EUROPEAN UNION AGENCY FOR RAILWAYS

Making the railway system
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Report

Assessment of achievement of safety targets – 2021

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Date	04/03/2021	08/03/2021	12/03/2021
Signatures	[signed]	[signed]	[signed]

Document History

Version	*Date*	*Comments*
0.1	04/03/2021	Final draft
1.0	23/03/2021	Final report

1. Contents

2. Reference documents

N°	*Description*	*Reference*
[1]	Directive 2004/49/EC of the European Parliament and of the Council on safety on the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (Railway Safety Directive). (In force until 31 October 2020)	2004/49/EC
[2]	Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (recast of the Railway Safety Directive)	(EU) 2016/798
[3]	Commission Decision on the adoption of a common safety method for assessment of achievement of safety targets, as referred to in Article 6 of Directive 2004/49/EC of the European Parliament and of the Council	2009/460/EC (CSM)
[4]	Commission implementing decision of 22 July 2011 on a mandate to the European Railway Agency on the revision of common safety targets and related common safety method for period 2011-2015	C(2011) 5158
[5]	Commission Decision on the second set of common safety targets as regards the rail system	2012/226/EU
[6]	Commission implementing decision of 11 December amending Decision 2012/226/EU on the second set of common safety targets for the rail system	2013/753/EU

3. List of terms and abbreviations

Term / Abbreviation	*Definition*
Agency	European Union Agency for Railways (formerly European Railway Agency, ERA)
CSI	Common Safety Indicator
CSM	Common Safety Method
CST	Common Safety Target
EC	European Commission
ERAIL	European Railway Accident Information Links (Agency safety database)
Eurobase	Eurostat dissemination database
EU	European Union
MS	Member State
MWA	Moving Weighted Average
NSA	National Safety Authority
NRV	National Reference Value
OBS	Annual observation

4. Executive summary

This report presents the twelfth assessment of achievement of safety targets carried out by the Agency in accordance with the Common Safety Method (CSM) as defined in Commission Decision 2009/460/EC [3]. It is the tenth assessment using the second set of Common Safety Targets (CSTs) and National Reference Values (NRVs). The assessment uses Eurostat and Agency data for the years 2015-2019 for the 26 EU Member States[1] that have a railway system plus Norway.

The results of the assessment indicate a possible deterioration of safety performance in the following Member States (by risk category):

- Belgium (Others);
- Czechia (Others);
- Germany (Others);
- France (Trespassers);
- Netherlands (Others);
- Sweden (Employees)

Moreover, a probable deterioration of safety performance is noted in the following case:

- Portugal (Others)

The assessment shows that railway safety performance remains acceptable at the EU level for all categories of railway users.

In accordance with Article 5 of the Method [3], the Member States for which there is a 'possible deterioration in safety performance' in any category of railway user, shall send to the Commission a report explaining the likely causes of the results obtained. In the case of a 'probable deterioration in safety performance' the Member State concerned shall send to the Commission a report explaining the likely causes of the results obtained and submit, if appropriate, a safety enhancement plan.

The Agency refers the readers of this report to the recent ex-post evaluation of the CSM CST to better interpret the results and to find several recommendations to improve the Method.

[1] *The assessment covers the period 2015-2019 during which the UK was an EU Member State*

5. Introduction

Common safety targets ('CSTs') and CSMs have been gradually introduced to ensure that safety is maintained at a high level and, when and where necessary and reasonably practicable, improved. They should provide tools for the assessment of the safety and performance of operators at Union level as well as in the Member States. Common safety indicators ('CSIs') have been established in order to assess whether systems comply with the CSTs and to facilitate the monitoring of railway safety performance.[2]

This report presents the results of the annual assessment of achievement of NRVs and CSTs as set out in Article 7 of the Railway Safety Directive (EU) 2016/798 [2] and in accordance with the CSM defined in Decision 2009/460/EC (hereafter referred to as the Method).

The current assessment is the tenth carried out by the Agency using the second set of NRVs/CSTs published as Commission Decision 2012/226/EU.

6. Method for assessing achievement of safety targets

6.1. Data

According to point 3.1.4 of the Annex of the Method [3], the assessment shall be carried out annually by the Agency taking into consideration the five most recent reported years. Therefore, the current assessment uses Eurostat and CSI data for the years 2015-2019.

Until 2015, the CSI data was compared to the Eurostat data derived from Eurostat's Common Questionnaire, and the latter would have precedence. Annex 3 highlights the instances where 2015 data was not available in Eurobase and CSI traffic data had to be used instead. As from 2016, Eurostat extracts rail safety data directly from the CSI dataset, meaning that there is one single data source.

Concerning the Eurostat data it is noted that the numbers for the categories level crossing users, unauthorised persons and others were inferred[3], as they were not directly available in Eurobase[4]. The ex-post evaluation that can be found on the ERA website, reflects on how the results should be interpreted in light of such data limitations.

6.2. Definitions

The following definitions are used in the assessment:

- ***'fatalities and weighted serious injuries (FWSIs)'*** means a measurement of the consequences of significant accidents combining fatalities and serious injuries, where 1 serious injury is considered statistically equivalent to 0.1 fatalities;
- ***'passengers'*** means all persons, excluding members of the train crew, who make a trip by rail, including passengers trying to embark onto or disembark from a moving train for accident statistics only;
- ***'staff including employees or contractors'*** means any persons whose employment is in connection with a railway and is at work at the moment of the accident; it includes the crew of the train and persons handling rolling stock and infrastructure installations;
- ***'level crossing users'*** means all persons using a level crossing to cross the railway line by any means of transportation or by foot;
- ***'others'*** means all persons not defined as 'passengers', 'staff including employees or contractors', 'level crossing users' or 'trespassers';

[2] *(EU) 2016/798 Recital 11 [2]*

[3] *As described in the Annex of the "Report on the development of the second set of CSTs"*

[4] *In Eurobase only the following 3 categories of victims were available: passengers, employees and others.*

- **'*trespassers*'** means any persons present on railway premises where such presence is forbidden, with the exception of level crossing users, and
- **'*societal* risks'** means the collective risk to all categories of persons listed in Article 7(4)(a) of Directive 2004/49/EC [1] and Article 7 (1)(a) of Directive (EU) 2016/798 [2].

6.3. Four-step assessment procedure

The four-step assessment procedure described in chapter 3 of the Annex of the Method [3] was applied to each of the six risk categories[5]:

- Passengers (1.1 and 1.2);
- Staff including employees or contractors (2);
- Level crossing users (3.1)[6];
- Others (4)[7];
- Trespassers (5);
- Societal risk (6).

The four steps of the assessment procedure are described in the flowchart in Figure 1, adapted from Appendix 2 to the Method [3]. The positive decisional arrows correspond to a passed result and the negative decisional arrows correspond to a failed result of the different assessment steps.

The first step and first part of the second step are performed autonomously by the Agency using the Eurostat/CSI data. In the second part of the second step, the Agency contacts the national safety authority of the concerned Member States to retrieve information on the single highest-consequence accident in the five most recently reported years, and asks whether that accident was more severe than the most severe single accident included in the data used for setting the NRVs/CSTs (period 2004-2009).

The third and fourth steps are carried out autonomously by the Agency with Eurostat/CSI data and the outcomes of previous assessments. A detailed description of the content of each step is available in chapter 3.2 of the Annex to the Method [3].

[5] This report uses the risk categories' names defined in (EU) 2016/798. Annex 2 provides the correspondence of risk categories' names across the applicable legislation.

[6] The NRVs and CSTs for the risk category 3.2 were not established in the second set of NRVs/CSTs due to the lack of reliable data.

[7] This includes the CSIs 'other person at a platform' and 'other person not at a platform'.

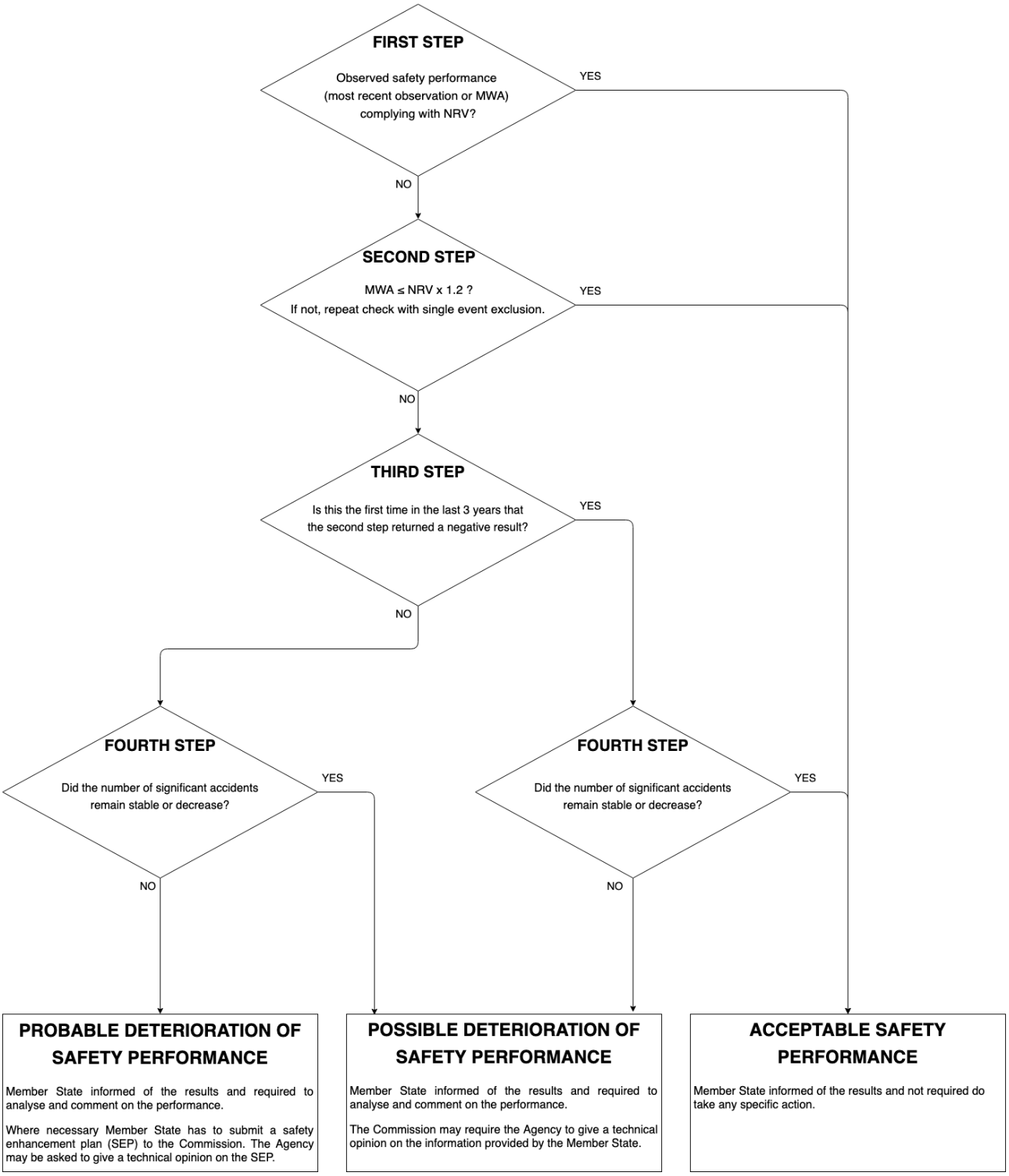


Figure 1 : Decision flowchart for assessing achievement of NRVs and CSTs. (adapted from Appendix 2 to the Method [3])

7. Results of the assessment

7.1. First and second steps of the assessment procedure

The majority of Member States achieved a 'passed' result at either the first or second steps of the assessment for all risk categories considered, indicating acceptable safety performance. For nine Member States there was a 'failed' result in one specific risk category in the first part of the second step, as show in Table 1.

Table 1 : Intermediate results of the assessment: Member States failing after the first part of the second step (i.e. after applying the 20% tolerance)

Risk category						
Passengers		*Staff including employees or contractors*	*Level crossing users*	*Others*	*Trespassers*	*Societal risk*
1.1	*1.2*	*2*	*3.1*	*4*	*5*	*6*
-	-	Sweden	Latvia	Belgium Czechia Germany Spain Netherlands Portugal	France	-

According to the Annex of the Method [3], if the 20 % tolerance is not met, the Agency shall ask the national safety authority (NSA) of the Member State concerned to provide the specifics of the single highest-consequence accident (in terms of FWSIs) in the five most recent years of observation, here the period 2015-2019. This accident shall be excluded if it is more severe, in terms of consequences, than the most severe single accident included in the data used for setting the NRVs/CSTs (period 2004-2009).

The concerned NSAs were contacted to identify the single highest-consequence accident. None of the contacted NSAs indicated that any of the relevant accidents in the 2015-2019 period was more severe than the ones that occurred between 2004 and 2009. As such, there were no intermediate changes because of the exclusion of an accident.

The detailed results of the second step of the assessment are summarized in the Annex 4. Annex 5 provides an historic overview of the Member States that had a negative result after the second step.

7.2. Third and fourth steps of the assessment procedure

The application of the third step identified that in the case of Latvia and Spain it was the first time in the last three years that the second step returned a negative result. For the other Member States it was either the second or third time with a negative result in that specific risk category during the last three years.

The fourth step of the assessment procedure was applied to examine the data on the number of significant accidents. Table 2 shows where an increase in significant accidents was observed by category.

Table 2 : Member States in which there was a statistically significant increase in accident risk in 2020.

All significant accidents	*Accidents involving level crossing users*	*Accidents to persons caused by rolling stock in motion*
Portugal	Portugal	Portugal

The final result of the assessment is either 'possible deterioration of safety performance' if the number of significant accidents remained either stable or decreased, or 'probable deterioration of safety performance' if it did not. The results are summarised in Table 3.

*Table 3 : Result of the assessment after applying all four steps of the assessment method – 'Possible deterioration of safety performance' – 'Probable deterioration of safety performance' in **bold***

Risk category						
Passengers		*Staff including employees or contractors*	*Level crossing users*	*Others*	*Trespassers*	*Societal risk*
1.1	*1.2*	*2*	*3.1*	*4*	*5*	*6*
-	-	Sweden	-	Belgium Czechia Germany Netherlands **Portugal**	France	-

For **Sweden**, it was the second time in the past three years that the second step returned a negative results in the category of staff including employees or contractors (2). According to the methodology, since the number of relevant significant accidents remained either stable or decreased, the result of the assessment is **possible deterioration of safety performance in the category of staff including employees or contractors (2)**.

For **Belgium**, it was the second time in the past three years that the second step returned a negative result in the category of others (4). According to the methodology, since the number of relevant significant accidents remained either stable or decreased, the result of the assessment is **possible deterioration of safety performance in the category of staff including employees or contractors (2)**.

For **Czechia**, it was the third time in the past three years that the second step returned a negative results in the category of others (4). According to the methodology, since the number of relevant significant accidents remained either stable or decreased, the result of the assessment is **possible deterioration of safety performance in the category of others (4)**.

For **Germany**, it was the second time in the past three years that the second step returned a negative results in the category of others (4). According to the methodology, since the number of relevant significant accidents remained either stable or decreased, the result of the assessment is **possible deterioration of safety performance in the category of others (4)**.

For **the Netherlands**, it was the second time in the past three years that the second step returned a negative results in the category of others (4). According to the methodology, since the number of relevant significant accidents remained either stable or decreased, the result of the assessment is **possible deterioration of safety performance in the category of others (4)**.

For **Portugal**, it was the third time in the past three years that the second step returned a negative results in the category of others (4). According to the methodology, since the number of relevant significant accidents did not remain stable or decreased, the result of the assessment is **probable deterioration of safety performance in the category of others (4)**.

For **France**, it was the third time in the past three years that the second step returned negative result in the category of trespassers (5). According to the methodology, since the number of relevant significant accidents

remained either stable or decreased, the result of the assessment is **possible deterioration of safety performance in the category of trespassers (5).**

This completes the assessment of achievement of safety targets using the second set of NRVs/CSTs.

7.3. Analysis of the results

The twelfth annual assessment of achievements of safety targets identified the acceptable safety performance in the categories of passengers (both 1.1 and 1.2), level crossing users and societal risks in all Member States. For the category of level crossing users it was the second time since the 2013 assessment that no country showed a possible deterioration.

The assessment also shows that railway safety performance remains acceptable at the EU level for all categories of railway users.

The "possible deterioration of safety performance" was identified in one Member State for the category of staff including employees or contractors, four Member States for the category others, and one Member State for the category trespassers. One Member State showed a "probable deterioration of safety performance" for the category others as well.

7.3.1. Data limitations

The second set of NRVs, used in this assessment, was established using 2004-2009 safety data. Concerns exist that the reliability of the data from that period is lower than that of more recent years. Notably, the safety data for certain categories reported for years 2004 and 2005 were not fully harmonised and there have been cases of underreporting in the category 'others'.

It is also noted that railway safety data available in Eurobase was used in the assessments for the years until 2015. The CSI data available in ERAIL is used for the years as of 2016. Whilst the differences in data from these sources are generally small, an effect on the results has been observed in some instances, notably on the number of deteriorations that are noted under the category 'others'.

The ex-post evaluation on the CSM CST, which can be found on the ERA website, explains these limitations in greater detail and provides recommendations to address them.

7.3.2. Method limitations

The 2021 assessment confirms that negative results are more likely to be obtained when the FWSI is small (e.g. in the category of staff or others). This points to a limitation of the method, which would become more pertinent if a new set of NRVs (using more recent and generally lower FWSI values) were to be used. The aforementioned ex-post evaluation on the Method expands on such methodological limitations as well.

8. Conclusions

This assessment of the achievement of safety targets identified a “possible deterioration of safety performance” in six EU Member States for three categories of railway users. In one EU Member State a “probable deterioration of safety performance” was observed.

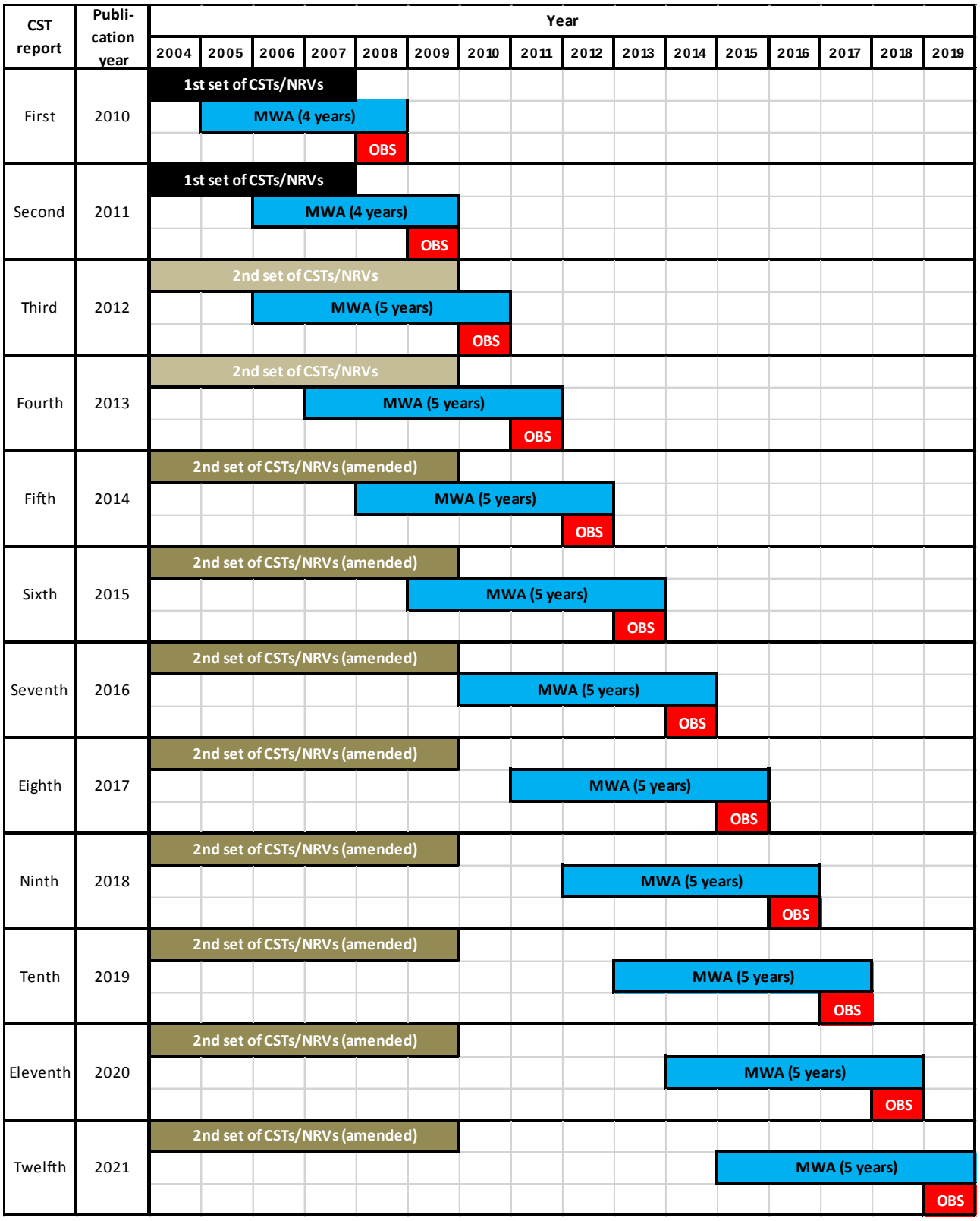
At the same time it was found that railway safety in the EU remains acceptable for all categories of users. The Agency emphasizes nevertheless the enduring need to improve safety performance across the EU.

In accordance with Article 5 of the Method, the Member States with a possible deterioration in safety performance shall send to the Commission a report explaining the likely causes of the results obtained. In the case of a probable deterioration the Member State concerned shall send to the Commission a report explaining the likely causes of the results obtained and submit, if appropriate, a safety enhancement plan.

The Agency refers the readers of this report to the recent ex-post evaluation of the CSM CST to better interpret the results and to find several recommendations to improve the Method.

Annex 1 Overview of annual assessments

This is the twelfth assessment of achievement of CSTs carried out by the Agency. The table below provides an overview of the specificities of all previous assessments made by the Agency.



Annex 2 Names of risk categories across the relevant legislation

Risk Category	*2004/49/EC*	*2009/460/EC*		*2012/226/EU*	*2013/753/EU*	*(EU)2016/798*
	Art.7	*Art. 3*	*Appendix 1*	*Annex*	*Annex*	*Art. 7*
1.1	Passengers					
1.2						
2	Staff including the staff of contractors	'Staff' or 'employees including the staff of contractors'	Employees			Staff including employees or contractors
3	Level crossing users					
4	Others	Others (third parties)	Others	Persons classified as "others"	Persons classified as "others"	Others
5	Unauthorised persons on railway premises					Trespassers
6	Societal risks	Risk to society as a whole	Whole society	Societal risk		

Annex 3 Input data overview

The table below shows the instances where, in assessments prior to 2016, CSI data was used in place of Eurostat data, as they were not available in Eurobase. Only data used in the current assessment are included.

Data category	*Country and year*	*Remark (Eurostat)*
Train movement for all trains Train-Km (rail_tf_trainmv)	BE (2015) DE (2015) DK (2015) FR (2015) HU (2015) NL (2015)	Not published due to quality issues.
Train movement for passenger trains Passenger train-Km (rail_tf_trainmv)	BE (2015) DE (2015) DK (2015) FR (2015) HU (2015) NL (2015)	Not published due to quality issues.
Passenger transport by rail Passenger-Km (rail_pa_quartal)	BE (2015) AT (2015)	Data are confidential.

Annex 4 Results after the 2nd step of the assessment.

Member State	*Risk category 1.1 – 'Passengers'*				
	*NRV (*10^{-9}) [2004-2009]*	*OBS (*10^{-9}) [2019]*	*OBS ≦ NRV (Yes/No)*	*MWA (*10^{-9}) [2015-2019]*	*MWA ≦ NRV*1.2 (Yes/No)*
Belgium (BE)	37.26	0.00	Yes		
Bulgaria (BG)	207.00	9.54	Yes		
Czechia (CZ)	46.49	9.55	Yes		
Denmark (DK)	9.03	149.43	No	8.79	Yes
Germany (DE)	8.13	0.18	Yes		
Estonia (EE)	78.18	0.00	Yes		
Ireland (IE)	2.74	0.00	Yes		
Greece (EL)	54.67	99.42	No	40.41	Yes
Spain (ES)	29.19	11.67	Yes		
France (FR)	22.53	6.38	Yes		
Croatia (HR)	176.90	6.58	Yes		
Italy (IT)	38.10	0.30	Yes		
Latvia (LV)	78.18	164.80	No	15.00	Yes
Lithuania (LT)	97.16	0.00	Yes		
Luxembourg (LU)	23.81	0.00	Yes		
Hungary (HU)	170.18	26.54	Yes		
Netherlands (NL)	7.43	0.00	Yes		
Austria (AT)	26.25	2.54	Yes		
Poland (PL)	116.13	1.79	Yes		
Portugal (PT)	41.82	6.72	Yes		
Romania (RO)	57.40	12.32	Yes		
Slovenia (SI)	25.27	55.05	No	24.49	Yes
Slovakia (SK)	62.05	45.77	Yes		
Finland (FI)	9.03	2.72	Yes		
Sweden (SE)	3.54	0.79	Yes		
United Kingdom (UK)	2.73	0.36	Yes		
Norway (NO)	2.83	0.00	Yes		
Scaling basis – Passenger train-km per year.					

Member State	*Risk category 1.2 – 'Passengers'*				
	*NRV (*10^{-9}) [2004-2009]*	*OBS (*10^{-9}) [2019]*	*OBS ≦NRV (Yes/No)*	*MWA (*10^{-9}) [2015-2019]*	*MWA ≦NRV*1.2 (Yes/No)*
Belgium (BE)	0.32	0.00	Yes		
Bulgaria (BG)	1.91	0.13	Yes		
Czechia (CZ)	0.82	0.12	Yes		
Denmark (DK)	0.11	1.42	No	0.08	Yes
Germany (DE)	0.08	0.00	Yes		
Estonia (EE)	0.67	0.00	Yes		
Ireland (IE)	0.03	0.00	Yes		
Greece (EL)	0.50	0.76	No	0.34	Yes
Spain (ES)	0.27	0.07	Yes		
France (FR)	0.11	0.03	Yes		
Croatia (HR)	1.14	0.14	Yes		
Italy (IT)	0.26	0.00	Yes		
Latvia (LV)	0.67	1.55	No	0.14	Yes
Lithuania (LT)	0.76	0.00	Yes		
Luxembourg (LU)	0.18	0.00	Yes		
Hungary (HU)	1.65	0.03	Yes		
Netherlands (NL)	0.09	0.00	Yes		
Austria (AT)	0.29	0.02	Yes		
Poland (PL)	0.85	0.01	Yes		
Portugal (PT)	0.31	0.04	Yes		
Romania (RO)	0.61	0.12	Yes		
Slovenia (SI)	0.36	0.72	No	0.14	Yes
Slovakia (SK)	0.88	0.43	Yes		
Finland (FI)	0.11	0.02	Yes		
Sweden (SE)	0.03	0.01	Yes		
United Kingdom (UK)	0.03	0.00	Yes		
Norway (NO)	0.03	0.00	Yes		
Scaling basis – Passenger-km per year.					

Member State	Risk category 2 - 'Staff including employees or contractors'				
	NRV (*10^{-9}) [2004-2009]	OBS (*10^{-9}) [2019]	OBS ≦NRV (Yes/No)	MWA (*10^{-9}) [2015-2019]	MWA ≦NRV*1.2 (Yes/No)
Belgium (BE)	24.63	0.00	Yes		
Bulgaria (BG)	20.40	3.30	Yes		
Czechia (CZ)	16.45	12.57	Yes		
Denmark (DK)	9.10	0.00	Yes		
Germany (DE)	12.56	2.85	Yes		
Estonia (EE)	64.83	0.00	Yes		
Ireland (IE)	5.22	0.00	Yes		
Greece (EL)	77.87	18.07	Yes		
Spain (ES)	8.81	5.99	Yes		
France (FR)	6.06	0.22	Yes		
Croatia (HR)	73.65	0.00	Yes		
Italy (IT)	18.85	0.77	Yes		
Latvia (LV)	64.83	65.22	No	55.25	Yes
Lithuania (LT)	41.01	0.00	Yes		
Luxembourg (LU)	11.99	0.00	Yes		
Hungary (HU)	9.31	2.74	Yes		
Netherlands (NL)	5.97	0.00	Yes		
Austria (AT)	20.29	3.74	Yes		
Poland (PL)	17.18	11.81	Yes		
Portugal (PT)	53.09	27.34	Yes		
Romania (RO)	22.30	3.78	Yes		
Slovenia (SI)	40.88	19.89	Yes		
Slovakia (SK)	2.71	0.00	Yes		
Finland (FI)	9.21	0.00	Yes		
Sweden (SE)	2.86	12.91	No	7.23	No
United Kingdom (UK)	5.17	5.25	No	1.40	Yes
Norway (NO)	2.82	21.66	No	1.27	Yes
Scaling basis - Train-km per year.					

Member State	Risk category 3.1 - 'Level crossing users'				
	NRV (*10^{-9}) [2004-2009]	OBS (*10^{-9}) [2019]	OBS ≦NRV (Yes/No)	MWA (*10^{-9}) [2015-2019]	MWA ≦NRV*1.2 (Yes/No)
Belgium (BE)	138.00	75.42	Yes		
Bulgaria (BG)	141.60	125.50	Yes		
Czechia (CZ)	237.76	147.44	Yes		
Denmark (DK)	65.43	0.00	Yes		
Germany (DE)	67.76	33.27	Yes		
Estonia (EE)	399.88	177.33	Yes		
Ireland (IE)	23.57	0.00	Yes		
Greece (EL)	710.26	560.12	Yes		
Spain (ES)	108.72	6.48	Yes		
France (FR)	78.72	48.11	Yes		
Croatia (HR)	611.30	302.17	Yes		
Italy (IT)	42.87	13.16	Yes		
Latvia (LV)	239.16	339.15	No	301.73	No
Lithuania (LT)	521.65	0.00	Yes		
Luxembourg (LU)	95.90	0.00	Yes		
Hungary (HU)	274.20	276.30	No	200.06	Yes
Netherlands (NL)	126.54	56.55	Yes		
Austria (AT)	160.16	64.28	Yes		
Poland (PL)	277.30	244.95	Yes		
Portugal (PT)	460.58	344.50	Yes		
Romania (RO)	542.00	248.46	Yes		
Slovenia (SI)	364.15	124.30	Yes		
Slovakia (SK)	309.00	189.36	Yes		
Finland (FI)	163.75	46.60	Yes		
Sweden (SE)	63.98	38.11	Yes		
United Kingdom (UK)	23.45	5.08	Yes		
Norway (NO)	21.61	0.00	Yes		
Scaling basis - Train-km per year.					

Member State	Risk category 4 - 'Others'				
	NRV (*10^{-9}) [2004-2009]	OBS (*10^{-9}) [2019]	OBS ≦NRV (Yes/No)	MWA (*10^{-9}) [2015-2019]	MWA ≦NRV*1.2 (Yes/No)
Belgium (BE)	2.86	22.82	No	10.21	No
Bulgaria (BG)	35.47	0.00	Yes		
Czechia (CZ)	2.41	12.00	No	10.25	No
Denmark (DK)	14.15	0.00	Yes		
Germany (DE)	3.05	8.27	No	6.02	No
Estonia (EE)	11.64	0.00	Yes		
Ireland (IE)	7.00	0.00	Yes		
Greece (EL)	4.51	0.00	Yes		
Spain (ES)	5.54	20.45	No	10.58	No
France (FR)	7.71	5.79	Yes		
Croatia (HR)	7.28	0.00	Yes		
Italy (IT)	6.70	0.26	Yes		
Latvia (LV)	11.64	0.00	Yes		
Lithuania (LT)	11.64	0.00	Yes		
Luxembourg (LU)	5.46	0.00	Yes		
Hungary (HU)	4.51	0.00	Yes		
Netherlands (NL)	4.70	6.69	No	7.11	No
Austria (AT)	11.09	0.00	Yes		
Poland (PL)	11.64	0.00	Yes		
Portugal (PT)	5.54	30.08	No	27.56	No
Romania (RO)	2.83	0.00	Yes		
Slovenia (SI)	14.48	0.00	Yes		
Slovakia (SK)	2.41	0.00	Yes		
Finland (FI)	14.15	0.00	Yes		
Sweden (SE)	14.15	0.00	Yes		
United Kingdom (UK)	7.00	8.47	No	4.75	Yes
Norway (NO)	14.15	0.00	Yes		
Scaling basis - Train-km per year.					

Member State	Risk category 5 - 'Trespassers'				
	NRV (*10^{-9}) [2004-2009]	OBS (*10^{-9}) [2019]	OBS ≦NRV (Yes/No)	MWA (*10^{-9}) [2015-2019]	MWA ≦NRV*1.2 (Yes/No)
Belgium (BE)	72.64	12.90	Yes		
Bulgaria (BG)	900.20	459.05	Yes		
Czechia (CZ)	301.26	20.57	Yes		
Denmark (DK)	116.24	104.29	Yes		
Germany (DE)	113.08	89.71	Yes		
Estonia (EE)	1547.95	136.41	Yes		
Ireland (IE)	85.23	103.83	No	33.11	Yes
Greece (EL)	722.94	487.85	Yes		
Spain (ES)	167.83	81.81	Yes		
France (FR)	67.16	67.26	No	83.47	No
Croatia (HR)	676.30	347.95	Yes		
Italy (IT)	119.25	99.12	Yes		
Latvia (LV)	1314.28	417.42	Yes		
Lithuania (LT)	2045.34	266.18	Yes		
Luxembourg (LU)	79.92	0.00	Yes		
Hungary (HU)	588.06	536.19	Yes		
Netherlands (NL)	15.93	7.30	Yes		
Austria (AT)	119.03	40.56	Yes		
Poland (PL)	1213.09	391.05	Yes		
Portugal (PT)	834.33	514.02	Yes		
Romania (RO)	1388.20	785.73	Yes		
Slovenia (SI)	236.44	0.00	Yes		
Slovakia (SK)	1758.00	427.47	Yes		
Finland (FI)	248.74	19.42	Yes		
Sweden (SE)	94.83	51.63	Yes		
United Kingdom (UK)	84.54	18.98	Yes		
Norway (NO)	91.81	21.66	Yes		
Scaling basis - Train-km per year.					

Member State	*Risk category 6 – 'Societal risk'*				
	*NRV (*10^{-9}) [2004-2009]*	*OBS (*10^{-9}) [2019]*	*OBS ≦NRV (Yes/No)*	*MWA (*10^{-9}) [2015-2019]*	*MWA ≦NRV*1.2 (Yes/No)*
Belgium (BE)	275.05	111.14	Yes		
Bulgaria (BG)	1440.00	594.45	Yes		
Czechia (CZ)	591.22	200.02	Yes		
Denmark (DK)	217.92	245.60	No	114.15	Yes
Germany (DE)	203.16	135.48	Yes		
Estonia (EE)	2107.86	313.74	Yes		
Ireland (IE)	114.43	103.83	Yes		
Greece (EL)	1535.77	1156.38	Yes		
Spain (ES)	322.57	124.71	Yes		
France (FR)	179.94	126.73	Yes		
Croatia (HR)	1467.00	654.70	Yes		
Italy (IT)	230.95	115.90	Yes		
Latvia (LV)	1658.79	887.01	Yes		
Lithuania (LT)	2587.94	266.18	Yes		
Luxembourg (LU)	209.70	0.00	Yes		
Hungary (HU)	1020.00	835.29	Yes		
Netherlands (NL)	148.17	70.54	Yes		
Austria (AT)	329.01	110.46	Yes		
Poland (PL)	1590.22	648.99	Yes		
Portugal (PT)	1361.81	921.40	Yes		
Romania (RO)	1704.36	1046.80	Yes		
Slovenia (SI)	697.89	169.05	Yes		
Slovakia (SK)	1131.08	648.71	Yes		
Finland (FI)	416.98	67.96	Yes		
Sweden (SE)	169.19	103.27	Yes		
United Kingdom (UK)	119.79	38.12	Yes		
Norway (NO)	50.87	43.33	Yes		
Scaling basis - Train-km per year.					

Annex 5 Overview of 'fail' results after the 2nd step of the assessment (2010 – 2020).

Risk category	*Passengers*		*Staff including employees or contractors*	*Level crossing Users*	*Others*	*Trespassers*	*Societal risks*
	1.1[8]	*1.2*[9]	*2*	*3.1*	*4*	*5*	*6*
2010 Assessment 2008 Data	Greece Slovakia	Greece Slovakia	Lithuania Romania	Romania	n.a.	Romania Slovakia	Romania Slovakia
2011 Assessment 2009 Data	Slovakia Slovenia	Slovakia Slovenia	Belgium Finland Lithuania Romania	Estonia Romania Slovenia	n.a.	Romania Slovakia	Romania Slovakia
2012 Assessment 2010 Data	Belgium Greece Spain Slovakia	Belgium Greece Slovakia	Bulgaria Estonia Romania Slovakia	Ireland Romania	n.a.	Romania Slovakia Sweden	Ireland Romania Slovakia
2013 Assessment 2011 Data	Slovakia	Slovakia	Bulgaria Finland Romania Slovakia		Romania	Romania Slovakia Sweden	[Norway] Romania
2014 Assessment 2012 Data			Bulgaria Lithuania Romania Slovakia Slovenia Sweden	Bulgaria	Croatia Netherlands Romenia	Italy	[Norway] Slovakia

[8] *Scaling base: passenger train-km per year.*
[9] *Scaling base: passenger-km per year.*

Risk category	*Passengers*		*Staff including employees or contractors*	*Level crossing Users*	*Others*	*Trespassers*	*Societal risks*
	1.1[10]	*1.2*[11]	*2*	*3.1*	*4*	*5*	*6*
2015 Assessment 2013 Data	Spain	Spain	Romania Slovakia	Bulgaria [Norway]	Belgium	Croatia France Italy [Norway]	[Norway] Slovakia
2016 Assessment 2014 Data			Hungary Romania Slovakia Sweden	[Norway] Bulgaria	Hungary	France Italy [Norway]	Slovakia
2017 Assessment 2015 Data			Austria Bulgaria Slovakia Sweden	[Norway]		Italy [Norway]	[Norway] Slovakia
2018 Assessment 2016 Data			Bulgaria Hungary Slovakia	Bulgaria	Hungary	Italy	
2019 Assessment 2017 Data			Slovakia	[Norway]	Czechia Latvia Portugal	France	

[10] *Scaling base: passenger train-km per year.*
[11] *Scaling base: passenger-km per year.*

2020 Assessment 2018 Data			Bulgaria Slovakia Sweden		Belgium Czechia Germany Latvia Hungary Netherlands Portugal	France	

Notes: [ ] refer to the fact that Norway is not a MS.

Annex 6 Overview of the final results of all annual assessments (2010 – 2020).

Risk category	*Passengers*		*Staff including employees or contractors*	*Level crossing Users*	*Others*	*Trespassers*	*Societal risks*
	1.1[12]	*1.2*[13]	*2*	*3.1*	*4*	*5*	*6*
2010 Assessment 2008 CSI Data			(Romania)	(Romania)	n.a.	(Romania)	(Romania)
2011 Assessment 2009 CSI Data	Slovakia	Slovakia	Lithuania **Romania**	Romania	n.a.	Romania Slovakia	**Romania** Slovakia
2012 Assessment 2010 CSI Data					n.a.	Sweden	
2013 Assessment 2011 CSI Data	Slovakia	Slovakia	**Bulgaria** Romania Slovakia		Romania	Romania Slovakia Sweden	Romania
2014 Assessment 2012 CSI Data			Bulgaria Romania Slovakia Sweden	Bulgaria	(Croatia[14]) (Romania)		[Norway]
2015 Assessment 2013 CSI Data			Romania Slovakia	Bulgaria		Italy [Norway]	Slovakia [Norway]
2016 Assessment 2014 CSI Data			Hungary Romania **Slovakia** Sweden	Bulgaria [Norway]	Hungary	France Italy [Norway]	**Slovakia**

Risk category	*Passengers*		*Staff including employees or contractors*	*Level crossing Users*	*Others*	*Trespassers*	*Societal risks*
	1.1[15]	*1.2*[16]	*2*	*3.1*	*4*	*5*	*6*
2017 Assessment 2015 CSI Data			Bulgaria Slovakia Sweden	[Norway]		Italy [Norway]	Slovakia [Norway]
2018 Assessment 2016 CSI Data			Bulgaria Hungary Slovakia	Bulgaria	Hungary	Italy	
2019 Assessment 2017 CSI Data			Slovakia	[Norway]		France	
2020 Assessment 2018 CSI Data			Bulgaria Slovakia		Czechia Latvia Hungary Portugal	France	

Notes: *[ ] refer to the fact that Norway is not a MS. () mean that the result cannot be fully relied upon due to data quality issues.* For countries in **bold** "probable deterioration of safety performance" and for the other cases "possible deterioration of safety performance". The assessment result for countries excluded from the table was "acceptable safety performance".

[12] *Scaling base: passenger train-km per year.*
[13] *Scaling base: passenger-km per year.*
[14] *Assessment carried out retrospectively for 2010 and 2011.*
[15] *Scaling base: passenger train-km per year.*
[16] *Scaling base: passenger-km per year.*