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At the last session, the TEM Project Manager elaborated on potential areas of contribution to SC.1 including analytical works and the identification of current practices in the road infrastructure safety management of TEM member countries and within the ECE region. In addition, guidelines for the implementation of necessary road infrastructure safety management procedures, and a review of the AGR agreement from the perspective of the inclusion of road safety audits and road safety inspections, were also suggested as potential contributions. This document contains an analysis of the current practices and tools on RSA and RSI in the TEM region countries and recommendations.



TRANS-EUROPEAN NORTH-SOUTH MOTORWAY PROJECT (TEM)

Road Safety Audit and Road Safety Inspection

**Analysis of the current practices and
tools in the TEM region countries and
recommendations**

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Section 1: Introduction

1.1 Purpose of this report

In various countries, road infrastructure planning, construction, and operation are subject to numerous legal regulations and additional instructions and recommendations, usually including a set of principles known as 'best practices.' Among these regulations and principles, requirements related to road safety play a crucial role. The general principles of these requirements can be categorised as follows.

- Meeting the requirements for vehicle traffic dynamics.
- Ensuring visibility in various road situations.
- Providing clear visual guidance for drivers and early recognition of lane-dividing elements.
- Clarity of traffic rules at intersections and junctions.
- Proper drainage to ensure good tire grip on road surfaces.
- Psychological and psychophysical factors affecting road users and their impact on road element design, intersections, and junctions.
- Effective, clear, unambiguous, and visible road signage.
- A safe road environment.

In most countries, these general requirements are reflected in detailed road design regulations, guidelines, standards and instructions. Therefore, one should expect that the infrastructure designed by these regulations would create safe conditions for vehicle and pedestrian traffic. However, accident statistics indicate otherwise, suggesting that road infrastructure is a significant, direct, or indirect cause of road accidents

Road accidents are typically the result of the improper functioning of the 'human-road-vehicle-road environment' system rather than individual elements of this system. In this context, particular attention should be paid to the 'human' as road users, along with many factors influencing their decision-making processes and behaviour. Acknowledging the dominant role of humans in this system, it is also necessary to examine the role of road infrastructure as a cause of accidents and collisions.

To address these challenges in 2016 the Trans European Motorway Project carried out under umbrella of the United Nations Economic Commission for Europe issued the report regarding practices of its Member Countries in respect to the Road Safety Audit and Road Safety Inspection on the TEM Network.

The report aimed at the collection of the current at the time practices in the RSA and RSI to identify necessary steps forward to improve the road safety on the TEM road network as well as to assist TEM Member Countries to derive from their partner countries experiences.

The purpose of this report is to analyse what are the developments and improvements in the TEM region as well as in the UNECE region as a whole and to understand what might be the actions the international community may undertake for the sake of the road safety.

1.2 General road safety situation

All countries need effective road safety systems to prevent accidents, protect people in case of lack of prevention, rescue individuals after accidents, and learn from accidents.

Between 2010 and 2019, the number of people killed in road accidents decreased by an average of 7.7%. Excluding data from the USA, the overall reduction was 18%.

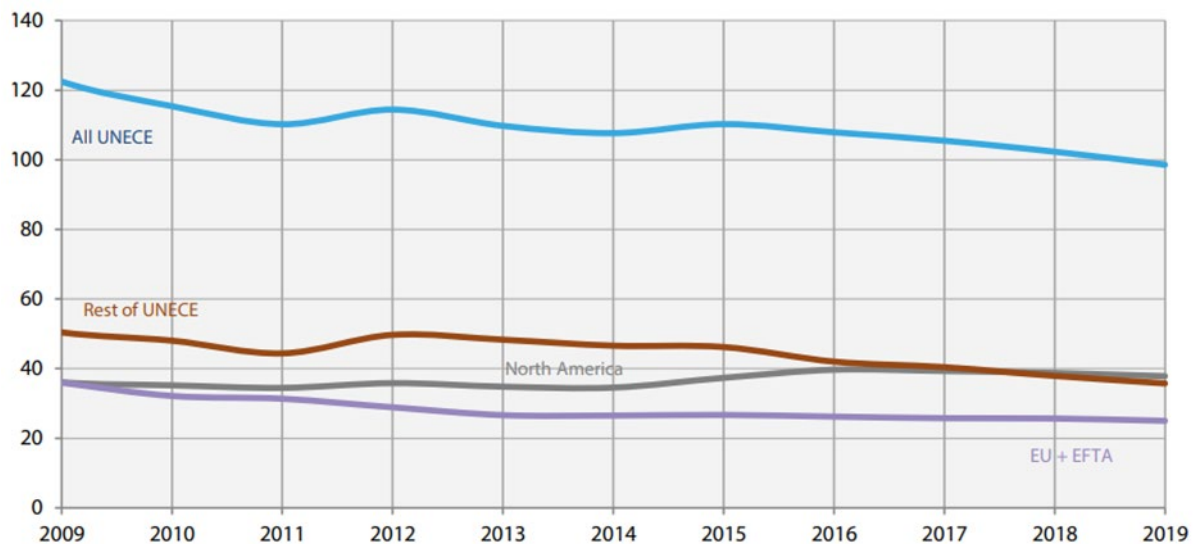


Figure 1 Road traffic fatalities by region (thousands), 2009-2019 [UNECE, Statistics of road traffic accidents in Europe and North America Volume LVI 2021]

This reduction was far smaller than the 50% reduction target set under the First Decade of Action for Road Safety 2011-2020 (UN, 2010; WHO, 2011).

The COVID-19 pandemic led to widespread and significant disruptions, resulting in a considerable decrease in road traffic globally. As a result, the data for the years 2020 and 2021 should be approached with caution as they may need to provide a more reliable long-term perspective. Drawing comparisons between the number of road accident fatalities in 2010 and 2020 could lead to erroneous conclusions regarding the trends in road safety.

1.3 The Safe System approach and the Road Infrastructure Safety Management

In August 2020, the United Nations General Assembly adopted resolution 74/299, declaring 2021-2030 as the Second Decade of Action for Road Safety (UN, 2020). In October 2021, the World Health Organization (WHO) and UN regional commissions prepared and officially launched the Second Decade of Action by publishing the Global Plan for the Decade of Action for Road Safety 2021-2030 (WHO, 2021).

In line with Goal 3.6 of The Sustainable Development Goals the Second Decade of Action aims to reduce the number of road traffic fatalities and serious injuries by at least 50% between 2021 and 2030 (UN, 2020: 5). Achieving this ambitious goal requires continuous efforts from all countries.

In particular, countries must monitor road accidents, casualties, and road safety indicators to develop appropriate road safety strategies and implement measures to reduce fatalities and serious injuries significantly. It is also essential for countries to regularly assess their actions and adjust the steps taken based on the results.

While analysing individual countries' approaches, it is crucial to emphasise the significance of adopting strategies with quantified goals to improve road safety. A tremendous achievement is the shift in behaviour and mindset among citizens and decision-makers regarding road safety, recognising it as a critical goal to minimise social and material consequences.

In many countries, implementing a safe system has yielded tangible results.



Figure 2 Percentage change in the number of road deaths, 2010-2019 [ITF (2022), Road Safety Annual Report 2022, OECD Publishing, Paris]

A key aspect has been recognising that institutional factors, safe road design, maintenance and operation, safe road user behaviour, and safer vehicles are integral components of a safe road system. However, a common challenge for all countries persists in effectively establishing budget priorities based on various needs, such as maintaining existing roads and their safety levels, upgrading (e.g., improving road capacity or road safety levels), and constructing new roads to meet the growing travel demand.

On 1 April 2020, the Inland Transport Committee (ITC) of the United Nations Economic Commission for Europe (UNECE) formally recommended to all countries and international organizations the ITC Recommendations for Enhancing National Road Safety Systems (“ITC Recommendations”), prepared by the Sustainable Transport Division and adopted at its eighty-second session (ECE/TRANS/2020/9), after extensive discussions at UNECE/ITC working party and expert levels.

These recommendations interlinked the five pillars of road safety (management, safe user, safe vehicle, safe road, and effective post-crash response) with key action areas (legislation, enforcement, education, technology) and international support. It was of utmost importance to outline potential actions within each pillar, identify the ideal responsible authority, establish national coordination, international support, and the application of relevant UN legal instruments related to road safety.

The ITC Recommendations emphasized that in the concept of a safe system, all elements of the system - pillars and areas - should be in place and operate in an integrated manner. This integrated approach allows for the improvement of one or more elements, but always within the context of the overall system and the promotion of long-term systemic solutions.

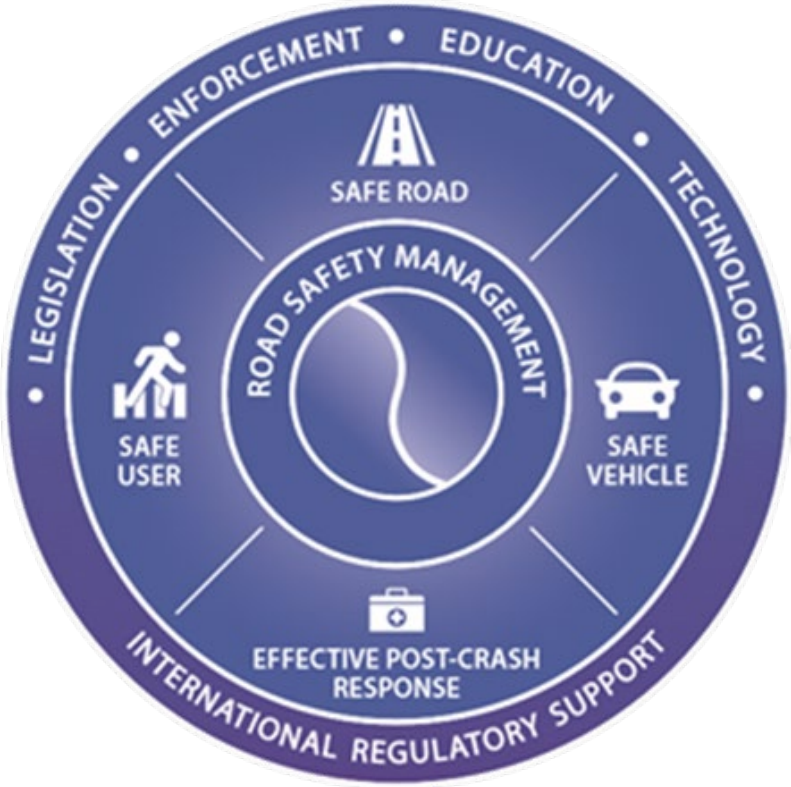


Figure 3 Safe System approach [ITC Recommendations for Enhancing National Road Safety Systems, 2022, UNECE Publishing, Switzerland]

The previously dominant reactive approach of governments and road authorities, based on accident analysis, has been complemented in some countries by new tools and procedures of a proactive approach to road infrastructure safety management (RISM).

At each “road life” cycle stage, we can apply various RISM tools and procedures for managing road infrastructure safety.

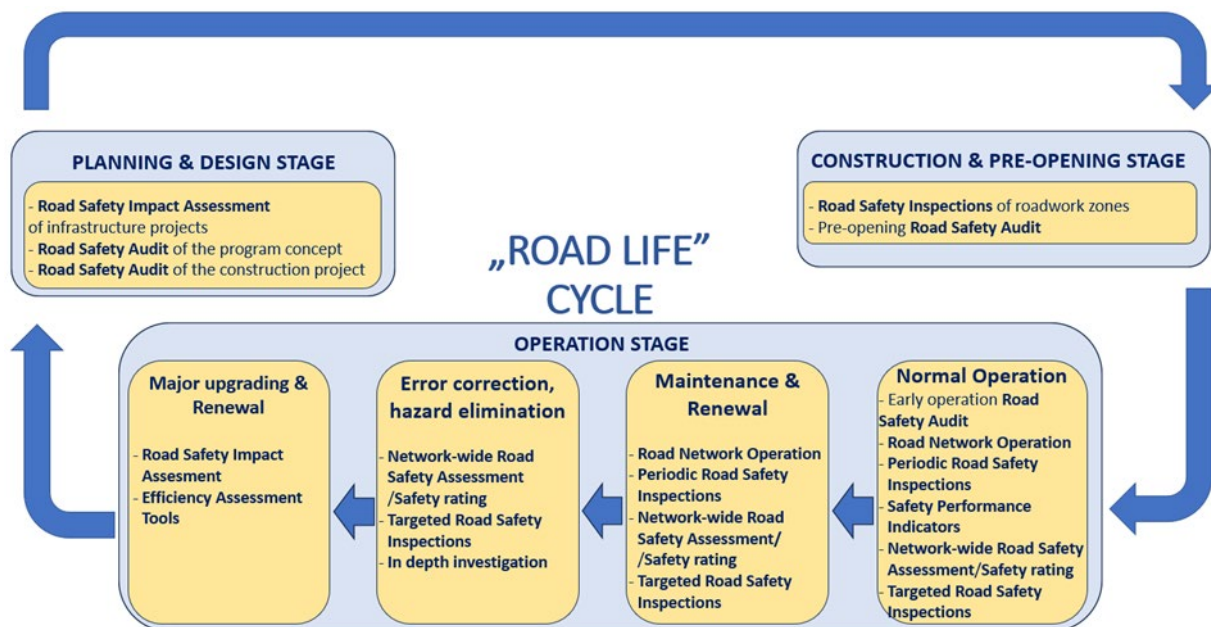


Figure 4 RISM procedures and tools in the road life cycle

As emphasised by the authors of the Road Infrastructure Safety Management Research Report (OECD/ITF 2015), a common problem for all countries is setting budget priorities based on different needs: maintaining existing roads and their safety levels, reconstructing them (e.g., increasing road capacity or safety levels), and building new roads to meet the travel demand.

In practice, governments and road authorities must find cost-effective solutions. Implementing perfect road infrastructure is sometimes impossible but the safest option available within the resources. Road Infrastructure Safety Management (RISM) procedures help cost-effectively identify safety-oriented solutions at all stages of the road infrastructure lifecycle. When properly implemented, they can quickly and less costly improve road safety. However, their adoption may only sometimes be straightforward, as these procedures may require specialised knowledge and skills, access to extensive road safety data, specific tools, and economic resources.

1.3.1 International experiences

Experience of the European Union

Implemented Road Infrastructure Safety Management (RISM) procedures in the TEN-T network have contributed to reducing the number of fatalities and severe injuries in the European Union. The impact assessment of Directive 2008/96/EC of the European Parliament and of the Council of 19 November 2008 on road infrastructure safety management clearly shows that member states voluntarily applying RISM principles on their national roads outside the TEN-T network achieved significantly better road safety outcomes than those member states that do not.

The communication of 20 July 2010 from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions entitled ‘Towards a European

road safety area: policy orientations on road safety 2011-2020' stated the strategic objectives of the Union to halve the number of road deaths by 2020 compared to 2010 and to move close to zero fatalities by 2050. However, progress towards achieving those objectives has stalled in recent years. A new interim target of halving the number of severe injuries by 2030 compared to 2020 was endorsed by the Council in its conclusions of 8 June 2017 on road safety, endorsing the Valletta Declaration of March 2017. More extraordinary efforts are therefore needed to attain both those targets.

To achieve both of these objectives, changes were made to Directive 2008/96/EC. These modifications were implemented through Directive (EU) 2019/1936 of the European Parliament and the Council on 23 October 2019, drawing from past experiences and lessons derived.

The current directive introduced the following procedures:

- Road Safety Impact Assessment (RIA)
- Road Safety Audits (RSA)
- Road Safety Inspections (RSI)
- Network-wide Road Safety Assessment (NRSA) / Safety Rating (SR)

These procedures should be appropriately applied to planned or existing roads, with the procedures and tools about the planning & design stage and the construction & pre-opening stage, such as Road Safety Impact Assessment (RIA) and Road Safety Audits (RSA), representing a proactive approach. On the other hand, Periodic and Targeted Road Safety Inspections (RSI and TRSI), Network-wide Road Safety Assessments (NRSA), and Safety Rating (SR) are reactive measures.

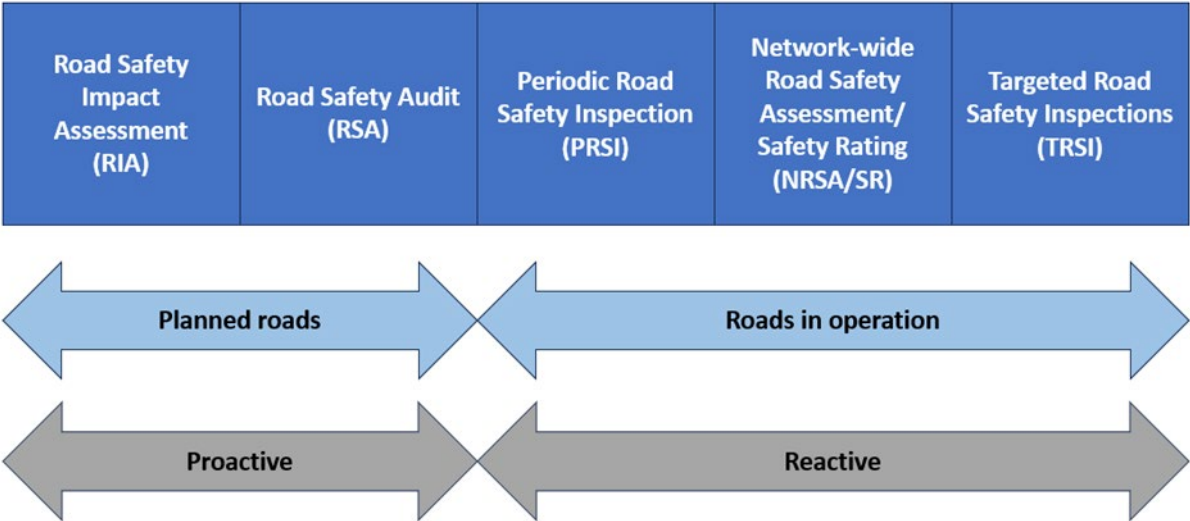


Figure 5 Overview - methods of the road infrastructure safety management

Experiences from the United States of America

The tools mentioned above are just some of the ones used worldwide. For example, in the United States, an alternative method of infrastructure safety management has been developed based on the following analytical tools:

- The Network Screening Tool - identifies sites with potential for safety improvements through algorithms that identify areas of concern (e.g. higher than expected crash frequencies).
- The Diagnosis Tool identifies the nature of safety problems at specific sites.
- The Countermeasure Selection Tool helps in the selection of interventions to reduce crash frequency and severity at sites.

- The Economic Appraisal Tool performs an appraisal of either specific countermeasures or different options at a site.
- The Priority Ranking Tool ranks sites and proposed improvements according to the benefit and cost analysis conducted by the Economic Appraisal tool.
- The Countermeasure Evaluation Tool allows pre- and post-evaluations of safety improvements using the Empirical Bayes approach.

Road Safety Impact Assessment (RIA) means 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.

Road safety audit (RSA) means 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.

Periodic road safety inspection means an ordinary periodical verification of the characteristics and defects that require maintenance work for reasons of safety.

Network-wide Road Safety Assessment shall evaluate accident and impact severity risk, based on:

- a) primarily, a visual examination, either on site or by electronic means, of the design characteristics of the road (in-built safety);
- b) and an analysis of sections of the road network which have been in operation for more than three years and upon which a large number of serious accidents in proportion to the traffic flow have occurred.

Targeted Road Safety Inspection means a targeted investigation to identify hazardous conditions, defects and problems that increase the risk of accidents and injuries, based on a site visit of an existing road or section of road;'

DIRECTIVE (EU) 2019/1936 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2019 amending Directive 2008/96/EC on road infrastructure safety management

This report covers the following procedures:

- Road Safety Audits (RSA)
- Road Safety Inspections (RSI)

which have been successfully implemented in many countries, as evidenced by the positive results in reducing the number of fatalities and seriously injured people due to road accidents.

Section 2: Implementation of the RSA and RSI procedures

Although implementing RSA and RSI procedures is often complex and time-consuming, looking at the tangible effects achieved by countries adopting them, it is worth taking up this challenge. Based on previous experiences in many regions globally, it is worth noting that the most effective and cost-efficient way to implement these procedures in a given country is through a top-down approach.

The involvement of the relevant authorities in road safety processes is a significant step towards their implementation. Therefore, it is highly beneficial if the implementation of these procedures is included in the national road safety strategy as a starting point for all necessary actions that need to be taken. This should trigger incorporation into national legal framework to upgrade national road safety system.

Raising awareness and convincing people of the benefits of road safety procedures is a task that needs to be carried out at all levels. Still, it is especially crucial among decision-makers authorities responsible for road safety matters and road safety professionals.

One aspect to bear in mind is the funding of new procedures. More resources, both financial and personal, can often be a significant obstacle to implementing road safety processes, especially during constrained budgets. The current economic crisis resulting, among other factors, from the COVID-19 pandemic has impacted infrastructure investments, making it challenging to argue for introducing additional new procedures Network-wide Road Safety Assessment (NRSA) / Safety Rating (SR) that entail higher costs.

The assessment of safety benefits resulting from Road Safety Audits (RSA) is not straightforward, as a classic before-and-after analysis cannot be conducted (due to the lack of pre-audit data available, which is often only present in technical drawings). However, it is possible, for example, to carry out post hoc audits on newly constructed, previously unaudited roads and estimate the reduction in the number of accidents that could result from implementing the auditor's recommendations. Such evaluations have shown positive cost-to-benefit ratios, ranging from 1.34:1 ("acceptable") to 99:1 ("excellent") (ROSEBUD, 2006a).

If followed by appropriate measures, RSI is a powerful tool that minimises the likelihood of serious accidents on a road section. Evaluative studies have shown the beneficial impact of RSI in reducing the number of accidents. The cost-benefit ratio depends on the type of implemented measures, making it crucial to monitor the impact of the remedial actions initiated by RSI after the initial years of implementation.

Cost-benefit analyses have shown the positive benefits of RSA and RSI. Since investments in research and maintenance are generally funded from public resources, this can translate in the procedure's favour. Again, raising awareness and education/training and certification of professionals will be necessary in this regard.

The procedure must be defined for a specific country considering the national. Existing procedures can be adapted; New procedures should be incorporated into existing programs with minimal disruptions. In any case, duties should be specified and guidelines developed or since many international and national guidelines are already available, existing guidelines can be adjusted to adopt the best practice. However, raising awareness and convincing people that these procedures make sense will take longer than preparing the manual.

The effectiveness of these procedures largely depends on the competence of the individuals conducting RSA and RSI, namely auditors and inspectors. They must be well-qualified and have

relevant background experience, such as academic qualifications and professional expertise. Therefore, criteria for auditors and inspectors needs to be established. An certification system is typically in place in countries where these procedures have been implemented for some time.

2.1 Road Safety Audit

Road Safety Audit (RSA) is a form of assessment conducted by road safety auditors to evaluate a road infrastructure projects in design, construction, and operation stages on potential accident risks for all road users. It involves an independent, detailed, systematic, and technical safety check carried out at various phases, from planning to early operation. The results of the Road Safety Audit are documented in a report/s.

The main objective of the Road Safety Audit is to ensure road safety by identifying and mitigating deficiencies in road projects and constructions that threaten road safety. Deficiencies are addressed through a comprehensive, multidimensional, and multifaceted examination to ensure that the documentation of individual sections does not include solutions that may seem safe when assessed separately within each sector but, when combined with solutions from other sectors, could pose a risk to road safety. The Road Safety Audit also aims to increase attention to safe solutions used by all participants involved in road planning, design, construction, and maintenance processes.

Considering the need to minimise time losses related to preparation or implementation, some countries (e.g., Poland) allow for parallel Road Safety Audits. This approach involves initiating the Road Safety Audit earlier than in the traditional/final Road Safety Audit, commencing it before the completion of a specific stage of road planning, design, or construction and continuing the Road Safety Audit simultaneously with the ongoing planning, design, or construction activities. This method enables the progressive assessment of completed elements of the project or design stage, which may still need to form a finished whole. It concludes the Road Safety Audit directly after finishing these activities. The parallel Road Safety Audit results form part of the Road Safety Audit Report. They are integrated into the overall process of conducting the Road Safety Audit by the general principles set out for Road Safety Audits.

Road Safety Audit (RSA) is conducted at the following stages:

- Stage I - Feasibility stage (before a decision on the definitive routing; interface with Road Safety Impact Assessment)
- Stage II - Preliminary design (before land acquisition)
- Stage III - Detailed design (before construction starts)
- Stage IV - Pre-opening (after construction is completed)
- Stage V - Early operation (within 12 months from the road's opening for traffic)

During the RSA in Stages I and II, the following aspects are mainly considered:

- 1) Geographical location, geographical, climatic, and meteorological conditions
- 2) The location and type of intersections or interchanges
- 3) Traffic restrictions
- 4) Functionality within the road network
- 5) Permitted and designed vehicle speeds
- 6) Cross-section, including the number and width of traffic lanes
- 7) Site plan and longitudinal profile
- 8) Visibility constraints
- 9) Accessibility for public transport means
- 10) The needs of vulnerable road users

- 11) Railway crossings
- 12) Designated wildlife crossings and other environmental protection devices
- 13) Drainage

During the RSA in Stage III, the following aspects are mainly considered:

- 1) Vertical and horizontal road signalisation based on traffic organisation.
- 2) Road and intersection or interchange lighting.
- 3) Devices and objects within the road reserve (e.g., road restraint systems).
- 4) Land use planning adjacent to the road reserve, including vegetation.
- 5) Road users, particularly vulnerable road users, and their requirements for safe parking areas.
- 6) Adapting road safety devices to the needs of road users, especially vulnerable road users.

During the RSA in Stage IV, the following aspects are mainly considered:

- 1) Safety of road users, especially vulnerable ones, and visibility in various weather conditions and times of the day.
- 2) Visibility of vertical and horizontal road signalisation based on local visual observations in the terrain.
- 3) Road surface condition.

During the Road Safety Audit (RSA) in Stage V, the evaluation of road users' behaviours, particularly vulnerable road users, and their impact on road safety is considered.

During subsequent stages of the road safety audit, the criteria used in earlier stages of RSA are considered if necessary.

Conducting Road Safety Audits requires essential technical knowledge, skills, and experience. RSA auditors should be capable of reading project plans, have highly developed visualisation skills for interpreting the solutions presented in the documentation, and be able to assess technical solutions from the perspective of all road users, including pedestrians, cyclists, motorcyclists, car drivers, truck/bus drivers, and even specialised vehicles such as fire trucks.

As a result, most countries establish prerequisites for auditors and inspectors, which typically include:

- Prior (mainly technical) education, often including academic qualifications.
- Relevant professional experience (e.g., road design, road safety engineering) of at least two years.

In the case of certification, successful completion of a training course is another requirement in virtually all countries with an accreditation system for auditors and inspectors. For this reason, implementing RSA and RSI requires defining prerequisites for auditors and inspectors, developing training courses, and establishing a certification system. In most countries, certificates are issued by government agencies or road authorities.

The duration and content of training courses vary significantly worldwide. According to RIPCORD-ISEREST (RIPCORD-ISEREST, 2008), there are two approaches: short courses for individuals with experience in road safety work and more comprehensive courses for those with limited experience. In TEM member countries, courses range from 36 to 120 hours. Each country must determine the content and duration of its training courses. It is possible to differentiate between courses for RSA and RSI, although, in many countries, courses cover both procedures. Training courses or teaching programs should be approved or certified by the government to ensure the proper quality of the offered courses. Refresher courses are typically necessary to maintain competence certification. It is recommended that the courses include both theoretical and practical components.

2.2 Road Safety Inspection

2.2.1 Periodic Road Safety Inspection

Periodic Road Safety Inspections (PRSI) should be conducted by individuals with relevant expertise (typically with at least two years of experience) in selected fields such as road design, road traffic engineering, road management, traffic management, or safety assessment of road projects, or individuals possessing qualifications and experience required for a Road Safety Auditor. Targeted Road Safety Inspections should be performed by an experienced team of inspectors, with at least one member possessing the qualifications and experience required for a Road Safety Auditor.

Inspectors should undergo training covering the principles of defect identification and control procedures (including practical application of inspections). The inspection scope should encompass road construction, traffic/road safety engineering, user behaviour, and perception theory.

PRSI should encompass all significant road-related objects and phenomena, mainly focusing on the following:

- 1) Roadway, sidewalk, and bicycle path geometries on-road sections.
- 2) Roadway, sidewalk, and bicycle path geometries within intersections, junctions, toll collection points, passenger service locations, and other public utility facilities.
- 3) Unpaved and hard shoulders.
- 4) Slopes, ditches, culvert walls, and retaining walls.
- 5) Curbs and road edges.
- 6) Horizontal and vertical road markings, signs and signals, and traffic organisation.
- 7) Guardrails, handrails, barriers, and other road restraint devices.
- 8) Trees and shrubs.
- 9) Road lighting.
- 10) Railway crossings, bridges, viaducts, tunnels, and animal crossings.
- 11) Other infrastructure elements within the safety zone (e.g., advertisement panels, road fencing, noise barriers, etc.).
- 12) Sound barriers and anti-glare screens.
- 13) Roadway drainage (median strips, curb drains, slope drains).
- 14) Visibility at exits, intersections, passenger service locations, toll collection points, and junctions.
- 15) Visibility on interchanges.
- 16) Clearance restrictions.
- 17) Road fencing.

2.2.2 Targeted Road Safety Inspection

Targeted Road Safety Inspection (TRSI) means a focused investigation to identify hazardous conditions, defects, and issues that increase the risk of accidents and injuries based on an on-site visit to an existing road or section of road.

According to best practices, the basis for selecting locations or road sections subject to Targeted Road Safety Inspection should be the Network-wide Road Safety Assessment (NRSA) and Safety Rating (SR) results.

TRSI should be carried out periodically by independent and well-trained teams of experts, encompassing the assessment of multiple safety-relevant parameters during on-site visits.

TRSI should address safety elements relevant to all road users, including motorised vehicles, cyclists, and pedestrians (including specific pedestrian categories: disabled individuals, seniors, and children).

During the TRSI process, thorough assessments of these elements should be conducted to ensure road safety for all users. TRSI should not cover the technical condition of bridge structures, tunnels, and road pavement and shoulders (except defects affecting road safety, e.g., potholes, ruts, uneven road and shoulder levels).

Figure 6 presents an illustrative scheme of the inspection procedure.

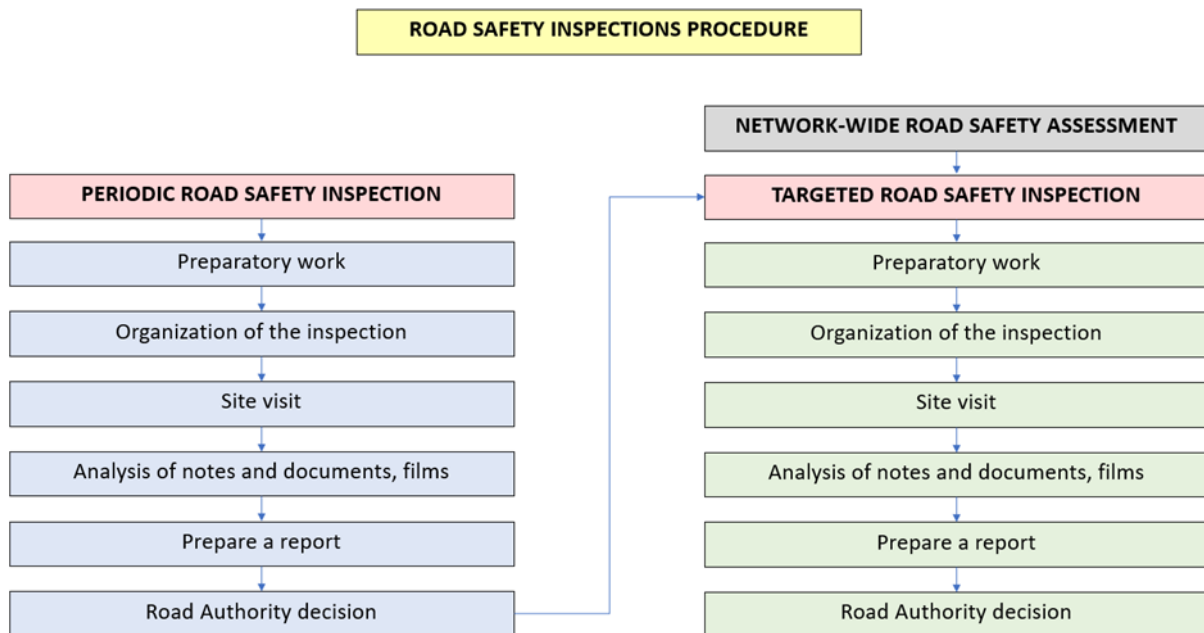


Figure 6 Example of the Road Safety Inspection procedure

The work of the inspection team is usually conducted following standardized checklists. Identified safety deficiencies are compiled in a detailed inspection report, along with specific recommendations for corrective actions. In some countries (e.g., Poland), the inspection report specifies a risk class (low, medium, high), and depending on the possibilities, a response to the risk is determined as follows:

- Immediate - actions that can be implemented in typical ongoing maintenance activities.
- It is staggered in time - using immediate temporary actions, such as securing the risk until it is completely removed.
- It was deferred in time - mainly related to investment activities.

Qualifying a defect into a specific risk class should be based on the subjective assessment of the Inspectors (based on knowledge and experience) and objective measures determined according to risk classification criteria.

An example of the procedure for dealing with identified risks during the inspection is presented in Figure 7 below.

The Road Safety Inspection client (typically the road authority) must respond in writing to the report, clearly stating whether (and when) the recommendations will be implemented and which issues will be rejected (and why). RSIs should be conducted regularly throughout the road network under the authority's jurisdiction.

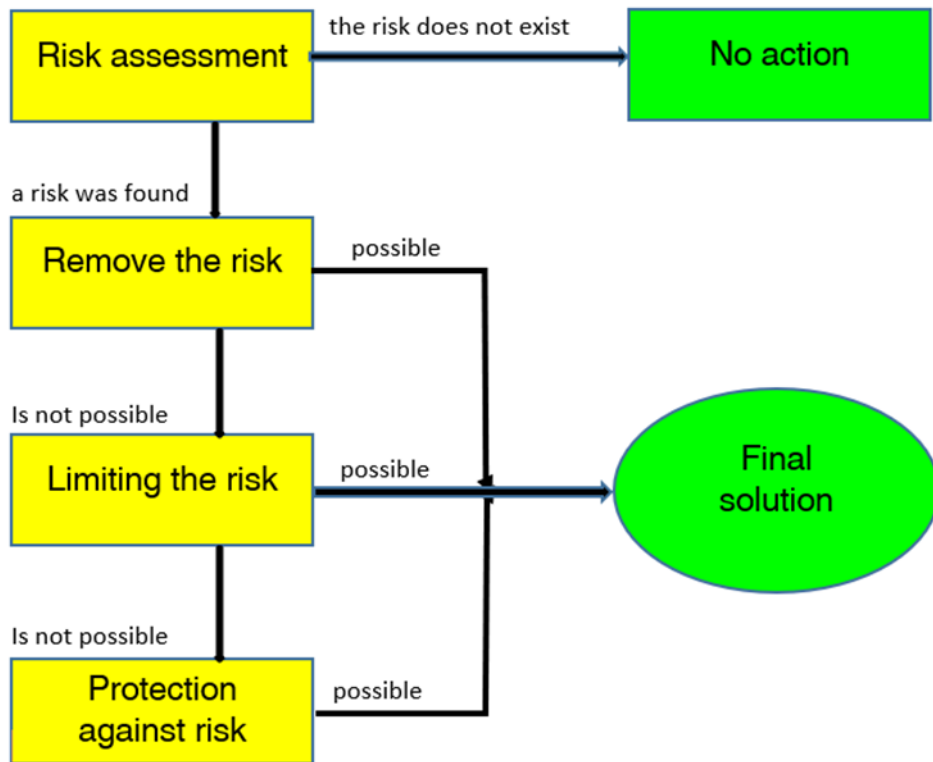


Figure 7 Example of the proceedings in the event of identifying a risk on the road

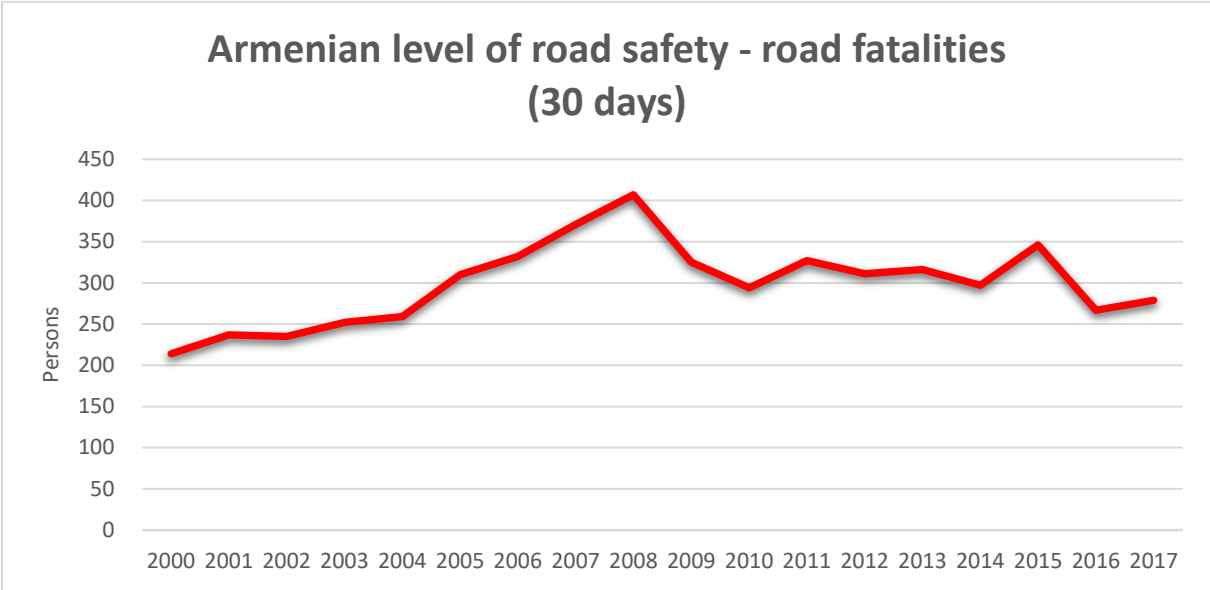
Section 3: Overview of the RSA and RSI practices in the region

A questionnaire was sent to TEM member countries and selected UNECE region countries to collect information on implementing Road Safety Audits, Road Safety Inspection and training of Auditors and Inspectors. Parts of the questionnaire included the following topics:

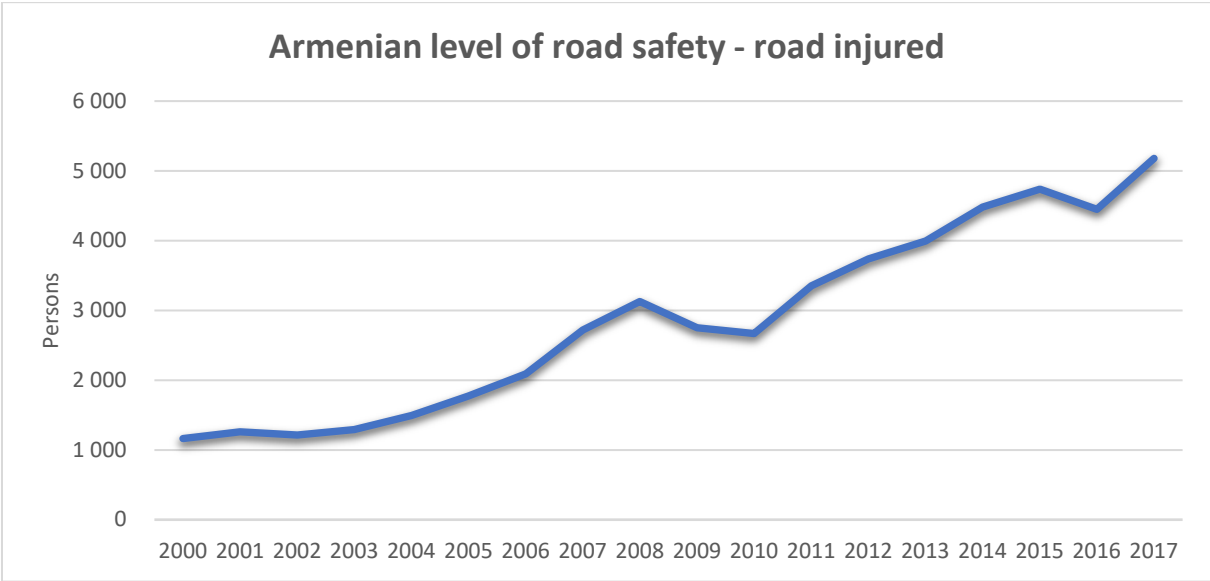
- Legal framework/guidelines
- Experiences in the implementation of RSA / RSI
- Administrative and institutional set-up
- Training and certification of the auditors/road safety inspectors

The questionnaire and responses from the particular countries are included in the section Annexes: submitted questionnaires of this report.

3.1 Armenia



Graph 1 Armenia: road fatalities (30 days)



Graph 2 Armenia: road injured

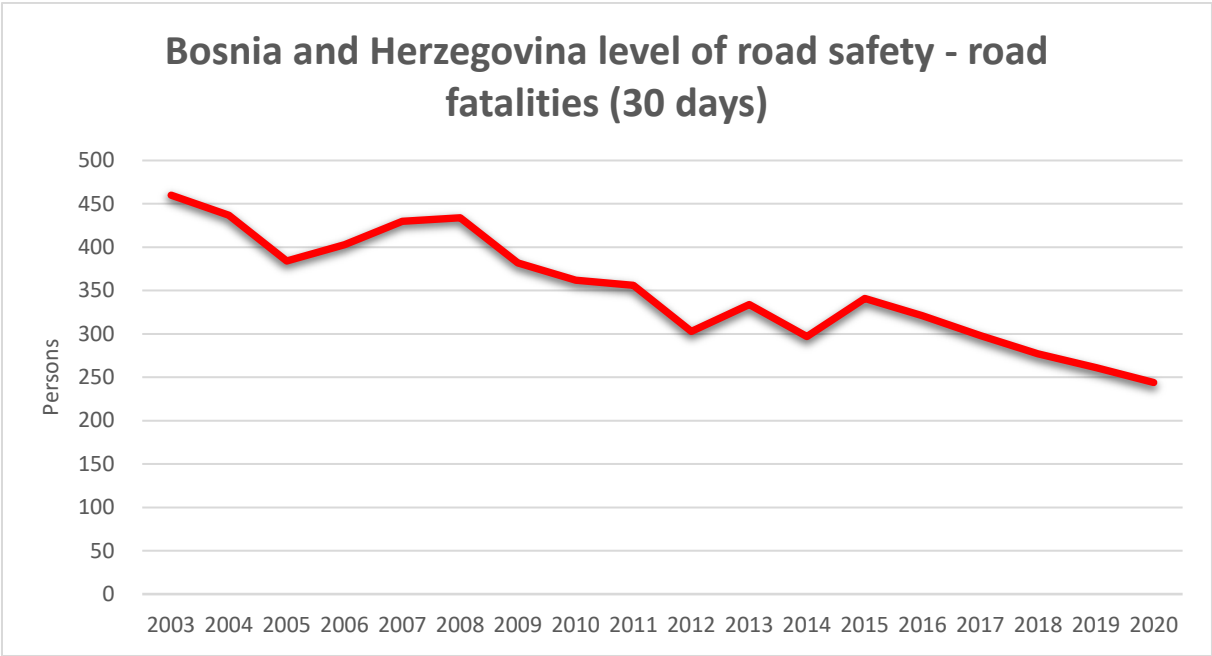
Armenia must still include Road Safety Audits and Inspections into its national legislation. However, the country is undertaking road safety reforms and has formulated a national road safety strategy, currently under coordination with relevant authorities.

This strategy document includes various measures related to the implementation of road safety audits and inspections. Once the strategy is approved, a methodology for road safety audits and inspections will be developed, along with a training and qualification program for road safety auditors. In Armenia, Road Safety Audits are only conducted for specific international projects financed by IFIs.

3.2 Federation of Bosna and Herzegovina

NOTE!

Provided below graphs present the road safety situation in the whole Bosnia and Herzegovina. The analysis of the RSA and RSI practices concern Federation of Bosnia and Herzegovina according to the received responses to the questionnaire.



Graph 3 Bosnia and Herzegovina: road fatalities (30 days)

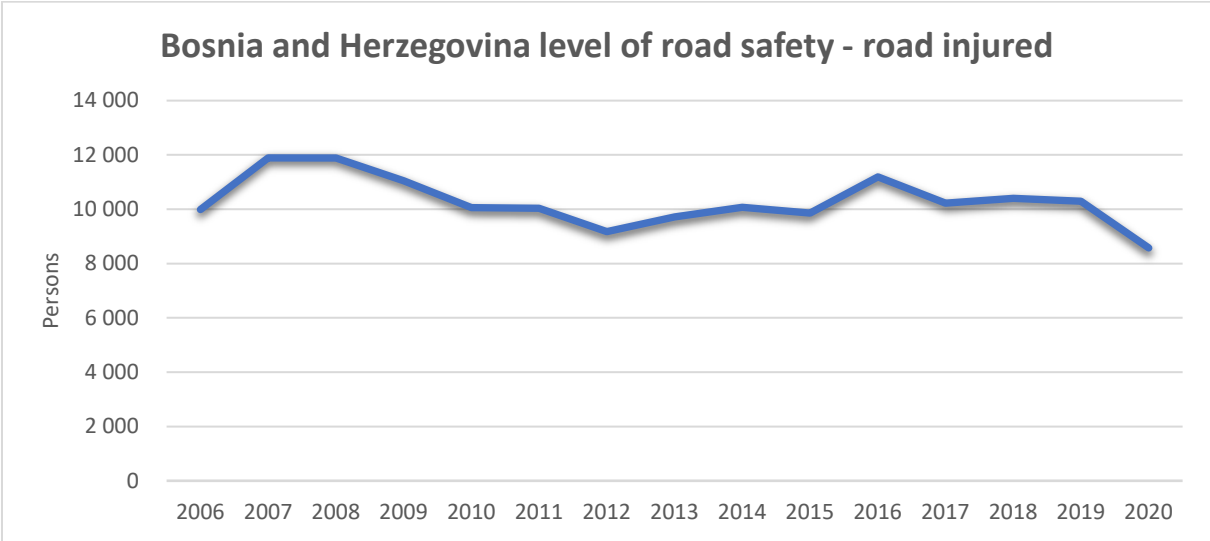
RSA and RSI procedures are not incorporated into the Federation of Bosnia and Herzegovina legal framework. Implementing these procedures requires amending Entity Law on Roads. Despite the absence of specific legal regulations, RSA and RSI procedures are carried out.

The RSA procedure is conducted for all TEM projects in the detailed project phase and before opening. RSA is conducted on TEM motorways and expressways by an independent team of auditors who are road managing company internal personnel. A leader leads the team.

The obligation to conduct the RSA procedure is derived from the requirements imposed on PC Motorways FBiH by financial institutions (EBRD and EIB) due to loans. Conducting the RSA procedure is a prerequisite for project approval.

The RSI procedure is conducted on the TEM network. On average, inspections are carried out on 140 kilometres of the TEM network annually. A stretch of approximately fifteen kilometres of road is

checked during a single inspection. Each road section is inspected at five-year intervals. RSI is conducted by an external team of independent inspectors led by a leader.



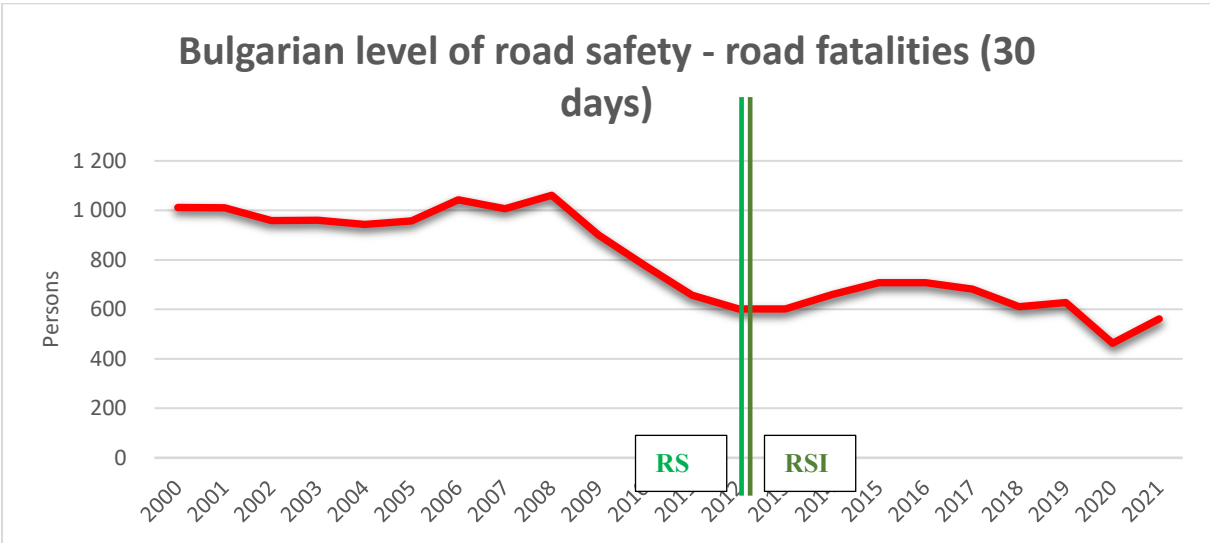
Graph 4 Bosnia and Herzegovina: road injured

According to the provided questionnaires, respondents indicated that the main challenges related to RSA and RSI procedures are the need for more legal regulations at the national level defining the responsibility of entities for conducting these procedures.

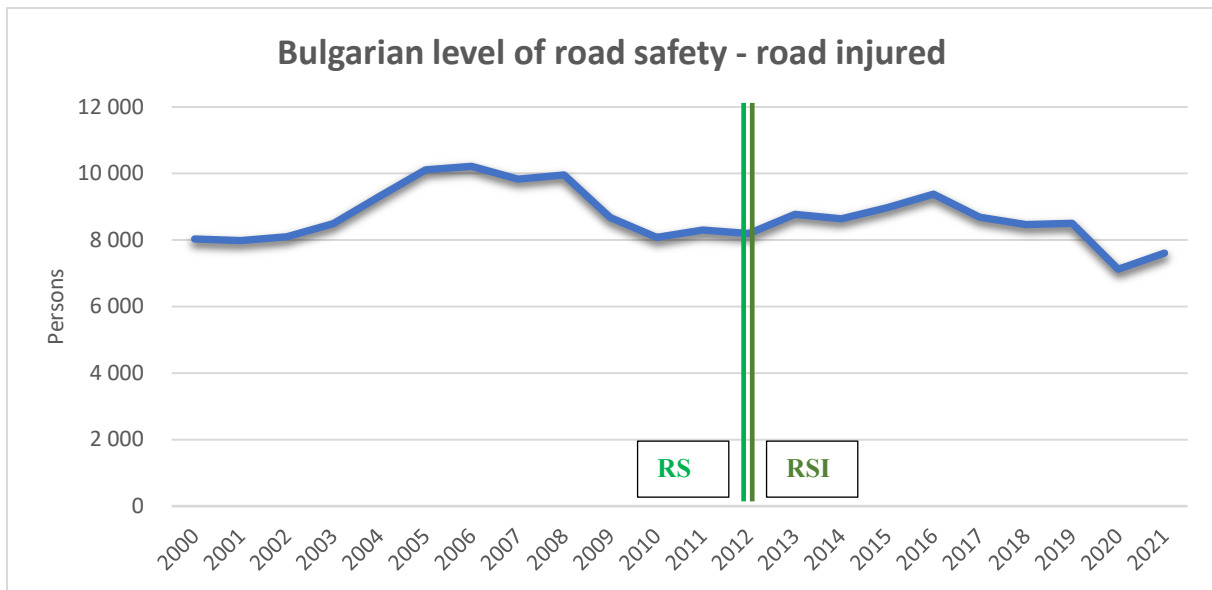
In the Federation of Bosnia and Herzegovina, initial courses are implemented separately for Auditors and Road Safety Inspectors. A five-day course concluded with the issuance of a certificate, is conducted by the road authority. Successful course completion is contingent on assessed knowledge tests, practical exercises, and group work.

3.3 Bulgaria

RSA and RSI procedures were incorporated into Bulgarian law in 2012, and guidelines for both procedures were issued in the same year. TRSI procedures, on the other hand, were included in Bulgarian law in 2022.



Graph 5 Bulgaria: road fatalities (30 days)



Graph 6 Bulgaria: road injured

Both procedure guidelines include checklists and a report template. RSA is conducted in all phases (stage I – V) of TEM projects on motorways, expressways, and interurban/rural roads. However, RSA is not shown on urban roads.

The Road Infrastructure Agency initiates RSA and TRSI on the TEM network. The Road Infrastructure Agency finances these procedures through the Ministry of Regional Development and Public Works budget. The Road Infrastructure Agency carries periodic RSI on the TEM network through regional road administration and the Road and Bridges Institute. In the case of Targeted RSI, independent RS Inspectors are also included.

RSA is performed by an independent external auditors/contractors audit team with a leader. According to DIRECTIVE (EU) 2019/1936 requirements OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2019, national legislation recognises the difference between Periodic RSI and Targeted RSI. As Targeted RSI was introduced into national legislation in 2022, it has yet to be implemented on any road section.

Periodic RSI is conducted on TEM roads, motorways, expressways, interurban/rural roads, and urban roads. On average, RSI covers a road section of 10-15 km. The results of RSI are prepared in reports in the PC database of the Road Infrastructure Agency. TEM highways are periodically inspected monthly by internal personnel teams, external inspectors/auditors, and contractor teams with a team leader.

Since 2013, Road Safety Audits can be conducted by individuals with the appropriate certification. According to the legal requirements, there is no obligation to have a certificate for completing Road Safety Inspections.

However, personnel carrying out TRSI are required to undergo separate courses. Since 2013, the University has conducted these courses for a fee (Initial Training - 895 BGN; Refreshment training - 150 BGN) based on the certification manual. Individuals acting RSA and/or TRSI must undergo refreshment training every five weeks and then renew their certification every five years by completing a 20-hour course.

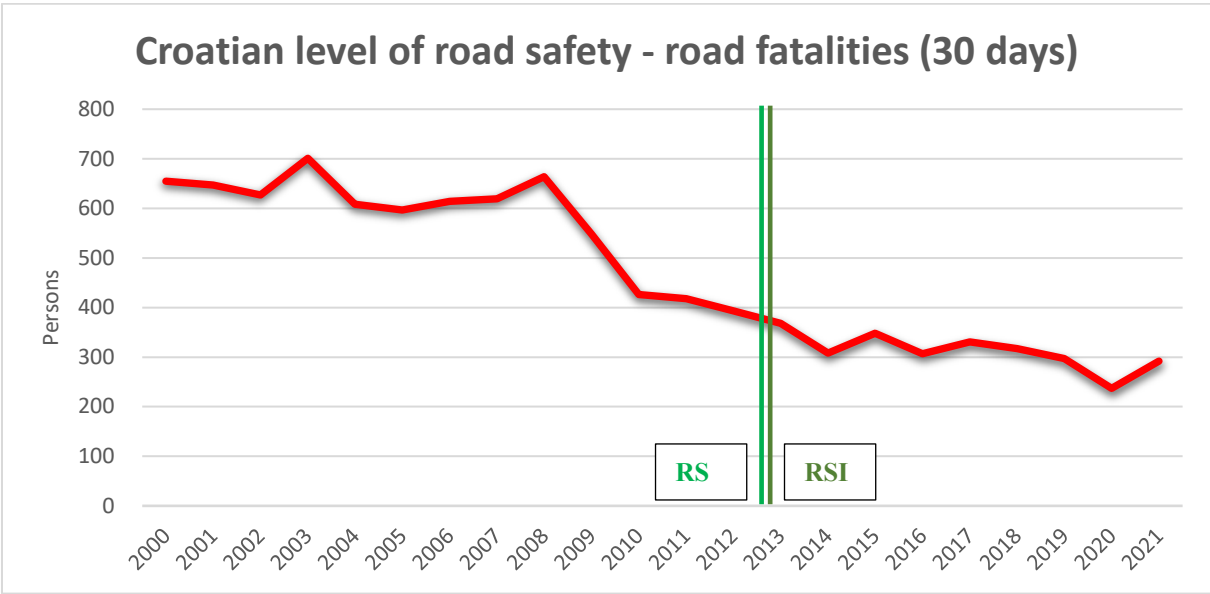
Individuals who meet all criteria (successful completion of training course, academic qualifications, work experience, road design experience) and pass the exams are awarded the Road Safety Auditor or Road Safety Inspector certificate, valid for five years.

The main difficulties in implementing RSA & RSI are:

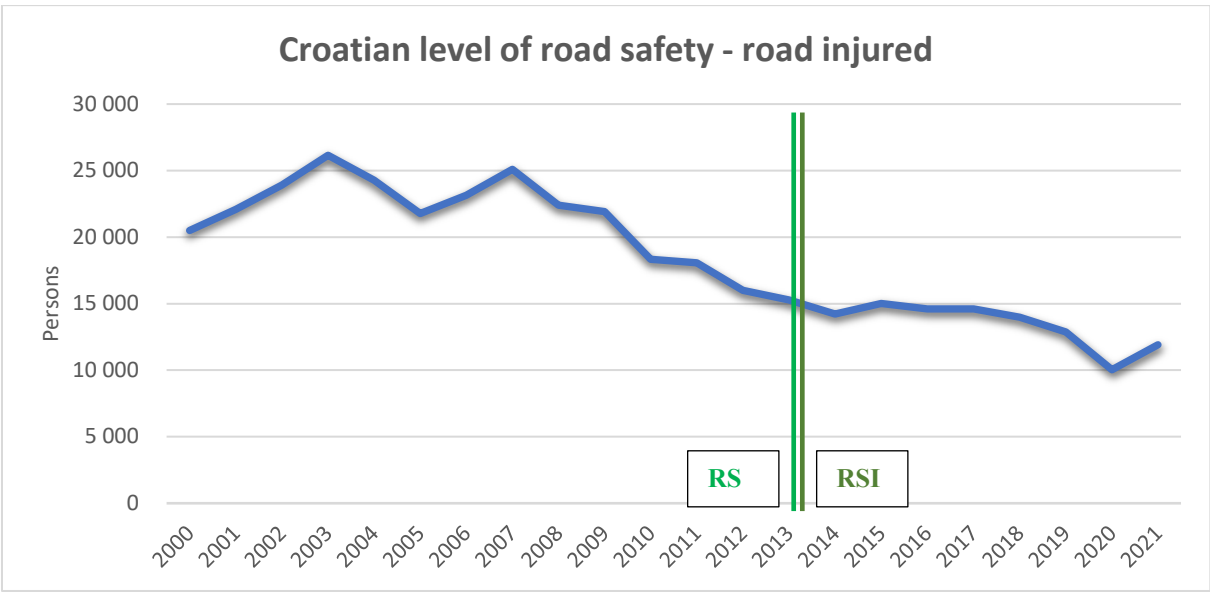
- Restricted budget, which can hinder the implementation of prescribed safety measures.
- Labour fluidity can affect the continuity of personnel involved in the procedures.

3.4 Croatia

RSA and RSI procedures were incorporated into Croatian law in July 2013. They were updated in December 2021, during which the Road Safety Audit instruction was revised. However, the current instruction must include checklists or a Road Safety Audit report template.



Graph 7 Croatia: road fatalities (30 days)



Graph 8 Croatia: road injured

A Road Safety Audit is conducted by an independent external road safety auditors team contracted by the road operator, with a team leader. The road operator is also responsible for financing the implementation of this procedure.

A Road Safety Audit is necessary to approve a project on the TEM network during the study phase and a detailed project for all TEM projects on motorways and expressways.

The December 2021 legislation update modified the definition of Road Safety Inspection, introducing two new reports: Periodic Road Safety Inspection and Targeted Road Safety Inspection.

Periodic Road Safety Inspections are carried out frequently enough to ensure adequate levels of safety for the road infrastructure. PRSI should be conducted at least every five years by an independent external inspector/auditor or contractor team with an inspection team leader.

Targeted Road Safety Inspection means a targeted examination to identify dangerous conditions, errors, and problems that increase the risk of accidents and injuries based on a field visit of an existing road or road section.

Due to the relatively recent introduction of the abovementioned definitions, Periodic and Targeted Road Safety Inspections have yet to be conducted. The Road Operator will carry them out.

The process of conducting Road Safety Inspection is supported by the following tools: cameras, reflection meter, measuring rod for the slope, road database, and road documentation.

Proper certification is required to conduct Road Safety Audit and Road Safety Inspection. There are no separate standards for RSA and TRSI certification. Obtaining the Road Safety Auditor/Road Safety Inspection certificate requires completing a course lasting 36 hours, costing 2,000 EUR. Several private organisations offer the course. Candidates must possess the appropriate work experience and complete the course.

Individuals meeting these criteria are awarded the certificate (valid for five years) after passing the knowledge test and individual exams.

According to the responses from the questionnaire, in-depth procedures and the exchange of best practices at the international level can improve the work of experts. The respondent also indicated that a cost-benefit analysis of proposed measures can expedite the implementation of so-called "light measures".

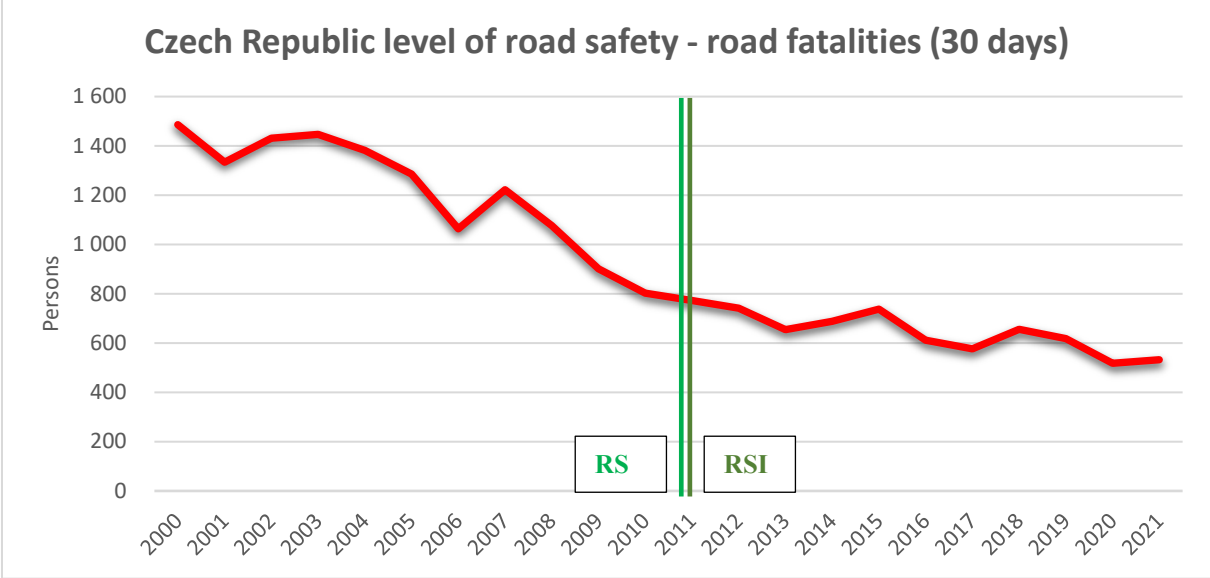
3.5 Czech Republic

RSA and RSI procedures were incorporated into Czech Republic law in 2011, and guidelines for both procedures were issued in the same year. PRSI and TRSI procedures were incorporated into Czech Republic law in 2022.

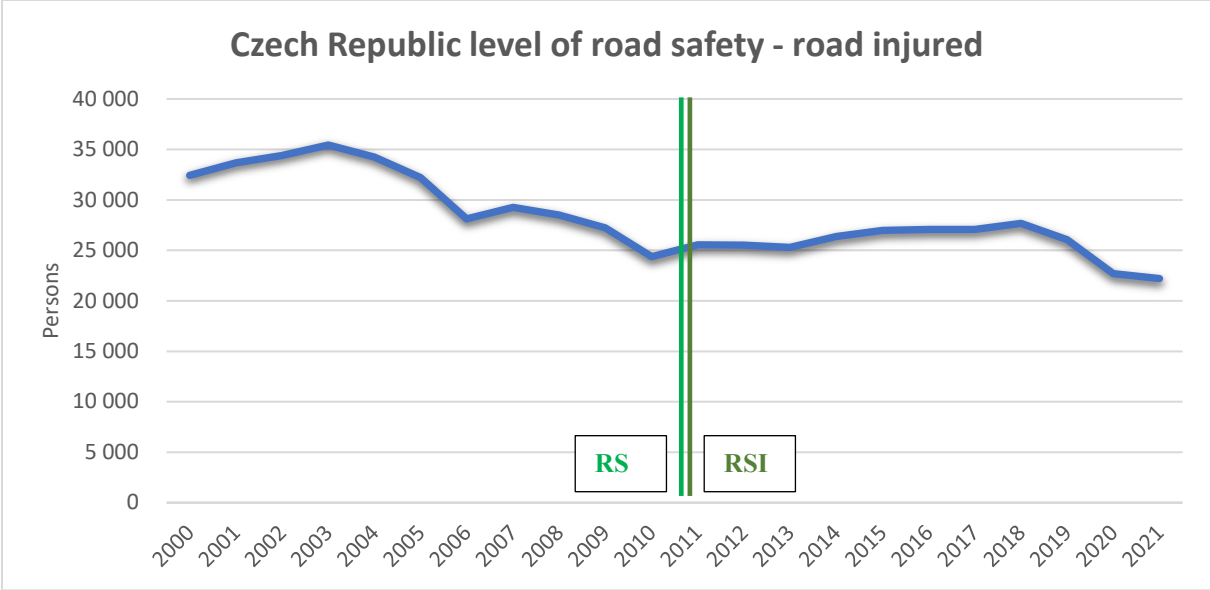
According to the definition derived from the legislation and Directive 96/2008 EC, safety inspections are conducted on roads already in operation. The purpose of the inspection is to identify risky areas on the road that may contain hidden defects and where an abnormally high number of accidents may have yet to be recorded in the past. Safety inspections are carried out at least once every five years by Directive 96/2008 EC.

Since 2012, a manual for conducting Road Safety Audits (Audit bezpečnosti pozemních komunikací | CDV (shopcdv.cz)) contains checklists and report templates. A year later, a manual for Road Safety Inspections was also introduced, including checklists and report templates.

RSA is conducted in all phases (stage I – V) of TEM projects on motorways, expressways, interurban/rural roads, and urban roads. The road owner or administrator is responsible for launching an RSA on the TEM network, and this procedure is financed and conducted by the National Road Administrator. RSA is conducted by an independent external auditors/contractor’s audit team with a leader.



Graph 9 Czech Republic: road fatalities (30 days)



Graph 10 Czech Republic: road injured

As per DIRECTIVE (EU) 2019/1936 requirements OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2019, national legislation recognises the difference between Periodic RSI and Targeted RSI. However, due to the recent introduction of Periodic and Targeted RSI into national legislation in 2022, they have yet to be implemented in practice on any road network segment. According to the updated law, Periodic RSI should be conducted on TEM roads every five years.

RSI is conducted by an independent external auditors/contractors audit team with a leader. The results are prepared in reports in the CEBASS database of safety deficiencies at the Road

Infrastructure Agency. TEM highways are periodically inspected at least every five years by an independent external inspector/auditor or contractor team with an inspection team leader .

According to the current law, individuals holding the proper certificate can conduct Road Safety Audits and inspections. There are no separate standards for RSA and TRSI certification. Candidates seeking certification shall demonstrate professional competence through the following:

- a) Completion of a bachelor's, master's, or doctoral program in technical sciences and technology or completion of higher vocational education or secondary education with a matriculation examination in fields related to road safety auditing.
- b) Road safety experience of:
 - a. three years if they have completed a bachelor's, master's, or doctoral degree,
 - b. four years if they have completed a higher vocational qualification or
 - c. five years if they have completed secondary education with a school-leaving certificate and
- c) Passing an examination.

Three accredited institutions (Private organisation, University, and Transport Research Centre) provide training for RSA/RSI auditors, and there are exams at the Ministry of Transport for certification. The training includes a theoretical part (3 days) and a practical part (2 days). The course prepares candidates for conducting both Road Safety Audits and Road Safety Inspections. To obtain the certificate, individuals must pass an individual knowledge test, which includes the following parts:

- 1st part is a written test
- 2nd part is an oral exam discussing safety issues in projects, photos, etc.

The Ministry of Transport is the certifying institution, and the validity period of the Certificate of Competence of an RSA auditor/RS inspector is three years. After this period, an RSA auditor/RS inspector should undergo a two-day (16-hour) refresher course.

The respondent indicated that the main difficulties in implementing RSA & RSI are the acceptance of new duties by the professional community. Additionally, it was pointed out that the terminology could be the same as in the Directive, as some new terminology was introduced in Czech law, which could cause delays.

3.6 Georgia

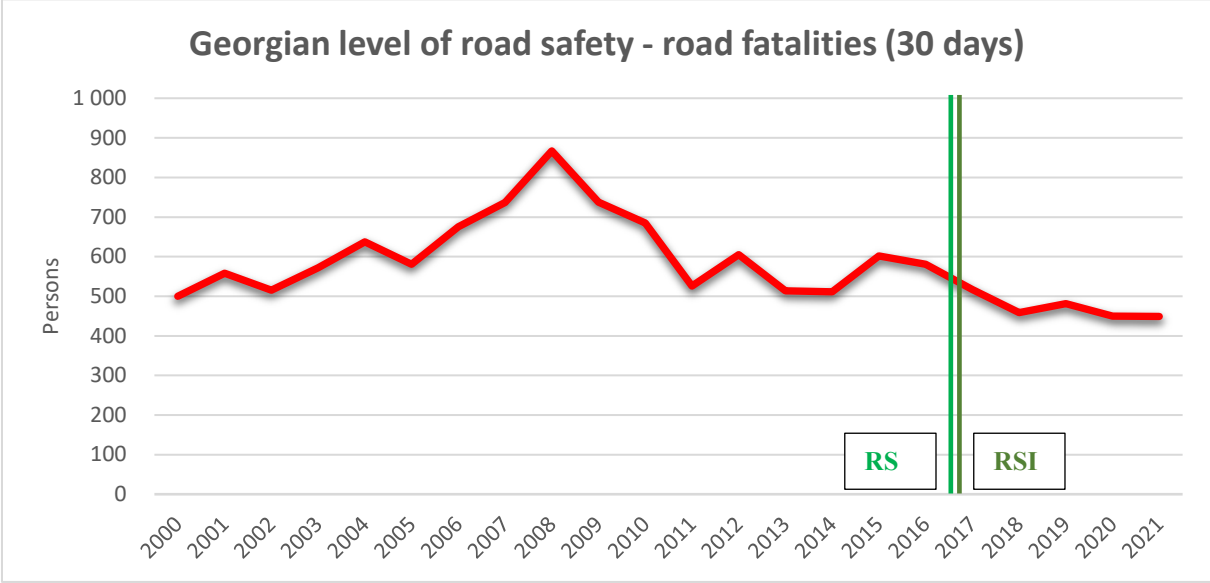
RSA and RSI procedures were developed in Technical Guidelines in May 2011 and then approved in July 2017 by the Chairman of the Roads Department of Georgia (Internal order of the agency). The Technical Guidelines include checklists and report templates.

Currently, Periodic and Targeted RSI is not defined in Georgian law. Road Safety Audits are conducted in the preliminary project, detailed project, and before opening phases. Before opening, compliance is checked for new construction or rehabilitation road sections with detailed design documentation.

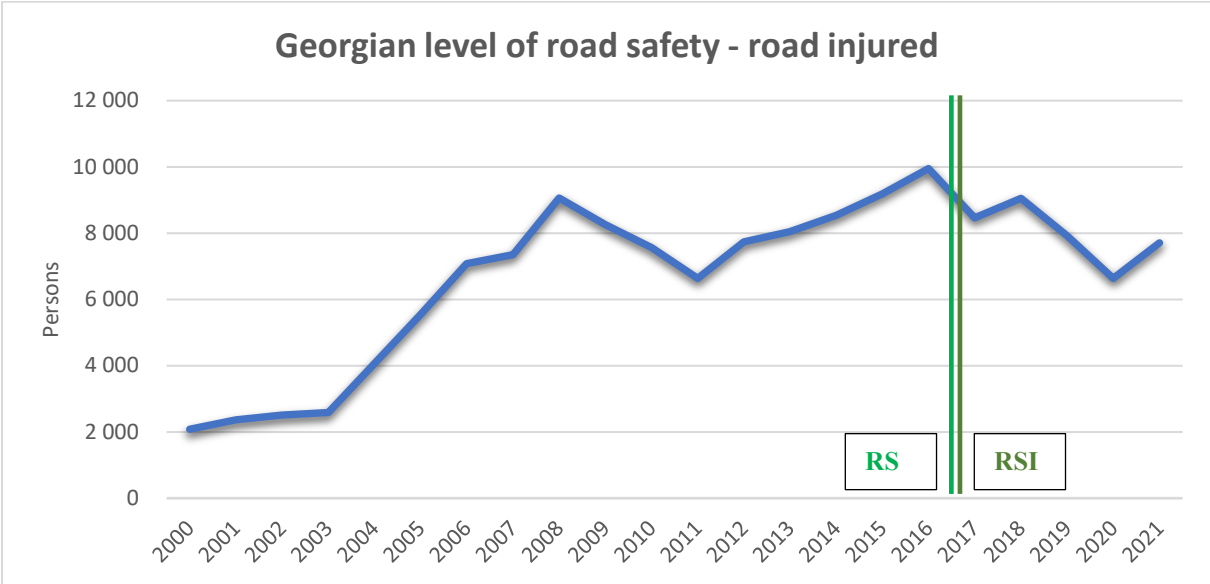
All TEM projects for motorways, expressways, interurban/rural roads, and urban roads are audited. Independent external auditors and internal personnel conduct Road Safety Audits. It is recommended to conduct audits as a team, but there is no requirement for a designated leader within the team.

RSI is conducted for TEM projects on motorways, expressways, interurban/rural roads, and urban roads. On average, inspections are carried out annually on 200 km of the TEM network, with approximately 45 km of road assessed during one inspection.

There is a requirement for roads to be inspected every three years by an independent team of inspectors with a designated leader. The team comprises external inspectors/auditors, contractors, and/or internal personnel.



Graph 11 Georgia: road fatalities (30 days)



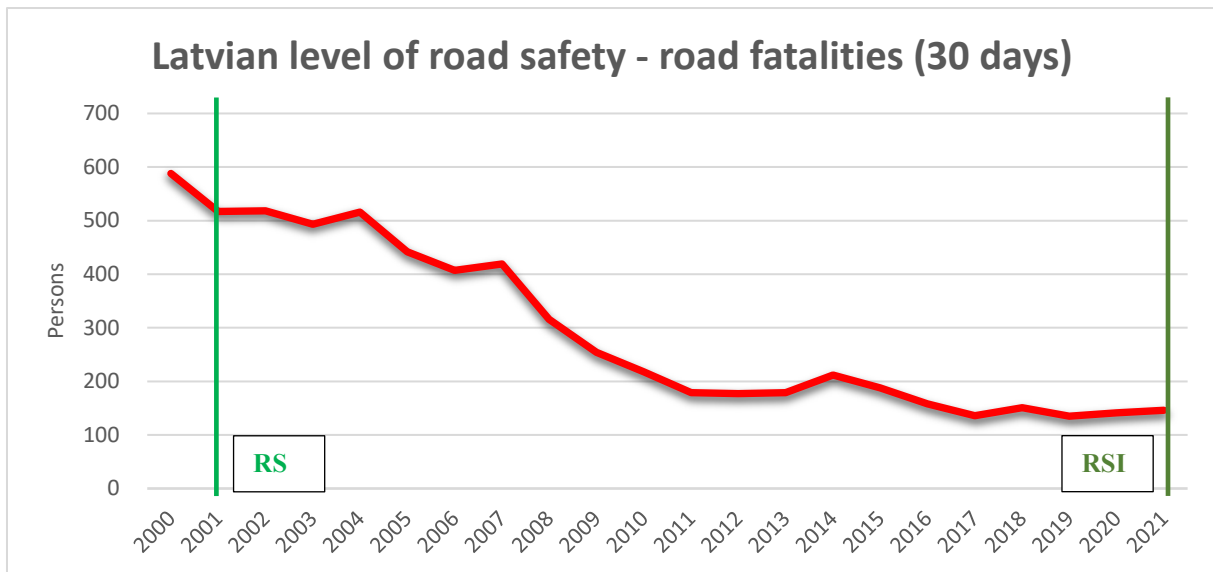
Graph 12 Georgia: road injured

The Roads Department in the Ministry of Regional Development in Georgia is responsible for launching and conducting RSA on the TEM network. RSA is necessary for the approval of a project on the TEM network. Similarly, the Roads Department in the Ministry of Regional Development in Georgia is responsible for launching and financing RSI on the TEM network.

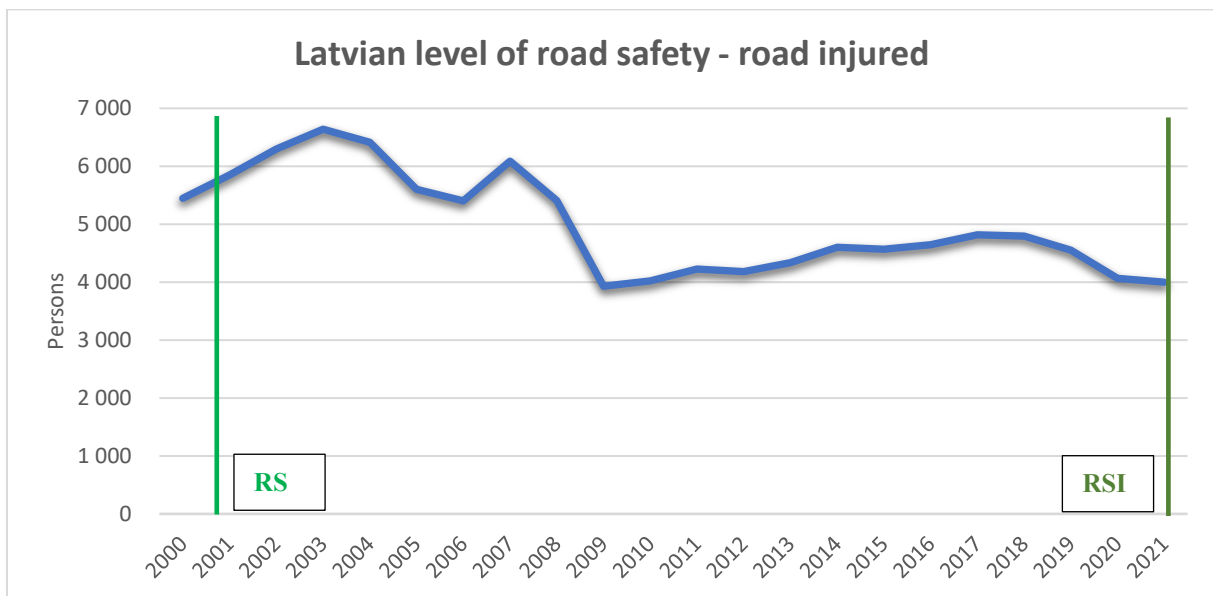
A certificate is required for RSA and RSI, but no additional training course is provided.

3.7 Latvia

RSA procedures were incorporated into Latvian law in 2001. Latvia still does not have guidelines/manuals for RSA, but in 2014, guidelines/manuals for RSI were issued. PRSI and TRSI procedures were incorporated into Latvian law in 2022.



Graph 13 Latvia: road fatalities (30 days)



Graph 14 Latvia: road injured

As indicated by the respondents, governmental-level laws and regulatory enactments by the Cabinet are at a high level, which helps prevent the bypassing of RSA. However, there needs to be more manuals and training programs for best practices and common regulations at the regional level.

Legal framework for RSI is satisfactory, amendments to the guidelines are needed to include targeted road safety inspections.

RSA is conducted in all phases (stage I – V) of projects on motorways, expressways, interurban/rural roads, and urban roads. The Latvian State Roads are responsible for launching, financing and conducting an RSA on the road network. RSA is conducted by an independent external auditors/contractor’s audit team with a leader.

As per DIRECTIVE (EU) 2019/1936 requirements OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2019, national legislation recognises the difference between Periodic RSI and Targeted RSI. However, due to the recent introduction of Periodic and Targeted RSI into national

legislation in 2022, they have yet to be implemented in practice on any road network segment. According to the updated law, Periodic and Targeted RSI should be conducted on interurban/rural roads and urban roads every six years.

The entire Latvian road network, approximately 420 km long, is subject to periodic inspections.

RSI is conducted by an independent external auditors/contractors audit team with a leader.

According to the current law from 2007, individuals holding the proper certificate can conduct Road Safety Audits. There are no separate standards for RSA and RSI certification. The institution issuing certificates is the governmental organization. The certificate is valid for three years.

Auditor is a person who meets the following requirements:

- has obtained a university education in the road sector or traffic management (management);
- has worked practically or managed works related to the road industry or traffic management industry for at least five years, and has experience in road design and road traffic accident analysis;
- has received an auditor's certificate in accordance with the procedures specified in the regulatory act on the certification of road safety auditors.

Candidates seeking certification shall demonstrate professional competence through the following:

- Passing knowledge test
- Passing practical exercises
- Passing individual tests/exams

Refreshing of certificate every 3 years need review about activities in RSA field.

According to regulatory enactment of the Cabinet No. 482 Certification of Road Safety Auditors program must include topics:

1. The importance of road safety issues in the field of public safety and aspects related to vulnerable road users and the infrastructure intended for them.
2. Analysis of road traffic accidents.
3. Need and principles of road safety audit.
4. Road safety audit stages: (from 1 to 5).
5. Audit of projects (construction projects) and existing roads.
6. Preparation of road safety audit opinion.
7. Practical lessons (also in real conditions).
8. Presentation of the road safety audit opinion.

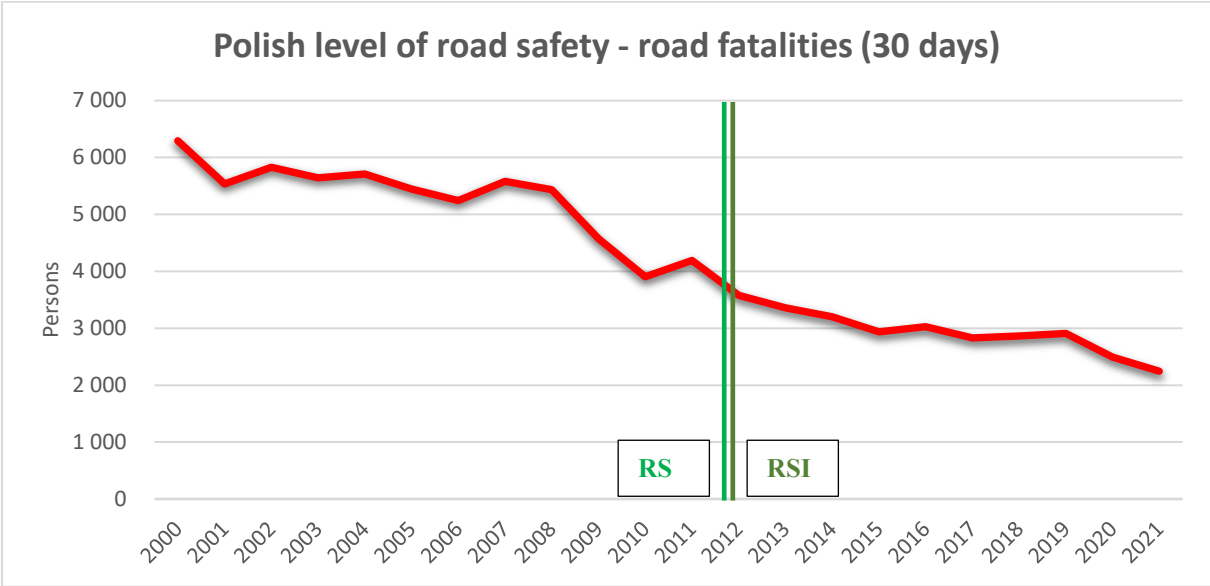
3.8 Poland

Before the entry into force of DIRECTIVE 2008/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on road infrastructure safety management, there were only a few documents containing systemic road infrastructure safety management.

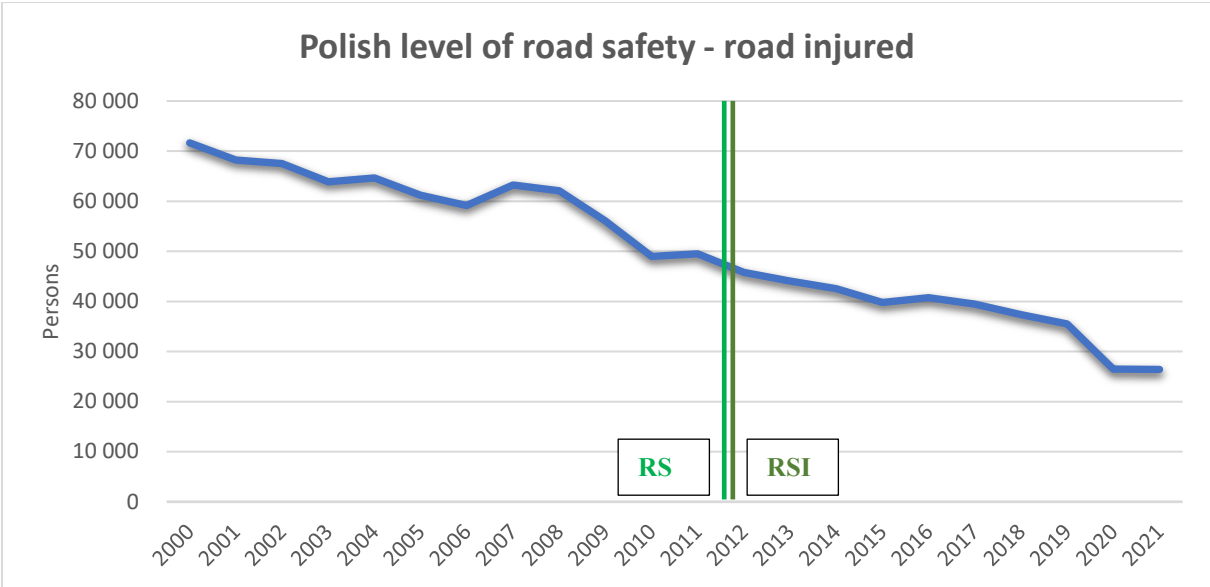
The first safety improvement programs in Poland were created in the 1990s. However, these were selective programmes, solving problems at various stages of investment implementation.

During this period, there was a growing awareness that issues related to road safety need to be systematically addressed. It was recognised how important it is to assess design solutions for road safety at a very early stage of investment planning and every subsequent stage of the project's lifecycle.

In 2000, the General Directorate for National Roads and Motorways (government road authority) began training road safety auditors.



Graph 15 Poland: road fatalities (30 days)



Graph 16 Poland: road injured

About 150 employees were trained during this period. In 2002-2004, this institution prepared instructions for Road Safety Auditors of the General Directorate for National Roads and Motorways. Also, during this period, this institution developed formal and substantive requirements for Road Safety Auditors. On April 24, 2004, the General Director of National Roads and Motorways introduced an ordinance on road safety audits. In 2006, the General Directorate for National Roads and Motorways implemented a trial road safety audit program for 88 selected road projects.

RSA and RSI procedures were incorporated into Polish law in 2012. The guideline for the RSA procedure was introduced in 2009 and has since been updated. The guideline for the RSI procedure was created in 2014 and has also been updated. The guidelines mentioned above include checklists and report templates. TRSI procedures were incorporated into Polish law in 2022.

RSA and RSI are carried out on:

1. Roads or sections thereof in the Trans-European Road Network;
2. Highways and motorways or sections thereof outside the Trans-European Road Network;
3. National roads or sections thereof that meet the following criteria:
 - a. Extend beyond the administrative boundaries of cities and
 - b. Are under construction, reconstruction, or have been constructed or reconstructed with the participation of funds from the European Union budget;
4. Voivodeship roads or sections thereof that collectively meet the criteria mentioned in point 3 and do not provide access to properties adjacent to them via an exit.

According to the definition derived from the legislation and Directive 96/2008 EC, road safety inspections are conducted on roads already in operation. The purpose of the inspection is to identify risky areas on the road that may contain hidden defects and where an abnormally high number of accidents may have yet to be recorded in the past. RSI is carried out at least once every three years.

National legislation does not recognise the difference between Periodic RSI and Targeted RSI. However, due to the recent introduction of Targeted RSI into national legislation in 2022, they have yet to be implemented in practice on any road network segment. According to the updated law, Targeted RSI should be conducted on TEM roads every three years.

The road authorities are responsible for launching RSA and RSI procedures on the TEM network, and these procedures are financed and conducted by him.

RSA is conducted in the preliminary project phase, detailed project phase, before opening, and twelve months after road opening. Furthermore, the RIA procedure is implemented during the study phase. A Road Safety Audit is necessary to approve projects on all national roads, including TEN-T-network.

Every year, 5.300 km of TEN-T-roads are inspected in Poland, with an average length of 100 km per inspection.

The General Director for National Roads and Motorways is responsible for launching Road Safety Audits and Road Safety Inspections on the TEN-T-network; respectively, funding is provided by the state treasury. The Regional Office Director of the General Directorate for National Roads and Motorways is responsible for conducting Road Safety Inspections on TEN-T-network.

Poland is a country with separate courses for Auditors and Inspectors. Certification is necessary for both Auditors and Inspectors. A guideline for training & certifying Auditors/Inspectors is available for Road Safety Audits only, issued in 2012.

The duration of the Road Safety Audit course is 120 hours, the most extended period within the countries covered. Four organisations (all universities) provide courses and the Ministry of Infrastructure issues certificates. Formal criteria for certification as an Auditor are academic qualifications (engineer in road construction, traffic engineering or transport), five years of work experience in road design, traffic engineering, road management or traffic management and the successful completion of the training course.

The certification's five-year validity period is refreshment courses are necessary to maintain the certificate (32 hours).

Courses for Inspectors last 30 hours. As RSI in Poland is conducted by internal personnel, courses were provided by one university for internal personnel of the road authority. Certificates are issued

by the same institution offering the course. Refreshment courses with a length of 30 hours are necessary; the validity period of the certification for Inspectors was not stated.

Formal criteria for certification as an Inspector are at least two years of practice in road design, traffic engineering, road management or traffic management and successful completion of the training course.

Poland Road Safety Inspections are divided into three types - general, detailed and special. General and special inspections performed at night are regular and cyclical to the entire national road network: the detailed inspection covers selected sections and places indicated based on road safety classification and general inspection. A special inspection also includes a safety inspection in road works.

General Inspection is performed during the day and is used to inspect the condition of elements located along the road (in the road lane and the safety zone) and to assess their impact on road safety. A general inspection is a systematic activity relating to the road, performed once every three years and aimed mainly at identifying hazards on the road, which will enable effective and efficient maintenance and planning of investment works.

A detailed inspection is carried out during the day and controls specific places, selected after the Road Safety Classification (risk class 5), as sections or points of concentration of road accidents. In addition, a detailed inspection is performed due to general inspections, during which hazards were identified that pose a potentially high risk of severe accidents (fatalities and serious injuries) or as needed. Detailed inspection can refer to a selected road section, intersection or another specific place (pedestrian crossing, horizontal or vertical curve).

Detailed inspection may be supplemented with Night Time Control. During a detailed inspection, apart from the elements of the road infrastructure and its surroundings, the behaviour of road users should also be monitored in terms of safety, and the impact of selected aspects of the road infrastructure and its environment on this behaviour should be analysed. If the detailed inspection concerns an intersection, a safety analysis should also be carried out, considering 100-meter sections of road inlets intersecting the main road.

A detailed inspection should be additionally ordered in an accident with many fatalities (at least four people). In such a case, it is necessary to analyse in detail the potential faults of the road and its surroundings, which could contribute to such a severe accident.

Road night inspection is used to analyse the perception of the road and its equipment in the absence of natural light. This control aims to determine the need for lighting hazardous places – intersections and pedestrian crossings. The inspection is also used to assess the visibility of the marking at night and the occurrence of dazzling drivers by cars driving from the opposite side and by objects in the road lane or its immediate vicinity (e.g. advertisements). This cyclical inspection is performed every three years, including the road inspection performed in the fall. The Night Inspection may also complement the Detailed Inspection.

Road works inspection is used to check whether the road works are appropriately organised and secured from the point of view of road safety. Road works inspection for investment works, such as construction, reconstruction, or road extension, is carried out at least once a month and every time after changing the temporary traffic organisation. For other road works, inspections are carried out as needed. The inspection covers the organisation of traffic in the area of works, securing all road users, conducting and marking any detours, vertical and horizontal marking in the area of road works, the

behaviour of road users, connecting employees, including clothing inspection, checking the correct functioning of temporary traffic lights. It should also be checked whether the approved traffic organisation project carries out the traffic organisation for the time of the works.

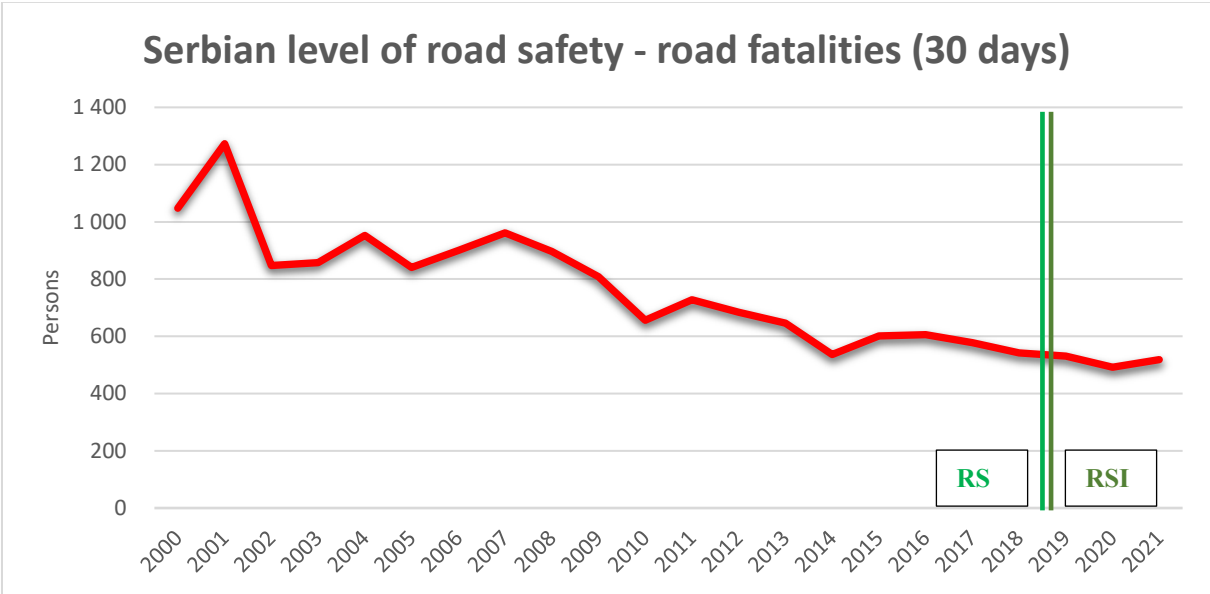
Each Inspection should be carried out once, on a limited length that guarantees the appropriate quality of the inspectors' work. In the event of a general or special check, the assessed section of the road must be driven twice (The review for both directions must be carried out separately). With a team of 2-3 inspectors, the tasks for each inspector and possibly accompanying persons before going into the field should be precisely defined. It is recommended that the maximum length of travel per day is 200 km (100 km travel distance in both directions). In the case of detailed inspections that require an on-site visit, there is no daily limit.

3.9 Serbia

In the Republic of Serbia, RSA and RSI procedures were incorporated into the law in 2019.

During this time, guidelines for RSA were developed and implemented. Subsequently, in 2023, a Guideline for Professional Training and Examination of Auditors and Road Safety Inspectors was created, along with Guidelines for Road Safety Inspection.

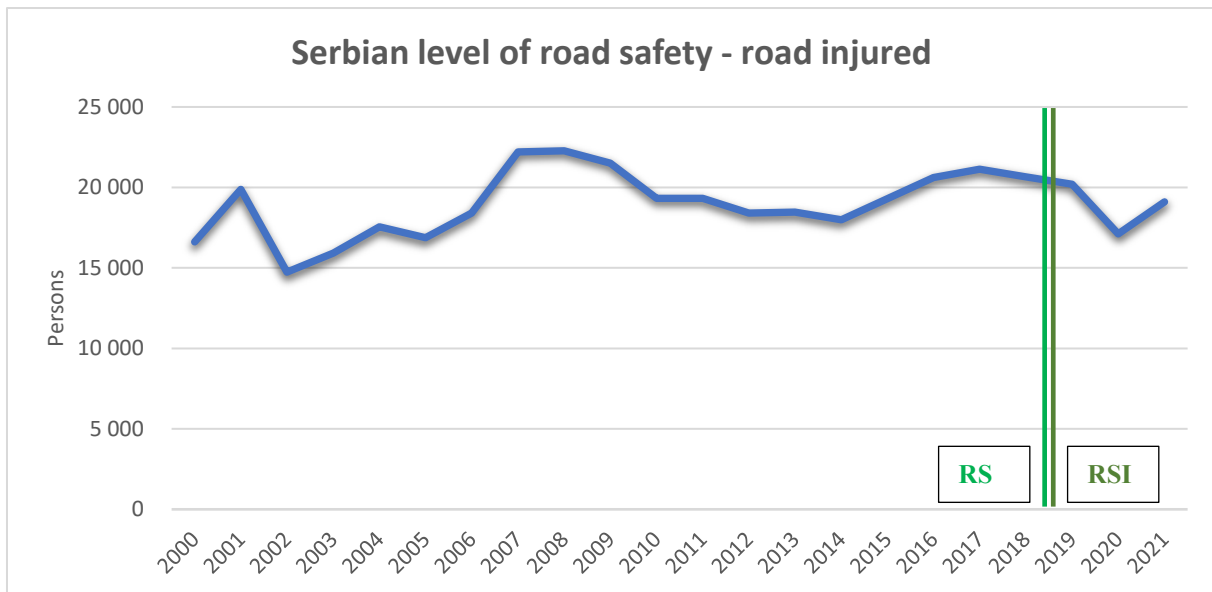
These documents contain checklists and report templates for conducting periodic and targeted RSA and RSI procedures.



Graph 17 Serbia: road fatalities (30 days)

RSA is carried out in the preliminary project phase, detailed project phase, before opening, and six months after road opening. RSA covers TEM motorways and expressways. An external team of independent auditors conducts the RSA procedure.

RSI is conducted every five years on interurban/rural roads. An external team of independent inspectors carries out the RSI procedure.



Graph 18 Serbia: road injured

The initiation and financing of RSA and RSI on the TEM network are the responsibility of the managing body or the investor of the infrastructure project, which places orders for new road construction projects or existing road reconstruction projects. RSA is essential for project approval on the TEM network.

To conduct RSA and RSI, certification is required. As mentioned earlier 2023, a Guideline for Professional Training and Examination was issued for auditors and road safety inspectors.

In the Republic of Serbia, initial courses are implemented separately for Auditors and Road Safety Inspectors. A six-day course concluded with the issuing of a certificate is conducted by the road authority. A certificate is contingent on completing the training course and a final knowledge test. The certificate is valid for five years; during its validity, participants must attend three refreshment courses (1 working day per refreshment course).

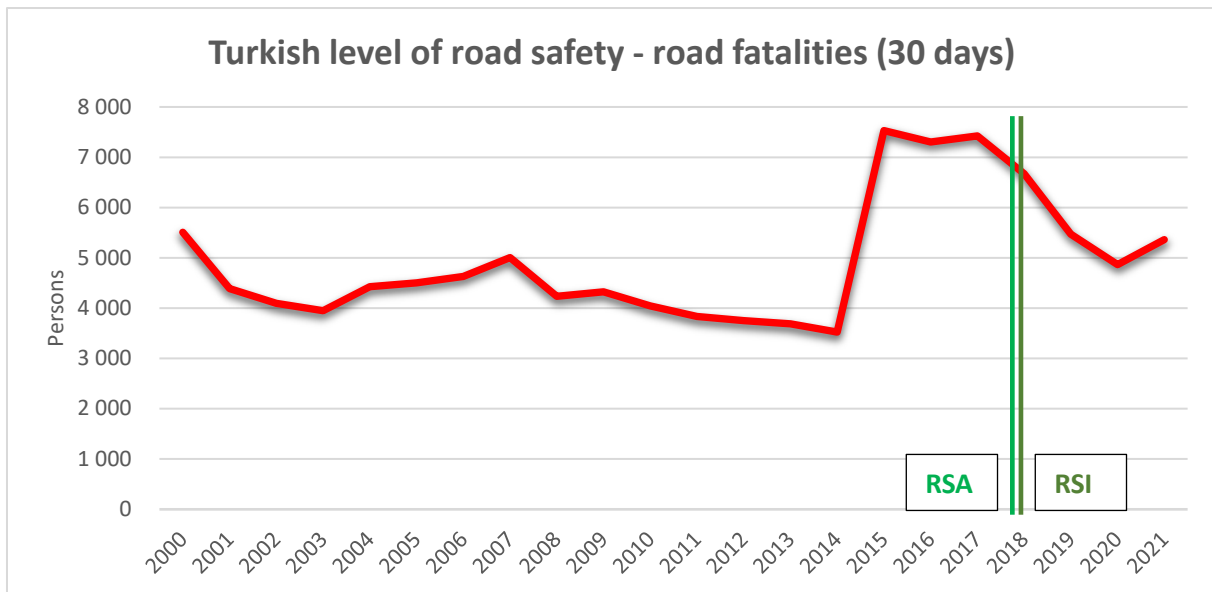
3.10 Türkiye

Road Safety Audit (RSA) procedures and Road Safety Inspection (RSI) procedures were incorporated into Turkish legislation on 21/10/2018.

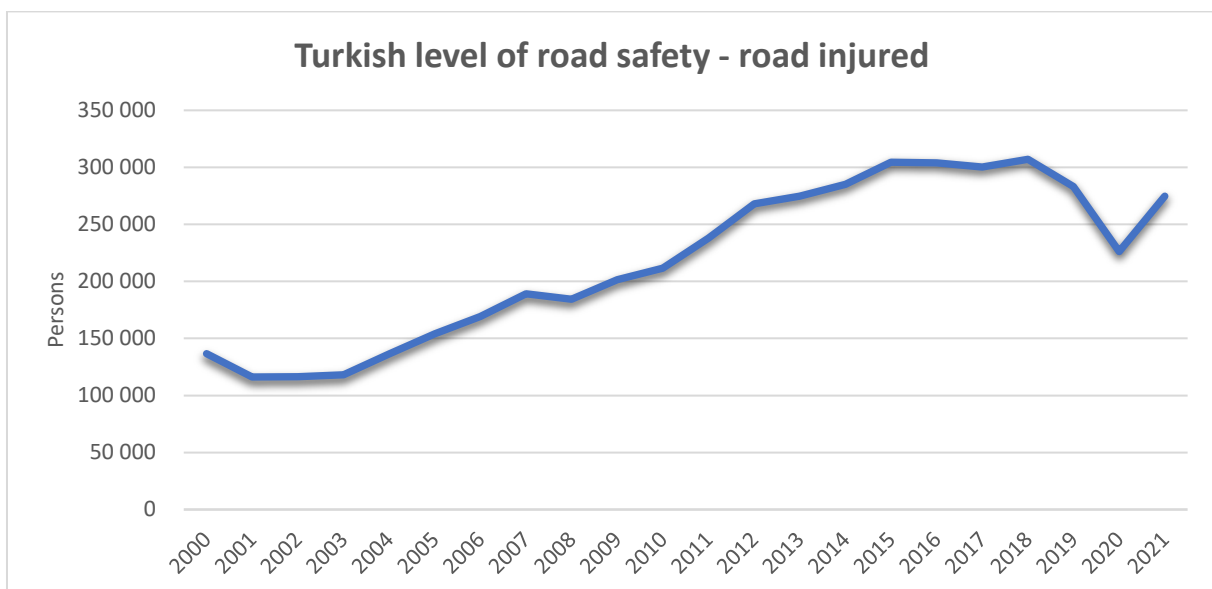
According to the current regulations:

- Road Safety Audit (RSA) is an independent, detailed, systematic, and technical safety examination covering all stages of highway infrastructure projects' design features, from the preliminary design stage until the road is opened to traffic.
- Periodic Road Safety Inspection (RSI) involves identifying elements that require improvement and maintenance works and assessing road infrastructure features for road safety on the roads open to traffic at regular and specified time intervals.

Currently, no guidelines are available for Road Safety Audits and Road Safety Inspections. Implementation studies have been initiated by the "Regulation on Road Infrastructure Safety Management," published in the Official Gazette on 21.10.2018, to comply with the EC Directive dated 19 November 2008 and numbered 2008/96 on Road Infrastructure Safety Management.



Graph 19 Türkiye: road fatalities (30 days)



Graph 20 Türkiye: road injured

The General Directorate of Highways is responsible for preparing documents such as guides, manuals, specifications, etc., required to implement the regulation within five years from the publication date of this regulation. It is planned that the inspections will be performed by certified road infrastructure safety experts three years after these documents are published.

To align Turkish Legislation with Directive 2008/96/EC on Road Infrastructure Safety Management, an analysis of the current situation will be conducted, technical visits to EU countries will be arranged, and stakeholder workshops will be shown.

Currently, Road Safety Audits are conducted by independent internal personnel for the preliminary project and detailed project phases. They apply to TEM projects on interurban/rural roads. A team of auditors carries out audits, but there is no requirement to designate a team leader.

The General Directorate of Highways is responsible for launching, financing, and conducting RSA on the TEM network. RSA is necessary for the approval of a project on the TEM network.

The gathered information shows that the current institutional structure needs to be revised to complete the regulation. Therefore, institutional capacity will be increased by changing the existing institutional system and training the relevant staff within the scope of the EU project.

Section 4: Detailed analysis of the RSA and RSI practices in the region

This section presents a comparative analysis of critical aspects of implementing RSA and RSI in individual countries. The basis for the study was questionnaires filled out by respondents from ten countries listed in the previous chapter.

The questions included in the questionnaires (Appendices 2 to 12 of this report) were grouped into the following areas:

- 1. Legal framework/guidelines
- 2. Experiences in the implementation of RSA / RSI
- 3. Administrative and institutional set-up
- 4. Training and certification of auditors/road safety inspectors

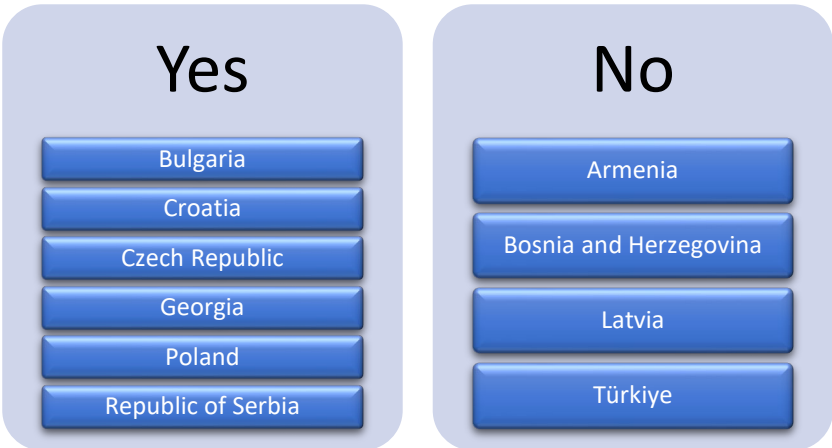
It should be emphasized that the level of detail and completeness of responses to the questions varied significantly in cases where a respondent needed to answer a question or provide a more brief response. Their country of origin was not included in the comparative analysis of that particular issue.

4.1 Legal framework and guidelines

4.1.1 National guidelines and manuals for the RSA

National guidelines and manuals for the RSA have been implemented in most countries surveyed. This perfect practice should be widely adopted in countries where it has yet to be done. Developing guidelines/manuals for RSA allows for standardizing activities.

Furthermore, including a checklist in these guidelines/manuals facilitates multidisciplinary assessment of various aspects of road safety for those conducting RSAs.



A drawback of such an approach is the tendency of auditors to only respond to questions found in the checklist, which may prove insufficient depending on the level of detail of such a list that needs to be revised. It should be noted that the multitude of factors affecting road safety is so vast and dependent on individual solutions that it is not possible to describe them in a closed list of questions.

In summary, introducing national guidelines/manuals for RSA with an additional checklist is a recommended and commendable practice for countries that still need to implement such a document into their national laws or internal regulations

4.1.2 National guidelines and manuals for the RSI

Most countries participating in the survey have implemented national guidelines/manuals for RSI (Road Safety Inspections). This excellent practice should be widely adopted in countries where it has yet to be done.

Developing guidelines/manuals for RSI allows for standardizing activities. Furthermore, including a checklist in these guidelines/manuals facilitates multidisciplinary assessment of various aspects of road safety for those conducting RSIs. This is especially important in cases where a country still needs to implement a certification process for RSI inspectors, and RSIs are driven by internal personnel.



A drawback of such an approach is the tendency of inspectors to only respond to questions found in the checklist, which may prove insufficient depending on the level of detail of such a list. It should be noted that the multitude of factors affecting road safety is so vast and dependent on local conditions that it is impossible to describe them in a closed list of questions.

In summary, introducing national guidelines/manuals for RSI with an additional checklist is a recommended and commendable practice for countries that still need to implement such a document into their national laws or internal regulations.

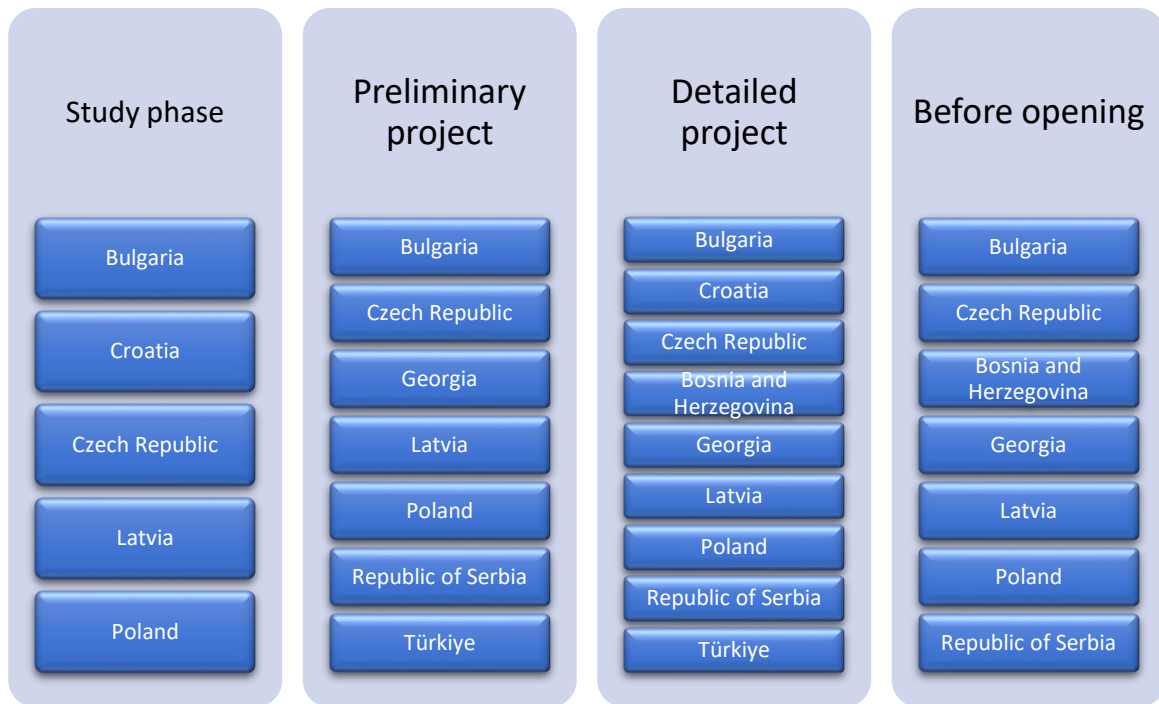
4.2 Experiences in the implementation of the RSA and RSI

4.2.1 Phase of carrying out the RSA

In most countries participating in the survey, the RSA (Road Safety Audit) procedure is focused on the preliminary and detailed project stages before road opening. Conducting audits at the project and before opening stages allows for a multidisciplinary assessment of project documentation and correcting any oversights before the road is opened for use.

As revealed by the study, fewer surveyed countries performed RSA during the study phase. It should be emphasized that conducting assessments at such an early stage enables the evaluation of the correctness of design solutions regarding selecting optimal road corridors and appropriate types of intersections from a road safety perspective.

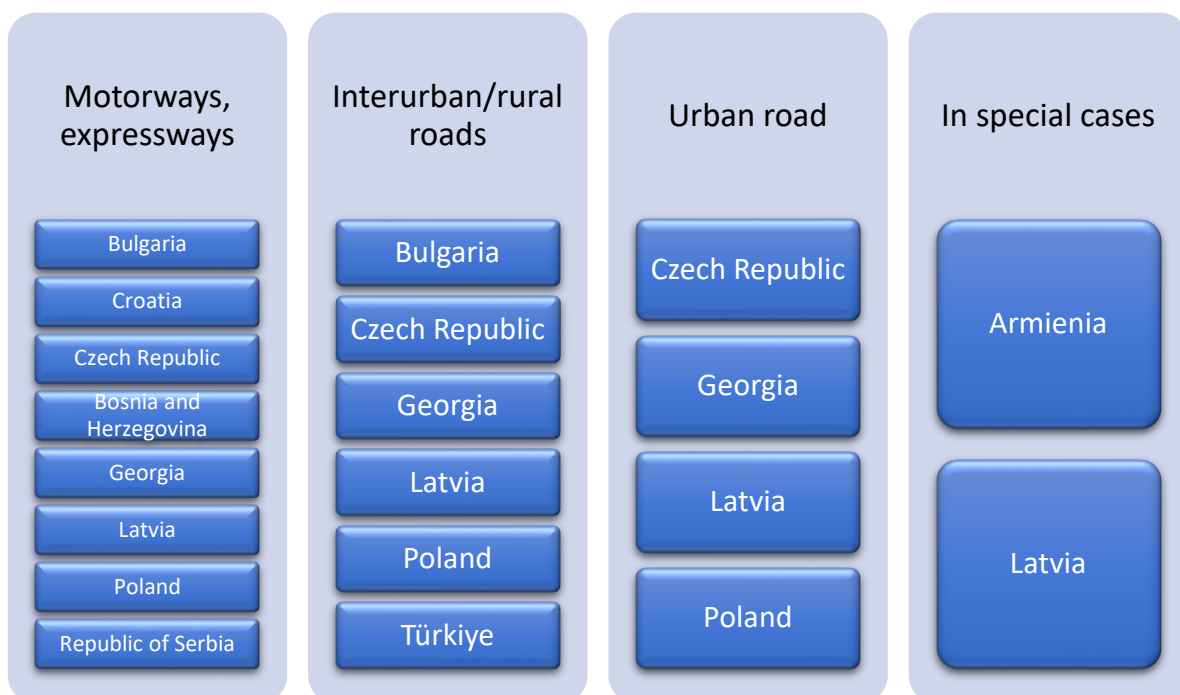
Performing RSA during the study phase also helps minimize investment costs because corrective actions during project implementation are usually much more expensive.



Additionally it is worth mentioning that a few countries from the region carry out the RSA procedure after opening. It should be noted that conducting RSA at this stage allows for verifying and comparing the project assumptions with actual traffic conditions and road user behaviour. Performing RSA at this stage facilitates the evaluation of investment assumptions and contributes to the self-improvement of the institution conducting the RSA.

4.2.2 The type of the roads on which the RSA is carried out

As indicated by the survey, most countries perform RSA (Road Safety Audit) on motorways, expressways, and interurban/rural roads. This assumption is correct since speed often determines the severity of accidents on these roads.



However, it should be noted that black spots usually occur on urban roads, especially at the entrances to towns within pedestrian crossings. Many conflict points between vehicles and unprotected road users characterise urban sections. Therefore, it is recommended also to conduct the RSA procedure on urban road sections.

4.2.3 Auditors

The survey revealed that different countries have organized personnel for conducting RSA (Road Safety Audit) in various ways. Depending on the country, road authorities or road managing companies carry out the RSA procedure. As the surveys indicate, the RSA procedure personnel can be internal staff or external entities. Both of these solutions have their advantages and disadvantages.



One advantage of the approach where RSA is conducted by internal staff of road authorities is that, especially in countries where the procedure is being newly implemented, the expertise of a specialized internal team allows for gradually building these competencies among a broader group of engineers (both administrative employees and eventually designers and representatives of construction and maintenance companies).

A disadvantage of this type of solution is the issue of auditors' independence, which will be described in the further part of the comparative analysis.

Additionally, when auditors are part of a construction or maintenance company's staff, there is a significant risk that, due to reluctance to incur additional costs for corrective actions (Design and Building or Design, Building, and Maintenance projects), auditors may avoid identifying defects that would result in high repair costs.

4.2.4 Audit teams and single auditors

The survey results indicate that the RSA (Road Safety Audit) procedure cannot be conducted by a single auditor in most countries.

This is a very positive trend that allows for maintaining an objective assessment, which serves as a compromise between the opinions of individual audit team members.

It helps to avoid extreme opinions and results in auditors improving each other's skills through mutual learning and collaboration.



4.2.5 Auditors independence

In all countries participating in the survey, the importance of the independence of road safety auditors was emphasised. This principle should be a top priority, especially in countries implementing the RSA (Road Safety Audit) procedure.



While it was noted in all countries that maintaining the independence of RSA auditors is crucial, the practice of selecting them from internal staff may be a subject of debate.

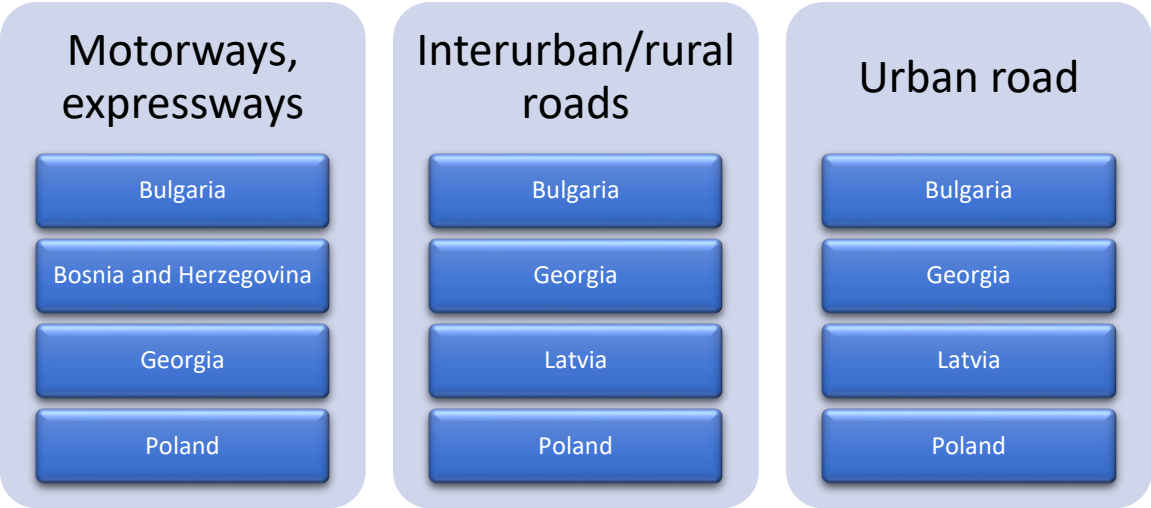
It's essential to highlight that such an approach can lead to conflicts within the audit organisation because the auditor performing RSA depends on their superior.

This poses a risk of omitting defects in RSA reports that could result in high repair costs (a conflict of business nature) or defects arising from oversights by the RSA auditor in the earlier stages of documentation (a conflict of a disciplinary nature).

In such cases, measures should be implemented within the institution to minimise the risk of compromising the independence of RSA auditors, such as cross-RSA conducted by an auditor from a different branch of the organisation not directly involved in the design, supervision, or maintenance of the audited road section.

4.2.6 The type of the roads on which the RSI is carried out

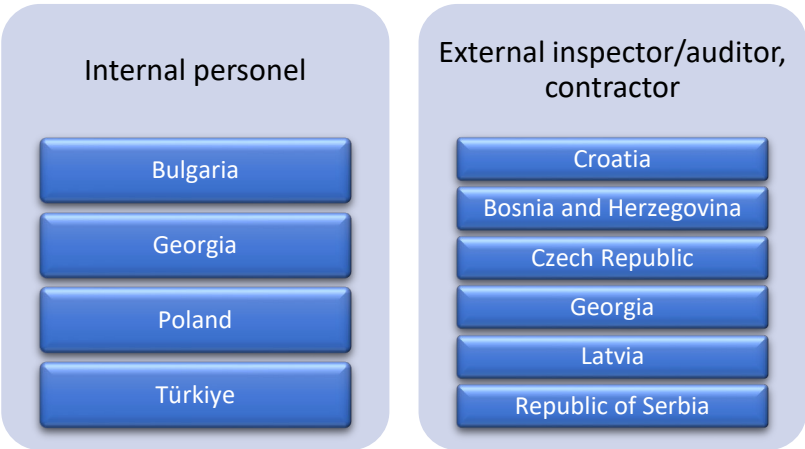
According to the responses provided in the questionnaires, three countries (Bulgaria, Georgia, Poland) have the RSI (Road Safety Inspection) procedure implemented on all types of roads. Similarly to RSA (Road Safety Audit), it is recommended to conduct RSI on all types of roads because this procedure is the fundamental tool for ongoing road safety assessment on used roads.



This procedure allows for the quick identification of hazardous locations and the implementation of remedial actions (especially in routine road maintenance) to help reduce or even eliminate the causes of road safety hazards.

4.2.7 Inspectors

The survey revealed that different countries have organized personnel conducting RSI (Road Safety Inspection) in various ways. Depending on the country, road authorities or road managing companies carry out the RSI procedure. As indicated in the surveys, the RSI procedure personnel can be internal or external to these organizations. Both of these solutions have their advantages and disadvantages.



One advantage of having internal road authorities conduct RSI is that, especially in countries where the procedure is being introduced, the expertise of specialized internal personnel allows for the

gradual development of these competencies among a broader group of engineers, including both administrative staff and over time, representatives of road maintenance companies.

However, a disadvantage of this type of solution is the issue of independence of the inspectors, which will be described in more detail in the subsequent comparative analysis. Furthermore, in cases where the inspectors are part of the road maintenance company's personnel, there is a significant risk that, due to reluctance to incur additional costs for corrective actions (Design and Building or Design, Building, and Maintenance projects), inspectors may avoid identifying defects that would result in high repair costs.

4.2.8 Inspections team and single inspector



The survey results indicate that the Road Safety Inspection (RSI) procedure only allows a few inspectors to conduct it in most countries.

This is a very positive trend that enables the maintenance of an objective assessment, which represents a compromise of the views of individual team members. It helps to avoid extreme opinions and results in mutual improvement among the Inspectors.

4.2.9 Inspector independence



In almost all countries participating in the survey (except for the Poland), the importance of the independence of Inspectors was emphasized. This is a principle that should be considered primarily in countries that are in the process of implementing the RSI procedure. While all countries indicated the

necessity of maintaining the independence of Inspectors, the practice of selecting them from internal staff may raise questions. It should be noted that such a solution can lead to conflicts within the auditing organization because an Inspector conducting RSI depends on their superior.

This poses a risk of omitting defects in RSI reports that could result in high repair costs (a conflict of business nature) or defects resulting from oversights by the person conducting the RSI in the earlier stages (a conflict of a disciplinary nature).

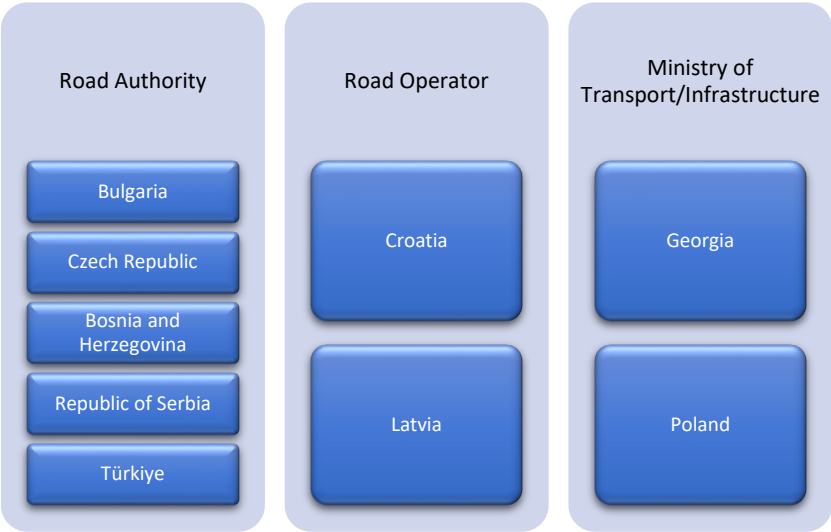
In such cases, it is advisable to implement control mechanisms within the institution to minimize the risk of Inspector independence not being upheld, such as cross-auditing conducted by an Inspector from another branch of the organization not directly involved in maintaining the audited road section.

4.3 Administrative and institutional set-up

4.3.1 Entity responsible for launching the RSA

In the most surveyed countries, the road authority initiates the RSA procedure. Such a solution carries the risk of RSA procedures being conducted only by the Road Authority responsible for a particular type of road.

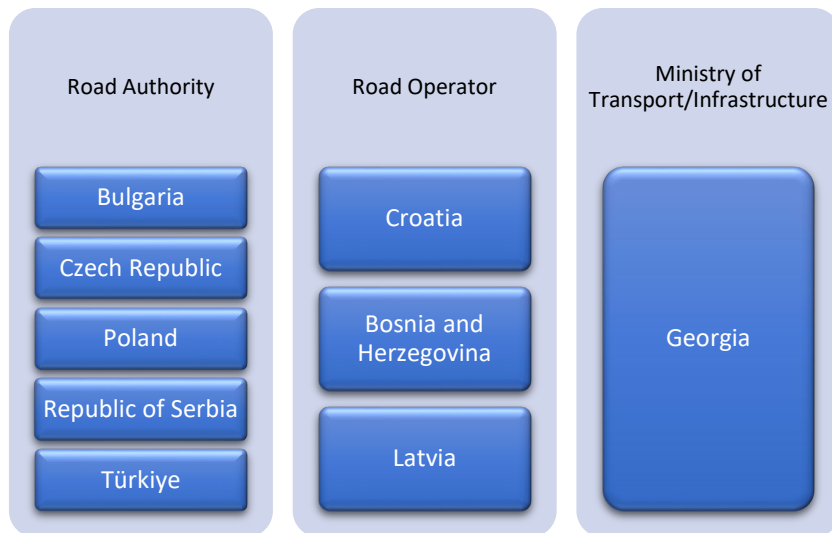
Establishing legal regulations for the RSA procedure through the relevant Ministry is recommended, which will allow for coordinating activities related to conducting the RSA procedure across the entire road network in a given country.



4.3.2 Entity responsible for financing the RSA

In the majority of surveyed countries, the road authority is responsible for financing the RSA procedure.

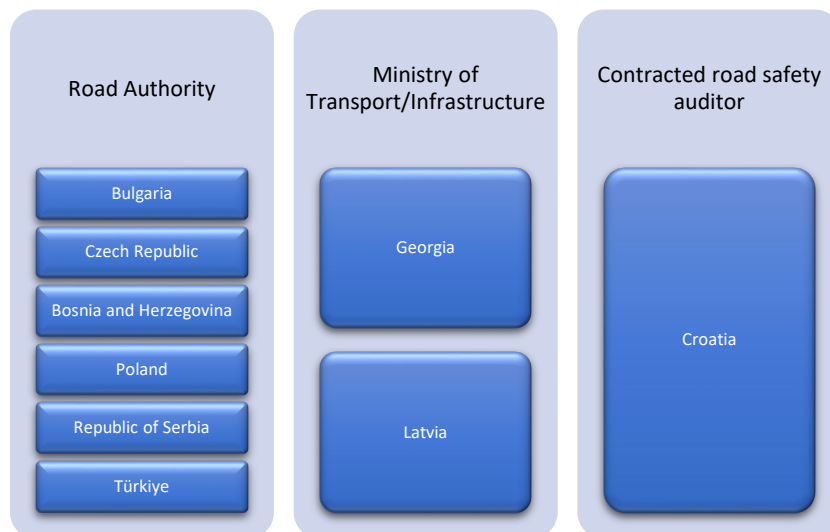
This is a good trend because, in most cases, these institutions include the costs associated with conducting RSA in the overall investment costs when planning funding for the preparation and implementation of projects.



4.3.3 Entity responsible for conducting the RSA

In most surveyed countries, the road authority is responsible for financing the RSA procedure. This is a good trend because, in most cases, the road authority is responsible for managing the safety of the infrastructure and possesses detailed data regarding the audited road section.

This organization of RSA allows for the coordination of work between designers and RSA Auditors, thereby facilitating a shortened design and project assessment process.



4.3.4 Requirements to conduct the RSA for project approval

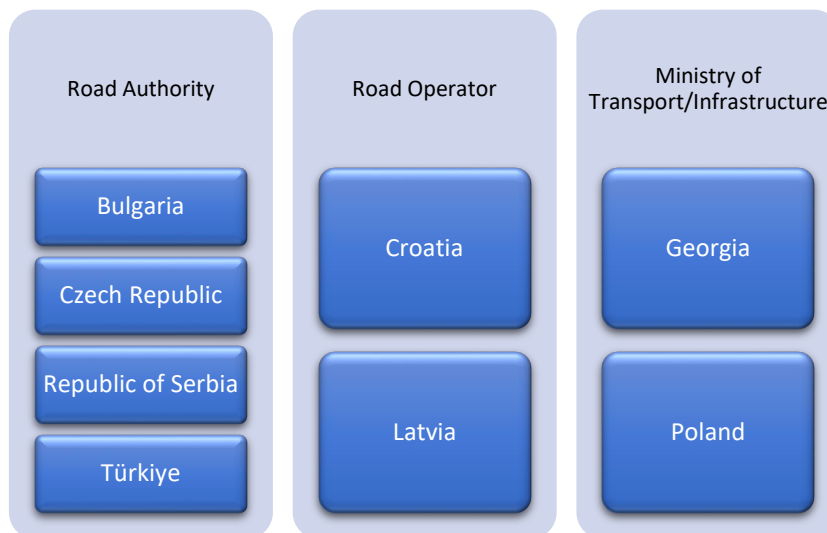


In almost all surveyed countries (except for the Czech Republic), conducting the RSA procedure is necessary for approving a project intended for implementation. This very positive trend allows for implementing projects with a minimized number of solutions that could pose risks to road safety..

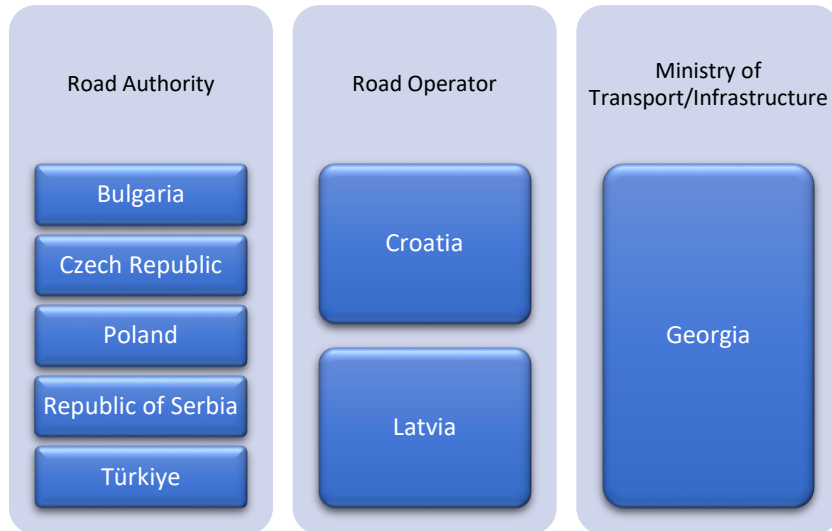
4.3.5 Entity responsible for launching the RSI

In most surveyed countries, the Road Authority initiates the RSI procedure. This solution carries the risk of the RSI procedure being conducted only by the Road Authority responsible for a particular type of road.

It is recommended to legally implement the RSI procedure through the relevant Ministry, which would allow for coordinating activities related to conducting the RSI procedure across the entire road network in the country.



4.3.6 Entity responsible for financing the RSI



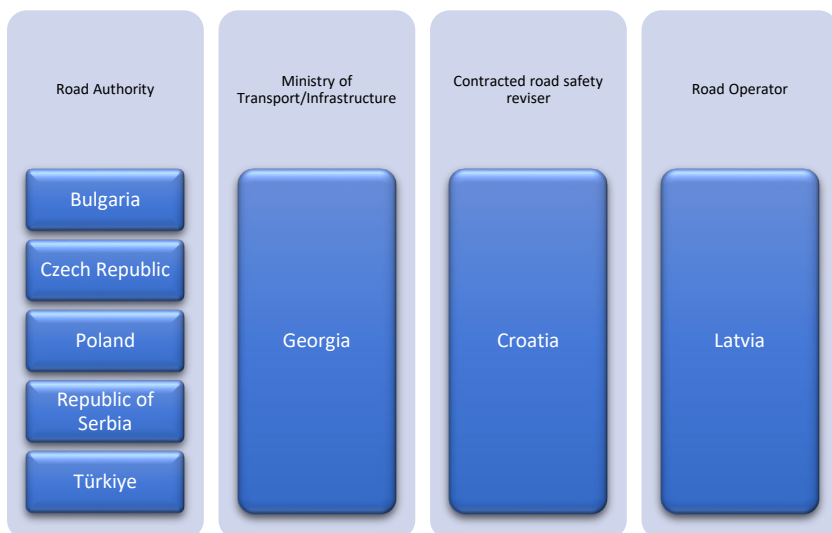
In most surveyed countries, the road authority is responsible for financing the RSI procedure.

This is a good trend because, in most cases, these institutions, when planning funds for road maintenance, include the costs associated with conducting RSI in the overall maintenance costs.

4.3.7 Entity responsible for conducting the RSI

In most surveyed countries, the road authority is responsible for financing the RSI procedure. This is a good trend because, in most cases, the Road Authority is responsible for managing the safety of the infrastructure and possesses detailed data regarding the assessed road section.

This organization of RSI allows for efficient remedial actions in the case of identifying hazardous locations that pose a threat to road safety.



4.4 Training and certification of the auditors and inspectors

4.4.1 Requirements to possess a certificate for conducting the RSA

In all surveyed countries, it was emphasized that conducting RSA requires the RSA Auditor to possess the appropriate certification. This is an excellent practice because the knowledge and the way RSA Auditors assess design solutions are significantly broader than designers' "typical" knowledge.

RSA Auditors should have multidisciplinary knowledge, which should be continuously updated.

Yes

Bulgaria
Croatia
Czech Republic
Bosnia and Herzegovina
Georgia
Latvia
Poland
Republic of Serbia

Moreover, an RSA Auditor conducting an audit should evaluate the given design or execution solutions from the perspective of use by all authorized road users (pedestrians, persons with disabilities, cyclists, motorcyclists, drivers of passenger vehicles, trucks, buses, and special vehicles).

4.4.2 Requirements to possess a certificate for conducting the RSI

Yes

Bulgaria
Croatia
Czech Republic
Bosnia and Herzegovina
Georgia
Republic of Serbia

No

Bulgaria
Latvia
Poland

In most surveyed countries, it was indicated that conducting RSI requires the Inspector to possess the appropriate certification. This is an excellent practice because the person conducting RSI should already have practical experience and expertise in identifying hazardous locations on the road section in use. This knowledge should be continuously updated.

4.4.3 Initial course for auditors

In almost all surveyed countries (except for Georgia and Latvia), there is a requirement for Auditors to undergo an Initial course. This is an excellent practice because it is essential to differentiate between initial and refreshment courses.

The preparatory courses should be more comprehensive to encourage candidates to have a broader understanding of road safety issues beyond just evaluating the technical correctness of design solutions. Refreshment courses should focus on sharing experiences among auditors and evaluating auditing assumptions.



4.4.4 Initial course for inspectors

In almost all surveyed countries (except for Georgia and Latvia), there is a requirement for Inspectors to undergo an Initial course. This is a perfect practice because it is essential to differentiate between initial and refreshment courses.

The preparatory courses should be more comprehensive to encourage candidates to have a much broader understanding of road safety issues on the audited road sections. Refreshment courses should focus on sharing experiences among Inspectors and evaluating the initial assumptions.



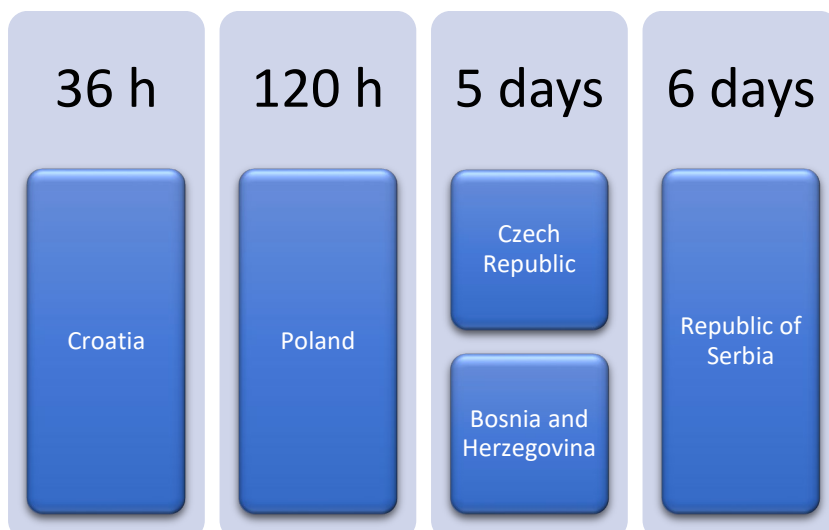
4.4.5 Separate courses for auditors and inspectors

The research indicates only one trend in conducting joint courses for Road Safety Auditors and Inspectors. The authors of this report emphasize the excellent practice of having at least one member of the team conducting Road Safety Inspections be a Road Safety Auditor.

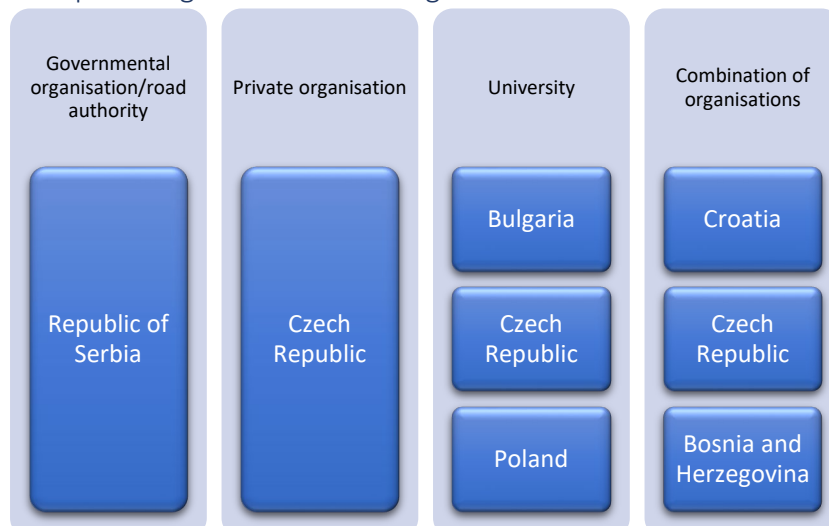


4.4.6 Duration of the RSA training courses

The research indicates no single trend in the duration of courses for Road Safety Auditors. This report recommends selecting sufficient course hours to cover the necessary theoretical and practical sessions (including documentation and in-site visits) and allow time for experience exchange.

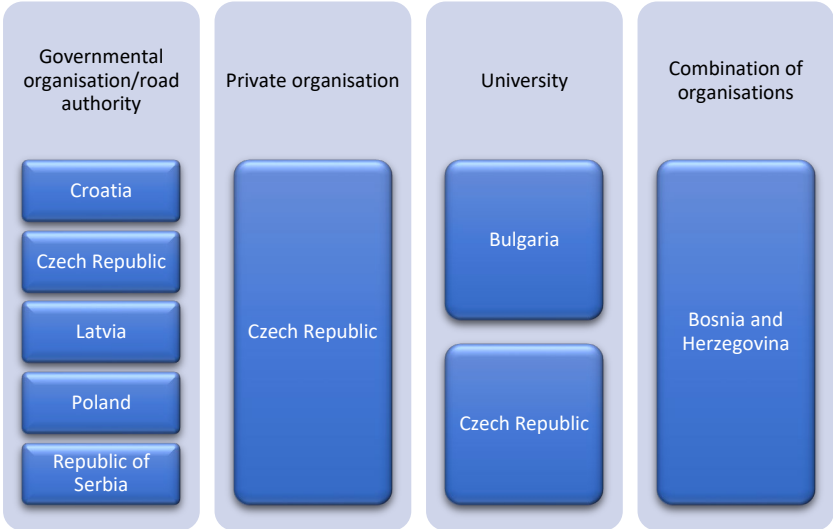


4.4.7 Organisations providing of the RSA training courses



The survey results indicate that the dominant trend is the provision of courses by universities or through a combination of organizations. Regardless of who is entrusted with conducting the courses, participants must acquire theoretical knowledge and the latest practical insights into road safety.

4.4.8 Organisations issuing of the RSA certificates



The analysis of the submitted surveys has shown that the prevailing trend is the issuance of certificates by Governmental organizations or Road authorities.

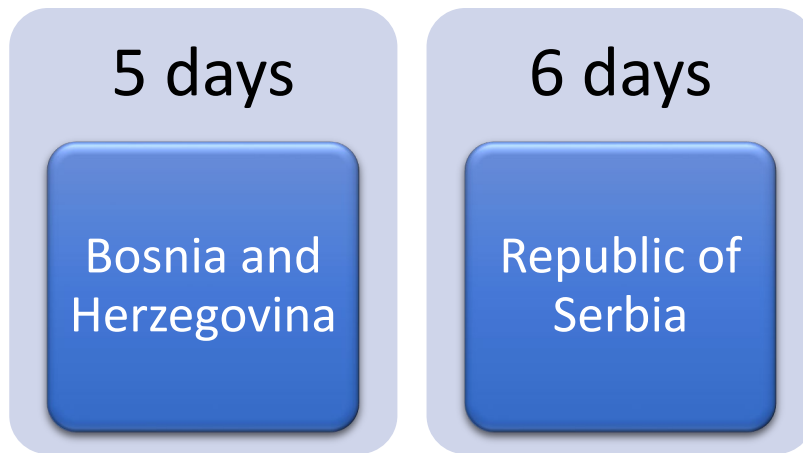
4.4.9 Refreshment courses to maintain the RSA certificate

In most surveyed countries, the requirement for a refreshment course has been introduced. According to the authors of this report, this is a good practice. Refreshment courses should focus on the exchange of experiences among Inspectors and the evaluation of initial assumptions.

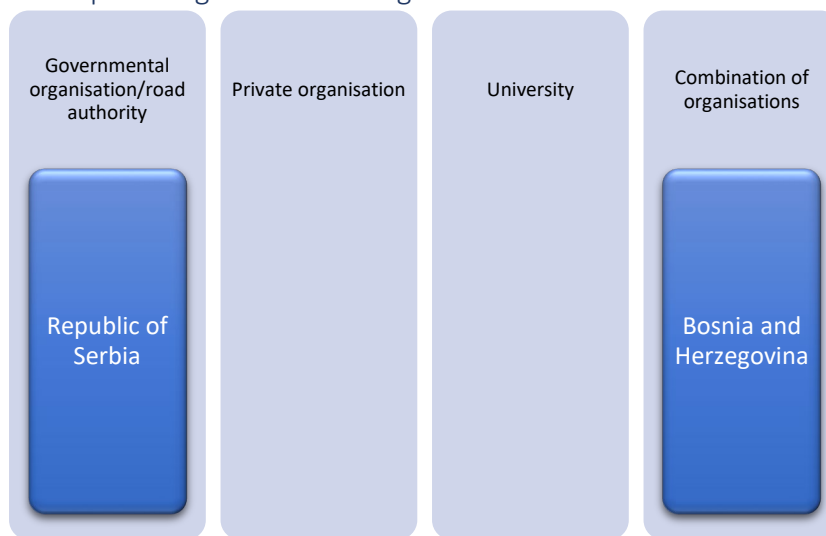


4.4.10 Duration of the RSI training courses

Based on the limited responses to this question, it is difficult to determine the optimal duration for Inspector courses. The authors of this report recommend selecting a sufficient number of course hours to cover necessary theoretical and practical field exercises and allow time for experience sharing.

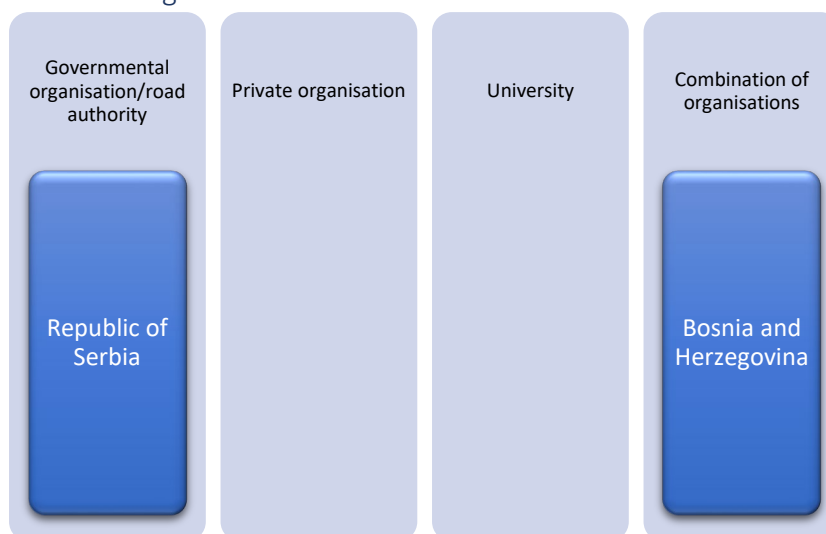


4.4.11 Organisations providing the RSI training courses



The limited responses to this question make it challenging to determine a general trend. This report recommends selecting an institution capable of professionally and engagingly conducting the necessary theoretical and practical field exercises and moderating the exchange of experiences among course participants.

4.4.12 Organisations issuing the RSI certificates



Due to the lack of a sufficient sample of data to determine the dominant trend, the report's authors recommend adopting a Governmental organization or Road authority, similar to the approach for Auditor courses.

4.4.13 Refreshment courses to maintain the RSI certificate

Due to the lack of a sufficient sample of data, a dominant trend cannot be determined.



Section 5: Summary and recommendations

5.1 The Safe System approach and areas of intervention

According to the “Global Plan. Decade of Action for Road Safety 2021-2023” road traffic crashes cause worldwide nearly 1.3 million preventable deaths and an estimated 50 million injuries each year – making it the leading killer of children and young people worldwide. As things stand, they are set to cause a further estimated 13 million deaths and 500 million injuries during the next decade and hinder sustainable development, particularly in low and middle-income countries.

Recognizing the importance of the problem and the need to act, governments from around the world declared unanimously — through UN General Assembly Resolution 74/299 — a Second Decade of Action for Road Safety 2021–2030 with the explicit target to reduce road deaths and injuries by at least 50% during that period.

The Global Plan calls on governments and stakeholders to take an integrated Safe System approach that squarely positions road safety as a key driver of sustainable development.

The Safe System approach recognizes that road transport is a complex system and places safety at its core. It also recognizes that humans, vehicles and the road infrastructure must interact in a way that ensures a high level of safety.

A Safe System therefore:

- anticipates and accommodates human errors;
- incorporates road and vehicle designs that limit crash forces to levels that are within human tolerance to prevent death or serious injury;
- motivates those who design and maintain the roads, manufacture vehicles, and administer safety programmes to share responsibility for safety with road users, so that when a crash occurs, remedies are sought throughout the system, rather than solely blaming the driver or other road users;
- pursues a commitment to proactive and continuous improvement of roads and vehicles so that the entire system is made safe rather than just locations or situations where crashes last occurred; and
- adheres to the underlying premise that the transport system should produce zero deaths or serious injuries and that safety should not be compromised for the sake of other factors such as cost or the desire for faster transport times.

To make these aspirations operational, the Member States need effective systems for road safety to prevent accidents, protect people in accidents if prevention fails, rescue people after accidents, and learn from the accidents.

On 1 April 2020, the Inland Transport Committee (ITC) of the United Nations Economic Commission for Europe (UNECE) formally recommended to all countries and international organizations the “ITC Recommendations for Enhancing National Road Safety Systems”, prepared by the Sustainable Transport Division and adopted at its eighty-second session (ECE/TRANS/2020/9), after extensive discussions at UNECE/ITC working party and expert levels.

The ITC Recommendations give a comprehensive picture of national road safety systems that interconnect the five pillars for road safety (management, safe user, safe vehicle, safe road and effective post-crash response) with key broad areas of intervention (legislation, enforcement, education, technology) and international support.

PILLAR / AREA	LEGISLATION	ENFORCEMENT	EDUCATION	TECHNOLOGY	INTERNATIONAL REGULATORY SUPPORT
ROAD SAFETY MANAGEMENT – VERTICAL AND HORIZONTAL COORDINATION					
SAFE USER	TRAFFIC RULES FOR DRIVERS, CYCLISTS, PEDESTRIANS	LAWFUL BEHAVIOUR ENSURED BY POLICE AND INSPECTORS	AWARENESS RASING, TRAINING AND EXAMINATION	SUPPORTIVE TECHNOLOGY AND EQUIPMENT, RULES REMINDERS	UN RS LEGAL INSTRUMENTS AND RESOLUTIONS, WORKS OF WP.1, SC.1, WP.15
SAFE VEHICLE	RULES AND STANDARDS FOR ADMISSION OF VEHICLES	CERTIFICATION AND INSPECTIONS BY QUALIFIED INSPECTORS	AWARENESS RAISING FOR USERS, TRAINING FOR INSPECTORS	SUPPORTIVE TECHNOLOGY AND EQUIPMENT, COMPLIANCE REMINDERS	UN RS LEGAL INSTRUMENTS AND RESOLUTIONS, WORKS OF WP.1, SC.1, WP.29
SAFE ROADS	STANDARDS FOR DESIGN AND CONTRUCTION, MAINTENANCE, SIGNAGE	AUDIT, ASSESSMENT AND INSPECTION BY QUALIFIED TEAMS	AWARENESS RAISING FOR ROAD MANAGERS, USERS AND FOR INSPECTORS	FORGIVING AND SELF-EXPLAINING ROAD DESIGN, INTELLIGENT TRANSPORTATION SYSTEMS	UN RS LEGAL INSTRUMENTS AND RESOLUTIONS, WORKS OF WP.1, SC.1, TEM PROJECT
EFFECTIVE POST-CRASH RESPONSE	STANDARDS FOR DATA COLLECTION, POST-CRASH RESPONSE AND INVESTIGATION	OVERSIGHT OF RESCUE SERVICES, INVESTIGATORS INVESTIGATING CRASHES	FIRST AID AND RESUE SERVICE TRAINING, INVESTIGATORS TRAINING	SUPPORTIVE TECHNOLOGY AND EQUIPMENT	CONSOLIDATES RESOLUTION, INTERNATIONAL STANDARDS, WP.1, SC.1

Table 1 Road Safety pillars and areas of intervention matrix

The approach recommended by the ITC allows to identify what are the necessary actions which will assure that objectives and goals given for particular road safety pillar are possible to be achieved. In respect to the pillar “Safe Roads” these actions may be for example as follows:

AREA OF INTERVENTION	POSSIBLE ACTIONS
LEGISLATION	<p>STANDARDS FOR ROAD DESIGN, CONSTRUCTION, MAINTENANCE AND SIGNAGE:</p> <ul style="list-style-type: none"> • Road classification that meet the safety needs of all road users • Adequate standards for geometric and design characteristics per classified road • Internationally harmonized signs and signals • Regulations to ensure that infrastructure plans and land use planning prioritize safety • Standards for road maintenance and for road work zones • Designation of authorities responsible for implementation including Road Safety Inspection and Road Safety Auditing and enforcement of the existing standards
ENFORCEMENT	<p>AUDIT, ASSESSMENT AND INSPECTION BY QUALIFIED TEAMS:</p> <ul style="list-style-type: none"> • Conducting of new road safety design assessment and audit before construction work starts • Conducting new road safety audit before opening it to traffic • Carrying out periodic safety inspection of roads in operation, including risk mapping
EDUCATION	<p>AWARENESS-RAISING FOR ROAD MANAGERS, USERS AND INSPECTORS:</p> <ul style="list-style-type: none"> • Training of road designers, construction engineers, inspection and audit organizations to perform high-quality work • Assessment of the effectiveness of education activities
TECHNOLOGY	<p>FORGIVING, SELF-EXPLAINING AND INTELLIGENT ROADS:</p> <ul style="list-style-type: none"> • Using equipment, materials and technologies for design and construction forgiving and self-explaining • Measurement, benchmarking and reporting on safety performance • Supporting of intelligent cost-effective systems • Introducing intelligent traffic management systems
INTERNATIONAL REGULATORY SUPPORT	<ul style="list-style-type: none"> • Convention on Road Signs and Signals (1968) • European Agreement on Main International Traffic Arteries (1975) • Agreement on International Roads in the Arab Mashreq (2001) • Intergovernmental Agreement on the Asian Highway Network (2004) • Agreement concerning the International Carriage of Dangerous Goods by Road (1957) • United Nations Consolidated Resolutions on Road Traffic • United Nations Consolidated Resolutions on Road Signs and Signals • UNECE bodies and initiatives: <ul style="list-style-type: none"> ○ Working Party on Road Traffic Safety (WP.1) ○ Working Party on Road Transport (SC.1) ○ Trans European Motorway Project (TEM)

	<ul style="list-style-type: none"> • ISO standards • Technical recommendations from global organizations (e.g.: PIARC)
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Table 2 Examples of possible actions within areas of intervention

Although the direct impact of the road operators and other relevant bodies being in charge for the Safe Roads pillar is mainly achieved by the implementation of the road life cycle activities (e.g.: design, construction, maintenance, rehabilitation, reconstruction), the key prerequisites for the smart road asset management is to put in place necessary legislation to detail how to carry out aforementioned activities and to ensure enforcement of implemented regulations.

It is necessary to understand that all actions within the road asset management practice should be aligned with achieving of the objectives set for the road network. It is not enough therefore to stay focused on the technical condition of the road assets but to put emphasis on the whole-network functionality including: safety, accessibility, availability, resilience, comfort.

These are the attributes of the road network which the road users value and expect.

Ensuring the Safe Roads therefore requires implementation of the sound analytical capacities and practices which are represented by – inter alia - the Road Infrastructure Management System procedures described in the previous sections.

5.2 Improvements in the RSA and RSI practices in the region

According to the comparative analysis carried out by the TEM Project in the UNECE region (based on the data and information shared by some of the Member States both in 2016 and in 2023) there is a positive change in the level of implementation of the Road Safety Audits and Road Safety Inspection practices and procedures, what results in improving the overall road safety situation.

	National legislation		Guideline RSA		TEM projects audited		Guideline RSI	
	2016	2023	2016	2023	2016	2023	2016	2023
Armenia								
BIH/Fed.								
Bulgaria								
Croatia								
Czechia								
Georgia	N/P ¹		N/P		N/P		N/P	
Latvia	N/P		N/P		N/P		N/P	
Poland								
Serbia	N/P		N/P		N/P		N/P	
Türkiye								

Table 3 RSA and RSI legislation and regulations 2016 and 2023

	Independence of auditors		Study phase (RSIA)		Preliminary design		Detailed design		Before opening	
	2016	2023	2016	2023	2016	2023	2016	2023	2016	2023
Armenia				N/A ²		N/A		N/A		N/A
BIH/Fed.	N/A		N/A		N/A		N/A		N/A	
Bulgaria										
Croatia										
Czechia										

¹ N/P – not participating in the 2016 analysis

² N/A/ - no answer provided in the questionnaire

Georgia	N/P		N/P		N/P		N/P		N/P	
Latvia	N/P		N/P		N/P		N/P		N/P	
Poland										
Serbia	N/P		N/P		N/P		N/P		N/P	
Türkiye										

Table 4 Road Safety Auditing practices: 2016 and 2023

	Necessary for RSA		Necessary for RSI	
	2016	2023	2016	2023
Armenia		N/A		N/A
BIH/Fed.	N/P		N/P	
Bulgaria				
Croatia			N/A	
Czechia				
Georgia	N/P		N/P	
Latvia	N/P		N/P	
Poland				
Serbia	N/P		N/P	
Türkiye		N/A		N/A

Table 5 RSA and RSI certification and education: 2016 and 2023

These analyses shows that although RSA and RSI practices are used more commonly and frequently, the overall development is rather moderate. This leads to the conclusion that there is necessity for constant improvement in respect to the legislative and regulatory frameworks as well as within the enforcement and education practices.

While there are plenty of mechanisms and international support to finance or co-finance implementation of road networks development or rehabilitation, there is a need to strengthen the efforts of the international community in respect to the globally recognized road safety related legislation and regulations.

Currently areas of intervention as legislation, enforcement or education in terms of the Safe Roads pillar have more sub-regional standards. In many countries however they are usually implemented partially or to the particular projects only when the external fundings appears and the IFIs require road safety audits.

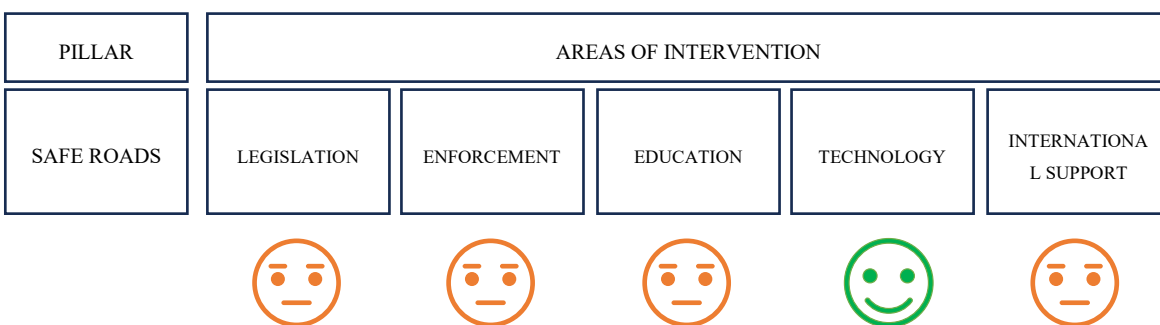


Figure 8 Recommended areas of intervention for further improvement

5.3 Recommendations for further works

Based on this diagnosis, the TEM Project Member States propose the following groups of the key recommendations:

- International legal instruments
- RISM capacity building
- RISM facilitation

5.3.1 International legal instruments

One of the main TEM project goals is to balance existing gaps and disparities between motorway networks in Western, Eastern, Central and South-Eastern Europe, where harmonization of legal instruments and standards on TEM network plays a crucial role. In order to harmonize Road Infrastructure Safety Management procedures and to set-up the level playing field in all TEM countries, an important step would be to find modalities to amend the European Agreement on Main International Traffic Arteries (AGR) to include Road Infrastructure Safety Management procedures.

In this sense, importance of already proven RSA and RSI procedures will be recognized and basic procedures for the implementation of RSA/RSI will be harmonized not only on the TEM network, but actually in 38 countries that are contracting parties to AGR.

It is recommended that amendments to the AGR will not only create the legal basis for formal implementation of the RSA and RSI procedures but will provide the necessary rationale for the use of the procedures in the road network life cycle as well as assistance in necessary minimum requirements for the procedures and their scope.

This action will supplement already undertaken actions under umbrella of the UN Road Safety Fund.

5.3.2 RISM capacity building

Some countries in the UNECE region did not yet implement Road Infrastructure Safety Management procedures like RSA and RSI. Training and certification for safety personnel is not existent in some of them. Thus, further awareness raising on all levels is still necessary to convince relevant decision makers and organisations of the usefulness of the procedures.

Usually deficiencies are detected during Road Safety Audits and Road Safety Inspections. Due to different technical guidelines in the UNECE region countries, forming an important basis of assessment, a comparison of situations and hazards detected in RSAs sometimes may not be easy. Moreover, deficiencies are often a very special topic and connected with a certain local situation.

Still, an exchange of knowledge and best practice between the UNECE region may help to increase the quality level of RSA, e.g. by raising the awareness of the benefits of road infrastructure safety and putting RSA/RSI topics on the agenda in some countries where this issue might not have been considered thoroughly yet.

Problems in the existing network are often similar throughout European countries. Deficiencies detected in RSIs may well be quite similar as well.

An exchange of knowledge on the main hazards detected in Road Safety Inspections within the UNECE region countries therefore seems useful. Especially knowledge transfers of good remedial measures, in best cases good cost-efficient solutions, would make sense, as setting similar standards on the road networks is one of the objectives of the both TEM Project and the UNECE.

If similar problems and situations are treated in a similar way, this certainly would be a big step towards harmonisation of the network.

Knowledge transfer and exchange is essential when new developments and safety issues are in implementation phase. Intelligent Transport Systems (ITS), e.g., can play an important role in safety and security in transport.

As these systems (on-board systems and/or roadside ITS, influencing e.g. human factors, running performance of vehicles or giving information on infrastructural or outside conditions) are developing

rapidly, experiences with those new devices are of utmost interest for Auditors and Inspectors to take into account new technologies in RSA and RSI.

Taking into consideration the TEM Project contribution and expertise it is recommended to use the TEM Project in collaboration with SC.1 as a capacity building vehicle on RSA and RSI for the UNECE region.

5.3.3 RISM facilitation

In a few countries courses for the training of Auditors and Inspectors are not available at current state.

Institutional aspects like who is offering courses, which institution is issuing certificates etc. can only be decided by those countries. Minimum standards for training courses are available.

However, it is recommended that courses should contain a theoretical part and a practical part in which candidates have to conduct the RSA/RSI procedures themselves. Naturally, training courses should cover the latest developments and findings of research in regard of traffic safety issues. Hence, new technologies, like ITS, should be a topic within the courses.

Establishing of RSA/RSI training courses under the TEM umbrella could be the one of the additional possibilities for boosting road safety capacities of TEM participating countries and knowledge sharing.

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Annexes: submitted questionnaires
