety, and with a view of a future similar target for seriously injured, can the current Directive considered an adequate instrument?	The Directive has led to the establishment of RISM procedures in all Member States, thus increasing their use in comparison with a pre-Directive context. In particular, it has increased use of cost-effective procedures (RSAs and RSIs) which have proven to yield positive results in terms of reduction of road casualties were applied. Further, there is indication of a correlation between having lower fatality rates and having road safety procedures, indicating that the Directive will most probably positively impact road safety, and certainly in countries which did not have these procedures in place before.
Efficiency		
EQ26	To what extent has the Directive generated benefits and costs for road users, road managers and public authorities?	Most Member States were not able to provide information on costs and benefits related to performing the RISM procedures. Costs associated with the follow-up of safety assessment have been reported as the most significant cost category involved in the application of the RISM procedures. No evidence has shown a direct effect on road users of costs generated by the Directive. Concerning benefits, the literature reviewed indicates that these procedures are cost effective (in particular for RSAs). In general terms, the reduction in the number of road victims/injuries can be considered the main benefit of the application of the Directive (both for users and public authorities), but a quantification of them is still not possible, given that the Directive only entered into force recently.
EQ27	What is the administrative burden generated by the Directive distinguishing between costs for the national administrations and costs for road authorities?	The administrative burden generated by the Directive is mainly related to the costs for administering (launching and performing) the RISM procedures. Administrative costs account for nearly one-fifth of the global cost involved in the application of the RISM procedures. Concerning their distribution, administrative costs are largely borne by national authorities (80-85%) and only to a small extent by road managers (15-20%). Overall, road safety management may require approximately 12-24 man-months or €12,176-€ 24,353 per year per country (at the level of responsible

No	Evaluation Questions	Conclusions
		authority). The cost for carrying out the RISM procedures ranges between € 1,000 and € 25,000 per project.
EQ28	Is there room for a further reduction of these costs?	It is not always possible to clearly separate the changes in costs (and benefits) associated with all RISM procedures or even with some of them. Evidences collected appear to indicate that, in countries having pre-Directive RISM procedures in place, the (low) administrative costs have remained the same throughout the years, both before and after the implementation of the EU legislation (see also evaluation question #30). Therefore, it is reasonable to infer that, in the mid-term, the application of the Directive does not lead to a further reduction of costs.
EQ29	Did the application of the Directive lead to a more efficient and cost saving planning and management of the network in the operation?	The application of the Directive is still considered to be too recent to acquire an understanding of whether it has led to a more efficient and cost saving planning and management of the network. The cost for performing the procedures is higher in countries without previous experience on RISM procedures. There is no divergence between Member States with and without pre-Directive procedures: cost savings for interventions has been evaluated as “moderate” in both groups of EU countries.
EQ30	Has the network safety ranking and the black spot management generated additional cost advantages?	No particular cost advantages have been triggered, since Member States indicate that operating costs for the planning and management of the road network have remained practically unchanged. However, the improved understanding of the road sections featuring the highest critical levels in terms of accidents supports the possibility to plan the interventions to be undertaken in advance and in a cost-effective manner. Finally the saving in social costs can be considered limited.
EU added value		
EQ31	What is the EU added value of the obligation to establish the same practices and procedures in road safety infrastructure management?	The EU added value of the Directive has been realised. RISM procedures are now equally established and embedded into a harmonised legislative framework across all Member States, compared to Member States developing (or not) their own comparable legislation which would had led to disparities in their application.
EQ32	Is there a widely recognized exchange of good practices and how does this contribute to the EU added value?	Member States are engaged in exchanging good practices either with other Member States or with international organizations. Nonetheless, such exchange is not carried out systematically, which motivates why cooperation between Member States has little supported the application of the Directive and the realisation of its effects. Therefore, it can be concluded that the exchange of best practices has so far also little contributed to the Directive's added value at EU level. This is somewhat in line with the views of the majority of the Member States that sees with favour the possibility that the Directive provides more incentives for the monitoring and exchange of information between them.
EQ33	Would it have been possible to obtain the same results in terms of safety management without intervention at European level?	Directive 2008/96/EC had the benefit to force all Member States to establish a common set of RISM procedures and, importantly, within a clear timeframe. Though it holds true that differences emerge in terms of implementation across the distinct Member States, the Directive has provided a prop for a generalised used of the RISM procedures, encouraging a common "language" for their take-up. Then, it can be concluded that this result on safety management

No	Evaluation Questions	Conclusions
		of road infrastructures would not had been achieved leaving the Member States acting alone, in particular those that had not the procedures established before the adoption of the Directive.

Annex 1: Member State factsheets

AT - Austria



Implementation

- Practical transposition in MS legislation: **No information**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); no RSIAs performed yet**
- Road type: **all the TEN-T road network; motorways and expressways on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Federal Ministry for Transport, Innovation and Technology and ASFINAG-Autobahn and highway financing stock corporation (L) / ASFINAG (F) / ASFINAG and external consultants (P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); mainly used in draft design and detailed design stages**
- Road type: **all the TEN-T road network; motorways, expressways and regional roads (Type B and C) on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Federal Ministry for Transport, Innovation and Technology and ASFINAG-Autobahn and highway financing stock corporation (L) / ASFINAG (F) / ASFINAG and external consultants (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; motorways and expressways on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Federal Ministry for Transport, Innovation and Technology and ASFINAG-Autobahn and highway financing stock corporation (L) / ASFINAG (F) / ASFINAG and external consultants (P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every year**

AT - Austria

- Road type: **all the TEN-T road network; motorways, expressways and regional roads (Type B and C) on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Federal Ministry for Transport, Innovation and Technology and ASFINAG-Autobahn and highway financing stock corporation (L) / ASFINAG (F) / ASFINAG and external consultants (P)**

Training

- Adoption of specific training for auditors: **Yes (RSAs, RSIs)**
- Procedures for which certified auditors are required: **RSAs, NSM, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **Minimal**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: 0,5-0,7 k€/km (RM+PA); RSAs: 0,5-0,7 k€/km (RM+PA); NSM: 0,5-0,7 k€/km (RM+PA); RSIs: 0,5-0,7 k€/km (RM+PA)**
- Administrative burden: **No information**
- Cost for performing the procedures: **No information**
- Cost following from the assessment: **No information**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines
- Interviews

BE-F - Belgium (Flanders)



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **No**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); mainly used for new road projects**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Regional Authority and Concessionaries (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Regional Authority and Concessionaries (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Regional Authority (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every two years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Regional Authority and Concessionaries (L / F / P)**

BE-F - Belgium (Flanders)

Training

- Adoption of specific training for auditors: **Yes (RSAs)**
- Procedures for which certified auditors are required: **RSAs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **No**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **High**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

BE-W - Belgium (Wallonia)



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification); mainly used for road rehabilitation/upgrade projects**
- Road type: **all the TEN-T road network; starting 4/2014, all regional roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Direction de la Sécurité des infrastructures routières (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (50% of the projects); mainly used for road rehabilitation/upgrade projects**
- Road type: **all the TEN-T road network; starting 4/2014, all regional roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Direction de la Sécurité des infrastructures routières (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; starting 4/2014, all regional roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Direction de la Sécurité des infrastructures routières (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every three years**

BE-W - Belgium (Wallonia)

- Road type: **all the TEN-T road network; starting 4/2014, all regional roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Direction de la Sécurité des infrastructures routières (L / F / P)**

Training

- Adoption of specific training for auditors: **No**
- Procedures for which certified auditors are required: **RSIAs, RSAs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **Yes**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Medium**
- Cost following from the assessment: **Low**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

BG - Bulgaria



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects); no RSIAs performed yet**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National road administration (L / F) / Consultants (P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects); mainly used for new road projects; mainly used in draft design and detailed design stages**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National road administration (L / F) / Consultants (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; all national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National road administration (L / F) / National road administration and police (P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every month (motorways), every three months (others)**
- Road type: **all the TEN-T road network; all national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National road administration (L / F / P)**

BG - Bulgaria

Training

- Adoption of specific training for auditors: **Yes (RSAs)**
- Procedures for which certified auditors are required: **RSAs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **Yes**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **High**
- Cost following from the assessment: **Low**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **No**
- Complexity of procedures: **Yes**
- Lack of funding: **Yes**

Sources

- Member State' questionnaire
- Member State' guidelines
- Interviews

CY - Cyprus



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; sporadic**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (100% of the projects); no RSIAs performed yet**
- Road type: **all the TEN-T road network; motorways on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Communications and Works (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (100% of the projects); no information on the use**
- Road type: **all the TEN-T road network; motorways on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Communications and Works (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network; motorways on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Communications and Works (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; motorways on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Communications and Works (L / F / P)**

CY - Cyprus

Training

- Adoption of specific training for auditors: **Yes (RSAs)**
- Procedures for which certified auditors are required: **RSAs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Medium**
- Cost following from the assessment: **Low**
- Cost savings: **Relevant**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **Yes**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

CZ - Czech Republic



Implementation

- Practical transposition in MS legislation: **No information**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects); no information on the use**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Transport and Road and Motorway Directorate (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network; motorways and I, II, III class roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Transport and Road and Motorway Directorate (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Transport and Road and Motorway Directorate (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every five years**
- Road type: **all the TEN-T road network; motorways and I, II, III class roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Transport and Road and Motorway Directorate (L / F / P)**

CZ - Czech Republic

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, NSM, RSIs)**
- Procedures for which certified auditors are required: **RSAs, NSM, RSIs**
- Acceptance of auditor-training certificates from other MSs: **No**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Yes**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Medium**
- Cost following from the assessment: **Medium**
- Cost savings: **Relevant**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **Yes**

Sources

- Member State' questionnaire
- Member State' guidelines

DK - Denmark



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network; all non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Authority (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network; all non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Authority (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; all non-TEN-T road network**
- Responsible for launching (L)/ financing (F)/ performing (P) the procedure: **National Road Authority (L/F/P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every four years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Authority (L/F/P)**

DK - Denmark

Training

- Adoption of specific training for auditors: **No**
- Procedures for which certified auditors are required: **RSAs, NSM, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **None**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **High**
- Cost savings: **Scarce**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines
- Interviews

EE - Estonia



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **No**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); mainly used for road rehabilitation/upgrade projects**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Administration (L / F) / Private contractor (P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); mainly used for road rehabilitation/upgrade projects; mainly used in detailed design and early operation stages**
- Road type: **all the TEN-T road network; no information for non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Administration (L / F) / Private contractor (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Administration (L / F) / National Road Administration and Private contractor (P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every three years or according to necessity**
- Road type: **all the TEN-T road network; no information for non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Administration (L / F) / National Road Administration and Private contractor (P)**

EE - Estonia

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, NSM, RSIs)**
- Procedures for which certified auditors are required: **RSAs, NSM**
- Acceptance of auditor-training certificates from other MSs: **No**

Impacts

- Impacts on road planning / design / maintenance: **Minimal**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Yes**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: n/a (PA); RSAs: 0,3 k€/km (PA); NSM: <0,1 k€/km (PA); RSIs: n/a (PA)**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **High**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **Yes**
- Complexity of procedures: **Yes**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines
- Interviews

ES - Spain



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **No**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects starting June 2012); no RSIAs performed yet**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **General Directorate for Roads - Ministry of Public Works and Transports (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects starting June 2012) and non-TEN-T (no quantification); mainly used for new road projects; mainly used in early operation stage**
- Road type: **all the TEN-T road network; selected motorways and all project financed by EIB on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **General Directorate for Roads - Ministry of Public Works and Transports (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Every two years**
- Road type: **all the TEN-T road network; main roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **General Directorate for Roads - Ministry of Public Works and Transports (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every six years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **General Directorate for Roads - Ministry of Public Works and Transports (L / F / P)**

ES - Spain

Training

- Adoption of specific training for auditors: **Yes (RSAs)**
- Procedures for which certified auditors are required: **RSAs**
- Acceptance of auditor-training certificates from other MSs: **No**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **Yes**
- Impact on road users communication: **Yes**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: 0,3 k€/km (PA); RSAs: 0,7-1,0 k€/km (PA); NSM: n/a (PA); RSIs: n/a (PA)**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **High**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **Yes**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

FI - Finland



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; sporadic**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (50% of the projects); no information on the use**
- Road type: **all the TEN-T road network; state-owned public roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Finnish Transport Agency (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (50% of the projects); no information on the use**
- Road type: **all the TEN-T road network; state-owned public roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Finnish Transport Agency (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Every three-five years**
- Road type: **all the TEN-T road network; state-owned public roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Finnish Transport Agency (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Finnish Transport Safety Agency (L / F / P)**

FI - Finland

Training

- Adoption of specific training for auditors: **Yes (RSAs, RSIs)**
- Procedures for which certified auditors are required: **RSAs, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **no information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Medium**
- Cost following from the assessment: **Low**
- Cost savings: **Scarce**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **No**
- Complexity of procedures: **Yes**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

FR - France



Implementation

- Practical transposition in MS legislation: **No information**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **no information**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network; no information on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Road Authorities (L / F) / Auditors (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network; no information on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Road Managers (L / F) / Road Managers and Private/Public Engineering Departments (P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network; no information on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Road Managers (L / F) / Inspectors (P)**

FR - France
Training

- Adoption of specific training for auditors: **Yes (RSAs, NSM, RSIs)**
- Procedures for which certified auditors are required: **RSAs, RSIs**
- Acceptance of auditor-training certificates from other MSs: **No information**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No information**
- Impact on road users communication: **No information**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **No information**
- Cost for performing the procedures: **No information**
- Cost following from the assessment: **No information**
- Cost savings: **No information**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

HR - Croatia



Implementation

- Practical transposition in MS legislation: **No implementation**
- Exchange of practices with other Member States/qualified organizations: **Yes; sporadic**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before the Directive: **No**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **n/a**
- Road type: **n/a**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **n/a**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before the Directive: **No**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **n/a**
- Road type: **n/a**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **n/a**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before the Directive: **No**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **n/a**
- Road type: **n/a**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **n/a**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before the Directive: **Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **No information**
- Frequency of the application of the procedure: **No information**
- Road type: **No information**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Transport (L) / Concessionaires (F) / Road administrators (P)**

HR - Croatia

Training

- Adoption of specific training for auditors: **No**
- Procedures for which certified auditors are required: **None**
- Acceptance of auditor-training certificates from other MSs: **No**

Impacts

- Impacts on road planning / design / maintenance: **n/a**
- Impacts on road equipment and components selection quality: **n/a**
- Impact on road users communication: **n/a**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **n/a**
- Cost for performing the procedures: **n/a**
- Cost following from the assessment: **n/a**
- Cost savings: **n/a**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **No**
- Complexity of procedures: **Yes**
- Lack of funding: **No**

Sources

- Member State' questionnaire

HU - Hungary



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (10% of the projects); mainly used for new road projects**
- Road type: **all the TEN-T road network; motorways, motor roads and EU-financed roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Infrastructure and the Environment (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (10% of the projects); mainly used for new road projects**
- Road type: **all the TEN-T road network; motorways, motor roads and EU-financed roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Infrastructure and the Environment (L / F) / Independent certified contractors (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; motorways, motor roads and roads with >10.000 PCU/hour on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Infrastructure and the Environment (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (10% of the network)**
- Frequency of the application of the procedure: **Every five years**

HU - Hungary

- Road type: **all the TEN-T road network; motorways, motor roads and roads with >10.000 PCU/hour on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Infrastructure and the Environment (L / F / P)**

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, NSM, RSis)**
- Procedures for which certified auditors are required: **RSIAs, RSAs, NSM, RSis**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **High**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **Yes**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

IE - Ireland



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (100% of the projects); mainly used for new road projects**
- Road type: **all the TEN-T road network; motorways, dual carriage and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Authority, or Local Road Authorities, or Concessionaires (L / F) / Competent consultant (P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (100% of the projects); no information on the use**
- Road type: **all the TEN-T road network; motorways, dual carriage and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Authority, or Local Road Authorities, or Concessionaires (L / F) / Competent consultant (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; motorways, dual carriage and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Authority, or Local Road Authorities, or Concessionaires (L / F) / Competent consultant (P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (100% of the network)**
- Frequency of the application of the procedure: **No information**

IE - Ireland

- Road type: **all the TEN-T road network; motorways, dual carriage and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Authority (L / F) / Competent consultant and Members of the NRA Safety Section (P)**

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, NSM, RSIs)**
- Procedures for which certified auditors are required: **RSIAs, RSAs, NSM, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **Minimal**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: n/a (RM or PA); RSAs: 10-4,000 k€/audit (RM or PA); NSM: 0.4 k€/km (PA); RSIs: 0.2 k€/km (RM or PA)**
- Administrative burden: **Low**
- Cost for performing the procedures: **Medium**
- Cost following from the assessment: **Medium**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines
- Interviews

IT - Italy



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; sporadic**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); mainly used for new road projects**
- Road type: **all the TEN-T road network; no definition for the non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National and Local Road Administrators (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); mainly used for new road projects; mainly used in initial planning and draft design stages**
- Road type: **all the TEN-T road network; no definition for the non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National and Local Road Administrators (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Continuous**
- Road type: **all the TEN-T road network; no definition for the non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National and Local Road Administrators (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every two years**
- Road type: **all the TEN-T road network; no definition for the non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National and Local Road Administrators (L / F / P)**

IT - Italy

Training

- Adoption of specific training for auditors: Yes (RSAs, RSIs)
- Procedures for which certified auditors are required: RSAs, RSIs
- Acceptance of auditor-training certificates from other MSs: No

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: n/a (PA); RSAs: 1,5-80,0 k€/km (PA); NSM: 0,1 k€/km (PA); RSIs: 0,2 k€/km (PA)**
- Administrative burden: **Medium**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **Low**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **Yes**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

LT - Lithuania



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network; significant national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Lithuanian Road Administration or Municipalities (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); mainly used for road rehabilitation/upgrade projects**
- Road type: **all the TEN-T road network; significant national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Lithuanian Road Administration or Municipalities (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network; significant national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Lithuanian Road Administration or Municipalities (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (30% of the network) and non-TEN-T (30% of the network)**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network; significant national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Lithuanian Road Administration or Municipalities (L / F / P)**

LT - Lithuania

Training

- Adoption of specific training for auditors: **No**
- Procedures for which certified auditors are required: **RSIAs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **Yes**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: 0,5 k€/KM (PA); RSAs: 0,5 k€/km (PA); NSM: 0,1 k€/km (PA); RSIs: n/a (PA)**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **Low**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

LU - Luxembourg



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects); no RSIAs performed yet**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministère du Développement durable et des Infrastructures (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects); mainly used in detailed design stage**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministère du Développement durable et des Infrastructures (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministère du Développement durable et des Infrastructures (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every seven years**
- Road type: **all the TEN-T road network; motorways on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministère du Développement durable et des Infrastructures (L / F / P)**

LU - Luxembourg

Training

- Adoption of specific training for auditors: **No**
- Procedures for which certified auditors are required: **RSIAs, RSAs, NSM, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **Yes**
- Impact on road users communication: **No**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: n/a (PA); RSAs: n/a (PA); NSM: n/a (PA); RSIs: 4 k€/km (PA)**
- Administrative burden: **No information**
- Cost for performing the procedures: **No information**
- Cost following from the assessment: **No information**
- Cost savings: **Scarce**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **No**
- Complexity of procedures: **Yes**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

LV - Latvia



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **No**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **No information**
- Road type: **No information**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Latvian State Roads (L / F) / Design company (P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **No information**
- Road type: **No information**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Latvian State Roads (L / F) / Road Traffic Safety Directorate (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Frequency of the application of the procedure: **Every three years**
- Road type: **No information**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Latvian State Roads (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **No information**
- Frequency of the application of the procedure: **Every four years**
- Road type: **No information**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Latvian State Roads (L / F) / Road Traffic Safety Directorate and Latvian State Roads (P)**

LV - Latvia

Training

- Adoption of specific training for auditors: **Yes (RSAs; RSIs)**
- Procedures for which certified auditors are required: **RSAs; RSIs**
- Acceptance of auditor-training certificates from other MSs: **No**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **Yes**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **High**
- Cost savings: **No information**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

MT - Malta



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **No**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification; where deemed necessary according to the accident data); mainly used for road rehabilitation/upgrade projects**
- Road type: **all the TEN-T road network; arterial and distributor roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Transport Malta Authority (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification; where deemed necessary according to the accident data); mainly used for road rehabilitation/upgrade projects; mainly used in detailed design and pre-opening stages**
- Road type: **all the TEN-T road network; arterial and distributor roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Transport Malta Authority (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; arterial and distributor roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Transport Malta Authority (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (no quantification; where deemed necessary according to the accident data)**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network; all non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Transport Malta Authority (L / F / P)**

MT - Malta

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, NSM, RSIs)**
- Procedures for which certified auditors are required: **RSIAs, RSAs, NSM, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **High**
- Cost following from the assessment: **Low**
- Cost savings: **Relevant**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

NL - the Netherlands



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (90% of the projects) and non-TEN-T (90% of the projects); mainly used for road rehabilitation/upgrade projects**
- Road type: **all the TEN-T road network; motorways, motor roads and some single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Infrastructure and the Environment (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (95% of the projects) and non-TEN-T (95% of the projects); mainly used for road rehabilitation/upgrade projects; mainly used in detailed design and pre-opening stages**
- Road type: **all the TEN-T road network; motorways, motor roads and some single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Infrastructure and the Environment (L / F) / Independent certified contractors (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; motorways, motor roads and some single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Infrastructure and the Environment (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every two years**

NL - the Netherlands

- Road type: **all the TEN-T road network; motorways, motor roads and some single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Infrastructure and the Environment (L / F / P)**

Training

- Adoption of specific training for auditors: **Yes (RSAs)**
- Procedures for which certified auditors are required: **RSAs**
- Acceptance of auditor-training certificates from other MSs: **No**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: included in the studies (RM+PA); RSAs: 1,0 k€/km (RM); NSM: <0,1 k€/km (PA); RSIs: n/a (PA)**
- Administrative burden: **Medium**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **Low**
- Cost savings: **Relevant**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **Yes**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

PL - Poland



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); mainly used for new road projects**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **General Directorate for National Roads and Motorways (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (100% of the projects financed by EU); mainly used for new road projects; mainly used in detailed design, pre-opening and early operation stages**
- Road type: **all the TEN-T road network; national roads financed by EU and bypass roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **General Directorate for National Roads and Motorways (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **General Directorate for National Roads and Motorways (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **General Directorate for National Roads and Motorways (L / F / P)**

PL - Poland

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, RSIIs)**
- Procedures for which certified auditors are required: **RSIAs, RSAs**
- Acceptance of auditor-training certificates from other MSs: **No**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **High**
- Cost savings: **Relevant**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

PT - Portugal



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; extensive**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **No RSIAs performed yet**
- Road type: **No information**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **No information**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification; all dual carriage road projects on the national network); mainly used for new road and road rehabilitation/upgrade projects; mainly used in pre-opening stages**
- Road type: **all the TEN-T road network; motorways and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Mobility and Land Transport Institute, Estradas de Portugal (L) / Concessionaires (F) / Independent consultants (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **No information**
- Road type: **No information**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **No information**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (no quantification; significant part of the network) and non-TEN-T (no quantification; significant part of the network)**
- Frequency of the application of the procedure: **Every four or more years**
- Road type: **all the TEN-T road network; motorways and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Mobility and Land Transport Institute or Estradas de Portugal (L) / Concessionaires (F) / Independent inspectors and, at least, one certified road safety auditor (P)**

PT - Portugal

Training

- Adoption of specific training for auditors: **Yes (RSAs)**
- Procedures for which certified auditors are required: **RSAs, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **High**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **Yes**
- Lack of funding: **No**

Sources

- Member State' questionnaire

RO - Romania



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; sporadic**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network; motorways, express roads and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Road Administrators (L / F) / Romanian Road Transport Authority and independent inspectors (P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network; motorways, express roads and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Road Administrators (L / F) / Romanian Road Transport Authority and independent inspectors (P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network; motorways, express roads and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Road Administrators (L / F) / Romanian Road Transport Authority and independent inspectors (P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; mandatory**
- Degree of coverage of the network: **TEN-T (no quantification) and non-TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every two years**

RO - Romania

- Road type: **all the TEN-T road network; motorways, express roads and single carriage national roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Road Administrators (L / F) / Romanian Road Transport Authority and independent inspectors (P)**

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, RSIs)**
- Procedures for which certified auditors are required: **RSIAs, RSAs, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **Yes**
- Impact on road users communication: **Yes**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **RSIAs: 15,0 km€/km (PA); RSAs: 5,0-50,0 k€/km (PA); NSM: n/a (PA); RSIs: 5,0-50,0 k€/km (PA)**
- Administrative burden: **Low**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **Medium**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

SE - Sweden



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; sporadic**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects); mainly used for new road projects**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Swedish Transport Administration (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the projects); no information on the use**
- Road type: **all the TEN-T road network**
- R Responsible for launching (L) / financing (F) / performing (P) the procedure: **Swedish Transport Administration (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Swedish Transport Administration (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (100% of the network)**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Swedish Transport Administration (L / F / P)**

SE - Sweden

Training

- Adoption of specific training for auditors: **Yes (RSAs)**
- Procedures for which certified auditors are required: **RSAs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **No**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **No information**
- Cost for performing the procedures: **No information**
- Cost following from the assessment: **No information**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

SI - Slovenia



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; sporadic**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); mainly used for road rehabilitation/upgrade projects**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Administration (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Administration (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every five years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Administration (L / F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every five years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **National Road Administration (L / F / P)**

SI - Slovenia

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, NSM, RSIs)**
- Procedures for which certified auditors are required: **RSIAs, RSAs, NSM, RSIs**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Yes**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **High**
- Cost following from the assessment: **Low**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **Yes**
- Acceptance: **No**
- Complexity of procedures: **Yes**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

SK - Slovak Republic



Implementation

- Practical transposition in MS legislation: **Replacement of the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **No**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Transports (L) / Constructors (F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry of Transports (L) / Constructors (F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry Transport (L) / Road Administrators (F / P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **No / Yes**
- Application of the procedure on non-TEN-T road network: **No**
- Degree of coverage of the network: **TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Ministry Transport (L) / Road Administrators (F / P)**

SK - Slovak Republic

Training

- Adoption of specific training for auditors: **Yes (RSIAs, RSAs, RSIIs)**
- Procedures for which certified auditors are required: **RSIAs, RSAs, NSM, RSIIs**
- Acceptance of auditor-training certificates from other MSs: **No**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Not directly**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **Low**
- Cost for performing the procedures: **Medium**
- Cost following from the assessment: **Medium**
- Cost savings: **Moderate**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

UK - United Kingdom



Implementation

- Practical transposition in MS legislation: **Integration with the pre-existing National regulation**
- Exchange of practices with other Member States/qualified organizations: **Yes; sporadic**

Road Safety Impact Assessments (RSIAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); no information on the use**
- Road type: **all the TEN-T road network; strategic roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Local Highway Authorities (L / F / P)**

Road Safety Audits (RSAs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the projects) and non-TEN-T (no quantification); mainly used for new road projects**
- Road type: **all the TEN-T road network; strategic roads on non-TEN-T road network**
- Responsible for launching (L) / financing (F) / performing (P) the procedure: **Local Highway Authorities (L / F / P)**

Network Safety Management (NSM)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Frequency of the application of the procedure: **Every year**
- Road type: **all the TEN-T road network; strategic roads on non-TEN-T road network**
- Responsible for launching (L)/ financing (F)/ performing (P) the procedure: **Local Highway Authorities (L/F/P)**

Road Safety Inspections (RSIs)

- Presence of the procedure in MS legislation before / after the Directive: **Yes / Yes**
- Application of the procedure on non-TEN-T road network: **Yes; discretionary**
- Degree of coverage of the network: **TEN-T (100% of the network) and non-TEN-T (no quantification)**
- Frequency of the application of the procedure: **Every three years**
- Road type: **all the TEN-T road network; strategic roads on non-TEN-T road network**
- Responsible for launching (L)/ financing (F)/ performing (P) the procedure: **Local Highway Authorities (L/F/P)**

UK - United Kingdom

Training

- Adoption of specific training for auditors: **Yes (RSAs)**
- Procedures for which certified auditors are required: **RSAs, NSM**
- Acceptance of auditor-training certificates from other MSs: **Yes**

Impacts

- Impacts on road planning / design / maintenance: **No information**
- Impacts on road equipment and components selection quality: **No**
- Impact on road users communication: **Yes**

Costs

- Estimated costs for Road Managers (RM) / Public Authorities (PA): **No information**
- Administrative burden: **High**
- Cost for performing the procedures: **Low**
- Cost following from the assessment: **Low**
- Cost savings: **Scarce**

Problems and drawbacks

- Lack of coherent regulatory framework: **No**
- Acceptance: **No**
- Complexity of procedures: **No**
- Lack of funding: **No**

Sources

- Member State' questionnaire
- Member State' guidelines

Annex 2: Overview of the main literature reviewed

Document	Author(s), date	Contents	Link with Directive 2008/96/EC
EU documents			
Minutes from the Infra-committee on RSIAM	European Commission, DG MOVE (various dates between 2010 and 2012)	Minutes of the Infra-committee on RISM.	State-of-play of transposition and adoption of national guidelines (until 12/2012), exchange of views on the Directive's implementation (for instance of road safety ranking and national guidelines).
Communication from the Commission "WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system" COM(2011) 144 final	European Commission, DG MOVE (2011)	Overall EU vision for a competitive and sustainable transport system up to 2050	Overarching policy document displaying the bigger picture for European transport development, including the wider framework and policy goals in the road safety area.
Communication from the Commission "Towards a European road safety area: policy orientations on road safety 2011-2020" (COM(2010) 389 final).	European Commission, DG MOVE (2010)	Overall EU vision on road safety embedding a coherent holistic and integrated approach to halve the number of road deaths by 2020 in comparison to 2010.	Overarching policy document displaying the wider EU framework and policy goals in the road safety area, including as a major policy goal the efforts to make road infrastructure safer.
Road Safety: Directive 2008/96/CE on road infrastructure safety management	European Commission, DG MOVE (2008)	EU vision on road safety, instruments, approach. Presentation of the Directive 2008/96/EC	RSIA, RSA, NSM and RSI are defined.
Proposal for a Directive of the European Parliament and of the Council on road infrastructure safety management	European Commission (2006)	Proposal for a Directive on road infrastructure safety management	Estimations of the budgetary implications of the procedures RSIA, RSA, NSM and RSI.
Commission Staff Working Document Accompanying document to the Proposal for a Directive of the European Parliament and of the Council on road infrastructure safety management (SEC(2006) 1232	European Commission, DG MOVE (2006)	Impact assessment of the possible policy options related to the prospective adoption of Directive 2008/96/EC.	Estimations of social, economic, administrative and environmental impacts of the different policy options underpinning the proposal of Directive 2008/96/EC.
Road Infrastructure Safety Management (RIPCOP-ISEREST Conference)	European Commission, DG TREN (2006)	Proposal for a Directive on RISM: definitions, objectives, expected impacts and public consultation results on RISM procedures	Previous to the Directive. RSIA, RSA, NSM and RSI are defined.
Communication from the Commission "European road safety action programme -	European Commission, DG MOVE (2003)	Overall EU vision on road safety embedding a coherent holistic and integrated approach to halve the number of road deaths by	Overarching policy document displaying the wider EU framework and policy goals in the road safety

Document	Author(s), date	Contents	Link with Directive 2008/96/EC
EU documents			
Halving the number of road accident victims in the European Union by 2010: a shared responsibility” (COM(2003) 311 final)		2010 in comparison to 2001.	area, including as a major policy goal the efforts to make road infrastructure safer. Call for a EU legislative intervention in the area of road infrastructure management.
Road Infrastructure Safety Management, Report of the Working Group on Infrastructure Safety	European Commission, DG TREN, High Level Group Road Safety (2003)	Input to strategic road safety planning, the implementation of measures, the adoption of guidelines and their implementation. Importance of infrastructure safety and safety potential, definition of safety criteria for the road infrastructure, assessment of RISM procedures and case-studies from Member States (EU15).	Paved the way to the Directive. Previous to the Directive. RISM procedures are defined and explained based on case studies from Member States (EU15). Recommendations for the effective implementation of RISM procedures are developed.
WHITE PAPER “European transport policy for 2010: time to decide” (COM(2001) 370 final)	European Commission, DG MOVE (2001)	Overall EU vision for a competitive and sustainable transport system up to 2010	Overarching policy document displaying the bigger picture for European transport development, including the wider framework and policy goals in the road safety area. Call for improvement in road infrastructure safety management.

General literature			
Safety inspection and management of road network in operation (Transport Research Arena 2014, Paris)	Cafiso, S., Di Graziano, A., La Cava, G., Pappalardo, G. (2014)	Safety Risk Index (RI) formulated as measure of risk that uses Safety Inspection as primary source of information associated with design consistency assessment of the horizontal alignment. RI can be used to determine benefits and cost/benefit ratio of different intervention strategies	Some info on RSIs in Europe
Update of the Handbook on External Costs of Transport	Korzhenyevych, A., Dehnen, N., Bröcker, J., Holtkamp, M., Meier, H., Gibson, G., Varma, V., Cox, V. (2014)	The Handbook provides information on how to generate external cost values for different external cost categories, as a basis for the definition of internalisation policies such as efficient pricing schemes.	Definition of fatality and injury costs.
Ranking EU Progress on Road Safety. 8th Road Safety Performance Index Report.	European Transport Safety Council (ETSC) (2014)	Comparison of Member States’ yearly road safety performance.	Statistical evidence to establish ranking of Member States on the basis of their road safety performance to be linked – to the extent it is possible - to the impacts in reduced number of accident as a result of the application of Directive 2008/96/EC.

General literature			
Evaluation of road safety audit in Denmark	Institute of Transport Economics (TOI) and ViaTrafik (2013)	Evaluation of RSAs performed in Denmark: literature of experiences and efficacy studies from other countries, characteristics of RSAs, cost-benefit analysis, use of the RSA system.	RSAs are defined. Case-study for a specific Member State(Denmark), where RSAs rollout since 1990s and are today well integrated in the design process.
Trafikksikkerhethåndboken, Chapter 10.8, in Trafikksikkerhetsrevisjon and inspeksjon (<i>Traffic Safety Handbook, Chapter 10.8 in Road Safety Audits and Inspections</i>)	Elvik, R., Høy, A., Sørensen, M., Vaa, T. (2013)	Analysis of impacts of RSAs.	Background information and knowledge to the main features and application of RSAs.
Policy instruments for managing road safety on EU-roads. Transport 27:4, 397-404.	Laurinavicius, A. E. (2012).	Description of the scope of NSR, RSA and RSI procedures prepared in the frame of BALTRIS project, as well as description of detailed implementation and execution of procedures for the EU Member States.	Background information and knowledge to the main features and application of the RISM procedures.
Road infrastructure safety management as part of the Decade of Action for Road Safety - preconditions, instruments and examples from Europe	Gerlach, J. (2012)	Description of RISM procedures, including relevant examples and experience.	Background information and knowledge to the main features and application of the RISM procedures.
Unfallkostenrechnung Strasse 2012, Forschungsarbeiten des Österreichischen Verkehrssicherheitsfonds (<i>Accident costs, 2012. Research Work of the Austrian Funds for Traffic Safety</i>)	Sedlacek, N., Herry, M. Pumberger, A., Schwaighofer, P., Kummer, S., Riebesmeier, B. (2012)	Evaluation of direct and indirect accident costs.	Used as a source for calculating road accident costs in Austria.
Cost-benefit analysis in Road Safety Audit. Procedure Baltris Road Safety.	Katkus, M. (2012)	Analysis of impacts of RSAs.	Background information and knowledge to the main features and application of RSAs.
Road Safety Inspection Guidelines for Safety Checks of Existing Roads.	World Road Association (PIARC) (2012)	Definition of what is a road safety inspection and of its scope, including a description of the inspection process (preparatory work in the office, field study, check lists, content of the inspection report and the remedial measures and follow up to be considered)	Background information and knowledge to the main features and application of the RISM procedures, with a focus on RSIs.
Material from Sweden (Sveriges MotorCyklister)	Swedish Transport Administration (2011)	Stats about motorcyclists and crash barrier accidents from the Swedish Transport Administration: Nr 1: type of road. Nr 2: speed limits on the roads where motorcyclists hit a crash barrier	None (useful for taking into account Vulnerable Road Users)
Road Safety Engineering and Road Safety Audit.	TMS Consultancy (2011)	Description of RSAs procedure.	Background information and knowledge to the main features and application of the RISM procedures, with a focus on RSAs.

General literature			
Road Safety Inspection Schemes Review.	ERAnet project (2011)	Overview of the different approaches and methodologies of Road Safety Inspection (RSI) in European countries.	Info on RSIs in Europe
Deliverable Nr. 7 - Recommendations for the development and application of evaluation tools for road safety infrastructure management in the EU. RISMET - Road Infrastructure Safety Management Evaluation Tools	Schermers, G. E. (2011)	This guideline document describes ways for developing and applying evaluation tools in road infrastructure safety management, with a focus on accident prediction models	Background information and knowledge to the main features and application of the RISM procedures.
An Analysis of the Factors Influencing ITS Technology Adoption and Deployment – Final Report	RITA (2011)	This study analyzes the factors influencing the adoption of Intelligent Transportation Systems (ITS) technologies in the U.S. amongst state and local transportation agencies. Using data from the ITS Deployment Tracking survey, insight is provided on how economic and demographic factors influence ITS adoption/deployment, the role safety or mobility problems play in the decision to adopt/deploy ITS technologies, and how policy can affect ITS adoption/deployment. In addition, this study examines the historical adoption patterns of ITS technologies as they entered the market place.	Contribution of ITS technologies to accident reduction.
Report on BEXPRAC	Conference of European Road Directors (CEDR) (2010)	The national road authorities of 13 European countries launched the BEXPRAC survey (Benchmarking of expenditures and practices of maintenance and operation) in an effort to benchmark the performance of their maintenance and operation policies within the framework of the CEDR. The benchmark was to be completed by sharing figures and best practices	None (road maintenance costs estimations)
The Pilot4Safety project and its impact on secondary roads. Presentation given at the Road Infrastructure Safety Forum-New Challenges Ahead, Brussels, 14 December 2010.	Adesiyun, A. and Polidori, C. (2010)	Presentation of the Pilot4Safety projects	Insights on key requirements of Directive 2008/96/EC
FedEE Services Ltd., 2010. Review of Minimum Wage Rates. London.	FedEE Services Ltd., 2010.	Review and evidence on minimum wage rates across Europe.	Info on accident costs.
Tools for ISM Fact sheets and common conclusions	Conference of European Road Directors (CEDR) (2008)	Insight into the state-of-the-art in infrastructure management in CEDR member countries and showing which instruments have already been implemented in the countries or not.	Background information and knowledge to the main features and application of the RISM procedures.
RiPCORD-Iserest Final Report.	Weber R. and Matena, S. (2008).	Establishes best practice tools and guidelines for road	Background information and knowledge to the main

General literature			
		infrastructure safety measures. Further, tools have been established to assess the cost efficiency of different safety measures in order to manage and develop a safe road infrastructure in cost-effective way.	features and application of the RISM procedures.
Road Safety Audit - Best Practice Guidelines, Qualification of Auditors and “Programming”. RIPCORDER-ISEREST Project.	Matena, S., Weber, R., Huber, C.A., Hruby, Z., Pokorny, P., Gaitanidou, E., Vaneerdewegh, P., Strnad, B., Cardoso, J., Schermers, G., Elvik, R. (2008).	The report contains best practices guidelines on RSAs. It summaries practices that have been successfully applied in EU countries or abroad.	Information on RSAs.
Road safety inspections: safety effects and best practice guidelines. TOI Report 850/2006. Methodological Guide. Road Safety Inspections. SETRA (FRA), October, 2008.	Elvik, R. (2008).	The report contains best practices guidelines on RSIs. It summaries practices that have been successfully applied in EU countries or abroad.	Information on RSIs.
Safety audits of the road network - a cost effective way of saving lives on our roads. EuroAudits project.	International Road Federation (IRF) (2007)	Establishes best practice tools and guidelines for cost-effective operation of RSAs.	Background information and knowledge to the main features and application of the RISM procedures, with a focus on RSAs
Road Safety Inspections: best practice and implementation plan. RiPCORDER-ISEREST Deliverable D5.	Cardoso, J.L., Stefan, C., Elvik, R., Sørensen, M. (2007).	The report contains best practices guidelines on RSIs. It summaries practices that have been successfully applied in EU countries or abroad.	Information on RSIs.
HEATCO deliverable 5. Proposal for Harmonised Guidelines. EU-Project developing harmonized European approaches for transport costing and project assessment. Stuttgart.	Bickel, P., Friedrich, R., Burgess, A., Fagiani, P., Hunt, A., De Jong, G., Laird, J., Lieb, C., Lindberg, G., Mackie, P., Navrud, S., Odgaard, T., Ricci, A., Shires, J., Tavasszy, L. (2006)	This study proposes harmonised guidelines for project assessment for trans-national projects in Europe. This includes the provision of a consistent framework for monetary valuation based on the principles of welfare economics, contributing in the long run to consistency with transport costing.	Reference source for estimated values for casualties avoided.
Description of the current practice of RSI. RIPCORDER-ISEREST Project	Lutschounig, S., Nadler, H. and Mocsari, T. (2005).	Analysis of current RSIs practice in the EU.	Background information and knowledge to the main features and application of RSIs.
Road Safety Audit. Current Practice	Matena, S., Löhe, U. and Vaneerdewegh, P. (2005)	This synthesis report provides a review of the state of the practice of road safety audit (RSA) and road safety audit review (RSAR) applications for U.S. states and Canadian provinces.	Target insights on the use of RSAs in the USA and Canada, useful for possible comparison purposes with observed practices in the EU.
Operative Procedures for Safety Inspections on Two-Lanes Rural Roads	Cafiso, S., La Cava, G., Montella, A., Leonardi, S., Pappalardo, G. (2005)	Road safety operative procedures adopted by the IASP (Identificazione e Adeguamento delle Strade Pericolose) research project	None
ETSC Factsheet – Road Safety Audit, No 05.	ETSC (2005)	Overview of RSAs characteristics and practices.	Information on RSAs.

General literature			
Cost Benefit Parameters and Application Rules for Transport Project Appraisal	Goodbody Economic Consultants (2004)	Description of the evaluation process that impinges on the calculation of parameter values in appraisal of transport projects.	Used as a source for calculating accident costs in Ireland.
Elvik, R., Vaa, T. (2004). The handbook of road safety measures. Elsevier.	Elvik, R. and Vaa, T. (2004)	The handbook describes the effects of 124 road safety measures. The analysis is based on a critical and systematic review of current knowledge.	Information on road safety measures and their effects in terms of accident reduction.
Road Safety. Impact of New Technologies	OECD (2003)	The and details the impact that new transport technologies can have on road safety based on research from around the world. It provides recommendations to government and industry to ensure that road safety is enhanced and not compromised by the introduction of new technologies.	Information on the interlinking between ITS and road infrastructure.
Evaluation of the proposed action emanating from road safety audits. Sidney, Australian Road Research Board, AUSTRROADS, publication No. AP R209/02, 2002.	Macaulay, J. and CInerney, R. (2002).	Overview of RSAs application in Australia and New Zealand.	Target insights on the use of RSAs in Australia and New Zealand, useful for possible comparison purposes with observed practices in the EU.
Sicherheitsaudit für Straßen (SAS) in Deutschland (<i>Road Safety in Germany</i>).	BASSt (2002)	Overview of RSAs application in Germany.	Background information and knowledge to the main features and application of RSAs at German level.
The benefits of road safety audit. Paper presented at European road safety Conference in Malmö 1999.	Transport and Road Research Laboratory, TRL (1999).	Presentation on RSAs.	Information on benefits deriving from carrying out RSAs.
Relevance and introduction of road safety audit in developing countries. Proceedings of the AustRoads International Road Safety Audit Forum, Melbourne, Australia	Hoque, M.M., Mcdonald, M., Hall, R.D. (1998).	Analysis of impacts of RSAs.	Background information and knowledge to the main features and application of RSAs.
Road Safety Audit: A new tool for accident prevention. ITE Journal, No. 2, pp 15-22.	Institute of Transportation Engineers Technical Committee (1995)	Analysis of impacts of RSAs.	Background information and knowledge to the main features and application of RSAs.
Road Safety Audit: an investigation into Casualty Savings. A discussion report.	Surrey Country Council (1994)	Analysis of impacts of RSAs.	Background information and knowledge to the main features and application of RSAs.
Road Safety Audit: The AUSTRROADS Project. Road and Transport Research	Jordan, P.W. (1994)	Analysis of impacts of RSAs.	Background information and knowledge to the main features and application of RSAs.

EU-funded projects			
Project	Coordinator	Aim/Objective	Link with Directive 2008/96/EC
SENSOR 2012-ongoing	Make Safe Road Hellas	Risk Mapping on the trans-European road network (TEN-T) throughout the SEE Programme Area based on recorded deaths and serious injuries and traffic censuses, accompanied by a programme of road inspections in participating countries on a network on which road deaths are concentrated and undertake (i) safety rating of this infrastructure (Star Rating) for up to 4 roads.	Knowledge on road infrastructure and related accident rates in the SEE region.
WHITE ROADS (2010-2013)	European Union Road Federation (ERF), Asociacion Española de la Carretera (AEC)	Identify the characteristics of the road sections where there were no accidents during a certain period of time; under these circumstances, these road sections can be considered as the perfect field for obtaining recommendations to the design and operation of safer roads.	The final checklist developed by the consortium served as readily available tool for national authorities for the design, maintenance and management of their road network. This is meant as a complement to the existing safety guidelines regulated by the Directive 2008/96/EC on Safe Infrastructure Management.
PILOT4SAFETY (2010-2012)	Forum of European National Highway Research Laboratories (FEHRL)	Apply the Directive 2008/96/EC approaches related to training and certification of Road Safety Experts for the application of Road Safety Audit and Road Safety Inspection procedures to selected secondary roads, in the EU Regions represented in the project. The idea is to share good practices and define common agreed training curricula and tools for qualification of road safety personnel.	Focus and application on RSA and RSI in secondary (non-TEN-T) roads
DACOTA (2010-2013)	Transport Safety Research Centre, Loughborough University, UK	Creation of a road safety knowledge and data system.	Collection of data on road accidents, review of accident factors.
BALTRIS 2010-2012	Lithuanian Road Administration	The specific objective of the BALTRIS project is to develop tools and build capacity to better manage safety of road infrastructure in the BSR. Attention to road infrastructure safety and tools applied to manage it vary in the BSR countries. The Project focuses on the exchange of experience and joint development of road infrastructure safety management procedures: i.e. road safety impact assessment, road safety inspections, road safety audits, evaluation of high accident concentration sections	Analysis of the implementation of the RISM procedures in the Baltic region.
SAFETRIP (2009-2012)	Société des Autoroutes du Nord et de l'Est de la France (SANEF)	Development of an integrated system platform that will allow any third party company to develop applications for the road market.	ITS
RANKERS (2007)	Fundación para la Investigación y Desarrollo en Transporte y	Development of guidelines on road infrastructure safety enabling optimal decision-making towards safer roads and eradication of dangerous road sections.	Role of road infrastructure on accident rate and causation, innovative approaches in safe road

EU-funded projects			
Project	Coordinator	Aim/Objective	Link with Directive 2008/96/EC
	Energia (CIDAUT)		design,
SAFESPOT (2006-2010)	Centro Ricerche FIAT	Analysis of cooperative networks where the vehicles and the road infrastructure communicate to share information gathered on board and at the roadside to enhance the drivers' perception of the vehicle surroundings	ITS and dialogue vehicle-to-infrastructure
RIPCORD-ISEREST (2005-2007)	BASt (German Federal Highway Research Institute)	Collection and evaluation of approaches for road infrastructure related safety measures and their role in reducing road accidents and their consequences.	Analysis and definition of RISM procedures, preparation of a road safety handbook for secondary roads
IMPROVER (2004-2006)	BASt (German Federal Highway Research Institute)	Analysis of different aspects of road safety, among others the harmonisation of road signs and road markings from a safety point of view.	Application of harmonized road signs and road markings on the TERN.
ROSEBUD (2002-2005)	BASt (German Federal Highway Research Institute)	Thematic network of the European Commission headed by the Federal Highway Research Institute and intended to rate the efficiency of traffic safety measure	Used in the IA accompanying the proposal for the Directive 2008/66/EC and including an estimate of the potential benefits resulting from its adoption and application.
EURORAP	-	Measuring and raising awareness of risk, encouraging good practice and promoting the innovative implementation of road infrastructure measures known to reduce fatal and serious collisions.	Vast knowledge base on road infrastructure measures, accident data.

Annex 3: Approach for stakeholder consultation

A main element of the study around Directive 2008/96/EC was the consultation of stakeholders. They are an important source of data and present an important feedback mechanism. In order to capture those two functions, two different stakeholder consultation techniques were employed throughout the project: a stakeholder survey and a stakeholder conference.

Stakeholder survey

Due to the limitation of publicly available information and data on the implementation of Directive 2008/96/EC, the contractors decided that an important step in the data gathering process would be the consultation of stakeholders via an online survey. It has been agreed that among stakeholders there are two important groups that need to be consulted, each presenting unique (and sometimes differing) views on the study's topic: Member States and other relevant stakeholder groups, i.e. research groups, users' associations, financial institutions, private companies, road safety councils, victim's associations, etc. Due to the different expertise and knowledge these two groups can contribute it was decided to develop two separate questionnaires that would cover the same topics, but would be tailored to the specific level of knowledge of the two groups.

The set-up of the two questionnaires as well as the list of respondents has been agreed with the Commission in three physical meetings and numerous email exchanges. The final agreement on the questionnaires resulted in:

- Member States: 147 questions, originally send to 38 respondents (this list contains a combination of national authorities and CEDR¹⁴³ members)
- Other relevant stakeholder groups: 32 questions, originally send to 65 respondents

Considering the importance of the stakeholder input as part of the data gathering, several measures were taken to encourage high response rates:

- Both questionnaires were announced to the respondents through a briefing paper about one week in advance of the launch.
- Each questionnaire was sent out together with a personal email to the respondents.
- The original deadline was set at 3 weeks after the launch, giving respondents a reasonable amount of time to collect the relevant data and/or nominate other respondents.
- During the response period the contractor sent two individual reminder emails and did telephone follow-ups in the cases where the contact data was available, retrievable or the respondents requested it.

¹⁴³ Conference of European Directors of Roads. The mission of CEDR is to contribute to future developments of road traffic and networks as part of an integrated transport system under the social, economic and environmental aspects of sustainability; to promote an international network of personal contacts between Road Directors and their staff; to provide a platform for understanding and responding to common problems; to develop a strong involvement in EU developments on matters relating to road transport systems; to use existing representations on relevant international groups for mutual benefit and to make use of the results of common understandings as well as research results in each member country (www.cedr.fr)

- The Commission provided a support letter, which was sent to the respondents with the second email reminder.
- A personal, hands-on follow-up approach was adopted from the beginning, allowing for one-to-one interaction with respondents in answering all of their concerns and solving their individual technical difficulties.

These measures have enabled a considerably high response rate to the survey in the first place, however after the initial deadline had passed the contractor decided to give another three weeks to those respondents that had indicated their interest but struggled with the deadline and those that were identified as absolutely essential for the data collection (both by the contractor as well as the Commission). Along the same lines of the initial approach, the follow-up with these stakeholders was carried out intensively throughout the deadline extension period on an individual basis. For some countries, specific actions were taken:

- France: It was agreed that the French Member State representative would be contacted to ask for permission to use the responses they have supplied as part of their incomplete questionnaire. They have agreed to this and provided a list of the replies that can be used in the study.
- Germany: Due to the federal structure Germany was not able to give an answer to the questionnaire, but they were asked to provide any document/data that could support the study. Upon request the German member state representative provided implementation documents of each of the Bundesländer.

Altogether 29 replies to the Member States questionnaire were received: 25 Member States, two replies for Belgium (Flanders + Wallonia) and 2 non-Member States (Iceland and Switzerland). For the stakeholder questionnaires 28 replies were received, which can be grouped accordingly: 9 responses from “Road”, 14 from “Road Safety Research”, 3 from “Users’ Associations” and 2 from “IFIs”.

Stakeholder conference

The stakeholder conference on 13 June 2014 presented a second moment for interaction with stakeholders. In meetings between the Commission and the contractor it was decided that the conference should fulfill two objectives:

- Invite stakeholders to review the results of the survey, ask questions and comment.
- Invite stakeholders to map issues/topics of importance for road safety in relation to:
 - Vulnerable Road Users (VRUs)
 - Role of ITS
 - Certification and measurement of safety performance of a road

Considering these objectives it was agreed to use an interactive, participatory approach that would combine individual assignments with group work in order to encourage as many stakeholders as possible to participate in the discussions.

In order to prepare stakeholders for the interactive nature of the event, the contractor prepared a briefing document covering the four topics mentioned above, i.e. ex-post evaluation of the directive, VRUs, role of ITS, certification and measurement of safety performance of a road. Each section of the briefing document was accompanied by questions that were used to guide the stakeholder’s preparation.

During the conference experts introduced each of the four topics: the ex-post part was introduced by the contractors; the other three topics were introduced by an external expert (Prof. George Yannis of the National Technical University Athens). All experts were thoroughly briefed by the facilitator before the event and the event was discussed in three technical (preparatory) meetings with the Commission.

In order to reach the objectives it was decided to send the invitations to:

- Member State representatives who received (and replied to) the questionnaire
- Stakeholder groups, who received (and replied to) the questionnaire
- Representatives of Permanent Representations in Brussels.

This composition actually allowed respondents of the questionnaire to see and comment on the results and involve them (and the non-respondents) in a discussion on topics for improvement of the Directive.

Due to the limited capacity of the conference room (75 people including the contractor and Commission representatives) it was agreed that priority would be given to those participants that completed the questionnaire. A few days before the workshop this measure was assessed as less relevant, as enough seats were available to accommodate everybody that had expressed interest and registered for the conference. In the end, the conference was attended by 63 participants, representing 58 Member State ministries and 17 relevant organisations operating in Member States or EU-wide.

The stakeholder conference has been summarised in minutes, which were shared with stakeholders that attended the conference. A technical report was also drafted.

Annex 4: Survey questionnaires

Annex 5: List of respondents to survey

Member States/Non-EU Countries/CEDR/Observers	
Austria	Federal Ministry for Transport
Belgium – Wallonia	Direction de la Sécurité des Infrastructures routières
Belgium – Flanders	MOW Vlaanderen
Bulgaria	Road Infrastructure Agency
Croatia	Ministry of Maritime Affairs, Transport and Infrastructure
Cyprus	Public Works Department
Czech Republic	Ministry of Transport
Denmark	Vejdirektoratet Road Directorate
Estonia	Ministry of Economic and Communications
Finland	Finnish Transport Agency
France	Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement
Hungary	Coordination Centre for Transport Development
Ireland	National Roads Authority
Italy	Ministry of Infrastructure
Latvia	Ministry of Transport
Lithuania	Lithuanian Road Administration
Luxemburg	Ministère du Développement
Malta	Transport Malta
Netherlands, the	Rijkswaterstaat RWS
Poland	Generalna Dyrekcja Dróg Krajowych i Autostrad GDDKiA
Portugal	Mobility and Transport Institute
Romania	Ministry of Transport
Slovakia	Ministry of Transport
Slovenia	Ministry of Infrastructure and Spatial Planning
Spain	Ministry of Public Works and Transport
Sweden	Swedish Transport Agency
United Kingdom	Highway Agency
Iceland	Icelandic Road Administration
Switzerland	Bundesamt für Strassen ASTRA

EU MS	Grouping	Acronym	Stakeholders
AT	Road	ASFİNAG	Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (<i>Austrian Association of Highways</i>)
BE	Road	IRU	International Road Transport Union
BE	Road	ERF	European Road Union Federation
BE	Road	FIA	Fédération Internationale de l'Automobile (<i>International Automobile Federation</i>)
BE	Road	FIEC	European Construction Industry Federation
BE	Road Safety Research	ETSC	European Transport Safety Council
BE	Road Safety Research	IBRS/BIVV	Institut Belge pour la Sécurité Routière, Belgium / Belgisch Instituut voor Verkeersveiligheid (<i>Belgian Road Safety Institute</i>)
BE	Road Safety Research	FEHRL	Forum of European National Highway Research Laboratories
BE	Users' Association	FEMA	Federation of European Motorcyclists' Associations
BE	Users' Association	ECF	European Cyclists' Federation
CH	Road Safety Research	BFU	Beratungsstelle für Unfallverhütung (<i>Swiss Council for Accident Prevention</i>)
DE	Road Safety Research	DVR	Deutscher Verkehrssicherheitsrat e. V. (<i>German Transport Safety Council</i>)
ES	Road	AEC	Asociación Española de la Carretera (<i>Spanish Road Association</i>)
FI	Road Safety Research	TRAFI	Liikenteen turvallisuu- virasto Trafi (<i>Finnish Transport Safety Agency</i>)
FR	Road	FNTP	Fédération Nationale des Travaux Publics
HU	Road Safety Research	-	Szechenyi Istvan University of Applied Sciences
IT	Road	ANAS	Azienda Nazionale Autonoma delle Strade (<i>Italian Road Corporation</i>)
IT	Road	AISCAT	Associazione Italiana Società Concessionarie Autostrade e Trafori (<i>Italian Association of Highway Concessionaires and Tunnels</i>).
IT	Road Safety Research	SIIV	Società Italiana di Infrastrutture Viarie (<i>Italian Society for Road Infrastructures</i>)
IT	Road Safety Research	-	Università degli Studi di Firenze (<i>University of Florence</i>)
IT	Road Safety Research	-	Research Centre for Transport & Logistics Sapienza University di Roma (<i>University of Rome</i>)
LU	IFIs	EIB	European Investment Bank
NO	Road Safety Research	TOI	Transportøkonomisk institutt – Førstesiden (<i>Institute of Transport Economics</i>)
SE	Users' Association	-	Sveriges MotorCyklister (<i>Swedish Motorcyclists Association</i>)
SI	Road Safety Research	AVP-RS	Agencija za varnost v prometu (<i>Slovenian</i>)

			<i>Traffic Safety Agency)</i>
UK	Road Safety Research	iRAP	International Road Assessment Programme
UK	Road Safety Research	TRL	UK Transport Research Laboratories
UK	IFIs	EBRD	European Bank for Reconstruction and Development

Annex 6: List of attending organizations

Nr.	Organization
1.	Access EU!- EEIG
2.	ACEA
3.	ADAC e.V.
4.	Administration des Ponts et Chaussées - Luxembourg
5.	ASECAP
6.	Autostrade per l'Italia spa
7.	Belgian Road Research Centre (BRRC)
8.	Belgian Road Safety Institute
9.	Bruxelles Mobilité
10.	CEREMA Dtec ITM
11.	Confindustria
12.	Danish Road Directorate
13.	DEKRA e.V.
14.	DVR
15.	ERF
16.	ERMCO - European Ready Mixed Concrete Organisation
17.	Estonian Ministry of Economic Affairs and Communications
18.	ETSC
19.	EUPAVE
20.	European Investment Bank
21.	European Parliament Policy Department
22.	EuroRAP
23.	German Federal Ministry of Transport
24.	Fédération Internationale de Motocyclisme
25.	Federation of European Motorcyclists Association (FEMA)
26.	FEVR

27.	FIA Region I
28.	Finnish Transport Agency
29.	Flemish Authority - Dep. Public Works
30.	GDDKiA
31.	Insurance Europe
32.	International Road Research Board, (IR2B)
33.	International Road Transport Union (IRU)
34.	Italian Association of Road Safety Professionals
35.	Leaseurope
36.	MEDDE (FR)
37.	Anonymised.
38.	National Roads Authority Ireland
39.	National Technical University of Athens
40.	National Transport Administration Hungary
41.	OCW
42.	Permanent Representation of Germany to the EU
43.	Permanent Representation of Latvia to the EU
44.	Regione Autonoma Friuli Venezia Giulia, Liaison Office in Brussels
45.	Rijkswaterstaat
46.	Road Federation Belgium
47.	SPW - Belgium
48.	Steer Davies Gleave
49.	Swedish Transport Administration
50.	The Swedish Transport Agency
51.	Transport Malta
52.	TRL

Note: The present list includes organisations whose representatives indicated, during the official registration process for the stakeholder conference, that they agreed to have the name of their organisation shared with other participants and relevant project stakeholders.

Annex 7: Agenda of stakeholder workshop

Stakeholder Conference

as part of the Evaluation Study on the Road Infrastructure Safety Management
(Directive 2008/96/EC)

Date: 13 June 2014

Venue: Conference Centre Albert Borschette, 5-B (Rue Froissart 36, 1040 Brussels)

AGENDA

Time	Session
09:00 – 10:00	Registration
10:00 – 10:15	Welcome
10:15 – 10:35	Introduction to the ex-post evaluation and impact of the implementation of Directive 2008/69/EC
10:35 – 11:15	Session 1: Review the ex-post evaluation and impact of the implementation of Directive 2008/69/EC
11:15 – 11:45	Coffee Break
11:45 – 12:00	Introduction to the second part of the workshop
12:00 – 13:00	Session 2: Vulnerable road users in relationship with the Directive
13:00 – 14:00	Lunch
14:00 – 15:00	Session 3: Role of Intelligent Transport Systems (ITS) in the Directive
15:00 – 16:00	Session 4: Measurement of safety performance of the roads
16:00 – 16:15	Next Steps
16:15 – 16:30	Wrap Up & Closure

Annex 8: Briefing document for the stakeholder workshop

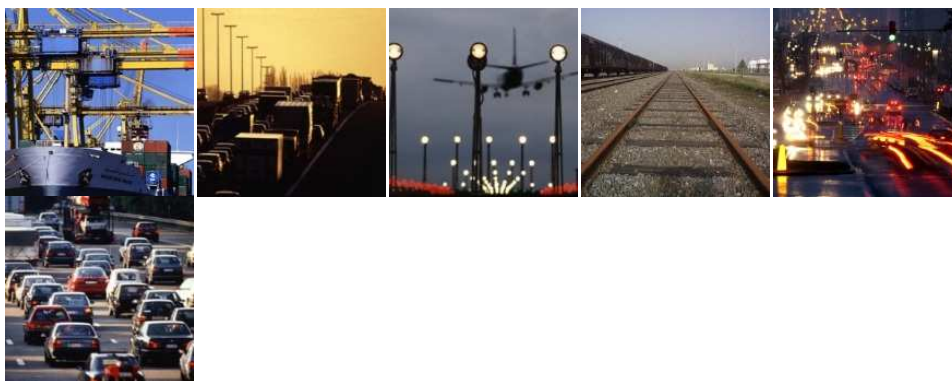
Workshop – discussion document

SPECIFIC CONTRACT MOVE/A3/350-2010 IMPACT ASSESSMENTS AND EVALUATIONS (EX-ANTE, INTERMEDIATE AND EX-POST) IN THE FIELD OF TRANSPORT

Study on the effectiveness and on the improvement of the EU legislative framework on road infrastructure safety management (Directive 2008/96/EC)

European Commission
Directorate-general for Mobility and Transport

Date: 20 May 2014



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3	Vulnerable road users.....	187
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DISCLAIMER:

This is a working document to facilitate the conference and does not represent an official position of the European Commission.

1 Background information

Improving road safety is a key objective for the EU transport policy. In the Policy Orientations on Road Safety the Commission proposed the ambitious target of halving the fatalities by 2020 compared to 2010 figures. Road infrastructure can play an important role in helping achieving this target as it is considered to be a contributing factor in one out of three fatal accidents¹⁴⁴. The European Union has stressed the importance of infrastructure by adopting Directive 2008/96/EC on road infrastructure safety management (hereafter "*the Directive*"). Its main objective is to establish procedures to ensure that safety is integrated in all phases of the planning, design and operation of road infrastructure. The Directive applies only to the trans-European road network, but Member States may apply its principles to other roads on a voluntary basis.

The Directive introduces a comprehensive system of road infrastructure management. The main procedures are road safety impact assessments, road safety audits with training and certification of safety personnel, management of road network safety, safety inspections, guidelines and exchange of best practices. However, the Directive does not directly impose any specified remedial action to be taken to increase the safety level of a road.

This conference is part of a study which has the overall objective of assisting the European Commission with the evaluation of the current Directive on road infrastructure safety management, to check whether it serves its purposes and to have a preliminary analysis of the Directive to evaluate whether it is coherent with new technological developments. More specifically, the objectives of the study are as follows:

- 4) The assessment of the current Directive by considering certain key evaluation criteria, notably relevance, effectiveness, efficiency, utility, sustainability and the European added value.
- 5) Gathering preliminary views of key stakeholders on how to proceed in order to continuously improve road safety.

The goal of this document is to provide background on the topics which will be discussed at the stakeholder workshop. It covers four themes:

- the methodology used for the ex-post evaluation and its preliminary results; and
- a reflection on three areas which deserve a greater attention:
 - protection of vulnerable road users,
 - the role of ITS in improving infrastructure safety and
 - the measurement of safety performance of road infrastructures.

¹⁴⁴ http://ec.europa.eu/transport/road_safety/infrastructure/safety_management_roads_en.htm

2 Evaluation and impact of the implementation of Directive 2008/96/EC

Alongside drivers and vehicles, infrastructure is widely acknowledged as the third element of any comprehensive road safety programme based on the principle of the integrated approach. The European Commission took action in the area of road infrastructure safety in its White Paper on European Transport policy for 2010¹⁴⁵ and in its Communication on a European Road Safety Action Programme of 2 June 2003¹⁴⁶. Further attention to developments in this area was paid in 2010 with the adoption of the new policy orientations on road safety for the period 2011-2020¹⁴⁷ in coordination with the overall policy efforts to increase road safety, as established by the White paper on Transports of 2011¹⁴⁸.

Directive 2008/96/EC on Road Safety Infrastructure Management represents the legislative response to the need of guaranteeing a common high level of safety of roads in the trans-European Network across all Member States. Adopted on 19 November 2008, this piece of EU legislation aims at ensuring that safety and safety management procedures (road safety impact assessments, road safety audits, road safety inspections and network safety management) are integrated in all phases of planning, design and operation of the road infrastructure, albeit it encourages Member States to apply its provisions to the rest of the network constructed using EU funding in whole or in part.

Globally, it is estimated that the Directive can help reduce the number of victims on the trans-European road network by more than 600 fatalities per year and the seriously injured by about 7.000 per year. According to the monetary estimations of the White Paper 2001, the welfare benefit of these reductions corresponds to more than 2,4 billion € per year. If the Directive will be applied on all motorways and main roads, the reduction of fatalities is estimated at around 1.300 every year; this corresponds to more than 5 billion € of benefits per year¹⁴⁹.

Against this background, the ex-post evaluation aims at establishing the current degree of practical application of the Directive across the EU countries five years after its adoption, as well as to meaningfully identify the main impacts generated by its implementation. The assessment is carried out from the point of view of a number of evaluation criteria which includes the implementation, the effectiveness, efficiency, sustainability, utility, relevance and the EU added value. It is based on a broad input collected through the literature review as well as from Member States and stakeholders contributions which were consulted through a survey. So far, preliminary findings

¹⁴⁵ “European transport policy for 2010: time to decide” (COM(2001) 370 final)

¹⁴⁶ Communication from the Commission “European road safety action programme - Halving the number of road accident victims in the European Union by 2010: a shared responsibility” (COM(2003) 311 final)

¹⁴⁷ Communication from the Commission “Towards a European road safety area: policy orientations on road safety 2011-2020” (COM(2010) 389 final)

¹⁴⁸ “Roadmap to a Single European Transport Area-Towards a competitive and resource efficient transport system” (COM(2011) 144 final)

¹⁴⁹ Commission of the European Communities (2006), Proposal for a Directive of the EU Parliament and of the Council on road infrastructure safety management. Full impact assessment, Commission Staff working document

seem suggesting that the Directive has represented a major step towards the achievement of a more systematic check-up in the area of road infrastructure safety management, while creating awareness for safety at all stages of the planning and decision-making process.

Questions:

- *What is your experience with the practical implementation of the Directive?*
- *With what indicators would you suggest measuring the positive and negative impacts of the implementation of the Directive?*
- *What are the main achievements obtained by the Directive? What are the obstacles which may prevent the implementation of the Directive?*
- *What are examples of effective practices for achieving a good implementation of the Directive's provision?*

3 Vulnerable road users

Design, maintenance and construction of roads are generally based on safety criteria associated with the characteristics of private cars, heavy vehicles and coaches, while the special needs of vulnerable road users are less often taken into account.

Vulnerable road users (VRU) are commonly understood as non-motorised road users (cyclists and pedestrians), and powered two-wheelers (Powered Two-Wheelers-PTWs). In the EU this category of users represented approximately 32% of all road victims in 2012¹⁵⁰. Moreover, PTWs accounted for some 15% of all road fatalities, but only for 2% of the road users. The decrease of PTWs in traffic fatalities has also been slower than the overall decrease in traffic accident fatalities and it is a growing concern, as often it involves young people¹⁵¹.

The Directive already addresses vulnerable road users in the procedures, in particular, in Road Safety Impact Assessments, Road Safety Audits and Network Safety Rankings, but no specific indications are provided on how vulnerable road users shall be taken into consideration. This may lead to operational difficulties in assessing road infrastructure safety for VRU. For instance, the Directive does not address the choice of safety components and other equipment. Specially designed crash barriers are one of the most effective instruments to reduce the severity of accidents involving motorcyclists, especially in case of single-vehicle accident.

Moreover, the Directive applies compulsorily only to roads that are part of the trans-European road network that mainly comprises motorways and expressways roads for long-distance traffic, where cyclists and pedestrians are not entitled to transit. Therefore the benefits for these groups of users arising from the application of the Directive are rather limited.

Nevertheless, the Directive can play a role by establishing a practice where technical standards for design, construction and maintenance of road infrastructure components are developed to meet the needs of vulnerable road users in general.

A broader application of the Directive, both extending the application of the principles beyond the TEN-T and taking into account the specific needs of vulnerable road users is a potential instrument for improving road safety, preventing accidents and mitigating their consequences.

On the preventive side, certain particular safety conditions for the design of the infrastructure (Road Safety Impact Assessment and Road Safety Audit) or for improving existing infrastructures (Road Safety Inspections) may be developed. This may include also the application of ITS tools for providing information on the current condition of the road infrastructure. Technical standards taking into account the needs of vulnerable road users (e.g. quality of road surface, road markings) may be further developed.

On the mitigation sides the principle of "forgiving roads" may be further applied, for instance detecting and replacing unsafe parts of the infrastructure where accidents are frequent or serious.

¹⁵⁰ Source: CARE database

¹⁵¹ ERSO(2012), Traffic Safety Basic Facts 2012 Motorcycles and Mopeds

In addition, further criteria could be developed to identify which roads should be specially targeted by VRU-friendly Road Infrastructure Safety Management procedures. One of the costs of an extensive application of the Directive beyond the TEN-T road network consists in the additional administrative and economic burden for the authorities and operators. Thus the action to be taken should be proportional to its potential benefits.

Questions

- *Does the Directive take adequately into account all road users? Which road users are not sufficiently addressed? Why?*
- *How could the safety of vulnerable road users be improved? Technical standards are one tool, but what other instruments are there?*
- *Which standards could be further developed to improve road safety for VRUs on road infrastructures falling under the scope of the Directive?*
- *Which ITS tools could be developed to improve road safety for VRUs on road infrastructures falling under the scope of the Directive?*

4 Role of ITS – safe and smart infrastructure

Intelligent Transport Systems (ITS) apply information and communication technologies to transport to create new services and improve transport safety.

The ITS Directive (Directive 2010/40/EU¹⁵²) was adopted on 7 July 2010 to accelerate the deployment of these innovative transport technologies across Europe. In the framework of this Directive the European Commission shall adopt specifications (i.e. functional, technical, organizational or service provisions) to address the compatibility, interoperability and continuity of ITS solutions across the EU. Six priority actions have notably been defined in the ITS Directive. The key priority actions linked to Directive 2008/96/EC are road safety-related minimum universal traffic information free of charge to users (Article 3c), information services for safe and secure parking places for trucks and commercial vehicles (Article 3e) as well as additional actions including the cooperative systems allowing communication between vehicles and infrastructure¹⁵³.

The Commission already adopted specifications on minimum universal traffic information in May 2013 (Commission Delegated Regulation (EU) No 886/2013¹⁵⁴). Pursuant to this Regulation, Member States shall designate sections of their road network where traffic and safety conditions require the deployment of road safety related traffic information services. At the same time the Commission adopted specifications on the information services for truck parking (Commission Delegated Regulation (EU) No 885/2013¹⁵⁵). Both regulations bring about an important ITS contribution to road safety.

Estimates suggest that intelligent information services could reduce the number of road fatalities by up to 7%, as well as the number and severity of accidents. They will also decrease delays caused by road accidents, CO₂ emissions and the cost of repairing the infrastructure.

Further integration of ITS elements in road infrastructure management merits a closer analysis. The efforts made under the ITS framework should neither be duplicated nor contradicted, but more specific themes reinforcing the use of ITS systems/services (e.g. facilitating events detection, data collection, accidents prevention) to enhance road infrastructure safety should be identified.

¹⁵² Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport

¹⁵³ Cooperative systems (C-ITS) allows the communication and the share of information dynamically between vehicles and the infrastructure to give advice or take actions. C-ITS offer significant potential benefits for road safety related services going beyond vehicle to vehicles (V2V) or vehicle to infrastructure (V2I) communication, as they can be applied also to powered two wheelers, or cyclist and pedestrians.

¹⁵⁴ Commission Delegated Regulation (EU) No 886/2013 of 15 May 2013 supplementing ITS Directive 2010/40/EU

¹⁵⁵ Commission Delegated Regulation (EU) No 885/2013 of 15 May 2013 supplementing ITS Directive 2010/40/EU

One possible area is the use of ITS to facilitate road safety inspections. This includes methods for surface monitoring (friction of road sections) and the monitoring of the condition of the road surface during the operation of the roads¹⁵⁶.

Questions

- *Should ITS be further considered in the road infrastructure safety management?*
- *How could ITS play a stronger role in facilitating road infrastructure safety management?*
- *Which kind of ITS Systems shall be further developed in relation with Directive 2008/96/EC?*
- *Could ITS be successfully applied to the procedures (road safety audits, management of safety of the Network in operation and road safety inspections) established by Directive 2008/96/EC?*
- *Is there a need for further legislation in this area? Are the existing technical standards sufficient?*

¹⁵⁶ For example, monitoring bridges is one of the most successful applications of smart roads. The six-lane, 2,9 km Charilaos Trikoupis Bridge is outfitted with 100 sensors that monitor its condition. Soon after the opening in 2004, the sensors detected abnormal vibrations which lead to modifications to the cables.

5 Measurement of safety performance of a road

Safety of road infrastructure depends not only on the safety of individual components but also on how different components interact with each other. While for several road components the measurement of safety performances is established at technical level through standards or other regulations, this is not the case for the whole infrastructure. For instance, road barriers are designed to avoid that car or trucks overrun from the road; these technical requirements are codified into standards. However, standards and technical regulations do not always cover the installation and interaction of barriers with the other components of the roads.

The Directive does not contain any specific provision on measuring the safety level of a road. Instead it provides a framework to ensure that safety is adequately addressed through the road lifecycle. Road safety audits check whether in the planning and design phases the road is safe, while the safety management of the network in operation provides for the identification, the ranking and the assessment of the road stretches where most of the accidents take place, the so-called "black spots".

The measurement of the safety performance may be developed in different ways: for instance through the definition of key performance indicators targeted to certain road users, or the application of a risk assessment method to predict the likelihood of an accident in a given time and place. This measurement may also take into account how well the infrastructure protects against death or injury in the event of an accident.

Establishing a methodology to measure safety performances of a road may support public authorities in their decision-making process for funding allocation or in the commitment to a certain minimum safety level for roads in operation. Measuring the safety performance would allow a further optimisation of public resources for investments in new roads and for maintenance or upgrading existing roads by ensuring that resources are earmarked to the sections with a low level of safety. This methodology may also be used to justify operating measures (speed limits, traffic bans) or certain technical solutions which may have a higher initial cost but produce more benefits in the long run.

Measuring safety of road infrastructure may lead to conditionality clauses for contracts to ensure that resources are used to build or renovate safer roads. There are already examples of such conditional financing at the European Investment Bank¹⁵⁷ even for road projects beyond the trans-European road network. This scheme could be applied also at national or local level.

Questions

- *Are the provisions within the current Directive, namely road safety audits and the black spot analyses, sufficient? Is there a need for a European methodology to measure the safety performance of the TEN-T?*

¹⁵⁷ European Investment Bank (2011), EIB Transport Lending Policy

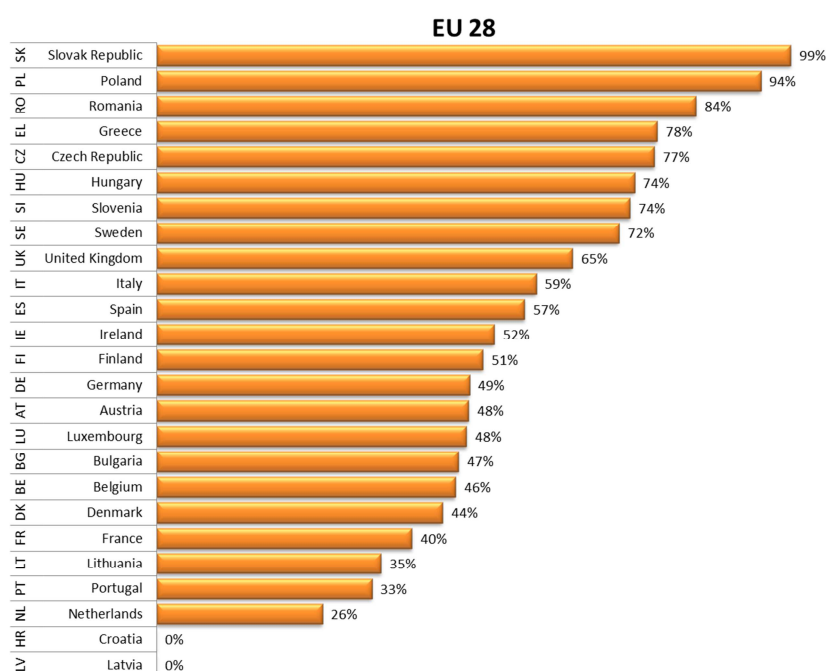
- *What could be the added value of the measurement of the safety performance of road compared to the four management instruments already included within the Directive?*
- *What are the pros and cons of conditional funding?*
- *Should conditionality on EU funding be established more widely? Can it be reproduced at a national level?*

Literature	Author(s), date	Aim/Objective	Link with Directive 2008/96/EC
Impact Assessment Road Safety Action Programme, Assessment for mid-term review, Final Report	ECORYS Transport, SWOV, 2005	Overall impact assessment covering economic, environmental and social impacts of the Road Safety Action Programme 2003-2010. Analysis of available policy options, and assessment of risks uncertainty of the assumptions.	Previous to the Directive. Analysis of RSAP's measures on road infrastructure: by defining and disseminating best practices and elimination of black spots, the road infrastructure can be made safer.
RIPCORD ISEREST, Black spot management and Safety analysis of road networks, Best practice guidelines and implementation steps	TØI, 2005	Summary of all relevant aspects of black spot management and description of all relevant steps to implement black spot management (BSM) and network safety management (NSM)	Previous to the Directive. Definition of BSM and NSM
Tools for Infrastructure Safety Management	CEDR, 2008	Fact Sheets and Common Conclusions developed for each RISM procedure.	Previous to the Directive. Harmonized definition of RISM procedures, analysis of effects and benefits, overview of CEDR member countries' experience
UNECE Transport Review	UNECE, 2008	Road safety considerations in road infrastructure.	Road safety considerations in road infrastructure in all steps of infrastructure planning.

Annex 9: Utility – Statistical analysis of accident data for road infrastructure safety management

As a first step, a preliminary statistical analysis of accident data to assess the effects of Directive 2008/96/EC on the safety conditions of the road infrastructures is discussed. Ideally, this should be done firstly on accident data for the TEN-T road network. Given that today there is no statistical database of accidents on the TEN-T network we use the number of fatalities on motorways as a first proxy (extracted from the CARE database) for a selection of countries. For some countries it is indeed the case that the TEN-T network represents a large share in the total length of the motorways (e.g. 99% of the Slovakian motorways are part of the TEN-T core network) as shown in the figure below. On the other hand for other countries this share is much lower (e.g. for the Netherlands it is only 26% and for Croatia and Latvia it is even 0%).

Figure 18: share of the TEN-T Core motorways by EU28 Member States (calculated on the total length of the modelled network of motorways for each EU28 country)



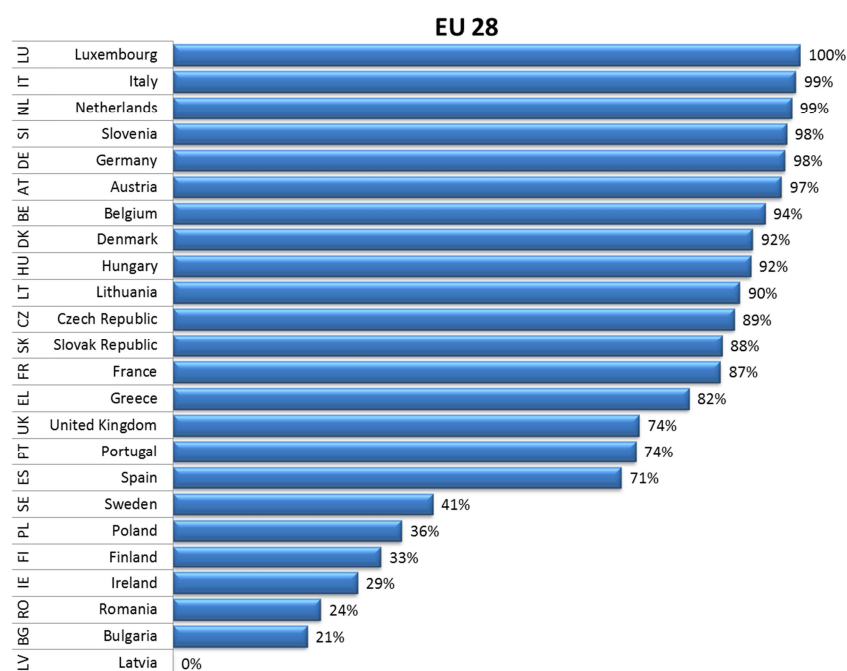
Note: in Estonia, Malta and Cyprus the TEN-T Core motorways do not exist

Source: TRT analysis on the TRUST network model

Also, while the TEN-T road network mainly consist of motorways (in Luxemburg 100% is motorway, in Italy and the Netherlands 99%), for some countries the share is much lower (21% in Bulgaria and 0% in Latvia)¹⁵⁸ as can be seen from the figure below.

¹⁵⁸ Source: TRT analysis on the TRUS network model

Figure 19: share of the TEN-T Core motorways by EU28 Member States (calculated on the total length of the TEN-T Core network for each EU28 country)



Note: in Estonia and in Croatia the TEN-T Core motorways do not exist

Source: TRT analysis on the TRUST network model

In this analysis, we restrict ourselves to those countries of which the TEN-T network forms a significant part of the motorways. More specifically, we only select countries where more than 70% of the TEN-T network consists of motorways. This means that Bulgaria, Croatia, Cyprus, Estonia, Latvia, Malta, Finland, Ireland, Poland, Romania and Sweden are discarded from the dataset because the country has no TEN-T network or because a significant share the TEN-T network is not a motorway.

Using this data we calculated the fatality rate by dividing the number of accidents on motorways by the number of vehicle kilometres driven on motorways in a particular country. The vehicle km are taken from the TREMOVE database¹⁵⁹. We have accident data for the period 1995 – 2012 and for 23 European countries, but for the purpose of this analysis we only use 8 years, i.e. the 2005-2012 time window. We combine this with information on the road safety management procedures used in various countries before the implementation of the Directive at the end of 2011 (source: survey) and with the information on whether they extended the procedures to other non-TEN-T roads.

The advantages of this approach are that the method is simple, the data need is small and that if a measure significantly reduces the accident rate faster than would be predicted based on the general evolution, this can be detected. Examples of such measures are the seat belt wearing obligations and the introduction of alcohol limits. The main disadvantages of using this method are:

¹⁵⁹ We used the TREMOVE database as Eurostat does not provide a complete database of vkm for all countries and while the database of vkm of UNECE is more complete, this database does not distinguish between different road types.

- up to now we only consider motorways,
- time series are short: our time series cover the period 2005-2012, while the Directive should only have been implemented by the end of 2011,
- having a statistically significant coefficient should be interpreted as indicative of an effect, but should not be taken as proof for any causal effect of the Directive on accident rates.

Assessment of structural break in European accident rate statistics at the end of 2011

First, we evaluate the evolution of fatality rates through time for the selected countries. We estimate a number of regression models where the fatality rate is the dependent variable and time is one of the explanatory variables. The estimated coefficient for time indicates how the fatality rates have evolved over the time period of our dataset 2005-2012. We also include a dummy variable for the year 2012 specifically. This dummy should indicate the relative effect of directive implementation, as this directive should be implemented by the end of 2011. We should, however, stress that the interpretation should be done carefully. There could be many other elements influencing accident rates in different years, but we control for none of them (except for time) in our regression model. Therefore, a statistically significant coefficient should be interpreted as indicative of an effect, but should not be taken as proof for any causal effect of the directive implementation on accident rates.

We first estimate a linear regression model and then move to the estimation of a fixed effects model. The difference between both approaches is that the fixed effects methodology is able to control for time-invariant effects. This means that, if there are be a time-invariant, country related effects that influence fatality rates, these effects are isolated in the fixed effects model. In the linear model, these effects would be confounded with the estimated coefficients because we have not included any control variables for them. In principle, the fixed effects results are thus somewhat more reliable. In addition to this, we also distinguish between estimation of a model 1 (in levels) and a model 2 (in logarithms). The difference between both is that estimated coefficients should be interpreted as a change in percentage points for fatality rates (model 1) and in terms of a percentage change of fatality rates (model 2).

Table 22: Overview of estimation results to analyze the presence of a structural break in accident rates at the end of 2011

		Linear model	Fixed effects model
1. Change in fatality rate (percentage point)	Time	-0,0008	-0,0005*
	Delta 2012	-0,0002	-0,0001
2. Percentage change in fatality rate	Time	-0,081*	-0,052**
	Delta 2012	-0,016	-0,009

Note: * statistical significance at 10% level, ** statistical significant at 5% level

The estimated coefficients can be interpreted as follows. We will just discuss the fixed effects results here, but the interpretation of the linear model results is analogous. In all models, we find a negative trend in fatality rates over time. In model 1, we find an average decrease of 0,05 percentage points in accident rates, for each additional year in our dataset. For the year 2012, we find an additional decrease of 0,01 percentage points on top of that. However the results are not statistically significant. In model 2, we find an average decrease of 5.2% of fatality rates per year. We also find an additional decrease in fatality rates in 2012 of 0.9%. The time coefficient is significant at 5% significance level.

In conclusion, we find some indication of an additional decrease in 2012, but the results are not significant. The main problem for the analysis is the unavailability of more data in the years after the implementation.

Differential analysis of effects in various European countries: difference-in-difference framework

We take a further step towards analysing this causal effect by evaluating the difference in fatality rate decrease between European countries. A first ‘control group’ consists of European countries who already had some type of road safety infrastructure management procedure (RSIA, RIA, RSI, NSM) implemented in their country before the directive entered into force. A second ‘treatment group’ consists of European countries that did not have any implementation of a procedure before the directive. We evaluate the difference in average fatality rates between the period 2005-2011 and the period 2012. We can combine this information with fatality rate data to further analyse the potential causal effect of the directive.

Table 23: Overview of differential analysis of accident rate statistics in European countries, in relation to safety management procedures

	Directive General	RSA	RSI	NSM	RSIA
Diff-in-diff	-0.007	-0.005	-0.005	0.003	-0.003
p-value	0.323	0.386	0.366	0.636	0.693

We give an overview of results in Table 23. The diff-in-diff row shows the estimate of the differential effect of the directive on fatality rates. The main estimate of - 0,007 indicates that there is a small difference in the evolution of fatality rates accident rates (between 2012 and 2005-2011) in countries where there was no safety procedure previous to 2011, than in countries where there was some type of safety management procedure already. We also analyse more specifically the differences in fatality rates between European countries in terms of type of safety procedure which was implemented previous to the directive. We find that the implementation of RSA and RSI procedures are associated with an average decrease of 0.5 percentage points in accident rate. This is the strongest effect. The estimated average effects of NSM and RSIA procedures are:

- NSM implementation: +0.3 percentage points,
- RSIA implementation: -0,3 percentage points.

None of the estimated coefficients is statistically significant, however. This is demonstrated by the p-value row, which is always much higher than 0.10 or 0.05.

Analysis of fatality rate statistics previous to directive implementation

We investigate whether significant differences exist in fatality rates between countries with extensive road safety management procedures in place before the directive, and countries with limited or no road safety management procedures. For this, we first divide the remaining countries in 2 groups. One group consists of countries with 2 or more road safety management procedures in place before the directive. A second group consists of countries with less than 2 road safety management procedures in place before the directive. We analyse the difference in the average fatality rate (for the period 2005-2011) between these two groups of countries. The result is shown in Table 24.

Table 24: Average fatality rate on motorways (2005-2011) for countries with and without safety management procedures

Outcome variable (average '05-'11)	Countries with less than 2 procedures	Countries with at least 2 procedures	Difference
Fatality rate (fatalities/million vkm)	0.016	0.007	-0.008
Std. Err.	0.002	0.001	0.002
P-value	0.00***	0.00***	0.00***

Note: *** 1% significance level

We find that countries with 2 road safety management procedures or more in place (before the implementation of the directive) have a significantly lower fatality rate on motorways (0.007 fatalities/mio vkm) than countries with less than 2 road safety management procedures in place (0.016 fatalities/mio vkm). The difference is 0.009 fatalities/mio vkm and this difference is statistically significant at 1% significance level.

We run a regression to test the relationship between the motorway fatality rate (the dependent variable) and an additional road safety management procedure (the explanatory variable). We find a significantly negative coefficient of -0.0044. This indicates that an additional road safety management procedure is associated with a decrease of 0.004 in the average fatality rate.

Table 25: Regression results with average ('05-'11) motorway fatality rates as dependent variable

Coefficient	Coefficient	P-value
Number of RSM procedures	-0.0044	0.000
Constant	0.018	0.000
R ²	0.31	

The coefficient of -0.004 is a correlation between road safety management procedures and motorway fatality rates. We should be cautious not to interpret this coefficient entirely as a causal influence of road safety management procedures on motorway fatalities. We do not control for other factors in this regression analysis as it would be impossible to include all other road safety policy measures, cultural factors, potential geographical effects and other relevant effects into the regression model. We can explain part of the variance in fatality rates using RSM procedures ($R^2 = 31\%$), but other relevant factors may be omitted. Therefore, we suggest to interpret the coefficient of -0.004 rather as a correlation than as a causal relationship.

We conduct a small sensitivity analysis and run another regression including three additional countries in the dataset: Poland, Romania and Sweden. These countries were excluded as less than 50% of their TEN-T network is situated on a motorway. However, a significant share of the country's motorways is part of the TEN-T network: 94%, 84% and 72% respectively. So fatalities on motorways are mostly taking place on the TEN-T network. Therefore, we run a similar regression as the previous one with the only difference that we include these three countries in the dataset. All three countries are countries with limited (Poland) or no (Romania & Sweden) road safety management procedures in place. Results of this regression are shown in Table 26.

Table 26: Regression results with average ('05-'11) motorway fatality rates as dependent variable (including countries Poland, Romania & Sweden)

Coefficient	Coefficient	P-value
Number of RSM procedures	-0.0016	0.000
Constant	0.011	0.000
R²	0.057	

We still find a negative correlation between road safety management procedures and motorway fatality rates, of -0.0016. This number gives additional proof that road safety management procedures are correlated with lower motorway fatality rates.

Annex 10: Strong and light implementers

Table 27: Strong and light implementers of Directive 2008/96/EC, scoring details

Country		Scores			
		Compulsion of remedial actions	Compulsion of application to non-TEN-T	Adoption of specific training for auditors	Total
Ireland	IE	1	4	4	9
Hungary	HU	1	4	4	9
Netherlands	NL	4	4	1	9
Lithuania	LT	4	4	0	8
Malta	MT	4	0	4	8
Slovenia	SI	4	0	4	8
Austria	AT	4	1	2	7
Bulgaria	BG	4	2	1	7
Romania	RO	0	4	3	7
Estonia	EE	2	0	4	6
Italy	IT	4	0	2	6
United Kingdom	UK	4	0	1	5
Cyprus	CY	0	4	1	5
Sweden	SE	4	0	1	5
Latvia	LV	0	3	2	5
Czech Republic	CZ	0	0	4	4
Denmark	DK	4	0	0	4
Luxembourg	LU	4	0	0	4
Finland	FI	0	2	2	4
Poland	PL	1	0	3	4
Belgium-Wallonia	BE	0	3	0	3
France	FR	0	0	3	3
Slovakia	SK	0	0	3	3
Portugal	PT	0	0	1	1
Spain	ES	0	0	1	1
Belgium-Flanders	BE	0	0	1	1
Croatia	HR	No information			
Germany	DE	No information			
Greece	EL	No information			

Note: strong implementers in orange

Annex 11: Tables from CEDR (2008)

Table 28: Experience Black Spot Management in 2008 in CEDR Member countries

Black Spot Management in CEDR member countries			
CEDR Country	Application [Yes/No]	Mandatory/Voluntary [M/V]	Guideline/Directive [Yes/No]
Austria	Yes	M	Yes
Belgium	Yes	V	Yes
Denmark	Yes	V	Yes
Estonia	Yes	M	No
Finland	No (Network Approach)		
France	Yes	M	Yes
Germany	Yes	M	Yes
Greece	Yes	V	No
Hungary	Yes	V	No
Iceland	Yes	M	Yes
Ireland	Yes	V	Yes
Italy	Yes	V	No
Latvia	Yes	V	Yes
Lithuania	Yes	M	Yes
Luxembourg	Yes	V	No
Netherlands	Yes	V	Yes
Norway	Yes	V	Yes
Poland	Yes	V	Yes
Portugal	Yes	M	Yes
Slovenia	Yes	M	Yes
Sweden	No	-	-
Switzerland	Yes	V	Yes
Spain	Yes	V	Yes
UK	Yes	M	Yes

Source: CEDR (2008), Tools for ISM Fact sheets and common conclusions

Table 29: RSIs in CEDR member countries in 2008

Road Safety Inspection in CEDR member countries			
CEDR Country	Application [Yes/No]	Mandatory/Voluntary [M/V]	Guideline/Directive [Yes/No]
Austria	Yes	V	Yes
Belgium	Yes	V	Yes
Denmark	Yes	V	Yes
Estonia	No	-	No
Finland	Yes	V	Yes
France	No	-	No
Germany	Yes	M	Yes
Greece	No	-	No
Hungary	Yes	M	Yes
Iceland	Yes	V	No
Ireland	Yes	V	No
Italy	Yes	V	Yes
Latvia	Yes	M	No
Lithuania	Yes	V	Yes
Luxembourg	No	-	-
Netherlands	Yes	V	No
Norway	Yes	M	Yes
Poland	No	-	-
Portugal	Yes	M	No
Slovenia	No	V	No
Sweden	No	-	-
Switzerland	Yes	V	Yes
Spain	No	V	No
UK	Yes	M	Yes

Source: CEDR (2008), Tools for ISM Fact sheets and common conclusions