EUROPEAN UNION AGENCY FOR RAILWAYS

Making the railway system work better for society.

Report

Assessment of achievement of safety targets - 2019

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Document History

Version	*Date*	*Comments*
1.0	13/05/2019	Final version.
1.1	17/05/2019	Updated following feedback from the Czech NSA.

1. Contents

2. Reference documents

N°	Description	Reference	Version
[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 16 June 2020)	2004/49/EC	Amended by Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community and by Directive 2008/110/EC of the European Parliament and of the Council of 23 December 2008 amending the Railway Safety Directive and by Commission Directive 2009/149/EC of 27 November 2009 amending Directive 2004/49/EC of the European Parliament and of the Council as regards Common Safety Indicators and common methods to calculate accident costs.
[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	11 May 2016
[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)	OJ L 150/11, 5 June 2009
[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	22 July 2011
[5]	Commission Decision on the second set of common safety targets as regards the rail system	2012/226/EU	23 April 2012
[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	11 December 2013

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)
EU	European Union
MS	Member State
MWA	Moving Weighted Average
NSA	National Safety Authority
NRV	National Reference Value
OBS	Annual observation
OSP	Observed Safety Performance
SEP	Safety Enhancement Plan

4. Executive summary

This report presents the tenth assessment of achievement of safety targets carried out by the Agency in accordance with the Common Safety Method (CSM) defined in the Commission Decision 2009/460/EC [3]. It is the eight assessment using the second set of Common Safety Targets (CSTs) and National Reference Values (NRVs) (see the overview of annual assessments in Annex 1). The assessment concerns the 26 EU Member States that have a railway system plus Norway and is based on Eurostat and Agency data for the years 2013-2017.

The results of the assessment indicate a possible deterioration of safety performance in two Member States and in Norway, as follows:

- France (Trespassers)
- Slovakia (Staff including employees or contractors)
- Norway (Level crossing users)

At the same time, the results of the assessment indicate that the railway safety performance remains acceptable at the EU level for all categories of railway users under consideration.

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.

The Agency considers that, as with any statistical method, the results obtained through this assessment while valid, should be used with caution. In particular, the Agency recognises:

- A limitation in the data used for establishment of NRVs and for their assessment;
- The need to update the NRVs used for the assessment;
- The difficulty of using the Method in relation to categories involving small numbers of fatalities, and
- The method is not to be used for proactive safety analysis.

The Agency has conducted in the past a consultation to support the revision of the Method whose outcome was to continue with the present method with an updating of NRVs where the current NRV was found to be incorrect or where the NRV was derived from another Member(s).

5. Introduction

Common safety targets ('CSTs') and CSMs have been gradually introduced to ensure that safety is maintained at a high level and, when necessary and where 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.[1]

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 [3] (hereafter referred to as the Method).

The current assessment is the eighth carried out by the Agency using the second set of NRVs/CSTs published as Commission Decision 2012/226/EU [5] and amended through the Commission Implementing Decision 2013/753/EU [6].

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 most recent five preceding reported years. Therefore, the current assessment uses Eurostat and CSI data for the years 2013-2017.

Until 2015, the CSI data were compared to the Eurostat data derived from Eurostat's Common Questionnaire, and the latter would have precedence. Due to changes in the data collection by Eurostat, with effect from 2016 CSI data only are used in the assessment.

The Annex 3 of this report highlights the instances where, in assessments prior to 2016, the CSI data had to be used in place of Eurostat data. In those assessments, the Eurostat data for carrying out the assessment for the categories level crossing users, unauthorised persons and others were inferred as described in the Annex of the "Report on the development of the second set of CSTs", as they were not directly available in Eurobase[2].

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;
- ***'level crossing users'*** means all persons using a level crossing to cross the railway line by any means of transportation or by foot;
- ***'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;
- ***'trespassers'*** means any persons present on railway premises where such presence is forbidden, with the exception of level crossing users;
- ***'others'*** means all persons not defined as 'passengers', 'staff including employees or contractors', 'level crossing users' or 'trespassers', and

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

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

› ***'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 for each of the six risk categories[3]:

- Passengers (1.1 and 1.2);
- Staff including employees or contractors (2);
- Level crossing users (3.1)[4];
- Others (4)[5];
- 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 has to request the input of the safety authority of the Member States concerned for the specifics of the single highest-consequence accident in the most recent five preceding reported years, excluding the years used to set the NRVs.
The third and fourth steps are carried out by the Agency autonomously with Eurostat/CSI data and the outcomes of previous assessments.
The detailed description of the content of the each step is available in chapter 3.2 of the Annex to the Method [3].

[3] This report uses the risk categories' names defined in (EU) 2016/798. Annex 2 provides the correspondence of risk categories' names across the relevant legislation.
[4] 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 data reliability.
[5] This includes the CSIs 'other person at a platform' and 'other person not at a platform'.

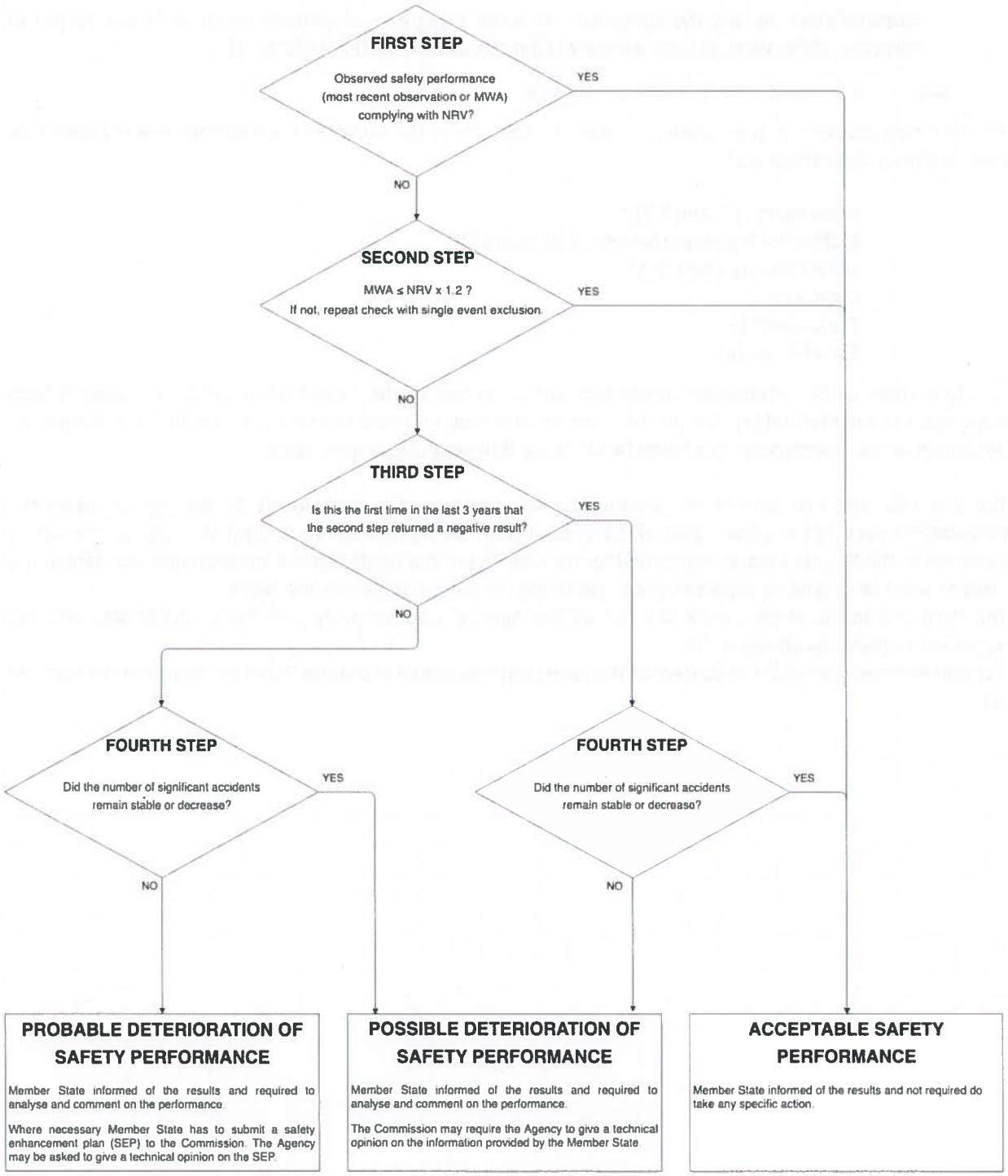


Figure 1 : Decision flowchart for assessing achievement of NRVs and CSTs. (adapted from Appendix 2 to the Method [3])

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 six Member States and Norway, there was a 'failed' result in one specific risk category in the first part of the second step. (refer to Table 1).

Table 1 : Intermediate results of the assessment: Member States failing at the first part of the second step. (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
-	-	Slovakia	[Norway]	Bulgaria Czechia Latvia Portugal	France	-

Notes: [ ] refer to the fact that Norway is not a MS so the CSM does not formally apply to it.

According to the Annex of the Method [3], if the 20 % tolerance is not met, the Agency shall ask the safety authority 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 2013-2017. This accident shall only 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 overview of the single highest-consequence accidents identified in cooperation with Member States is provided in table 2.

Table 2 : Single highest-consequence accidents during the period 2013 - 2017 for Member States failing after first part of the second step.

MS	Risk category	Accident specifics (relevant highest-consequence accident)	Excluded
FR	5	12/01/2013 – Aix-en-Provence Marseille Line – Train hit 3 persons who lost their lives.	No
PT	4	16/01/2017 – Carvalheira-Maceda train station– Train hit 1 person who lost their life. 27/09/2016 – Alfarelos train station – Train hit 1 person who lost their life. 11/11/2016 – Santarém train station – Train hit 1 person who lost their life. 17/07/2015 – Almourol train station – Train hit 1 person who lost their life. 13/08/2013 – Mosteirô train station –Train hit 2 persons causing 1 fatality.	No
SK	2	23/01/2013 - Level crossing accident between Liptovský Mikuláš and Liptovský Hrádok stations caused 1 staff fatality. 03/11/2015 - Level crossing accident between Petrovce nad Laborcom zast. and Michalovce stations caused 1 staff fatality. 19/12/2017 - Level crossing accident between Sládkovicovo and Senec stations caused 1 staff fatality.	No

Table 2 : Single highest-consequence accidents during the period 2013 - 2017 for Member States failing after first part of the second step. (continued)

MS	Risk category	Accident specifics (relevant highest-consequence accident)	Excluded
BG	4	10/12/2016 – Hitrino train station – Train derailment caused 7 fatalities and 4 serious injuries.	Yes

The MWA were recalculated for the Member States where the single highest-consequence accident was excluded from the dataset. The outcome of the second step of the assessment are summarised in Table 3.

Table 3 : Intermediate results of the assessment: Member States failing at the second step after the exclusion of the single highest-consequence accident)

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
-	-	Slovakia	[Norway]	Czechia Latvia Portugal	France	-

Notes: [ ] refer to the fact that Norway is not a MS so the CSM does not formally apply to it.

The detailed results of the second step of the assessment are summarized in the Annex 4. Annex 5 provides an overview of Member States failing after two steps of the assessment method after the exclusion of the single highest-consequence accident in the assessments performed to date.

7.2. Third and fourth steps of the assessment procedure

The application of the third and fourth assessment steps to the above cases led to 'acceptable safety performance' for the majority, except the ones summarized in Table 4. Since in some cases it was not the first time in the last three years that the second step returned a negative result, the final result of the assessment is either 'possible deterioration of safety performance' if the number of significant accidents remained stable or decreased or 'probable deterioration of safety performance' if it did not.

Table 4 : Result of the assessment after applying all four steps of the assessment method – 'Possible deterioration of safety performance'

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
-	-	Slovakia	[Norway]	-	France	-

Note: [ ] refer to the fact that Norway is not a MS so the CSM does not formally apply to it.

For **Slovakia**, it was the third time in the past three years that the second step returned a negative result 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 **Norway**, it was the second time in the past three years that the second step returned negative result in the category of level crossing users (3.1). 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 level crossing users (3.1).**

For **France**, it was the first 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 increased, the result of the assessment is **possible deterioration of safety performance in the category of trespassers (5).**

Annex 6 provides an overview of the possible and probable deteriorations of railway safety performance broken down by the various categories for the assessments performed to date. This completes the eighth assessment on the achievement of the second set of NRVs/CSTs.

7.3. Analysis of the results

The tenth annual assessment of achievements of safety targets led to acceptable safety performance in the categories of passengers (1.1 and 1.2), others (4) and societal risks (6) in all Member States. Possible deterioration of safety performance was identified in the categories of staff including employees or contractors (2), level crossing users (3.1) and trespassers (5).

Staff including employees or contractors and trespassers categories are the two categories in which unacceptable safety performance has been identified most frequently across all annual assessments (see Annex 6).

As regards the category of staff including employees or contractors (2), due to the small number of fatalities, for Member States failing in this category (between 1 and 2 fatalities per year), the negative results of the assessment may not necessarily reflect a trend in underlying safety performance. It may also reflect poor risk management in this category.

7.3.1. Trend in significant accidents

Although not required by the legislation, the Agency uses the assessment to give information to the Member States on possible trends in the number of significant accidents.

The third and fourth steps of the assessment procedure were applied to examine the data for a trend in the number of significant accidents, which might suggest that safety performance should be looked at more closely in the future. The Agency applied these steps to the data for those Member States and risk categories, which had achieved a 'passed' result either the first or the second steps. The results indicated a 'failed' outcome in the following Member States and risk categories (Table 5).

Table 5 : Member States in which there was a statistically significant increase in accident risk in 2017.

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

7.3.2. Data limitations

Previous assessments had found discrepancies between Eurostat and CSI data for 2015 for Poland and Slovakia. These discrepancies had no impact on the result of Poland and were subsequently addressed through the Polish Statistical Office.

In the case of Slovakia, following the correction of Eurostat data by the Slovakian statistical office in 2013 the NRVs for categories of passengers (1.1 and 1.2), staff including employees or contractors (2) and trespassers (5) have been updated in the Decision 2013/753/EU [6]. However, this update did not take into account the

category of societal risk (6), which should have been updated as well. The Agency had been alerted about this discrepancy by email from the Slovakian NSA on 22 March 2017 and took into account. After applying the assessment to the correctly calculated NRVs, the result of the assessment was acceptable safety performance in the category of the whole society (6) in 2017.

8. Conclusions

As result of the application of the CST methodology, railway safety in the EU remains acceptable (below the relevant EU reference value) in all categories of users. Nevertheless, the Agency remains concerned because:

- According to the latest CSIs reported (2017), the raw data reveals an increase in the number of fatalities and significant accidents;
- Amongst the others, the number of level crossing users and trespassers fatalities had an increasing trend.

Because of the limitation in terms of data granularity and volume, it is once again not possible to draw further conclusions on trends in safety performance in all individual Member States in the framework of safety targets. This is especially the case for categories involving small number of fatalities (e.g. Railway workers), where the Method is necessarily limited to the small set of lagging indicators collected according to Annex 1 of the Railway Safety Directive [1]. In order to provide more proactive trend analysis, the Agency is developing proposals for wider occurrence reporting and will initiate a wider discussion with stakeholders about the value of numerical safety targets. This will be the basis for a future mandate to the Agency for revising or retaining the current CSM and CSTs.

There is still a limitation associated with reliance on the Eurostat data used for the establishment of the second set of NRVs (e.g. case of Slovakia, as mentioned in chapter 4.3.2.), as they are in some cases inconsistent with the CSI data collected by the NSAs and reported to the Agency.

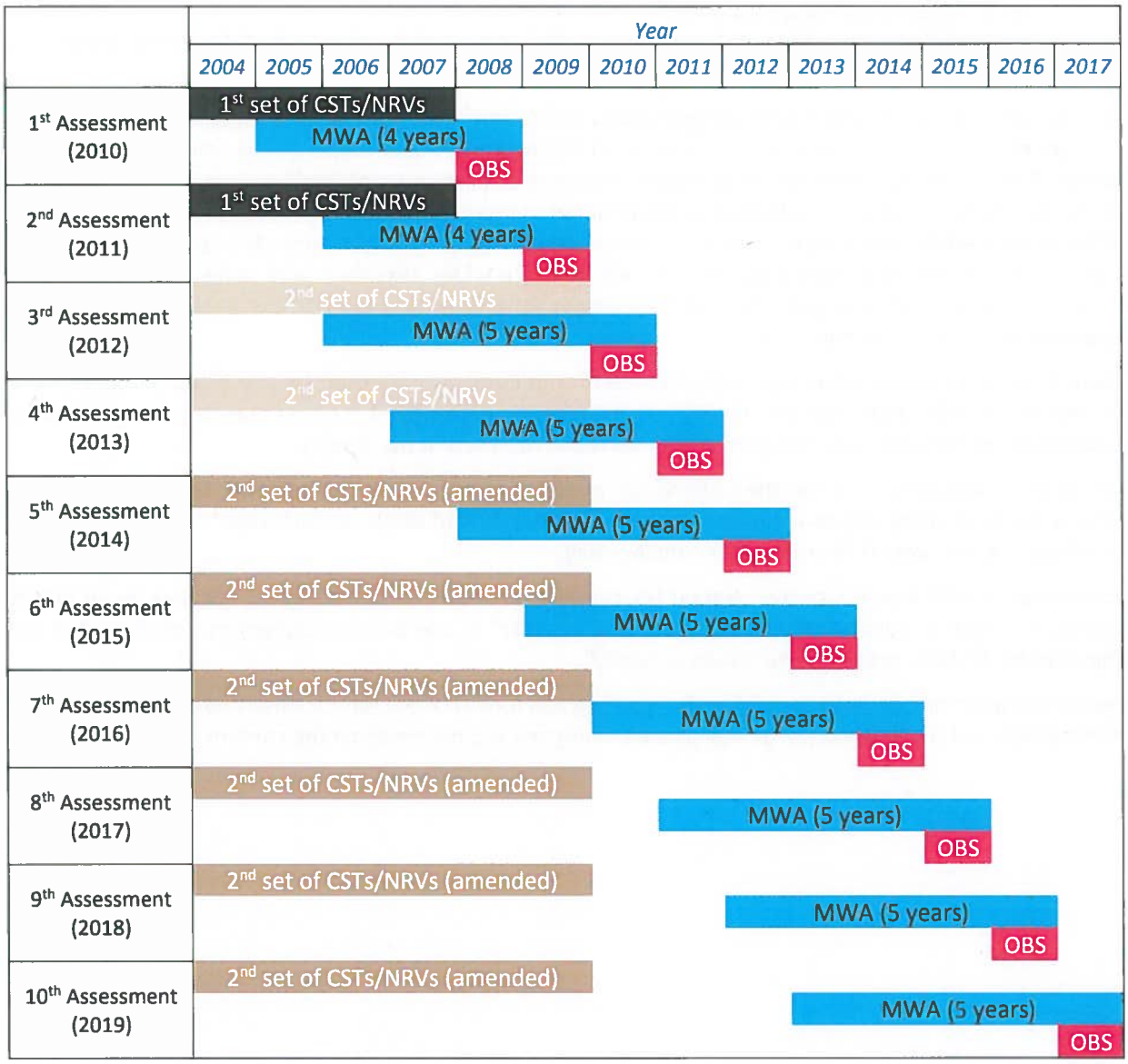
Noting the constraints of using the current set of NRVs as set out in the Method, this assessment of achievements of safety targets identified "possible deterioration of safety performance" in three categories of railway users in two EU Member States and Norway.

In accordance with Article 5 of the Method [3], the Member States that achieved a negative result in this assessment, with a "possible deterioration of railway safety" in one or more categories, "*shall send to the Commission the likely causes of the results obtained*".

The Commission may consider specifying the deadline and format of the report, since these are not provided in the Article 5 of the Method [3], as well as underlining the requirements on the content of the report.

Annex 1 Overview of annual assessments

This assessment is the tenth assessment of achievements of CSTs carried out by the Agency. The table below provides an overview of the specificities of all assessments made by the Agency so far in respect to the years considered for these assessments.



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 (2013, 2014, 2015) DE (2015) DK (2014, 2015) FR (2013, 2014, 2015) HU (2015) NL (2013, 2014, 2015)	Not published due to quality issues.
Train movement for passenger trains Passenger train-Km (rail_tf_trainmv)	BE (2013, 2014, 2015) DE (2015) DK (2014, 2015) FR (2013, 2014, 2015) HU (2015) NL (2013, 2014, 2015)	Not published due to quality issues.
Passenger transport by rail Passenger-Km (rail_pa_quartal)	BE (2013, 2014, 2015) AT (2013, 2014, 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}) [2017]*	*OBS ≦ NRV (Yes/No)*	*MWA (*10^{-9}) [2013-2017]*	*MWA ≦ NRV*1.2 (Yes/No)*
Belgium (BE)	37.26	15.29	Yes		
Bulgaria (BG)	207.00	55.76	Yes		
Czechia (CZ)	46.49	10.66	Yes		
Denmark (DK)	9.03	0	Yes		
Germany (DE)	8.13	0.76	Yes		
Estonia (EE)	78.18	0	Yes		
Ireland (IE)	2.74	0	Yes		
Greece (EL)	54.67	121.76	**No**	16.25	Yes
Spain (ES)	29.19	9.37	Yes		
France (FR)	22.53	2.92	Yes		
Croatia (HR)	176.90	6.58	Yes		
Italy (IT)	38.10	0.76	Yes		
Latvia (LV)	78.18	0	Yes		
Lithuania (LT)	97.16	0	Yes		
Luxembourg (LU)	23.81	0	Yes		
Hungary (HU)	170.18	19.22	Yes		
Netherlands (NL)	7.43	0.67	Yes		
Austria (AT)	26.25	9.34	Yes		
Poland (PL)	116.13	18.73	Yes		
Portugal (PT)	41.82	3.24	Yes		
Romania (RO)	57.40	10.69	Yes		
Slovenia (SI)	25.27	0	Yes		
Slovakia (SK)	62.05	39.92	Yes		
Finland (FI)	9.03	0	Yes		
Sweden (SE)	3.54	0	Yes		
United Kingdom (UK)	2.73	6.19	**No**	0.93	Yes
Norway (NO)	2.83	0	Yes		
Scaling basis – Passenger train-km per year.					

Member State	Risk category 1.2 – 'Passengers'				
	NRV (*10^{-9}) [2004-2009]	OBS (*10^{-9}) [2017]	OBS ≦ NRV (Yes/No)	MWA (*10^{-9}) [2013-2017]	MWA ≦ NRV*1.2 (Yes/No)
Belgium (BE)	0.318	0.115	Yes		
Bulgaria (BG)	1.911	0.835	Yes		
Czechia (CZ)	0.817	0.149	Yes		
Denmark (DK)	0.110	0	Yes		
Germany (DE)	0.081	0.006	Yes		
Estonia (EE)	0.665	0	Yes		
Ireland (IE)	0.028	0	Yes		
Greece (EL)	0.503	1.062	**No**	0.138	Yes
Spain (ES)	0.270	0.061	Yes		
France (FR)	0.110	0.013	Yes		
Croatia (HR)	1.135	0.137	Yes		
Italy (IT)	0.257	0.005	Yes		
Latvia (LV)	0.665	0	Yes		
Lithuania (LT)	0.757	0	Yes		
Luxembourg (LU)	0.176	0	Yes		
Hungary (HU)	1.650	0.021	Yes		
Netherlands (NL)	0.089	0.001	Yes		
Austria (AT)	0.292	0.079	Yes		
Poland (PL)	0.849	0.149	Yes		
Portugal (PT)	0.309	0.023	Yes		
Romania (RO)	0.607	0.126	Yes		
Slovenia (SI)	0.362	0	Yes		
Slovakia (SK)	0.883	0.361	Yes		
Finland (FI)	0.110	0	Yes		
Sweden (SE)	0.033	0	Yes		
United Kingdom (UK)	0.028	0.048	**No**	0.008	Yes
Norway (NO)	0.033	0	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}) [2017]	OBS ≤ NRV (Yes/No)	MWA (*10^{-9}) [2013-2017]	MWA ≤ NRV*1.2 (Yes/No)
Belgium (BE)	24.63	36.02	**No**	11.83	Yes
Bulgaria (BG)	20.40	3.27	Yes		
Czechia (CZ)	16.45	3.55	Yes		
Denmark (DK)	9.10	0	Yes		
Germany (DE)	12.56	11.27	Yes		
Estonia (EE)	64.83	0	Yes		
Ireland (IE)	5.22	0	Yes		
Greece (EL)	77.87	199.30	**No**	61.66	Yes
Spain (ES)	8.81	6.02	Yes		
France (FR)	6.06	4.53	Yes		
Croatia (HR)	73.65	9.26	Yes		
Italy (IT)	18.85	5.61	Yes		
Latvia (LV)	64.83	0	Yes		
Lithuania (LT)	41.01	65.16	**No**	11.57	Yes
Luxembourg (LU)	11.99	123.32	**No**	7.25	Yes
Hungary (HU)	9.31	1.72	Yes		
Netherlands (NL)	5.97	1.26	Yes		
Austria (AT)	20.29	1.28	Yes		
Poland (PL)	17.18	5.34	Yes		
Portugal (PT)	53.09	0	Yes		
Romania (RO)	22.30	23.54	**No**	22.44	Yes
Slovenia (SI)	40.88	4.55	Yes		
Slovakia (SK)	2.71	21.30	**No**	36.54	**No**
Finland (FI)	9.21	6.24	Yes		
Sweden (SE)	2.86	1.25	Yes		
United Kingdom (UK)	5.17	0.35	Yes		
Norway (NO)	2.82	0	Yes		
Scaling basis - Train-km per year.					

Member State	Risk category 3.1 - 'Level crossing users'				
	NRV (*10^{-9}) [2004-2009]	OBS (*10^{-9}) [2017]	OBS ≦ NRV (Yes/No)	MWA (*10^{-9}) [2013-2017]	MWA ≦ NRV*1.2 (Yes/No)
Belgium (BE)	138.00	93.05	Yes		
Bulgaria (BG)	141.60	189.67	**No**	156.97	Yes
Czechia (CZ)	237.76	134.86	Yes		
Denmark (DK)	65.43	16.14	Yes		
Germany (DE)	67.76	43.88	Yes		
Estonia (EE)	399.88	829.49	**No**	279.64	Yes
Ireland (IE)	23.57	0	Yes		
Greece (EL)	710.26	363.94	Yes		
Spain (ES)	108.72	70.70	Yes		
France (FR)	78.72	89.71	**No**	66.27	Yes
Croatia (HR)	611.30	347.22	Yes		
Italy (IT)	42.87	22.42	Yes		
Latvia (LV)	239.16	459.62	**No**	222.23	Yes
Lithuania (LT)	521.65	136.84	Yes		
Luxembourg (LU)	95.90	0	Yes		
Hungary (HU)	274.20	184.05	Yes		
Netherlands (NL)	126.54	38.38	Yes		
Austria (AT)	160.16	57.16	Yes		
Poland (PL)	277.30	182.66	Yes		
Portugal (PT)	460.58	161.85	Yes		
Romania (RO)	542.00	199.53	Yes		
Slovenia (SI)	364.15	236.34	Yes		
Slovakia (SK)	309.00	122.01	Yes		
Finland (FI)	163.75	197.51	**No**	122.83	Yes
Sweden (SE)	63.98	28.68	Yes		
United Kingdom (UK)	23.45	16.06	Yes		
Norway (NO)	21.61	38.77	**No**	26.65	**No**
Scaling basis - Train-km per year.					

Member State	Risk category 4 - 'Others'				
	NRV (*10^{-9}) [2004-2009]	OBS (*10^{-9}) [2017]	OBS ≦ NRV (Yes/No)	MWA (*10^{-9}) [2013-2017]	MWA ≦ NRV*1.2 (Yes/No)
Belgium (BE)	2.86	3.00	**No**	3.16	Yes
Bulgaria (BG)	35.47	68.67	**No**	20.51	Yes
Czechia (CZ)	2.41	26.62	**No**	6.32	**No**
Denmark (DK)	14.15	0	Yes		
Germany (DE)	3.05	8.57	**No**	2.62	Yes
Estonia (EE)	11.64	0	Yes		
Ireland (IE)	7.00	0	Yes		
Greece (EL)	4.51	0	Yes		
Spain (ES)	5.54	16.05	**No**	6.41	Yes
France (FR)	7.71	8.85	No	5.49	Yes
Croatia (HR)	7.28	0	Yes		
Italy (IT)	6.70	0	Yes		
Latvia (LV)	11.64	191.51	**No**	49.58	**No**
Lithuania (LT)	11.64	0	Yes		
Luxembourg (LU)	5.46	0	Yes		
Hungary (HU)	4.51	0	Yes		
Netherlands (NL)	4.70	7.55	No	2.43	Yes
Austria (AT)	11.09	6.42	Yes		
Poland (PL)	11.64	1.23	Yes		
Portugal (PT)	5.54	26.97	**No**	12.89	**No**
Romania (RO)	2.83	0	Yes		
Slovenia (SI)	14.48	0	Yes		
Slovakia (SK)	2.41	23.24	**No**	1.37	Yes
Finland (FI)	14.15	0	Yes		
Sweden (SE)	14.15	1.25	Yes		
United Kingdom (UK)	7.00	1.94	Yes		
Norway (NO)	14.15	0	Yes		
Scaling basis - Train-km per year.					

Member State	Risk category 5 - 'Trespassers'				
	NRV (*10^{-9}) [2004-2009]	OBS (*10^{-9}) [2017]	OBS ≦ NRV (Yes/No)	MWA (*10^{-9}) [2013-2017]	MWA ≦ NRV*1.2 (Yes/No)
Belgium (BE)	72.64	74.04	**No**	73.55	Yes
Bulgaria (BG)	900.20	313.94	Yes		
Czechia (CZ)	301.26	68.02	Yes		
Denmark (DK)	116.24	85.55	Yes		
Germany (DE)	113.08	92.22	Yes		
Estonia (EE)	1547.95	307.22	Yes		
Ireland (IE)	85.23	111.29	**No**	27.03	Yes
Greece (EL)	722.94	1273.78	**No**	693.35	Yes
Spain (ES)	167.83	52.65	Yes		
France (FR)	67.16	99.79	**No**	84.67	**No**
Croatia (HR)	676.30	615.74	Yes		
Italy (IT)	119.25	122.00	**No**	138.41	Yes
Latvia (LV)	1314.28	421.32	Yes		
Lithuania (LT)	2045.34	970.94	Yes		
Luxembourg (LU)	79.92	0	Yes		
Hungary (HU)	588.06	703.53	**No**	702.42	Yes
Netherlands (NL)	15.93	31.46	**No**	7.46	Yes
Austria (AT)	119.03	68.72	Yes		
Poland (PL)	1213.09	536.07	Yes		
Portugal (PT)	834.33	361.46	Yes		
Romania (RO)	1388.20	514.52	Yes		
Slovenia (SI)	236.44	0	Yes		
Slovakia (SK)	1758.00	462.87	Yes		
Finland (FI)	248.74	27.03	Yes		
Sweden (SE)	94.83	63.60	Yes		
United Kingdom (UK)	84.54	49.76	Yes		
Norway (NO)	91.81	19.39	Yes		
Scaling basis - Train-km per year.					

Member State	*Risk category 6 – 'Societal risk'*				
	*NRV (*10^{-9}) [2004-2009]*	*OBS (*10^{-9}) [2017]*	*OBS ≦ NRV (Yes/No)*	*MWA (*10^{-9}) [2013-2017]*	*MWA ≦ NRV*1.2 (Yes/No)*
Belgium (BE)	275.05	219.11	Yes		
Bulgaria (BG)	1440.00	614.80	Yes		
Czechia (CZ)	591.22	241.32	Yes		
Denmark (DK)	217.92	101.69	Yes		
Germany (DE)	203.16	161.62	Yes		
Estonia (EE)	2107.86	1136.71	Yes		
Ireland (IE)	114.43	111.29	Yes		
Greece (EL)	1535.77	1949.67	**No**	1173.02	Yes
Spain (ES)	322.57	153.44	Yes		
France (FR)	179.94	205.35	**No**	171.59	Yes
Croatia (HR)	1467.00	976.85	Yes		
Italy (IT)	230.95	156.70	Yes		
Latvia (LV)	1658.79	1072.45	Yes		
Lithuania (LT)	2587.94	1172.94	Yes		
Luxembourg (LU)	209.70	123.32	Yes		
Hungary (HU)	1020.00	903.07	Yes		
Netherlands (NL)	148.17	79.27	Yes		
Austria (AT)	329.01	140.01	Yes		
Poland (PL)	1590.22	737.61	Yes		
Portugal (PT)	1361.81	552.98	Yes		
Romania (RO)	1704.36	745.43	Yes		
Slovenia (SI)	697.89	240.89	Yes		
Slovakia (SK)	1131.08	656.54	Yes		
Finland (FI)	416.98	230.77	Yes		
Sweden (SE)	169.19	94.77	Yes		
United Kingdom (UK)	119.79	73.94	Yes		
Norway (NO)	50.87	58.16	**No**	58.22	Yes
Scaling basis - Train-km per year.					

Annex 5 Overview of 'fail' results after the 2nd step of the assessment (2010 – 2019).

Risk category	*Passengers*		*Staff including employees or contractors*	*Level crossing Users*	*Others*	*Trespassers*	*Societal risks*
	1.1[6]	*1.2*[7]	*2*	*3.1*	*4*	*5*	*6*
2010 Assessment 2008 CSI Data	Greece Slovakia	Greece Slovakia	Lithuania Romania	Romania	n.a.	Romania Slovakia	Romania Slovakia
2011 Assessment 2009 CSI Data	Slovakia Slovenia	Slovakia Slovenia	Belgium Finland Lithuania Romania	Estonia Romania Slovenia	n.a.	Romania Slovakia	Romania Slovakia
2012 Assessment 2010 CSI 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 CSI Data	Slovakia	Slovakia	Bulgaria Finland Romania Slovakia		Romania	Romania Slovakia Sweden	[Norway] Romania
2014 Assessment 2012 CSI Data			Bulgaria Lithuania Romania Slovakia Slovenia Sweden	Bulgaria	Croatia Netherlands Romenia	Italy	[Norway] Slovakia

[6] *Scaling base: passenger train-km per year.*
[7] *Scaling base: passenger-km per year.*

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*
2015 Assessment 2013 CSI Data	Spain	Spain	Romania Slovakia	Bulgaria [Norway]	Belgium	Croatia France Italy [Norway]	[Norway] Slovakia
2016 Assessment 2014 CSI Data			Hungary Romania Slovakia Sweden	[Norway] Bulgaria	Hungary	France Italy [Norway]	Slovakia
2017 Assessment 2015 CSI Data			Austria Bulgaria Slovakia Sweden	[Norway]		Italy [Norway]	[Norway] Slovakia
2018 Assessment 2016 CSI Data			Bulgaria Hungary Slovakia	Bulgaria	Hungary	Italy	
2019 Assessment 2017 CSI Data			Slovakia	[Norway]	Czechia Latvia Portugal	France	

Notes: [ ] refer to the fact that Norway is not a MS so the CSM does not formally apply to it.

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

Annex 6 Overview of the results of all annual assessments (2010 – 2019).

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*
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[12]) (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[13]	*1.2*[14]	*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	

Notes: *[ ] refer to the fact that Norway is not a MS so the CSM does not formally apply to it. () 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".

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