EUROPEAN UNION AGENCY FOR RAILWAYS

Making the railway system
work better for society.

NSA Annual Report 2022

Norway

Contents

Definitions and Abbreviations

CSI	Common Safety Indicator
CSM	Common Safety Method
CST	Common Safety Target
EC	European Commission
ECM	Entities in charge of maintenance
EMM	Enforcement Management Model
ERAIL	European Railway Accident Information Links
ERTMS	European Railway Traffic Management System
EU	European Union
FTE	Full Time Equivalent
IM	Infrastructure Manager
IOD	Interoperability Directive
IOP	Interoperability
NIB	National Investigation Body
NoBo	Notified Body
NSA	National Safety Authority
OTM	On Track Machines
PRM TSI	Technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility
RSD	Railway Safety Directive
RU	Railway Undertaking
SAF	Safety
SMS	Safety Management System
TDD	Train Drivers Directive
TSI	Technical Specification for Interoperability
VA	Vehicle Authorisation

1. Introduction

1.1. Purpose, scope, and addressees of the report

The purpose of this report is to provide information on the safety related results from 2022. It covers the main national railway network. Tramways and underground are excluded from the scope. The intended addressees of this report besides the ERA are the National Investigation Body (NIB) and the Ministry of Transport and Communications.

1.2. Main conclusions on the reporting year

The Risk based supervision process for 2022 concluded with these prioritized goals of the supervision programme:

- Enhance reporting of incidents and accidents internal for the RU´s and to the NSA.
- Improve fulfilment of the requirements to risk management and emergency preparedness related to security (including cyber security)
- Ensure that the IM fulfil their responsibility for coordination of the established cooperation fora for security and emergency preparedness.
- Ensure that the emergency preparedness systems for the RU's operating passenger services are sufficient.

Norway implemented the 4th railway package in June 2022 and have started the work of updating the cooperation agreement with Sweden and Denmark related to safety certification and supervision according to this. The updated agreement will be signed during this year.

NSA Norway have prioritised participating in the work with CSM ALSP, as Norway already have a well-functioning incident and accident reporting system, which gives the NSA important input to our risk-based supervision activities. It is of strategic importance to us to be able to get this information on a similar level also in the future.

NSA Norway arrange an annual safety conference to promote railway safety. Some of the topics presented in 2022 were new regulations on security and national contingency, human and organisational factors and supplier management. In addition, mini seminars on chosen subjects as part of the guidance were regularly organized.

In 2022, the total number of reporting of incidents was 21 309. In 2021 there were 19 591. The average from 2018-2022 is 20 827. The number of significant accidents in 2022 is 23. The average from 2018-2022 is 23. 14 of the accidents in 2022 involved passenger trains, 5 freight trains and 4 other types of trains. 10 of the accidents are classified as impact with object, 7 of these was teared down the overhead contact line. 2 of the accidents are classified as derailments. 3 was level crossing accidents. All these level crossing accidents were collision of train and vehicle with one fatality. In 2022, there were 6 fatalities in accidents to persons caused by rolling stock in motion. From 2021 to 2022, the category accident to persons has a significant increase, but NSA Norway can't find the reasons of this variation. NSA Norway will monitor this variation to see if there are any trends. No passengers or employees were serious injured or killed in accidents in Norway in 2022. In 2022, only number of signals passed at danger when passing a danger point is above average. The rest of the indicators relating to precursors to accidents are below the average.

For 2022, the bases of the supervision program were the following identified risks:

- Systems of evaluating and controlling risks
- Systems for following-up of reported incidents and accidents (mainly IM)

NSA Norway executed 15 supervisions, of which 10 were audits, 3 inspections, 2 supervision meetings and 2 top management meeting. In general, railway safety is satisfactory, provided necessary corrective actions are taken to close identified non-conformities.

NSA Norway continues to use its own adaptation of the management maturity model and is expecting to gain indications on safety culture in the railway sector.

In 2022 120 vehicles were upgraded with the respect to the ERTMS system. 56 locomotives were given authorizations to use in Norway.158 train driver licenses were issued, and the total number of valid licenses was 2 282 at the end of 2022.

2. English summary

See chapter 1.2 Main conclusion on the reporting year.

3. NSA safety strategy, programs, initiatives and organizational context

3.1. Strategy and planning activities

NSA Norway's Company Strategy (2021-2024) focus on the long term goals given by the Ministry of Transport and Communications that shall ensure a high safety level for the Norwegian railways and also a functioning Railway Market.

In addition, the effect of our work related to three areas are focused. NSA Norway shall be relevant, efficient, and innovative. This is supported by activities in our annual working program.

To support the Company strategy, we have developed a Supervision Strategy and a Strategy for Public Security.

The Strategy for Public Security looks at safety and security from a Civil Protection point of view but is relevant for railway safety as it gives attention to Cyber-security issues and also prevention of major accidents with low probability.

In line with our Supervision Strategy, we have established an annual supervision program. The supervision program includes some defined areas of priority to ensure necessary improvement of important safety related topics in the industry.

The supervision program and the prioritized areas are established using a risk-based model as support for priority. We use a simplified maturity model as a basis for documentation of the NSA's assessment of the safety level of railway undertakings (RUs) and infrastructure managers (IM). These assessments are updated as part of each audit.

The Risk based model process is done in three steps:

The first step is to establish an overall risk picture for the railway industry. Based on our experience from all our railway related activities, combined with actual reported accidents and incidents, probabilities and consequences are established. These results are plotted in a consequence/probability diagram, and the dominating risks are chosen based on expert judgement. These risks will then be used as prioritized topics for the supervision activities. In a longer perspective we want to use the overall risk picture as a tool for prioritizing all our activities also legal processes and authorisations.

For 2022 risk assessments (updating and follow-up), reporting of accidents and incidents and competence of RUs and IMs (specific focus on driving with ATC disconnected, and training facilities) were prioritized aspects.

The second step is a prioritizing exercise of which RU's and IM's that will have attention in the coming year. Based on type of operation and traffic volume, the entities are plotted in a risk matrix. The initial result is adjusted up or down based on experience from our activities, complexity of the organisation and safety statistics.

In step three the prioritized risks from the overall risk picture are combined the prioritized RUs and IMs to establish our annual supervision programme. The supervision programme and the prioritized topics are published on our website.

The Supervision Programme is dynamic, so if risks appear during the year that require attention, reprioritizing of activities is considered. As an example for 2022 supervision of level crossings without protection was prioritized, after insufficient stopping distances was revealed.

The Risk based supervision process for 2022 concluded with these prioritized goals of the supervision programme:

- Enhance reporting of incidents and accidents internal for the RU´s and to the NSA.
- Improve fulfilment of the requirements to risk management and emergency preparedness related to security (including cyber security)
- Ensure that the IM fulfil their responsibility for coordination of the established cooperation fora for security and emergency preparedness.
- Ensure that the emergency preparedness systems for the RU's operating passenger services are sufficient.

Related to international cooperation we have close cooperation with our neighbouring countries, Sweden and Denmark to exchange safety related experiences. Norway implemented the 4th railway package in June 2022 and have started the work of updating the cooperation agreement with Sweden and Denmark related to safety certification and supervision according to this. This will be signed in 2023. NSA Norway have prioritised participating in the work with CSM ALSP, as Norway already have a well-functioning incident and accident reporting system, which gives the NSA important input to our risk-based supervision activities. It is of strategic importance to us to be able to get this information on a similar level also in the future.

To help the industry to follow the established rules and regulations we have continued our systematic guidance of the requirements as a supplement to supervision activities. When establishing the risk-based supervision plan, we also use guidance as a tool to ensure that RU's and IM's are in line with the regulations.

NSA Norway arrange an annual safety conference to promote railway safety. Some of the topics presented in 2022 were new regulations on security and national contingency, human and organisational factors and supplier management. In addition, mini seminars on chosen subjects as part of the guidance are regularly organized.

3.2. Safety Recommendations

All recommendations issued by the NIB, are forward to the relevant RU's and IM's. The Ministry of Transport and Communications appoints this task to the NSA. The NSA may demand that the relevant RU's and IM's give an account on their plans for acting upon the recommendations from the NIB before the

recommendation is closed. These plans of actions are also presented to NIB by NSA Norway before recommending closure to the Ministry.

Twice a year, status on all the open recommendations and recommendations closed since last reporting period are given to the Ministry. The NIB is also informed. General meetings with the NIB to share information and gained experience are also held at least twice a year.

3.3. Safety measures implemented unrelated to the recommendations

Not applicable.

3.4. Safety Organisational context

There are no changes since the previous year.

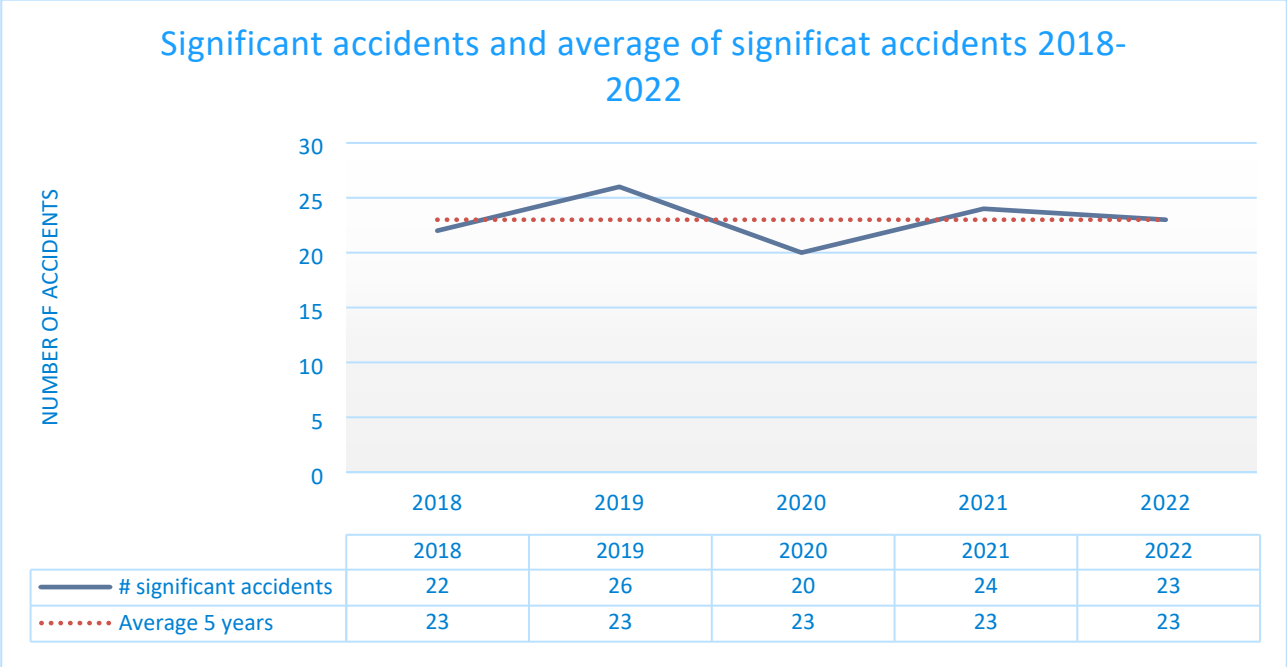
4. Safety performance

The number of fatalities in Norway is in general low. Most of the fatalities are connected to level crossings and trespassing.

Table 1 Number of minor and major incidents in the period 2018-2022

Year	Number of minor incidents	Number of major incidents
2018	20 972	1 258
2019	19 988	912
2020	19 260	846
2021	18 855	736
2022	20 490	819
Average 2018-2022	19 913	914

Table 1 shows that number of minor incidents in 2022 is above the average of the period 2018-2022 while major incidents in 2022 are below the average. The minor and major incidents have increased from 2021 to 2022. Previous two years, the major incidents have increased for level crossing users and trespassers. 65% of the reported major incidents in 2022 are due to trespassers and level crossing users. 60% of the reported major incidents in the period from 2018 to 2022 are due to trespassers and level crossing users.



	2018	2019	2020	2021	2022
# significant accidents	22	26	20	24	23
Average 5 years	23	23	23	23	23

Figure 1 Significant accidents and average of significant accidents in the period 2018-2022

Figure 1 shows that the number of significant accidents in 2022 is 23. The average of significant accidents from 2018-2022 is 23. 2022 is on average of the last 5 years of significant accidents.

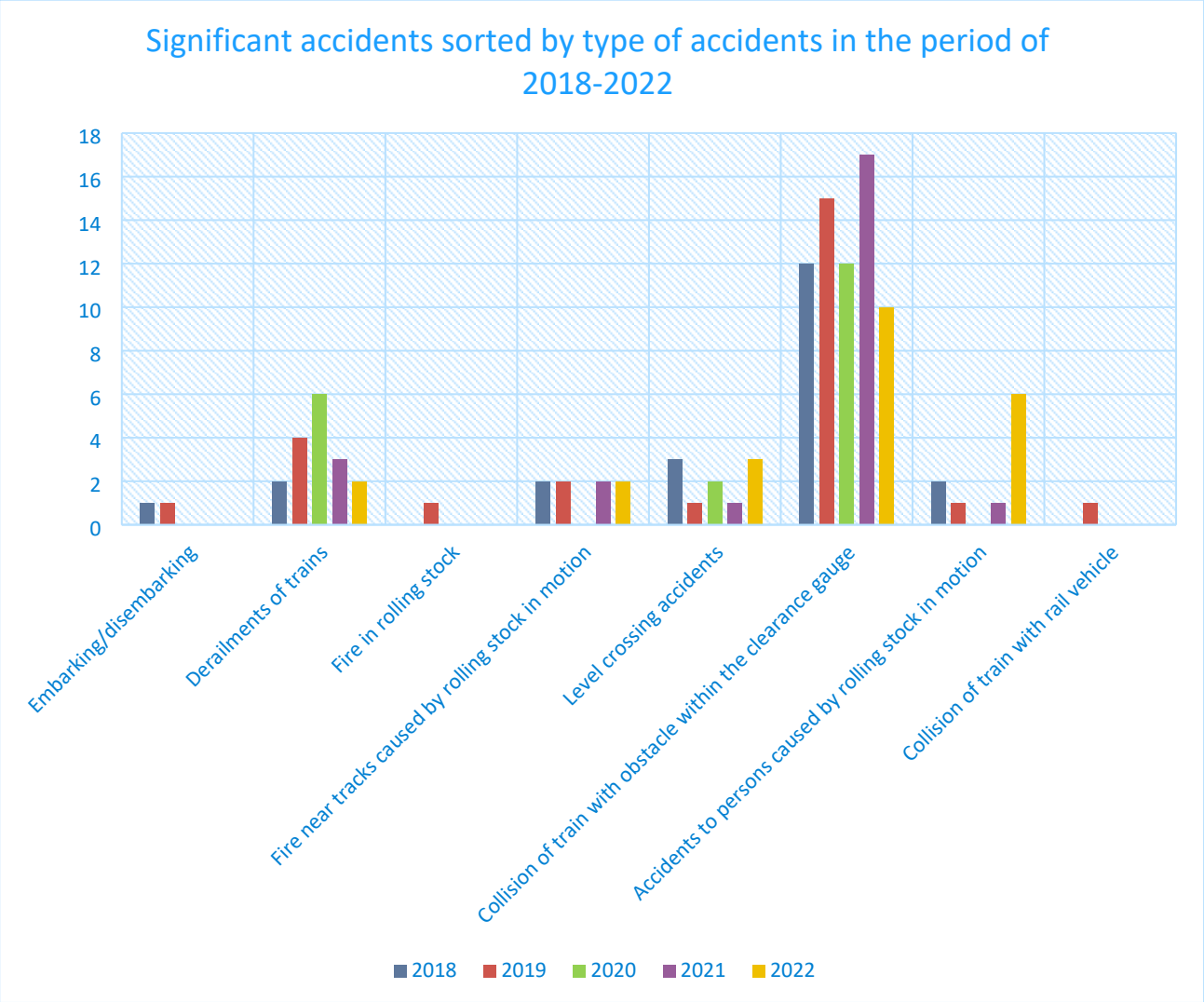


Figure 2 Significant accidents sorted by type of accidents in the period of 2018-2022

Figure 2 shows significant accidents sorted by type of accidents. 14 of the accidents in 2022 involved passenger trains, 5 freight trains and 4 other types of trains. 10 of the accidents are classified as impact with object, 7 of these was teared down the overhead contact line. 2 of the accidents are classified as derailments. 3 was level crossing accidents. All these level crossing accidents were collision of train and vehicle with one fatality. In 2022, there were 6 fatalities in accidents to persons caused by rolling stock in motion. From 2021 to 2022, the category accident to persons has a significant increase, but NSA Norway can't find the reasons of this variation. NSA Norway will monitor this variation to see if there are any trends. No passengers or employees were serious injured or killed in accidents in Norway in 2022.

Table 2 –Indicators relating to precursors to accidents in period 2018-2022

Indicators	2018	2019	2020	2021	2022	Average 2018-2022
Total number of precursors	224	142	149	177	135	165
Broken rails	55	50	53	103	43	61
Track buckles and other track misalignments	92	24	30	26	29	40
Wrong-side signalling failures	4	1	2	3	0	2
Signals passed at danger when passing a danger point	12	14	14	14	19	17
Signals passed at danger without passing a danger point	59	53	49	31	44	47
Broken wheels on rolling stock in service	2	0	1	0	0	0,6
Broken axles on rolling stock in service	0	0	0	0	0	0

Table 2 shows indicators relating to precursors to accidents in period 2018-2022. In 2022, only number of signals passed at danger when passing a danger point is above average. The rest of the indicators relating to precursors to accidents are below the average.

5. EU legislation and regulation

The Norwegian legislation implementing the fourth railway package and Directive (EU) 2016/798 came into force in 2022, and Norway was á jour with EU railway safety regulations.

6. Safety Certifications, Safety Autorisations and other certificates issued by the NSA

6.1 Safety Single Certificates and Safety Authorisations

The table 3 shows valid safety certificates and safety authorisations in Norway.

Table 3 Valid safety certificates and safety authorizations in Norway

Company name	History	Issuing date	Type of certificate
BLS Rail AB	New	07/04/2020	Type B
CargoNet AS	Renewed	11/03/2021	Type A
CargoNet AS	Renewed	11/03/2021	Type B
Flytoget AS	New	10/10/2022	SSC
Go Ahead Norge AS	New	03/07/2019	Type A
Go Ahead Norge AS	New	03/07/2019	Type B
Green Cargo AB	Renewed	22/11/2018	Type B
Grenland Rail AS	New	14/112022	SSC
Hector Rail AB	New	02/06/2022	SSC
LKAB Malmtrafik	Renewed	17/12/2018	Type B
Mantena AS	New	11/10/2019	Type A
Mantena AS	New	11/10/2019	Type B
Norsk Jernbanemuseum	New	23/06/2022	SSC
Norsk Jernbanemuseum	Amended	12/05/2021	Type A
Norsk Jernbanemuseum	Amended	12/05/2021	Type B
OnRail AS	New	20/04/2021	Type A
OnRail AS	New	20/04/2021	Type B
Protrain Trafik AB	Renewed	29/06/2020	Type B
Railcare T AB	New	01/07/2021	Type B
SJ AB	Amended	01/06/2018	Type B
SJ Norge AS	New	01/04/2020	Type B
SJ Norge AS	New	31/03/2020	Type A
Tågåkeriet i Bergslagen AB	Amended	13/06/2022	SSC
TM Togdrift AS	New	31/03/2020	Type B
TM Togdrift AS	New	31/03/2020	Type A
Vy Gjøvikbanen AS	Renewed	22/10/2020	Type A
Vy Gjøvikbanen AS	Renewed	22/10/2020	Type B
Vy Tog AS	New	18/09/2020	Type B
Vy Tog AS	New	18/09/2020	Type A
Vygruppen AS	Renewed	04/03/2021	Type A
Vygruppen AS	Renewed	04/03/2021	Type B
Bane NOR SF	Amended	28/09/2020	Safety authorisation

When issuing new, amended, and renewed safety certificates and safety authorisations, NSA Norway has noted these main issues:

- Risk analysis and risk assessment
- Competence management
- Safety management regarding outsourced activities (contractors)

In June 2022 NSA Norway implemented the fourth railway package and started to issue single safety certificates. Procedures, checklists and internal documentation regarding assessment reports are continuously improved.

6.2. Vehicle Authorisations

In 2022, 120 vehicles were upgraded with the respect to the ERTMS system and 56 locomotives were given authorizations to use in Norway.

6.3. Entities in Charge of Maintenance (ECM)

Not applicable.

6.4. Train drivers

In 2022, 158 train driver licenses were issued, and the total number of valid licenses was 2282 at the end of 2022. 866 driver licenses were renewed. NSA Norway suspended several licenses on a temporary basis due to medical issues, meaning that the medical requirements were not satisfied. There have been no changes in the strategy or procedure for issuing train driver licenses.

6.5. Other type of authorisation/certifications

NSA Norway may grant authorizations for placing in service new and upgraded infrastructure. The authorizations may be for the whole system or for separate subsystems.

6.6. Contacts with other National Safety Authorities

NSA Norway has a cooperation agreement on supervision and safety certification with the NSAs in Sweden and Denmark. The cooperation includes meetings and exchange of experiences with respect to safety certification and supervision processes.

In 2022 we started the work on updating the Memorandum of Understanding so that it will be in line with the fourth railway package. The updated MoU will also include Denmark.

6.7. Exchange of information between NSA and railway operators

The Norwegian NSA hosted one large sector meeting in connection with the implementation of the fourth railway package. The topic for the sector meeting was the new regulations. The main purpose of these sector meetings is to focus on guidance within topics that we see that the RU/IMs struggle with.

In addition, several guidance meetings were held. Most of these meetings were held on digital platforms.

The fall 2022 we could finally again arrange our annual safety conference. The safety conference is an annual meeting point for the sector with the same purpose as the sector meetings, but more comprehensive. Topics

for the conference covered safety and security, risk assessment and market surveillance. The feedback from this initiative was very positive.

7. Supervision

7.1. Strategy, plan, and decisionmaking

For 2022, the bases of the supervision program were the following identified risks:

- Systems of evaluating and controlling risks
- Systems for following-up of reported incidents and accidents (Mainly IM)

NSA Norway executed 15 supervisions, of which 10 were audits, 3 inspections, 2 supervision meetings and 2 top management meeting. In general, railway safety is satisfactory, provided necessary corrective actions are taken to close identified non-conformities.

Expected benefits for the supervision plan were:

- To ensure sufficient following-up of reported incidents and accidents
- Investigate all Rus/IM to clarify the extend of use of risk evaluation
- To ensure that risk evaluation is the tool for controlling risks, through use of accept criteria, methods for performing risk evaluations, and that top management is using risk evaluations as a tool for making decisions

The supervision plan was executed with only minor adjustments during the year.

NSA Norway there has an increased focus on guidance in interpretation of the regulations as supplement to supervision. There has been set up meetings open for all RUs and IM, on regularly basis for information and guidance about important topics as for example emergency preparedness and risk management system.

There is also implemented earlier warning about coercive fines for those who do not follow up within the decided time frames.

As mentioned above, NSA Norway check the correct applications and effectiveness of the safety management systems. We consequently require the companies to identify the root causes of non-compliances identified in other supervisions. NSA Norway frequently also investigate follow up of incidents related to the topic of the audits including how the company has identified the root causes, executed corrective actions related to the root causes and how the effect of the actions has been evaluated.

In 2022, NSA Norway did not receive any complaints on decisions from supervision activities.

7.2. Supervision results

NSA Norway executed 15 supervisions, of which 10 were audits, 3 inspections 2 supervision meetings and 2 top management meetings. In general, railway safety is satisfactory, provided necessary corrective actions are taken to close identified non-conformities.

In general, railway safety is satisfactory provided, necessary corrective actions are taken to close identified non-conformities.

Emergency preparedness

- There is still a need to improve analysis as a basis for emergency plans

Risk evaluation

- All RU/IMs have procedures in place to ensure that risk analysis is being performed
- The management uses the results from risk evaluations to outline their risk picture
- Performed supervisions and the investigation demonstrate that IM/Rus carry out risk evaluation because it is a requirement in the regulations more than as a mean to document that identified risks are managed
- The majority do not have a distinct system for prioritizing and implementation of actions as a result of risk evaluations
- In four of the supervisions there were not established suitable criterias for risk acceptance to use in deciding the need of safety measures

Follow-up of reported incidents and accidents

- Most RU/IMs following-up of incidents and accidents is to some extent insufficient to prevent reoccurrence, and incidents/accidents are mostly subject to analysis one by one, and not sufficiently subject to overall trend analysis
- Incidents and accidents are not fully investigated to find the real root causes

We had supervision with two training facilities. In both cases we found weaknesses in the systematic work with training programs, for instance no evaluation of training given to look at possible room for improvement.

We performed on two different occasions several inspections of level crossings without safety signaling. There were discovered several deficiencies from the regulations.

7.3. Coordination and cooperation

NSA Norway have a cooperation agreement on supervision and safety certification with NSA in Sweden and Denmark. The cooperation includes meetings and exchange of experience with respect to safety certification and supervision processes.

8. Application of relevant CSMs by RUs and IMs

In 2022 the fourth railway package went into force in Norway. That means that there became a big need for updating of the RUs and the IMs safety management systems since CSM SMS became the main regulation for safety management systems.

8.1. Application of the CSM on Safety Management System

As mentioned above, all of the RUs and the IM needed to update their safety management systems in relation with the implementation of CSM on SMS. Supervisions performed after the implementation of the fourth railway package were done in line with CSM SMS.

8.2. Application of Regulation 402/2013 on the CSM for risk evaluation and assessment

In general, the sector, and in particular the national IM, have applied the regulation as expected. And the risk assessment of large projects is satisfactorily. When it comes to smaller projects the quality of the risk assessments varies, but it is improving. The sector, in general, demonstrates satisfactorily performance

within the area of risk assessments when it comes to competence. However, there is still room for improvement, especially when it comes to system descriptions and consistent use of risk acceptance criteria. There is no evidence within SMSs of combined use of CSM RA and CSM Monitoring.

8.3. Application of Regulation 1078/2012 on the CSM for monitoring

The CSM on monitoring overlap to some extent with existing national legislation within safety management, but the sector still struggles with working sufficiently proactive regarding safety management. The sector tends to work proactive, and without any proper cooperation or coordination. There are no differences in application between smaller or bigger companies.

8.4. Participation and Implementation of EU projects.

No information available.

9. Safety culture

9.1 Safety culture evaluation and monitoring

NSA Norway has no separate activity regarding evaluation of safety culture within the sector.
NSA Norway continues to use its own adaptation of the management maturity model and is expecting to gain indications on safety culture in the railway sector. There is still need for more experiences before getting sufficient data to make any conclusions.

9.2. Safety culture initiatives/projects

No ongoing separate work on this topic.

9.3. Safety culture communication

Some of the biggest companies focus on this topic, but NSA Norway has not had any communication activity to the stakeholders on this topic.

Annex A: Progress with Interoperability

ANNEX: Progress with Interoperability

Please provide the following information as it is at the 31st December of the reporting year (2022).

Please refer to the Appendix for definitions.

1. Lines excluded from the scope of IOP/SAF Directive (end of year)

1a	Length of lines excluded from the scope of application of the IOP Directive [km]	0
1b	Length of lines excluded from the scope of application of the SAF Directive [km]	0

Please provide the list of lines excluded:

2. Length of new lines authorized by NSA (during the reporting year)

2a	Total length of lines [km]	30

3. PRM adapted stations (end of year)

3a	PRM TSI compliant railway stations	3
3b	PRM TSI compliant railway stations - partial TSI compliance	20
3c	Accessible railway stations	127
3d	Other stations	205

4. Train driver licenses (end of year)

4a	Total number of valid European licenses issued in accordance with the Directive 2007/59/EC (as amended)	2282
4b	Number of newly issued European licenses (first issuance)	158

5. Number of vehicles authorized under the interoperability Directive (EU) 2016/797 (during the reporting year)

5a	**First authorization - total**	
5aa	Wagon	NA
5ab	Locomotives	NA
5ac	Hauled passenger vehicles	NA
5ad	Fixed or pre-defined formation	NA
5ae	Special vehicles	NA
5b	**Additional authorization - total**	
5ba	Wagon	NA
5bb	Locomotives	56
5bc	Hauled passenger vehicles	NA
5bd	Fixed or pre-defined formation	NA
5be	Special vehicles	NA
5c	**Type authorization - total**	
5ca	Wagon	NA
5cb	Locomotives	NA

5cc	Hauled passenger vehicles	NA
5cd	Fixed or pre-defined formation	NA
5ce	Special vehicles	NA
5d	**Authorizations granted after upgrade or renewal - total**	
5da	Wagon	NA
5db	Locomotives	NA
5dc	Hauled passenger vehicles	NA
5de	Fixed or pre-defined formation	NA
5df	Special vehicles	NA

6. ERTMS equipped vehicles (total fleet, end of year)

6a	Tractive vehicles including trainsets equipped with ERTMS Level 1	NA
6b	Tractive vehicles including trainsets equipped with ERTMS Level 2	NA
6c	Tractive vehicles including trainsets – no ERTMS installed	NA

7. Number of NSA staff (full time equivalent employees) by the end of year

7a	FTE staff involved in safety certification	2
7b	FTE staff involved in vehicle authorization	3,5
7c	FTE staff involved in supervision	5,4
7d	FTE staff involved in other railway-related tasks	3