

Safety report for the railways 2011

Foreword

2011 was the year when no-one was killed in accidents at level crossings. This is the first time in many years, and is most gratifying. Even though it is already clear at the time of this publication, September 2012, that the trend has not persisted, the excellent result for 2011 shows it is possible to do something about accidents at level crossings. Information campaigns and the closure of the most dangerous crossings seem to be bearing fruit.

The number of significant accidents involving persons in 2011 is below the level of previous years, and also well below the national safety target of 0.3 significant accidents per 1 million train kilometres.

The theme of this year's safety report is the Danish Transport Authority's cooperation with the Danish Accident Investigation Board. The Danish Transport Authority takes an active stance on the recommendations made by the Danish Accident Investigation Board on the basis of their investigations of accidents and incidents.

In recent years, the Danish Transport Authority's supervision has focused more and more on undertakings' safety management systems. This has improved undertakings' ability to manage their own risks. It is the Danish Transport Authority's assessment that the most safety 'for the money' is obtained by supporting undertakings' own safety efforts.

2011 was used to prepare the industry for the introduction of EU rules on safety assessments (Common Safety Methods on Risk Assessment, CSM-RA). The new rules mean that undertakings must use significance assessments to determine whether something requires authorisation to be placed into service. In 2011, the Danish Transport Authority therefore worked hard to inform about the new developments through guidelines, education and presentations at the annual safety conference.

The Danish Transport Authority hopes that the report can contribute to exchange of experience and inspiration in the Danish railway sector. The report will also be used to exchange experience among the EU Member States and will be submitted to the European Railway Agency (ERA).

Happy reading!

Jesper Rasmussen

Deputy Director

Introduction

Railway safety is still high...

The Danish national target is to maintain the high 2004 railway safety performance. The total number of serious injuries should not rise above 0.3 per 1 million train kilometres. The national target represents the maximum number of injuries acceptable in connection with the railway.

In 2011 the national target was met. The number of serious injuries was 0.14 per 1 million train kilometres.

In 2011 six persons were killed in railway accidents, while 13 were severely injured. This corresponds to 0.09 serious injuries per 1 million train kilometres, which is below the levels of the previous years.

20 significant accidents (accidents with extensive disruptions to traffic, significant damage to equipment, serious injuries, or fatalities) occurred in 2011, which is fewer than the previous years. In 2011, accidents to persons caused by rolling stock in motion were the most frequent type of significant railway accident (14 out of 20). All fatalities (six) were caused by rolling stock in motion.

The decline in the number of significant accidents in 2011 is especially due to a reduction in the number of level crossing accidents. Most uncommonly, no-one was killed in accidents at level crossings. Three persons were seriously injured in level crossing accidents.

... due to much attention to safety – especially at level crossings

Natural variations in data could be the reason why there were so few accidents at level crossings in 2011 compared to the last few years. But the reason could also be that more companies have made an effort to abolish level crossings and inform users of the risks involved in crossing the rails.

Many companies work with dedication to improve safety, but there is still room for improvement.

Companies face challenges with their safety management systems...

In 2011, the Danish Transport Authority's supervision of the companies' safety management systems showed that several companies have an inadequate understanding of important elements of their safety management system – elements which are essential for a well-functioning safety management system. For example, the top management often does not display the necessary commitment in relation to the company's safety management system. Commitment of the top management is, in the Danish Transport Authority's experience, crucial for the success of the system because the commitment of the management has a spillover effect on all other parts of the company.

... which have led to a new focus in the Danish Transport Authority's supervision of 2012.

As a reaction to the challenges concerning the companies' safety management systems, the Danish Transport Authority has decided to focus part of its supervision effort during 2012 on the companies' internal safety revision – in other words, the companies' internal supervision.

The companies' safety reports from 2011 show that the companies have very varying perceptions of what the term 'internal safety revision' covers. There is a tendency towards the companies' internal supervision only covering supervision of the railway operations themselves – that is to say, inspections – while supervision of the safety management system is almost forgotten.

In 2011 the preparation of the EU legislation on risk analysis (CSM-RA) began

Denmark has chosen that the assessment of significance which is an element in the CSM-RA-regulation should not only decide which risk assessment method a project should use, but also whether the project needs an authorisation for placing into service.

This is in keeping with the goal of the Danish Transport Authority that, as the safety management systems in the sector evolve and mature, the sector handle more and more safety without requiring approval from the Danish Transport Authority.

The Danish Transport Authority used the second half of 2011 on preparation – among other things by implementing two new regulations regarding infrastructure and rolling stock, respectively. The Danish Transport Authority also arranged courses on the principles of CSM-RA for the sector and published three guides on the primary elements of the regulation: significance assessments, system definition and use of assessor.

From 1 January 2012, the significance of all revisions of the railway system must be assessed. The Danish Transport Authority will fully supervise the significance assessments carried out by the infrastructure managers for the year 2012.

Areas of focus in 2012

In 2012, the Danish Transport Authority will focus on implementing the principles of CSM-RA in the sector. It will be challenging to achieve a common understanding on how to interpret the relatively abstract criteria: monitoring, complexity, reversibility, failure consequence, additionality and novelty used in implementing the change – criteria which according to CSM-RA should be used when assessing whether a project is significant.

The Danish Transport Authority will cooperate closely with the companies on how the terms should be interpreted.

With the two new regulations regarding infrastructure and rolling stock, respectively, the roles in the railway sector in Denmark will change. To a higher degree than before, the companies will have to base their applications for authorisation for placing into service on risk assessments and use of assessor. It will be a challenge to create an efficient market for assessors and ensure that the assessors undertake their new role. To assist this process, the Danish Transport Authority will start up an assessor forum (a series of meetings) for current and potential assessors.

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Chapter 1. Accidents and incidents

For many years, there have been so few accidents involving passengers and employees that the average is close to zero. Accident data for 2011 show that safety levels on Danish railways are generally high.

Accidents, incidents and safety irregularities

There are approximately 2700 km of railway line in Denmark. A large part is equipped with effective safety systems that prevent serious accidents – especially on main lines, where traffic flow is fast and capacity is greatest (see also figures for the rail system in Annex 1).

Railway undertakings and infrastructure managers are continually following up on accidents, precursors of accidents and safety irregularities that occur in their area.

It is part of the undertakings' safety management system to carry out an investigation when something goes wrong. In the most serious cases, the Accident Investigation Board for Civil Aviation and Railways helps establish the chain of events and possible causes of the fault in the system.

Once a year all the data are passed on to the Danish Transport Authority, which analyses developments in rail safety nationwide. The results are set out in this chapter of the annual safety report.

All accidents, precursors of accidents and safety irregularities are reported in accordance with the 'Reporting Executive Order'¹. The definitions used are listed in Annex 3. Annex 4 contains an overview of the data. To minimise statistical uncertainty when indicating relatively small data volumes, the five-year average is used to assess developments in railway safety.

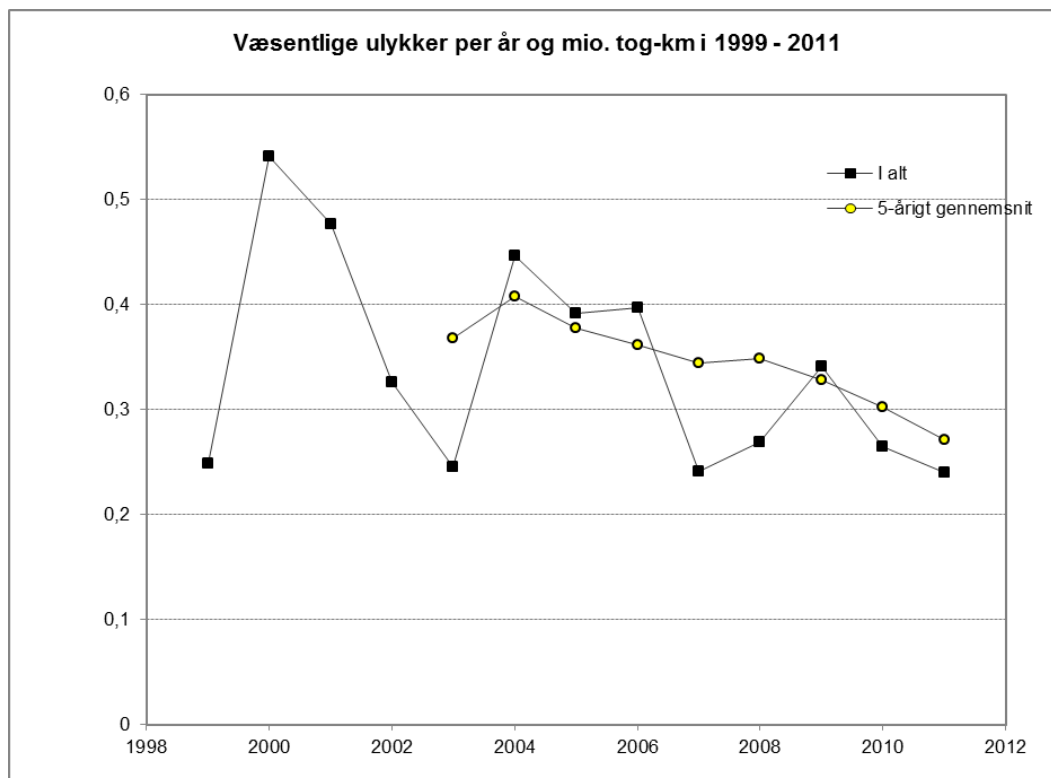
Significant accidents

The number of significant accidents² fell to a total of 20 in 2011, compared with 22 in 2010. As can be seen in figure 1, there was also a drop in the five-year average.

¹ Executive Order No 575 of 25 May 2010 concerning the reporting of data on accidents, precursors to accidents and safety irregularities, etc. to the Danish Transport Authority.

² Significant accidents are train accidents involving damage of over DKK 1.2 million, death or serious injury, or delays to train operations of more than six hours.

Figure 1. Significant accidents 1999-2011



Significant accidents are train accidents involving damage of over DKK 1.2 million, death or serious injury, or delays to train operations of more than six hours. The significant accidents are shown per year and per million train kilometres.

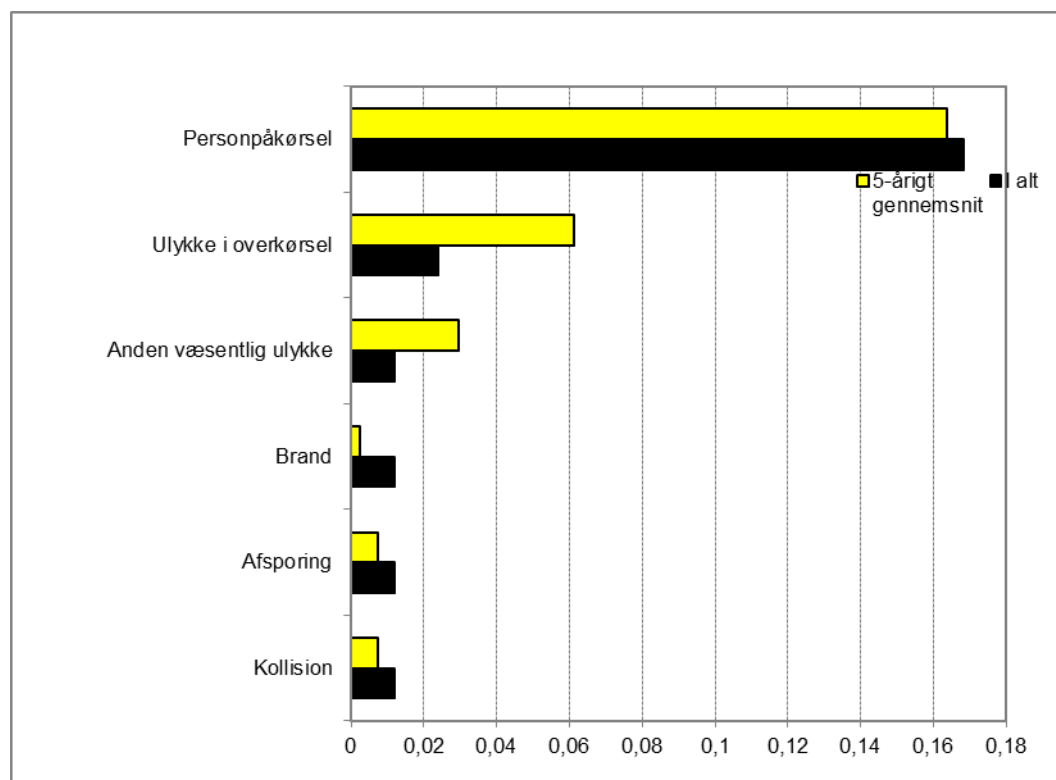
DK	EN
Væsentlige ulykker per år og mio. tog-km i 1999-2011	Significant accidents per year and per million train kilometres, 1999-2011
I alt	Total
5 årigt gennemsnit	5-year average

In 2011, no accidents caused more than two instances of serious personal injury at the same time. There was one collision, one fire and one derailment, all types of accident that have the potential to cause extensive damage, but none caused any fatalities.

The fall in the number of significant accidents in 2011 reflects a fall in the number of accidents at level crossings. The number of collisions with persons rose slightly compared with last year, but is still below the five-year average.

The number of collisions, fires and derailments is slightly above the five-year average, but other significant accidents are below the five-year average.

Figure 2. Significant accidents broken down by type of accident



Accident types are given per million train-km for 2011 and as a five-year average in the period 2007-2011.

DK	EN
Personpåkørsel	Collisions with persons
ulykke i overkørsel	Accidents at level crossings
Anden væsentlige ulykke	Other significant accidents
Brand	Fire
Afsporing	Derailment
Kollision	Collision
5-årigt	5-year
I alt gennemsnit	Total average

The change in the different types of accident is an expression of the fact that there is only a small volume of data. The annual change corresponds to a fall or rise of approximately one or two significant accidents in comparison with the average.

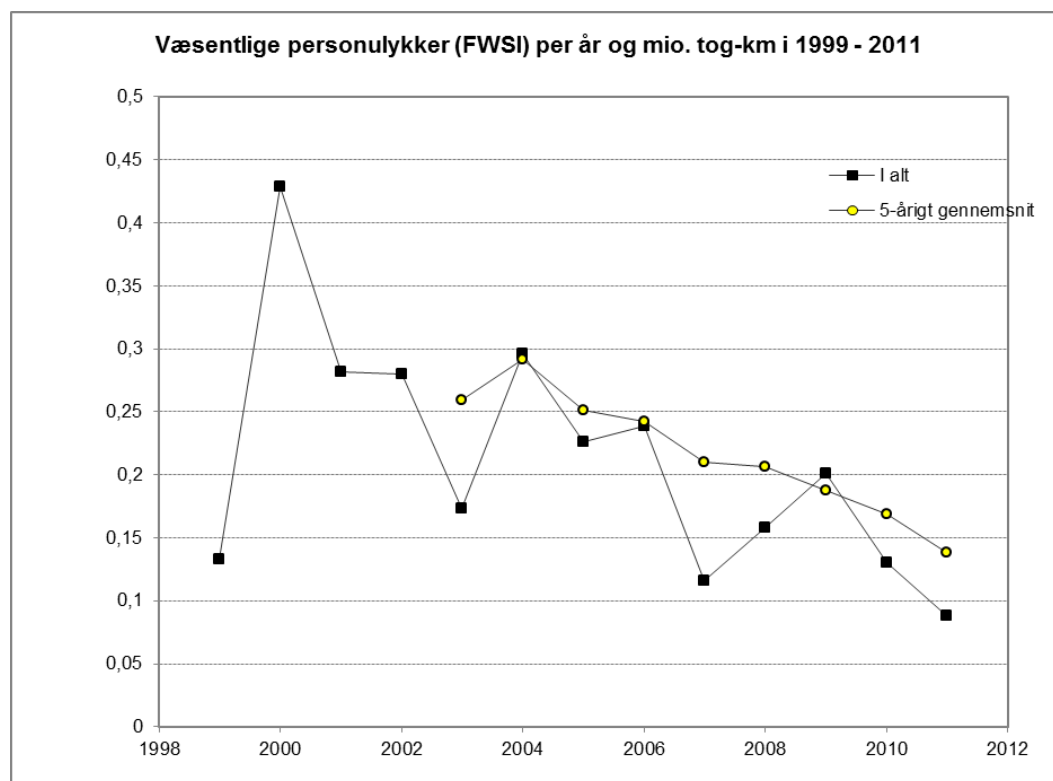
Safety target for the railways

The safety target for the railways has been set on the basis of the average number of 'significant accidents involving persons', taking 2004 as the base year³. Significant accidents involving persons are a weighted total of the number of persons killed (weighted 1/1) and seriously injured (weighted 1/10). The safety target can be used to assess whether safety on the railways is acceptable.

³ cf. the strategy 'Den fælles europæiske jernbane – Strategi for sikkerhed og smidig gennemførelse i Danmark' [The common European railways – Strategy for high levels of safety and smooth implementation in Denmark], Danish Transport Authority, February 2009.

Compliance with the safety target is assessed on the basis of changes in the number of significant accidents involving persons. Significant accidents involving persons are given as a five-year average and scaled up to train-km travelled. Figure 3 shows a downward trend in the five-year average from 2004 to 2011.

Figure 3. Significant accidents involving persons 1999-2011



'Significant accidents involving persons' are a weighted total of the number of persons killed (weighted 1/1) and seriously injured (weighted 1/10). The statistics cover all groups of persons. Suicides are not included. The significant accidents involving persons are shown per year and per million train kilometres.

DK	EN
Væsentlige personulykker (FWSI) per år og mio. tog-km i 1999-2011	Significant accidents involving persons (FWSI) per year and per million train-km, 1999-2011
I alt	Total
5 årigt gennemsnit	5-year average

The national safety target is still that the number of significant accidents involving persons on the railway should be less than 0.3 per million train-km in the five-year average. The target was met in 2011.

In 2011, the number of significant accidents involving persons was 0.14 per million train-km.

The number of significant accidents involving persons in the period 2007-2011 was below the level of previous years, and also well below the national safety target of 0.3 significant accidents per million train-km.

Breakdown of accidents involving persons

The number of personal injuries in railway accidents in Denmark in 2011 was very low compared with previous years. In all, six people were killed and 13 seriously injured – excluding suicides. None of the deaths involved passengers or employees.

The six people killed in railway accidents in 2011 were all on railway property without permission.

In total, 13 people were seriously injured in railway accidents. Of these, three were using level crossings, three were on railway property without permission, three were employees, three were passengers and one person belonged to the category 'other'⁴.

The number of deaths fell from 10 to six between 2010 and 2011, while the number of serious injuries rose from eight to 13.

The fall in the number of accidents involving persons was due to a sharp fall in the number of accidents at level crossings.

In 2010, four people were killed in accidents at level crossings, while four level-crossing users were seriously injured. In 2011 there were no fatalities at level crossings, but three people were seriously injured in accidents at level crossings.

In recent years, the number of significant accidents at level crossings has remained fairly stable. In the last couple of years, however, there have been several tragic accidents at level crossings involving children, as has been widely reported in the press.

It is possible that the increased attention on the dangers of level crossings has affected users' behaviour, and that this is a contributing factor to the fall in the number of accidents involving persons at level crossings in 2011.

One contributing factor may also be the work undertaken by infrastructure managers to reduce the number of accidents at level crossings. In 2011, following the tragic accident at a level crossing on the Svendborgban in 2010, Banedanmark initiated an action plan⁵ to establish better visibility at unprotected level crossings, while through visits to schools and information campaigns such as e.g. 'sporrespekt' ['respect the tracks'], the private lines have made a considerable effort to make people aware of the risks when crossing railway tracks.

The fall may therefore also be due to the natural variation in numbers given the small amount of data.

It will be interesting to see whether the low number of significant accidents at level crossings can be maintained in 2012.

Table 1, which contains an overview of the most recent five-year period, shows that significant accidents involving persons at level crossings represented 61% of the total number of significant accidents involving persons in the period. Collisions with persons represented 30% of the total number. The remaining 9% were due to 'other'

⁴ The category 'other' includes those persons in the reporting statistics not defined as belonging to the other categories. These are often persons who were hit by the train while on the platform. One might immediately think that these persons would be defined as passengers, but in these reporting statistics, passengers are defined as persons who are either on the train or in the process of boarding or alighting from the train. A person standing on the platform who is hit by a train is therefore not defined as a passenger.

⁵ Action plan for establishing better visibility at unprotected level crossings.

accidents', which are often fatal accidents where people who are on railway property without permission have come into contact with the traction current.

Table 5. Significant accidents involving persons and significant accidents involving persons broken down by type of accident 2007-2011

Type of accident	Significant accidents	Significant accidents (%)	Significant accidents involving persons	Significant accidents involving persons (%)
Collisions with persons	67	57	35	61
Accidents at level crossings	25	21	17	30
Dangerous goods	7	6	0	0
Other accidents	12	10	5	9
Collision of trains	3	3	0	0
Derailment	3	3	0	0
Fire	1	0	0	0
Total:	118	100	57	100
Average per year:	27		11.3	

The table shows accidents involving persons and significant accidents broken down by type of accident over a five-year period. Significant accidents are those where significant material damage or injury occurred.

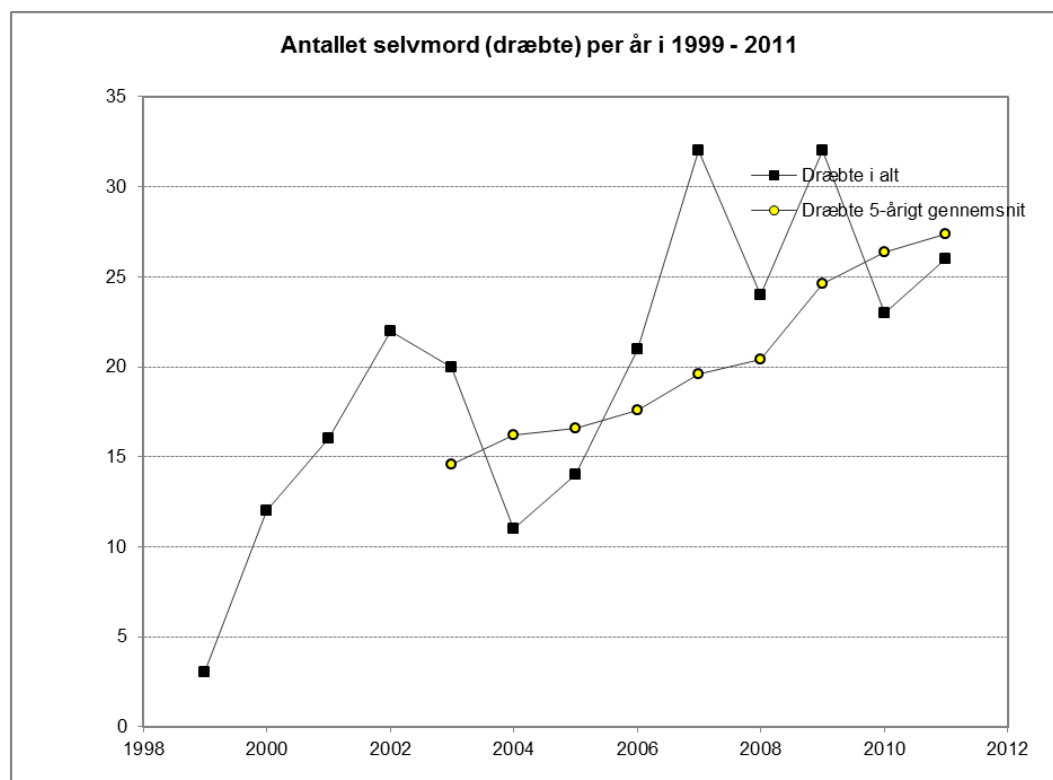
Significant accidents involving persons are a weighted total for persons killed (weighted 1/1) and seriously injured (weighted 1/10). Suicides are not included.

Collisions with persons and suicides on the railway

Suicide is not viewed as a railway accident in the traditional sense. This is because the causes of suicide are not directly related to the way railways are operated. Suicide on the railways is no different from suicide in other locations, and should be prevented in the same way as other suicides.

The number of suicides is typically more than twice the total number of deaths caused by accidents on the railway. In 2011 the number of suicides was fairly stable relative to the previous year. 26 people committed suicide on the railway in 2011, compared with 23 suicides in 2010.

Figure 4. Number of suicides 1999-2011



Suicides resulting in a fatality. Suicides are recorded on the basis of witness statements and police decisions.

DK	EN
Antallet selvmord (dræbte) per år i 1999-2011	Number of suicides (deaths) per year, 1999-2011
Dræbte i alt	Total number of deaths
Dræbte 5-årigt gennemsnit	5-year average number of deaths

The five-year average shows an increase in the number of suicides. However, this should be viewed in the context that figures for suicides on the railway entail some uncertainty. One source of error is that some suicides are mistakenly recorded as attempted suicides⁶. A further source of uncertainty is that it is not always possible to decide whether, when an accident first happens, it involves a suicide or a collision with a person.

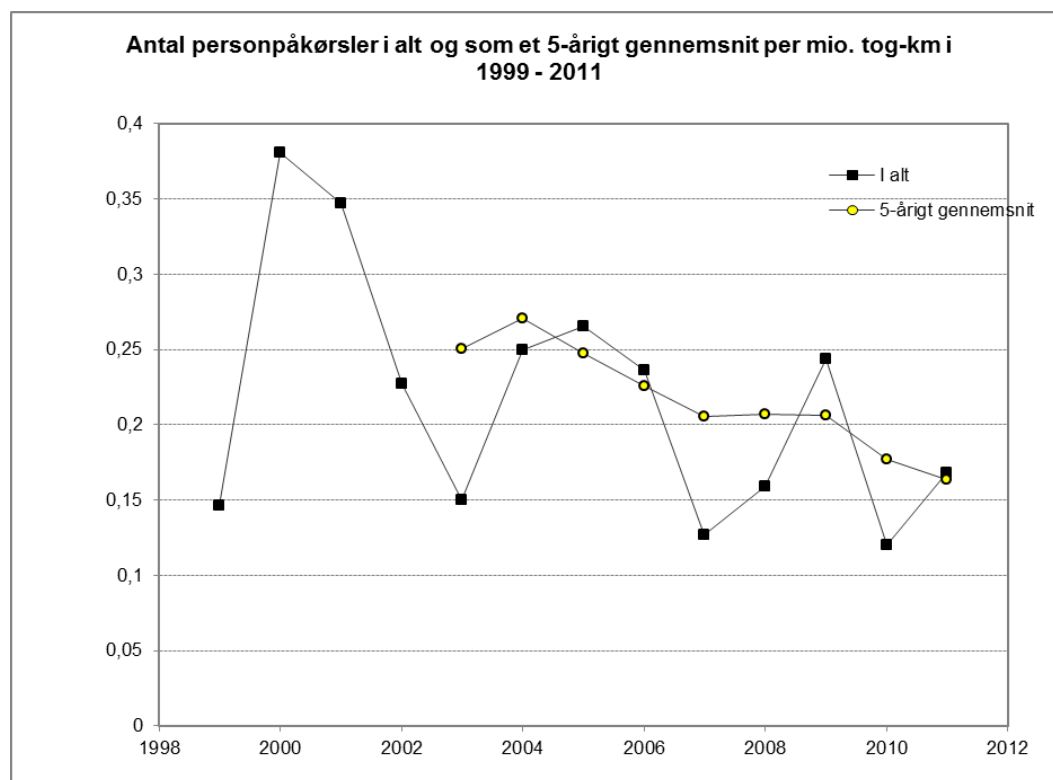
Data on suicides on the railways was first collected systematically in 2006 – before then the data most likely contained inaccuracies. The last five years' data suggest that the number of suicides on the railways is around 25-35 persons annually, if one assumes that some suicides are mistakenly recorded as attempted suicides.

There was a slight increase in the number of collisions with persons in 2011. Nevertheless, the number of collisions with persons is very low compared with previous years. Those injured in collisions with persons are typically on railway property without permission and are hit by trains. The category therefore also includes

⁶ Infrastructure managers and operators are responsible for submitting information on suicides to the Danish Transport Authority. Since they do not collect information from hospitals, the infrastructure managers and operators do not know how many of those who attempt suicide on the railway later die from their injuries.

incidents in which people are injured while in the train⁷, for example as a result of a fall or falling luggage. In 2011, six people were killed and five seriously injured after being hit by a train. Three passengers were seriously injured while in the train.

Figure 5. Number of collisions with persons 1999-2011



Number of significant accidents involving collisions with persons that resulted in either death or serious injury. This does not include suicides or accidents at level crossings. The number of collisions involving persons is shown per year and per million train kilometres.

DK	EN
Antal personpåkørsler i alt og som et 5-årigt gennemsnit per mio. tog -km i 1999-2011	Number of collisions with persons in total and as a 5-year average per million train-km, 1999-2011
I alt	Total
5-årigt gennemsnit	5-year average

Suicide attempts and other types of collisions involving persons have an impact on the operation of the railways, and on the psychological working environment of train drivers.

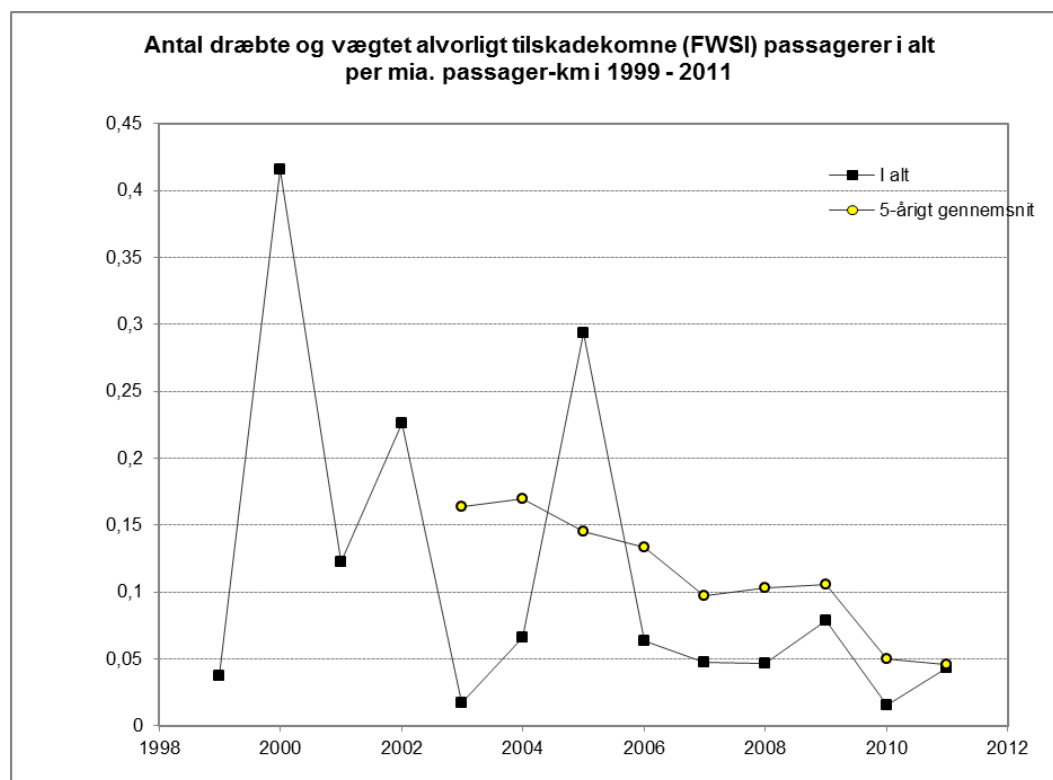
Breakdown of injuries by group of persons

In 2011, passenger safety was again extremely high. Three passengers were injured due to hard braking of the train. No passengers were killed.

⁷ Crucial to being counted in this category is that the accident is due to the movement of the train. Therefore, people who are, for example, the victim of a crime while on the train will not be counted in this category (they will not be included in these statistics at all).

The number of accidents involving passengers displays a downward trend. On average there were 0.046 deaths and weighted serious injuries per billion passenger-km in the period 2007-2011⁸. This equates to between three and four serious injuries a year.

Figure 6. Significant accidents involving passengers 1999-2011



Significant accidents involving passengers are described in relation to passenger-km travelled. One passenger-km is the transporting of one passenger for one km and expresses the transport work performed.

DK	EN
Antal dræbte og vægtet alvorligt tilskadekomne (FWSI) passagerer i alt per mia. passager-km i 1999-2011	Total number of fatalities and weighted serious injuries (FWSI) involving passengers per billion passenger-km, 1999-2011
I alt	Total
5-årigt gennemsnit	5-year average

Three railway employees were seriously injured in 2011. No employees were killed.

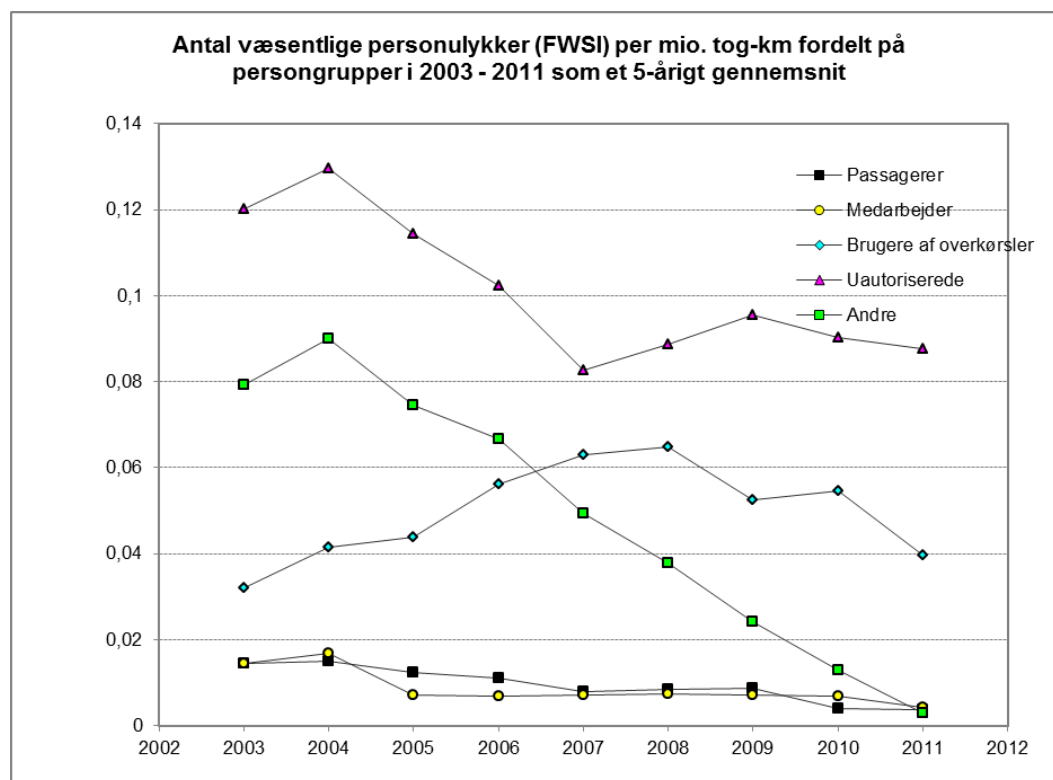
The groups of persons most vulnerable to railway accidents are, first, those on railway property without permission. These are followed by users of level crossings. In 2011, there were a total of seven deaths and six serious injuries in these two groups. There was a fall in the number of deaths and serious injuries among users of level crossings and a slight increase in the number of deaths and serious injuries people on railway property without permission.

For the sixth year in succession there were no passenger fatalities⁹. Accidents involving employees continue to maintain a stable five-year average.

⁸ 'Significant accidents involving persons' are a weighted total of the number of persons killed (weighted 1/1) and seriously injured (weighted 1/10). Suicides are not included.

Figure 7 shows a marked change in the number of accidents involving persons by types of person: level-crossing users, unauthorised persons on railway property and other, e.g. persons on platforms or people living near railway property. This reflects the fact that the method of calculation has changed. Previously the three types of person were in one group, but a new division allows the three types to be considered separately (definitions given in Annex 3). In recent years the figures have been extremely reliable, but caution should be exercised in attempting to discern trends.

Figure 7. Significant accidents involving persons broken down by groups of persons 2003-2011



Significant accidents involving persons are given as the number of persons killed (weighted 1/1) and seriously injured (weighted 1/10). The statistics are given as five-year cumulative averages for all groups of persons excluding suicides. The number of accidents involving persons is shown per year and per million train-km.

DK	EN
Antal væsentlige personulykker (FWSI) per mio. tog-km fordelt på persongrupper i 2003-2011 som et 5-årigt gennemsnit	Number of significant accidents involving persons (FWSI) per million train-km broken down by groups of persons in 2003-2011 as a 5-year average
Passagerer	Passengers
Medarbejder	Employees
Brugere af overkørsler	Level-crossing users
Uautoriserede	Unauthorised persons
Andre	Other

⁹ The statistics for 2009 recorded one passenger killed, this was later corrected by the railway undertaking and infrastructure manager concerned to be a fatality involving an unauthorised person on the railway. The correction was introduced in the statistics for 2010.

It should be noted that the absolute figure for persons killed and seriously injured in railway accidents is very small. Major fluctuations can therefore be expected from year to year.

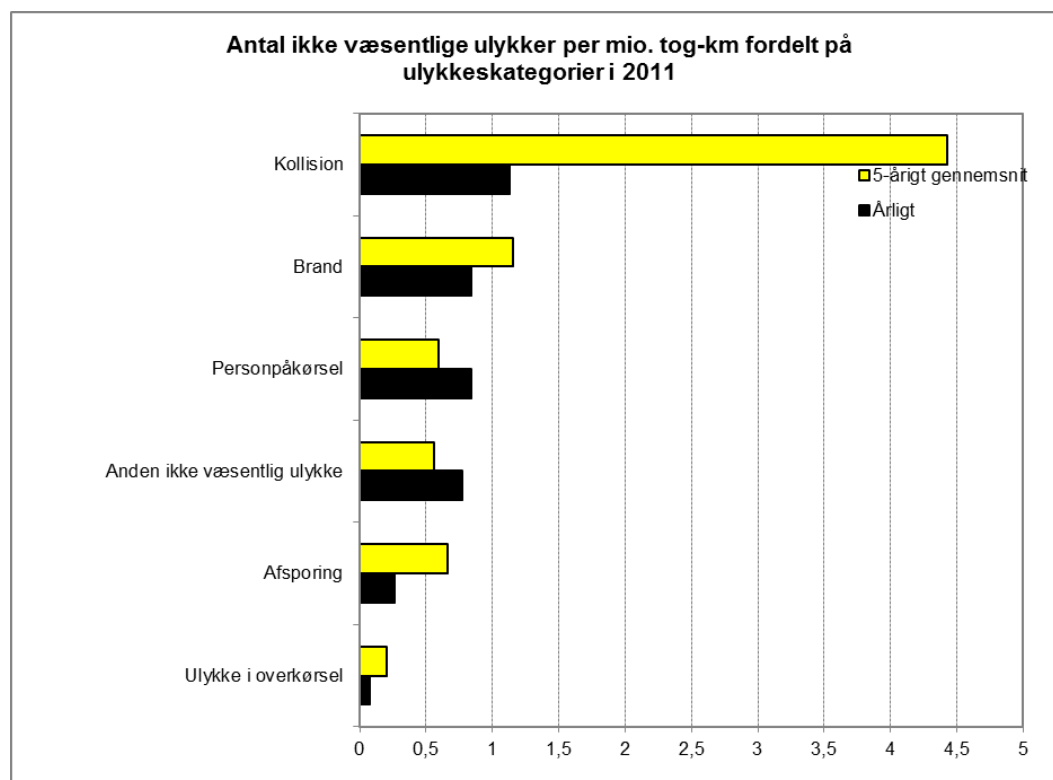
Minor accidents and incidents

A total of 326 minor accidents were recorded in 2011. In these statistics, an accident is considered 'minor' if it does not involve extensive material damage or serious personal injury. Like last year, the figure displays a downward trend.

Collisions still account for most minor accidents. In 2011, the number of collisions was again around one third of the five-year average, a significant drop. This could be due to a misunderstanding of the definition used for collision¹⁰, which thus continues to be a significant source of error.

In addition, there was a slight decline in accidents at level crossings and those involving fire and derailments. There were slight increases for collisions involving persons and other accidents. See figure 8.

Figure 8. Minor accidents broken down by type of accident 2011



DK	EN
Antal ikke væsentlige ulykker per mio. tog-km	Number of minor accidents per million

¹⁰ Inasmuch as the causes of collisions are often attributable to vandalism, there has been a tendency for events to be mistakenly recorded as vandalism. In so doing, the cause is confused with the primary event, the accident. In future, the Danish Transport Authority intends to pay special attention to this source of uncertainty.

fordelt på ulykkeskategorier i 2011	train-km broken down by type of accident in 2011
Årligt	Annual
5-årigt gennemsnit	5-year average
Kollision	Collision
Persopåkørsel	Collision with person
ulykke i overkørsel	Level-crossing accident
Anden ikke væsentlige ulykker	Other non-significant accident
Brand	Fire
Afsporing	Derailment

Minor accidents are those involving minor injuries or material damage of less than DKK 1.2 million. The types of accident are given per million train-km and as a five-year average for the period 2007-2011.

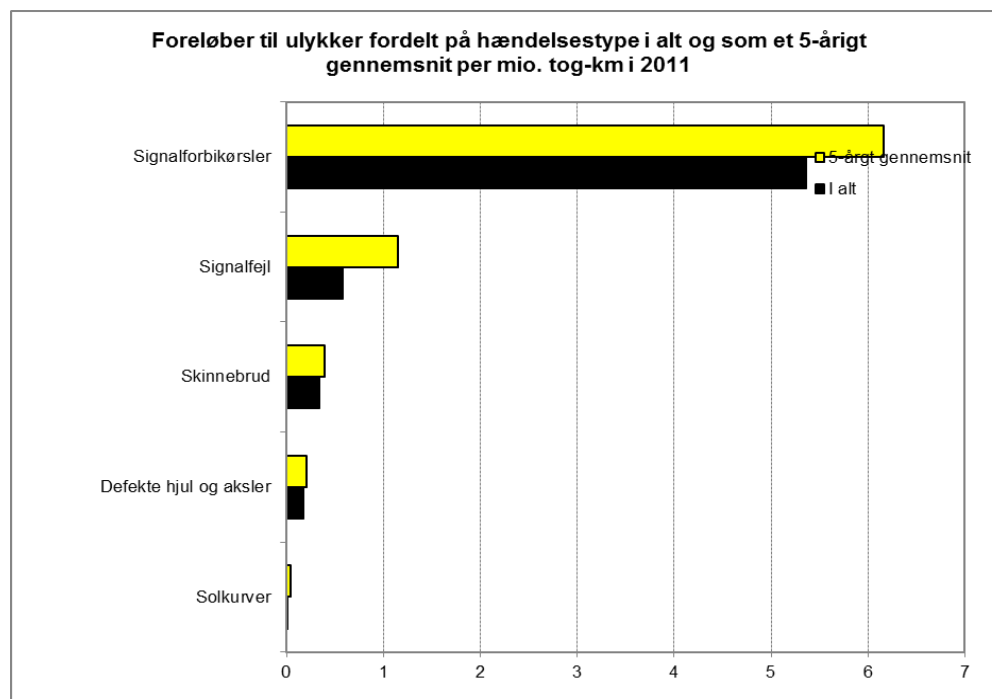
Minor accidents at level crossings also fell in relation to the previous two years and the five-year average. This mirrors the development of accidents involving persons at level crossings.

538 precursors to accidents were recorded in 2011, on a par with the previous year. Precursors to accidents are lapses in safety that do not cause damage. They can be divided into five types: broken rails, track buckles, signals passed at danger, signal failure, and broken wheels and axles.

Signals passed at danger easily constituted the highest proportion of precursors to accidents (446 cases) in 2011, but like last year, the number is below the five-year average. Both this year and last year, there were also fewer signals passed at danger than on average in the entire five-year period.

The next biggest proportion was signal failure (48 cases), followed by broken rails (28 cases). None of the five types of precursors to accidents was above the five-year average.

Figure 9. Precursors to accidents 2011



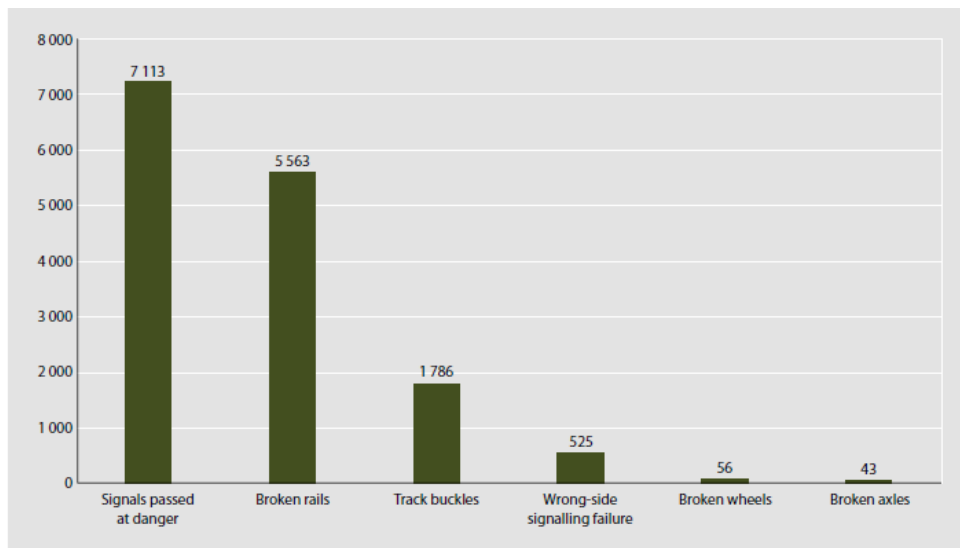
DK	EN
Foreløber til ulykker fordelt på hændelsestype i alt og som et 5-årigt gennemsnit per mio. tog-km i 2011	Precursors to accidents broken down by type of incident, in total and as a 5-year average per million train-km in 2011
Signalfortbikørsler	Signals passed at danger
Signalfejl	Signal failure
Skinnebrud	Broken rails
Defekte hjul og aksler	Broken wheels and axles
Solkurver	Track buckles

Precursors to accidents are given in relation to train-km travelled, and as a five-year average over the period 2007-2011. Precursors to accidents do not cause damage.

The European definition of signals passed at danger, which is also used in this report, is relatively broad. As a result, signals passed at danger also account for the largest share of precursors to accidents at European level. See figure 10.

Among other things, the DSB therefore works with a differentiated definition of signals passed at danger in its internal safety work, in which signals passed at danger are broken down according to their potential consequences. This allows a risk-based approach, with the most potentially dangerous signals passed at danger being handled first.

Figure 10. Precursors to accidents in the EU 2010



Precursors to accidents in the EU in 2010. Note that in contrast to the data in Figure 9, these data are not given in relation to train-km travelled, but are absolute figures. Source: The Railway Safety Performance in the European Union 2012, European Railway Agency.

Accidents and incidents with dangerous goods

In January 2011 a wagon carrying dangerous goods derailed in Nyborg due to ice in the grooved rail. However, the wagon was not damaged. In February there was also an incident involving dangerous goods, when it was discovered that a wagon was leaking solid fertilizer on the line between Fredericia and Taulov.

Railway safety in other countries

At European level, 2011 was a good year for railway safety, with the second lowest number of serious railway accidents¹¹ since 1980¹². The most serious European accident in 2011 was a head-on collision between a goods train and a regional passenger train just outside Hordorf in Germany. Ten people died in the accident, and 23 were seriously injured.

Investigations showed that the goods train had passed a stop signal on a line without a train control system. A contributing cause of the accident was poor visibility due to fog.

The EU's safety target

The European Railway Agency (ERA) publishes safety indicators and safety levels for EU Member States¹³. Comparison between the countries shows that Denmark has a

¹¹ Serious railway accidents are defined as accidents involving five or more fatalities.

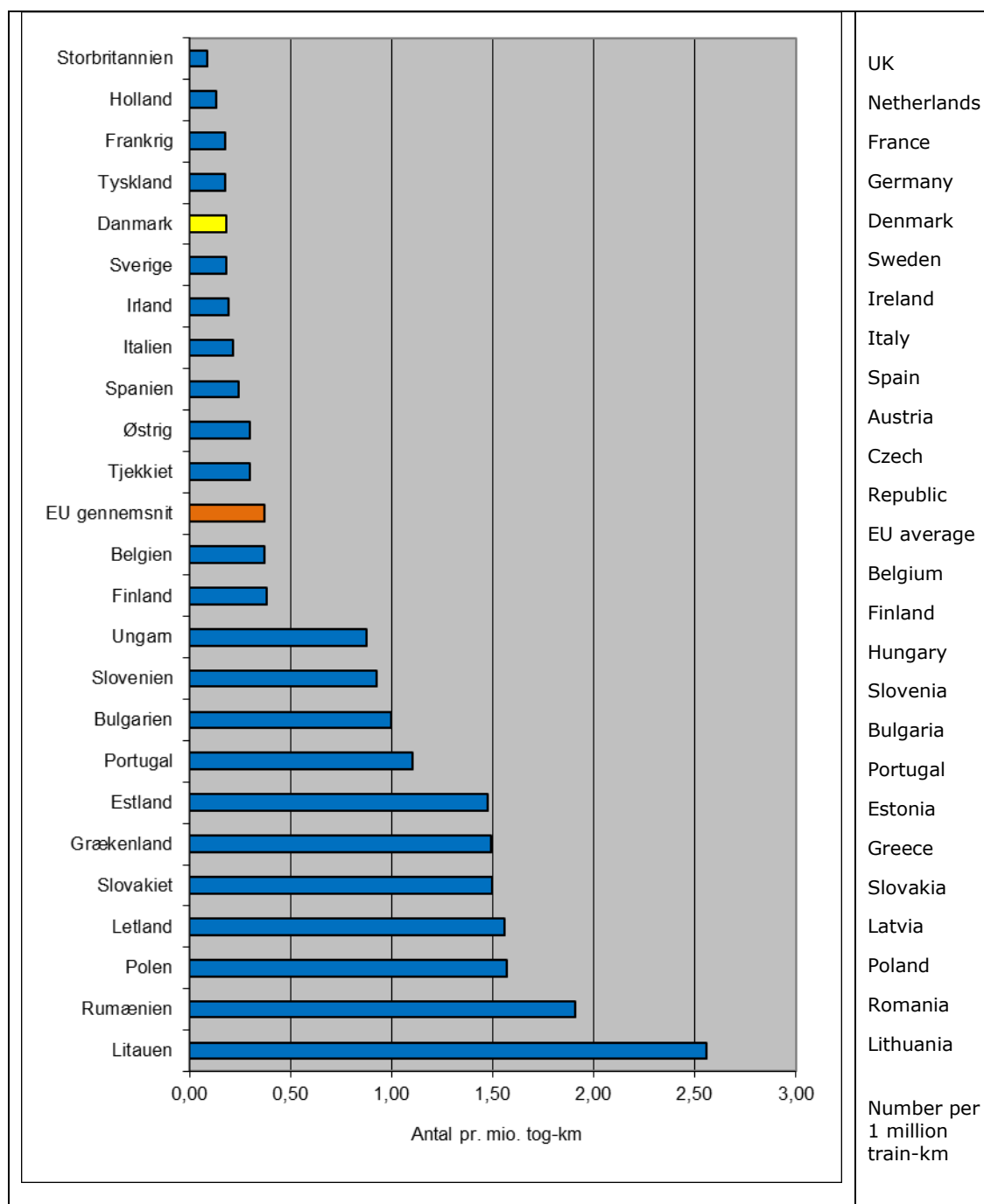
¹² The European Railway Agency (ERA) has data from 1980.

¹³ The Railway Safety Performance in the European Union 2012, European Railway Agency. www.era.europa.eu

very high level of safety, on a par with the neighbouring countries with which the country normally compares itself.

As in Denmark, the safety level is given as the number of deaths and weighted serious injuries in the period 2006-2010. Figure 11 also shows the European average, which is 0.37 significant accidents involving persons per million train-km in this reporting period. This is close to the Danish safety target (0.3), but is almost twice as high as the Danish 2011 level of approximately 0.14 significant accidents involving persons per 1 million train kilometres.

Figure 11. Significant accidents involving persons in the EU 2006-2010



The safety level is given as the number of deaths and weighted serious injuries over a four-year period. Source: The Railway Safety Performance in the European Union 2012, European Railway Agency.

Common safety targets for the whole EU were adopted in 2010. The targets were set on the basis of the first four years of data collected at Community level¹⁴.

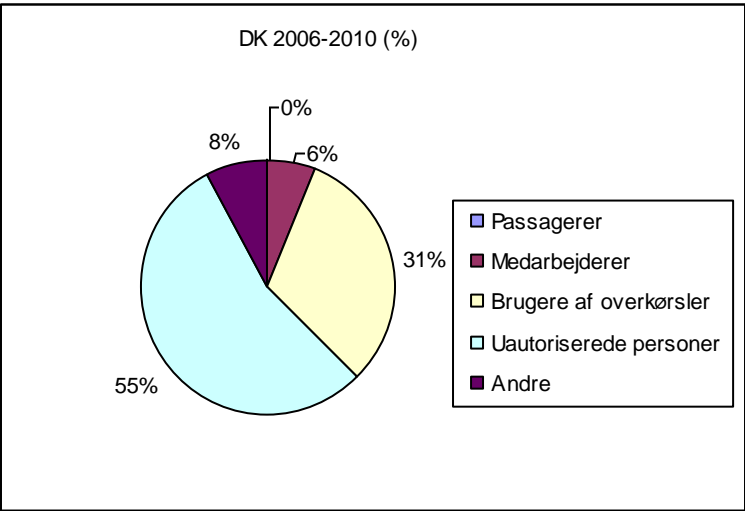
The common safety target is a target that all EU countries can meet. It is therefore relatively high, at 2.5 accidents involving persons per 1 million train kilometres. The basic data contain major uncertainties and the calculation is therefore seen as a first draft. The target will be revised next year, with the target slowly being adapted to the European average. The new common safety target for the EU will be calculated on the basis of six years' data, and will therefore be a little more precise than the first target.

Comparison of safety for groups of persons

Around 1300 people die each year in train accidents in the EU. In Denmark, around 6 – 15 people die each year¹⁵. The breakdown by different groups of persons shows the same pattern in Denmark and the EU as a whole.

A significant proportion of the deaths involve people on railway property without permission and users of level crossings. Passengers, employees and others account for a relatively small group. Passengers are most frequently injured when boarding or alighting from trains.

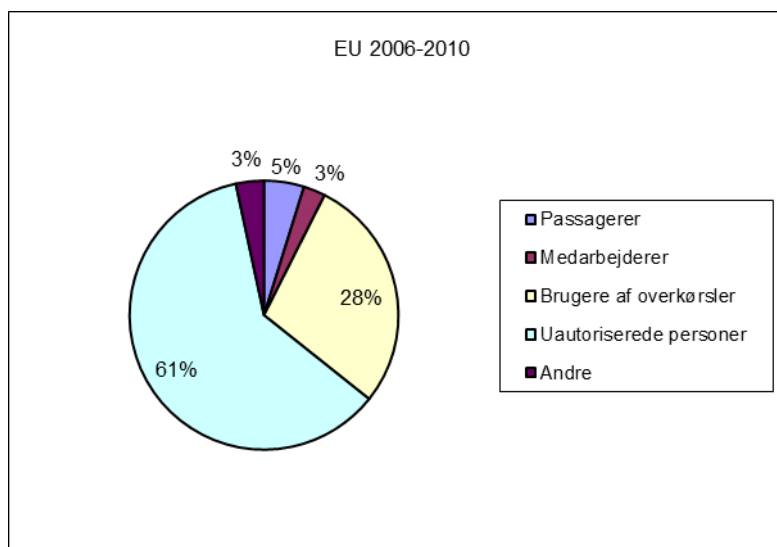
Figure 12. Fatalities broken down by groups of persons for Denmark and the EU 2006-2010



DK	EN
Passagerer	Passengers
Medarbejderer	Employees
Brugere af overkørsler	Level-crossing users
Uautoriserede personer	Unauthorised persons
Andre	Other

¹⁴ The common safety indicators (CSI) are reported, cf. Annex I to the Safety Directive. Published in Denmark in Order No 1293 of 23 November 2010.

¹⁵ This figure does not include suicides.



EU data for 2011 have not yet been published, so for the sake of comparison both calculations are for the period 2006-2010. Significant differences in calculation methods between EU countries mean that the European calculation is subject to a certain degree of uncertainty. Source: Railway Safety Performance in the European Union 2012, European Railway Agency and Danish Transport Authority.

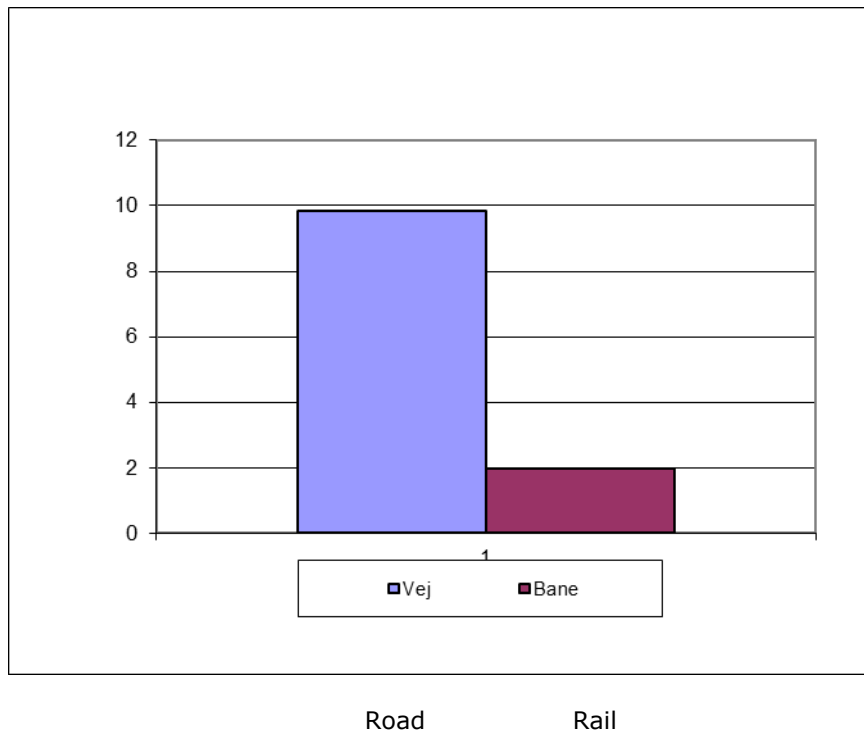
DK	EN
Passagerer	Passengers
Medarbejderer	Employees
Brugere af overkørsler	Level-crossing users
Uautoriserede personer	Unauthorised persons
Andre	Other

There are only minor differences in the size of the individual groups of persons between the European and Danish calculations. The imbalance is due to the fact that data volumes in Denmark are extremely small – i.e. a minor fluctuation in the number of employees killed comes through clearly in the statistics. It should also be noted that the European definitions were not used consistently in the reporting period, which affects the quality of the calculations.

Safety in connection with different forms of transport

Rail transport is extremely safe compared with other forms of transport. The number of serious accidents involving persons on the railways is approximately one fifth of the level for road transport.

Figure 13. Accidents involving persons on road and rail 2001 -2010



Accidents involving persons is the weighted total of the number of persons killed (weighted 1/1) and seriously injured (weighted 1/10) seen in relation to person-kilometres. For road traffic, 'seriously injured persons' are persons taken to accident and emergency departments/hospitals, whereas for the railway, seriously injured persons are those hospitalised for at least 24 hours. Data on accidents involving persons on the roads and accidents involving persons on the railways are therefore not directly comparable, but the figures can be used to give an impression of the difference in safety between the two forms of transport. The table does not include suicides. Source: Statistics Denmark, the Danish Road Directorate and Danish Transport Authority.

There are significant differences between road and rail traffic. On the roads there are several different types of road user in the same environment. The frequency of accidents for different vehicles on the road is also very different. Passenger cars are involved in more than 10 times as many accidents involving persons per passenger-km than trains, while buses have nearly the same level of safety as rail traffic.

Railways are relatively shielded from other road users. It is only at level crossings that trains cross the path of other road users. It is often other road users who are injured in railway accidents.

Chapter 2. Supervision of the railways in 2011

The Danish Transport Authority ensures through supervisory operations that undertakings have a properly functioning safety management system and that the relevant safety requirements are being met. The Danish Transport Authority conducts such supervision primarily by auditing undertakings' safety management systems, as this is considered to give the greatest possible security for surveillance efforts, cf. Chapter 3.

In January each year, the Danish Transport Authority publishes a schedule of its planned supervisory activities with railway undertakings and railway infrastructure managers. 2011 was the first year in which all railway undertakings and infrastructure managers had received a safety certificate/safety authorisation, as a result of which most supervisory resources were used to audit undertakings' safety management systems. The supervision schedule for 2011 includes 46 planned supervisory operations with a total of 90 audit days.

Besides planned supervisory operations, the Danish Transport Authority carries out inspections in the light of incidents or critical situations recorded on a continuous basis. The inspections can be initiated on the basis of information, an event or a submission to the Danish Transport Authority regarding a specific problem, and therefore do not generally take the form of planned supervisory operations. They do not therefore form part of the Danish Transport Authority's supervision schedule.

The Danish Transport Authority uses the supervision schedule as a tool for planning regular visits to all railway undertakings and railway infrastructure managers. At the same time it is ensured that the Danish Transport Authority's supervisory activities over a five-year period cover all the undertaking's activities that are part of the safety management system.

The supervision schedule shows where and in which quarter supervisory operations are carried out, and indicates any areas with particular focus that particular year – the so-called focus areas. The scope of the supervision is defined in accordance with the undertaking's size and areas of activity, its safety indicators and also the Danish Transport Authority's knowledge of the undertaking. Focus areas are selected by the Danish Transport Authority on the basis of its own experiences.

Finally, the Danish Transport Authority carries out themed supervision, which is supervision across the industry within a specific subject, e.g. dangerous goods. Themed supervision is carried out either as independent inspections or in connection with other supervision.

Results

The Danish Transport Authority made 61 supervision visits in 2011, relating to undertakings' safety management systems in connection with safety certification and safety authorisation and the follow-up of these.

Table 6. Number of supervisory operations planned and carried out in 2011

Supervisory operation	Issue, renewal, amendment and follow-up		Other		Total
	Railway undertakings	Infrastructure managers	Inspections	Themed supervision	
Laid down in the supervision schedule	29	15	0	2	
Carried out	25	9	25	2	61

Which certificates were issued on the basis of the supervisory operations carried out in 2011 can be seen in Annex 4: Certification, safety authorisation and supervision.

As shown in table 2, 34 supervisory operations were carried out in 2011 as audits of undertakings' safety management systems. The 34 operations were carried out over a total of 97 audit days.

In conjunction with the total of 61 supervisory operations carried out by the Danish Transport Authority in 2011, 1 order was issued and 60 non-conformities recorded.

The order was issued as a result of a failure to comply with the CSM-RA¹⁶ in connection with risk assessment.

The non-conformities were mainly identified within the following 3 areas:

- Maintenance and management of documentation
- Implementation and management of internal audits
- Documentation and management in relation to training and competence

In addition, based on a recommendation from the Accident Investigation Board, a ban was issued in relation to

- The operation of rolling stock both with and without passengers

During 2011, the Danish Transport Authority received one complaint in connection with its supervision.

Results – the safety management system

Focus areas form part of the planning of supervisory operations and are topics within the safety management system chosen by the Danish Transport Authority to receive extra focus and be included by all undertakings for the year in question.

¹⁶ Commission Regulation (EC) No 352/2009 on the adoption of a common safety method on risk evaluation and assessment as referred to in Article 6(3)(a) of Directive 2004/49/EC of the European Parliament and of the Council – hereinafter referred to as the CSM-RA.

In connection with the supervision carried out in 2010, the Danish Transport Authority generally noted a lack of understanding within undertakings of key elements of the safety management system. One can think in this connection of situations that are of crucial importance for the safety management system to be alive and properly functioning within the undertaking.

The most important shortcomings noted related to situations where the senior management in the undertakings has a decisive role. In 2011, the Danish Transport Authority therefore chose the following topics as focus areas:

- Undertakings' safety target and associated action plans
- Management's evaluation of the safety management system

The increased focus on these areas resulted in 11 non-conformities being issued, together with a number of comments within the areas. In 2012 the Danish Transport Authority wants to follow up on whether undertakings have been better able to establish safety targets and action plans and also whether undertakings have been better able to implement and document evaluations by management.

Results – emergency response management and dangerous goods

Themed supervision is supervision where the Danish Transport Authority wishes to achieve a greater insight into or gain an overview of a particular topic across the industry. Once the supervision year has ended, the Danish Transport Authority evaluates the selected themes. This evaluation forms part of the planning for the next supervision year.

In 2011, the Danish Transport Authority carried out themed supervision in connection with emergency response management and the transport of dangerous goods.

Emergency response management

A series of new requirements must be met in connection with the entry into force of an executive order on emergency response management within the railway sector on 1 January 2009. During 2010 and the first half of 2011, the Danish Transport Authority monitored undertakings' compliance with these new requirements.

The Danish Transport Authority was able to establish by means of supervision that most Danish railway undertakings and railway infrastructure managers have made a serious effort to comply with the requirements of the executive order. Within the areas of contact, coordination and exercises, which were the main subjects of the Danish Transport Authority's supervisory operations, only a few undertakings were issued with non-conformities or comments. The Danish Transport Authority will follow up on these non-conformities in 2012.

Transport of dangerous goods

In 2011 the Danish Transport Authority attempted to provide an overview of which and how many dangerous goods are transported on the Danish rail network.

Through contact with Statistics Denmark as well as Danish goods operators, the Danish Transport Authority learned that there are no valid data on the area on either the quantities or types of dangerous goods.

In 2012 the Danish Transport Authority will consider how more detailed information on the dangerous goods that are transported on the Danish rail network can be obtained.

In 2011, the Danish Transport Authority carried out one supervisory operation that focused on the transport of dangerous goods. During the operation, an inadequate wagon list and several loose labels were noted. Supervision focusing on the transport of dangerous goods is again planned for 2012.

Undertakings' annual safety reports

To support the undertakings' work with the annual safety report, in February 2011 the Danish Transport Authority published revised guidelines on drafting the annual safety report. After examining the undertakings' safety reports for 2010 (which were received in June 2011), the Danish Transport Authority can conclude that the quality of many of the reports had improved.

However, there were problems with some of the reports. In order to provide more complete feedback to the undertakings, the Danish Transport Authority therefore chose to give all undertakings feedback on their safety report at the supervisory operations carried out in the period from the end of 2011 to the beginning of 2012.

The Danish Transport Authority's assessment of undertakings' safety reports for 2011¹⁷

In general, the content of the safety reports has improved compared with previously. However, there are still opportunities for improvement in most of the reports.

In accordance with current requirements, the reports must address the following four topics: safety targets and action plans, safety indicators, results of internal safety audits and comments on railway safety¹⁸. In addition, undertakings must from this year report on their experiences with the CSM-RA, together with the result of their application.

The general picture is that the safety reports from the undertakings comply with the formal requirements and give an account of activities within the four essential areas.¹⁹ Often, however, there is no link between the targets and the action plans, nor any assessment of whether the action plans have had the desired effect. Likewise, undertakings often omit to comment on changes in their own risk profile, developments in the incidents/accidents reported and the results of internal audits.

Overall, it is welcomed that undertakings are actually using the data collected – over a longer period – from the achievement of targets, incidents and internal audits to assess developments in safety and thereby identify any new targets/areas for improvement, as well as any requirements for changes in the safety management system.

Following the review of the undertakings' safety reports for 2011, the Danish Transport Authority identified a need to update the guidelines. Among other things, the Danish Transport Authority will recommend that undertakings that are both railway undertakings and infrastructure managers only produce one consolidated report. (Data must still be in two separate annexes).

Against the background of the safety reports from 2010 and the supervision carried out, the Danish Transport Authority has chosen the area of internal audits as its focus area for 2012. The Danish Transport Authority's evaluation of the safety reports for 2011 confirms the general need within the industry for a dialogue on this subject.

¹⁷ Safety reports must be drawn up by all railway infrastructure managers and railway undertakings. Two of the total of 24 safety reports for 2011 had not been submitted by the 30 June deadline.

¹⁸ cf. Executive Order No 13 of 4 January 2007 on the safety authorisation of railway infrastructure managers and Executive Order No 14 of 4 January 2007 on safety certificates for railway undertakings.

¹⁹ 'Vejledning i udformningen af den årlige sikkerhedsrapport fra jernbanevirksomheder og infrastrukturforvaltere' [Guidance on drawing up the annual safety report from railway undertakings and infrastructure managers], March 2010. Available at www.trafikstyrelsen.dk

The Danish Transport Authority's assessment of how the undertakings have given an account of the four topics: safety targets and action plans, safety indicators, results of internal safety audits and comments on railway safety, is examined below.

Safety targets and action plans

All undertakings set targets and assessed the achievement of these targets in their safety reports. But most are still using safety indicators as targets instead of setting their own safety targets within the risk areas that characterise their business.

The basis for drawing up safety targets must be the undertaking's own risk profile and developments in railway safety. Targets should be set where the risk is high, or where a development is heading in a negative direction.

The Danish Transport Authority has also noted that some undertakings are not listing in their reports changes that have occurred during the year. This may involve, for example, the closure of level crossings, significant increases in traffic, or major organisational changes that affect the organisation of safety. It is important that undertakings have an overview of these changes and therefore of changes in their own risk profile.

All undertakings have also drawn up action plans. In 16 of 23 cases, however, there is no documented link between targets and action plans. The action plans must describe procedures to ensure compliance with the quantitative and qualitative targets set.

There is also some confusion in relation to the concepts of targets and action plans. Some undertakings are setting targets that are actually action plans. For example, that a number of courses or supervisory operations should be implemented. In reality, these are ways of achieving a target.

Safety indicators

All undertakings reported relevant safety indicators. Some of these data were presented in the safety reports.

It is the Danish Transport Authority's assessment that the undertakings' gathering of data is generally good, and that it is constantly improving.

However, very few undertakings actually use these data to analyse trends and their causes in order to identify areas for improvement. In their reports, most undertakings simply compared the figures from 2-3 years, and noted whether developments are heading in one direction or the other.

Results of internal safety audits

In their safety reports, undertakings typically indicated how many supervisory operations were carried out and how many non-conformities there were. The Danish Transport Authority would welcome a description of non-conformities and trends as well as the relevant corrective actions undertaken as a result of the undertaking's supervision.

The safety reports show that the concept of 'internal safety audit (supervision)' is understood in many different ways. There is a tendency for most of the undertakings' supervision to consist of supervision of operations, i.e. inspections, while supervision of the safety management system (audit) is almost forgotten. This means there are only very few undertakings that are able to explain how supervision covers the undertakings' own safety management system.

Comments on railway safety: experiences with the application of the CSM-RA

Undertakings have only limited experience of the CSM-RA. Some undertakings have incorporated the methods into their instructions and held courses based on the guidelines issued by the Danish Transport Authority.

Only three undertakings comment on their experiences. They do not elaborate in detail, but do say that the experiences are positive. One undertaking acknowledged that the regulation 'places great demands on the presence of the necessary technical skills', and another has introduced an internal assessment function. Finally, one undertaking stated that they were experiencing major variations between the guidelines from the Nordic countries.

Major challenges for the industry in 2012

It remains the Danish Transport Authority's assessment that one of the biggest challenges for undertakings is to ensure that their senior management show commitment in connection with the safety management system. Within undertakings, the Danish Transport Authority can observe that the management's commitment is essential if the system is to continue to function properly.

In an undertaking with a properly functioning safety management system, the senior management is actively involved and challenging in relation to targets and action plans. They ask for input from the safety manager, but take an active stance on this input and help develop guidelines, targets and policies – and communicate these to the undertaking's employees. On the other hand, if the senior management does not show the right commitment, examples are often seen where the safety management system is not taken seriously at management level, and thus the safety management system is not implemented and complied with in the organisation.

The Danish Transport Authority also feels that undertakings should strengthen their internal safety audits (internal supervision). It is especially important that undertakings' internal supervision also encompasses the safety management systems. Against this background, internal audits will be a focus area for the Danish Transport Authority's supervisory operations in 2012.

Another challenge for undertakings is the clearer division of roles, where undertakings now more than ever must base their work on the approval of infrastructure and rolling stock on risk assessments and the use of assessors, authorised and appointed bodies in connection with applications.

As is clear from the review of the undertakings' safety reports for 2011, undertakings' experience of the CSM-RA remains limited. To help undertakings with this, the CSM-RA on risk assessment and the use of assessors was a common theme at the Danish Transport Authority's safety conference in 2011. The topics were also addressed subsequently in a series of courses organised by the Danish Transport Authority for the industry (see Chapter 6). In 2012 the Danish Transport Authority will continue the close dialogue with undertakings on the application of the CSM-RA.

Chapter 3. Topic: Targets and sub-targets for the Danish Transport Authority's supervision

The undertakings are responsible for safety on the railways. The Danish Transport Authority's supervision of railway safety is intended to ensure that undertakings' ability to manage their own risks is maintained/improved. Compliance with the rules is one of several components of this.

The Danish Transport Authority will strive to give notice of the supervisory operation in good time, to allow undertakings to prepare themselves. This often helps undertakings to focus on the essentials and develop their safety management system as required.

Random tests are used to check whether undertakings have mastered the necessary safety-related recording and monitoring systems in relation to the applicable types of infrastructure, rolling stock, traffic, etc. One indicator is whether undertakings are complying with current safety rules.

Besides the planned supervisory operations, there may be situations where, in view of the nature or seriousness of the supervision, the Danish Transport Authority chooses to give very short notice, or perform an unannounced inspection.

Supervision strategy and effect targets

In October 2010 the Danish Transport Authority presented its new supervision strategy: 'Strategi og praksis for tilsyn på jernbanen' [Strategy and practice for supervision of the railways]. The supervision strategy is an overall plan for the Danish Transport Authority's supervision of the railways over a number of years. The supervision strategy will thus supplement the annual supervision plans made each year to organise the supervisory operations for that year (see Chapter 2).

The supervision strategy builds on the existing basic elements of the Danish Transport Authority's supervision of the railways of risk-based supervision, and the emphasis is on the auditing of undertakings' safety management systems, rather than actual technical inspections. As a rule of thumb, auditing should account for 80% of supervisory operations. The Danish Transport Authority believes this will give the best safety benefits for the supervisory efforts.

The strategy also describes the relationship between the input of resources into supervision, the prioritising of activities and the achievement of the intended effect.

In its strategy, the Danish Transport Authority set both a long-term and a short-term effect target.

The long-term target is that supervision of undertakings must help keep railway safety in Denmark at a high level, and help Denmark achieve its safety target. The target is set and evaluated annually. Trends in accident patterns must be reflected in the supervisory efforts in an attempt to arrest the trend and reduce future incidents.

The short-term effect target for supervisory activities is to maintain and ideally improve undertakings' ability to manage their own risks. A good safety culture in undertakings is a vital factor in minimising the risk of accidents.

In 2011 the Danish Transport Authority continued its work to make the cause-effect chain measurable, so it is possible to assess the effect of the supervisory work.

The long-term effect target for supervisory activities is that the national safety target is met.

Since the number of serious accidents involving the groups of persons of passengers and employees is already very low – and for many years zero – the ambition is that supervisory activities must help to preserve, and not necessarily increase, the level of safety measured in this way.

The long-term target is set and evaluated in connection with the annual safety report (see Chapter 1) and the annual evaluation of supervisory activities. If a trend emerges in the accident pattern, the supervisory work must take this into account in an attempt to arrest the trend and reduce similar accidents in the future.

Short-term effect target: undertakings must be strengthened

The long-term effect target is not close enough to the results of the Danish Transport Authority's specific supervisory activities to be able to be used alone to evaluate whether the supervisory efforts are good enough.

Under the EU's Railway Safety Directive, undertakings are directly responsible for safety on the railways. They are therefore the key players in achieving a high safety level.

One of the short-term targets of supervisory efforts is therefore to ensure that undertakings are able to meet this responsibility. This can be expressed as follows:

The short-term effect target for supervisory activities is to maintain and ideally improve undertakings' ability to manage their own risks.

The assumption is that if undertakings themselves focus on safety in all their activities, this will help reduce the risk of accidents and incidents. The short-term effect target (undertakings' own ability) thus supports the long-term effect target (number of accidents) in the cause-effect chain.

The short-term effect target is difficult to measure directly. However, three parameters can be identified which together give an indication of the undertakings' ability to manage risks:

- *Compliance with rules in undertakings:* Observation of significant deviations from the rules during supervision. This is the classic supervisory task. Compliance with the rules will in principle limit risks.
- *Learning in undertakings:* The supervision will assess whether undertakings' safety management systems guarantee continuous internal learning from mistakes, incidents, accidents, etc. Continually learning will directly improve the undertakings' risk management.
- *Assessment of the Danish Transport Authority's own regulations:* Authority rules are designed to support safety. Supervision will ensure implementation (compliance with the rules), but also contribute towards continuous learning as regards the issuing of rules. Effective and easy to understand rules promote undertakings' compliance with the rules and limit their risks.

The relationship between short- and long-term targets, and where they are measured, can be seen in table 3. The short-term effect target and associated parameters describe what the Danish Transport Authority wants to achieve within a period of around 3 years.

There is no accurate inventory of the starting point regarding the undertakings' ability to manage risks measured by the above three parameters. It is far from certain that

such a precise measurement is possible. Thus, the assessment of the short-term effect goal has so far been primarily qualitative.

The Danish Transport Authority's further development of its supervisory strategy in 2011

In 2011 the Danish Transport Authority worked to refine its supervisory targets, taking as its starting point the three parameters such that the effect target of the supervision remained more measurable. The result of the work means that in the future, supervision must ensure that the following five activities, cf. table 3, are assessed when supervising all undertakings:

- Recording and handling of incidents, including assessment of trends and corrective and preventive actions
- Internal audits and handling of non-conformities, including corrective and preventive actions
- Targets and action plans
- Management evaluation
- Undertaking's procedure for implementing and complying with legislation

Table 7. Supervisory activities and their effects

Supervisory activities	Results in the short term	Effect in the short term	Effect in the long term
Monitoring of safety targets and action plans	Set measurable and realistic targets that support the national target	<u>Learning in undertakings:</u> Action plans for set targets are drawn up	National safety target met (max. 0.3 serious accidents per million train-km)
Monitoring of undertakings' implementation of legal requirements	Relevant legislation identified by undertakings	<u>Compliance with rule in undertakings:</u> Procedure for identifying, implementing and complying with current legal requirements and other relevant rules is implemented and followed	
Monitoring of recording and handling of incidents, including corrective and preventive actions	All incidents are recorded by undertakings	<u>Learning in undertakings:</u> Incidents are assessed, analysed and dealt with Monitoring of assessment of trends, including preventive actions	
Monitoring of internal audits and handling of non-conformities, including preventive and corrective actions	Implement internal audits	<u>Learning in undertakings:</u> Non-conformities are assessed, analysed and dealt with	
Monitoring of implementation	Implement	<u>Learning in undertakings:</u>	

of management evaluation	management evaluation	The management evaluation is actively used to constantly improve the safety management system	

Relationship between the Danish Transport Authority's supervisory activities and the long-term effect target for supervisory efforts.

Experiences from 2011 and the introduction of effect targets mean that in 2012, the Danish Transport Authority will alter its practice so that all undertakings will receive at one supervisory inspection, and that each undertaking will be assigned a lead auditor, who will cover the undertaking through the year.

Chapter 4. Topic: Cooperation with the Accident Investigation Board

To ensure the best possible response to accidents, the Accident Investigation Board exists as an independent investigation body that makes recommendations to the Danish Transport Authority and other authorities on the basis of investigations of accidents and incidents. The Danish Transport Authority uses these recommendations to maintain the high level of safety on the railways.

The Accident Investigation Board for Civil Aviation and Railways is the Danish Transport Authority's key partner where both aviation and railway safety are concerned. The Accident Investigation Board is an independent investigation body tasked with carrying out safety-related investigations of accidents and incidents.

In the event of a railway accident, the Accident Investigation Board has access to the accident site and can be provided with all the relevant documentation to aid it in its investigation²⁰. Among other things, the Accident Investigation Board conducts interviews with people who can provide information of importance to the investigation.

The main purpose behind the work of the Accident Investigation Board is to identify opportunities to improve safety and prevent accidents. The Accident Investigation Board does not place blame or liability. Its accident investigators deliver an independent assessment of the underlying causes of an accident, thereby opening up the possibility of remedying possible errors and discrepancies.

The results of an accident investigation can lead to a notification of a serious risk²¹ or recommendations²² to improve railway safety. If the Accident Investigation Board identifies conditions that could constitute a direct risk to railway safety, the safety authorities must be notified as quickly as possible. Such notification will take the form of a recommendation. In particularly serious cases, notification will take the form of a recommendation for an order or a ban.

The Accident Investigation Board's recommendations

Safety-related recommendations are the Accident Investigation Board's most important action instrument. The recommendations are addressed to the Danish Transport Authority or another competent authority²³, which must take action against safety-critical situations and maintain railway safety.

²⁰ Executive Order of the Railways Act No 1249 § 21 q. and Article 20 of the Safety Directive describe the status of the investigation.

²¹ Executive Order of the Railways Act No 1249 § 21 s. and Article 21(7) of the Safety Directive.

²² Article 25 of the Safety Directive on recommendations in the field of safety.

²³ This will often be the Danish Safety Technology Authority or the Danish Working Environment Authority.

The Accident Investigation Board's recommendation will typically be precautions that are directed at either *causes* or *consequences of the accident*, or possibly *other safety-critical errors or observations* found during the investigation.

As the recipient of a recommendation, the Danish Transport Authority must ensure this is followed up appropriately. Any work is done in collaboration with the relevant responsible parties.

By way of example, the following questions are considered when determining what action to take:

- Are there adequate rules for the area, and were these followed?
- Is it likely that under the same conditions, a similar accident could be prevented in the future?
- How can the consequences of a similar accident be minimised?

The Accident Investigation Board receives continuous feedback from the Danish Transport Authority on the actions taken or planned as a result of its recommendations. The aim is to allow the Accident Investigation Board to assess the effect of its recommendations. The Accident Investigation Board is, however, not obliged to check the Danish Transport Authority's follow-up or to agree with it.

The Danish Transport Authority's follow-up of recommendations

The aim of the Danish Transport Authority's follow-up of recommendations is to maintain the high level of safety on the railways. When the Accident Investigation Board exposes safety-critical situations, the Danish Transport Authority has three types of action it can decide to use:

- 1) implement new regulations
- 2) oversee compliance with the applicable rules and procedures
- 3) issue an order or ban when safety requirements are not met

The Danish Transport authority can implement new regulations in the form of general rules with a safety-based content.

Procedures and instructions for railway undertakings cannot, however, be implemented by the Danish Transport Authority. Responsibility for procedures and instructions lies with the undertakings themselves, and their safety management systems require them to ensure that adequate 'internal rules' are in place and that these are followed.

The Danish Transport Authority can issue orders or bans if a situation is uncovered that represents a risk to railway safety²⁴.

A *ban* is issued when the applicable rules have been breached, e.g. when rolling stock or plan does not meet current safety requirements, or when staff do not satisfy the necessary medical or professional qualifications. Moreover, bans may be issued if the undertaking does not have a sound and effective safety organisation, or does not possess the necessary safety and control systems for its operation.

An *order* is issued when the safety-related situation is clearly untenable. This will typically involve relatively acute safety-critical situations. The safety certificate or

²⁴ cf. Executive Order of Railways Act 1249 § 21 l. paras. 3, 4 and 5.

safety authorisation can be withdrawn if it is felt that an undertaking is not able to manage its responsibilities in relation to safety.

The Danish Transport Authority cannot independently initiate investment in the railways with a view to improving railway safety. It is a political decision whether investments should be made in new technology or whether various kinds of additional costs should be imposed on the industry with a view to improving safety on the railways.

Cooperation with the Accident Investigation Board in 2011

The Accident Investigation Board did not publish any reports or accounts with recommendations for the Danish Transport Authority in 2011 other than an acute notification that the Danish Transport Authority should take steps as regards IC4 (more on this further on in the chapter).

However, recommendations from three earlier accounts were followed up – see table below.

Table 4: overview of the accounts published by the Accident Investigation Board that were followed by the Danish Transport Authority in 2011

Report date	Incidents	Date of incident
29.06.2010	Train collided with lorry on level crossing in Soderup	19.09.2009
24.06.2010	Collision between two trainsets at Helgoland	10.07.2007
Dec. 2004	Head-on collision in Holstebro	01.06.2004

All three accounts were described in previous safety reports. They are mentioned again because the Danish Transport Authority followed them up in 2011.

Below there is a brief summary of the investigation results²⁵, and the actions taken in response to the accidents.

Train collided with lorry on level crossing in Soderup

The level crossing accident occurred on 19 September 2009 in Soderup. A lorry and a train collided at a level crossing protected by a half-barrier system. The train hit the driver's cab of the lorry, trapping a trainee train driver. Following the collision the train derailed, and the lorry was pushed to the side and burst into flames. The accident resulted in two deaths: the trainee in the driver's cab and the driver of the lorry. The train driver was seriously injured, and a train guard and seven passengers sustained minor injuries.

The Accident Investigation Board confirmed that the level crossing was laid out in accordance with current guidelines and that the train was being driven correctly. The accident investigation shows that the lorry stopped too late and therefore drove into the barrier, which had come down. Reduced visibility as a result of fog and the lorry driver's raised blood concentration of THC (cannabis) may also have been significant to the accident.

²⁵ All reports and accounts can be found at www.havarikommissionen.dk

Collision between two trainsets at Helgoland

On 21 July 2007 two trainsets collided while shunting in the shunting area of the DSB's 'Helgoland' workshop. The first shunt sequence had received permission to shunt on the 2nd main track, and the second shunt sequence followed. The driver of the front train then stopped because he believed there was a fault with the train, and the following train did not have time to stop. The driver in the rear cab of the front shunt sequence managed to get out of the cab before there was a front-rear collision. Both trains suffered material damage, but no-one was injured.

The conclusion of the investigation was that the rules for shunting were not followed at Helgoland and that there was a lack of local instructions adapted to local conditions. The shunting work was deemed to have been carried out according to routings that entailed a risk of collision.

In 2008, Banedanmark introduced a common shunting instruction setting out precisely the specific rules for shunting at Helgoland. The operator subsequently began work to improve the safety culture among shunting personnel at Helgoland.

A new training organisation was implemented in which an instructor was placed in every department of the undertaking. First and foremost, the instructor at Helgoland wants to work on raising the safety awareness of shunting personnel.

The operator has introduced new procedures for following up precursors to accidents, as well as investigations e.g. when using interview schedules. At the same time, there is a greater focus on collaborating with infrastructure managers and other operators to change lighting and signs at relevant places to prevent misunderstandings.

Head-on collision in Holstebro

At around 7.19 a.m. on 1 June 2004, two trains were involved in a head-on collision at points 01 at Holstebro station. The collision occurred at low speed, since one train (RV 3705) was arriving onto track 2 from Herning and the other train (RV 3718) had just departed from Holstebro track 1 for Herning.

Following the collision, 26 people were referred to A&E for treatment, two of whom were seriously injured, and there was serious material damage to both trainsets, as well as to the track and signalling equipment.

In its investigation, the Accident Investigation Board determined that the cause of the collision was that the locomotive driver (in train RV 3718) initiated the departure procedure and set the train in motion without having observed the departure signal, and therefore without having received permission to depart, either via a signal or in some other manner.

The Accident Investigation Board also considers it established that the extremely poor visibility to the departure signal from the stopping place was a significant cause of the locomotive driver's action.

In the light of the accident, the Accident Investigation Board made a series of recommendations. In 2011, with the project 'Levetidsforlængelse af DSB 1977 anlæg' [Extending the life of DSB 1977 equipment], which among other things is aimed at removing inconsistencies between views of control media and the design of equipment on the rail network – including at Holstebro station – Banedanmark has satisfied the last points of the Accident Investigation Board's recommendation.

A cooperation has been established (described in a cooperation agreement) between the Danish Transport Authority and the Accident Investigation Board to ensure common understanding of the Accident Investigation Board's recommendations, the background to the recommendations and the other observations recorded in conjunction with the Accident Investigation Board's investigations.

**Another example of cooperation with the Accident Investigation Board:
Marslev and IC4**

On 7 November 2011 a high-speed train (IC4) went past a red signal at Marslev on Fyn. The cause of the incident was that the train could not be brought to a halt, despite the fact that this was attempted in time for normal conditions.

The Accident Investigation Board was informed and immediately began an investigation. In connection with this introductory investigation, the Accident Investigation Board informed the Danish Transport Authority of the incident.

Through the Accident Investigation Board's work on the case, it was established that there had previously been an incident with another IC4 trainset, and that the circumstances surrounding the previous incident were reminiscent of the incident at Marslev. On this basis the Accident Investigation Board recommended that the Danish Transport Authority issue a ban on the use of IC4s until the specific circumstances of the incidents had been clarified.

On the same day, the Danish Transport Authority therefore informed the DSB of the ban on the use of IC4s until further notice.

After carrying out a series of investigations, on 30 January 2012 the Accident Investigation Board recommended that the Danish Transport Authority took the following conditions into account when putting IC4s back into service:

- that in particularly slippery conditions, the IC4 trainsets' wheel locking system (WSP system) cannot protect against the whole/partial locking of the train's wheels
- that whole/partial wheel locking will lead to inaccurate recording of the actual distance travelled and actual speed when braking in particularly slippery conditions
- that the inaccurate recording of the actual distance travelled and actual speed could lead to the safety system (ATC) not intervening as expected.

These conditions were subsequently discussed with the DSB and the solution enabled the DSB to resume simulated operational runs with IC4s on 27 February 2012 and complete an application for type approval in which were implemented preventive measures in relation to the recommendations of the Accident Investigation Board.

In summary it can be noted that close collaboration between the Accident Investigation Board and the Danish Transport Authority ensured a prompt reaction to observations made both in connection with the incident itself and with the subsequent results of the continued investigations.

Chapter 5. Technical authorisations and certification

In the autumn of 2010 the Danish Transport Authority informed the industry that the principles outlined in the EU Regulation on risk assessment (CSM-RA) would be fully implemented as a basis for the authorisation of rolling stock and infrastructure as of 1 January 2012. In 2011 the Danish Transport Authority's focus in the area of authorisation was therefore the preparation of this in particular.

Technical authorisations

The Danish Transport Authority wants to maintain a high degree of safety while at the same time promoting conditions for the growth of the railways²⁶.

At the safety conference in the autumn of 2010, the Danish Transport Authority announced that the industry could expect the principles outlined in the Regulation on risk assessment (CSM-RA) would be fully implemented as a basis for the authorisation of rolling stock and infrastructure as of 1 January 2012.

As a result, the focus in the area of authorisation has particularly been on the preparation of the new executive orders, which harmonise the basis for the authorisation of infrastructure and rolling stock with EU law, including the CSM Regulation, the Interoperability Directive and the Safety Directive.

The European rules pave the way for the increased accountability of undertakings, i.e. that the safety authorities must reduce their technical handling of cases and undertakings themselves must do more.

In preparation, the Danish Transport Authority published three guidelines in 2011:

- *Guideline on the assessment of significance*, which specifies guidelines for undertakings to assess whether a change is significant. From 1 January 2012 competence in the assessment of significance is central, since non-significant changes can be dealt with using in-house procedures, while significant changes require authorisation to be placed into service, just as undertakings must deal with the safety-related situations in accordance with the procedure and methods of risk assessment resulting from the CSM Regulation.
- *Guideline on system definition*, which specifies the purpose of a system definition and guidelines for what a system definition should include. The system definition is a detailed description of that part of the railway system that is being changed, as well as the preconditions for change. System definitions form the basis of any risk assessment and play a crucial role when applying for authorisation to be placed into service in the case of a change to infrastructure or rolling stock.
- *Guideline on the use of assessors*, which deals with the assessment of (changes to) technical systems, authorisation to be placed into service is required. From January 2012, applications for authorisation to be placed into service must be

²⁶ cf. the strategy 'Den fælles europæiske jernbane – Strategi for høj sikkerhed og smidig gennemførelse i Danmark' [The common European railways – Strategy for high levels of safety and smooth implementation in Denmark], Danish Transport Authority, February 2009.

accompanied by a safety assessment report drawn up by an independent and competent assessor. Among other things, the guideline sheds light on the assessor's task, competences and requirement of independence.

Authorisation of infrastructure

At the same time as the efforts to harmonise the authorisation executive orders with the EU rules, the focus in the area of infrastructure was on reducing both the number of temporary authorisations to be placed into service and the use of conditions in authorisations to be placed into service.

New or altered infrastructure, such as e.g. bridges and tunnels, track, traction systems, platforms, radio systems, signals, protection systems, remote control systems and train control systems must be authorised to be placed into service before they can be put into operation.

There have, however, been cases where the Danish Transport Authority has issued a limited, temporary authorisation to be placed into service, because the available documentation showed that there were no outstanding situations that were critical for safety, but that there was either a lack of documentation, there were physical deficiencies, or there was a need to gain experience with operation (new systems, new components or altered function).

In December 2010 an accident occurred at a level crossing on the Svendborgban. The crossing had been granted a temporary authorisation to be placed into service, which had been extended several times. Against this background the Danish Transport Authority reported that a total of just over 80 temporary authorisations had been issued. The Danish Transport Authority subsequently introduced a change in practice, which did away with the possibility of being issued a temporary authorisation to be placed into service, and existing temporary authorisations could not be extended.

At the same time, the Danish Transport Authority began a collaboration with Banedanmark on a targeted effort to get to grips with physical deficiencies and lack of safety documentation on those sections of infrastructure that were in operation on the basis of a temporary authorisation. At the end of 2011, there was just one temporary authorisation to be placed into service still in force, and no new temporary authorisations were issued during the year. Finally, the Danish Transport Authority introduced a changed practice regarding the use of conditions, which has helped impress on those concerned that it is the infrastructure managers that are responsible for safety before, during and after any changes to the infrastructure.

Status of authorisations of major infrastructure projects

In recent years, significant funds have been allocated to the replacement of infrastructure and investment in new railway facilities. Some of these funds are tied up in the so-called major projects: Femern Bælt, Copenhagen Ringsted, The Signal Programme, Metro Cityring, etc. In 2011 the Danish Transport Agency initiated or continued dialogue with several of these projects on future authorisations to be placed into service.

In particular, the process for the authorisation of Banedanmark's Signal Programme has been consolidated, and the first permits have been granted for the construction of the Copenhagen Metro Cityring.

Example of good practice – the Storstrøm bridge

In the autumn of 2011 the Storstrøm bridge, which joins Sjælland and Falster, was closed to train traffic after the discovery of a 25 cm crack in one of the floating bays. This crack was found during a planned screening of the bridge, as part of a major review of all Banedanmark's bridges. Immediately after this screening, Banedanmark closed the bridge to train traffic. The Danish Transport Authority was informed about

the situation and about the next actions the responsible unit Drift²⁷ within Banedanmark wanted to take.

As part of the Danish Transport Authority's authorisation process for the re-opening of the bridge, a course of action consisting of 3 stages was agreed in collaboration with Banedanmark. In the first stage, the bridge's consoles were X-rayed to identify cracks, and the cracks were reinforced. After this, stranded rolling stock was able to pass from Falster to Sjælland with no risk to safety.

In the second stage, when additional ultrasound inspections of the bridge had been carried out, together with further reinforcements, light MR, IC3 and ICE trainsets could be put into use.

In the final stage it was clear that there were no further cracks not yet identified, and the reinforcement project was closed. Detailed calculations were performed, and it was possible to show an adequate carrying capacity in normal operation, even under conservative calculation conditions. In January 2012 the Storstrøm bridge was ready to resume normal operations with locomotive-drawn wagons. In January 2012, Banedanmark initiated the installation of strain gauges²⁷ on the bridge, which allows for effective monitoring of the formation of cracks in the future.

The entire project was monitored by an assessor, which was instrumental in producing a well-documented and solid basis for the safety authorisation process.

Approval of undertakings' safety rules

'Safety rules' are the railway infrastructure managers' and railway undertakings' technical and traffic-related safety rules for infrastructure, rolling stock, training and traffic safety. It is the responsibility of the individual railway infrastructure manager or railway undertaking to obtain approval for the rules needed to maintain safety.

Among other things, an application for approval of new or revised rules with safety-related content must contain a description of the amendment or addition being made and an assessment of the significance of this in terms of safety. The Danish Transport Authority assesses whether the applicant has documented that the level of safety in the undertaking's new or revised rules conforms to the legislation, and whether these rules may have a bearing on other rules, standards or regulations. More comprehensive risk assessments are carried out in complex cases, which often also involve an independent third party (assessor) to assess the case.

The majority of cases in 2011 with regard to *technical* safety rules involved various waivers in connection with renewal projects on the railways.

The majority of cases in 2011 with regard to *traffic-related* safety rules involved a long series of different waivers of Sikringsanlæggene Og Deres Betjening [Protection Systems and their Use] (SODB) Construction Provisions in connection with renewal projects on the railways.

Authorisation of rolling stock

In 2011, approximately 150 authorisations were issued for rolling stock. The authorisations consist of authorisations to be placed into service, type approvals, permits for tests and transport and safety rules. Annex 5 gives an overview of authorisations of rolling stock in 2011.

²⁷ A sensor used to monitor loads.

Undertakings that apply for authorisation to place vehicles into service must submit an application to the Danish Transport Authority, including, inter alia, a risk assessment and a safety plan. The Authority may require an undertaking to make use of expert assistance, including the assistance of an assessor, when applying for approval.

If the vehicle is covered by the European technical specifications for interoperability (TSI rules), the applicant must submit an EC declaration of verification, attested by a Notified Body, to the Danish Transport Authority. The declaration documents the fact that the vehicle meets the requirements of the Interoperability Directive and the relevant TSIs – and therefore fits into the context of the European rail network.

Authorisation to be placed into service is the Danish Transport Authority's approval of the technical characteristics and conditions of use of a vehicle. It is these characteristics that are relevant to railway safety and interoperability on Europe's railways. In March 2011 the Danish Transport Authority exempted certain vehicles that are used to maintain infrastructure from the requirement of an authorisation to be placed into service.

The exemption includes, for example, 2-way vehicles used on closed tracks, where the safe use of vehicles is subject to the infrastructure manager's own rules.

Application of the CSM-RA to rolling stock

During 2011, the Danish Transport Authority drafted a series of executive orders and guidelines on the use of Commission Regulation (EC) No 352/2009 on the adoption of a common safety method on risk evaluation and assessment as referred to in Article 6(3)(a) of Directive 2004/49/EC of the European Parliament and of the Council – hereinafter referred to as the CSM-RA. The Authority also gained its first experiences in the application of the CSM-RA.

Below are two examples concerning vehicles of projects where the CSM-RA were applied in 2011 or were prepared for application in 2012.

Experience with the CSM-RA in the IC2 (litra MP) project

The IC2 litra MP is a 2-wagon variant of IC4. The train is constructed for a maximum speed of 180 km/h, and has an 'intercity' interior corresponding to IC4. The IC2 was type-approved on 25.10.2011.

The authorisation process for type approval was described and agreed in an official approval plan. In accordance with this plan, AnsaldoBreda involved an independent third-party assessor, TÜV Rheinland.

Following IC2's type approval, it was decided as part of the project to extend the official approval plan to also include the handling by the authorities of changes to trainsets after type approval. AnsaldoBreda therefore updated the official approval plan to include a section on the CSM-RA. In 2012, all changes to trainsets will be handled in accordance with the CSM-RA and Executive Order No 1030.

More specifically, the Danish Transport Authority and AnsaldoBreda extensively discussed how the significance assessment should be performed and documented so that the project follows best practice. All change assessments are logged in a 'change log', with reference to the preliminary system definitions and significance assessments.

In 2011 no actual change applications were processed, since type approval was first granted on 25.10.2011. The CSM-RA are expected to be applied to a series of changes during 2012 – and as is evident, the project is well equipped for this.

Experience with the CSM-RA in the IC4 project

Executive Order No 686 on the authorisation of rolling stock, which was in force in 2011, requires handling by the authorities when so-called 'major works' are carried

out. This is understood to mean changes that are either covered by a TSI or which, as a result of a human or technical error, could lead to one or more serious injuries.

Official approval of changes to IC4 is agreed in a safety plan, which specifies that the CSM-RA Regulation's significance criterion be used for changes relating to safety conditions. Changes that are only of relevance to TSI are to be handled in accordance with processes described in the Interoperability Directive.

It is further agreed that all changes must be assessed by at least one internal assessor. Major works that are also classified as complex are assessed by an external ISA²⁸. Complex changes are understood to mean changes to safety-critical functions and/or changes that encompass several sub-systems.

In 2011 the TCMS2 software upgrade is an example of a major project implemented following an external assessment carried out by Scandpower.

The CSM-RA Regulation was therefore partially applied in the IC4 project in the handling of changes in 2011. In 2012 the CSM-RA must be utilised in full as a result of the new Executive Order No 1030 on the authorisation of rolling stock.

New certificates and safety authorisations

At the end of 2011, a total of 24 railway undertakings had a certified safety management system for managing railway safety.

In 2011, the Danish Transport Authority did not carry out any new certifications of railway undertakings or new authorisations of infrastructure managers in Denmark. As a result, at the end of 2011 there were still 12 railway undertakings with certificate A + B, 3 railway undertakings with B and 9 safety-authorised infrastructure managers.

During 2011 there were six undertakings that began introductory talks with the Danish Transport Authority on the certification or authorisation of safety management systems. Two of the railway undertakings expect to be certified in 2012, while the last 4 undertakings stopped the process before an application was submitted.

During its follow-up supervision of the undertakings, the Danish Transport Authority was able to establish that undertakings that have now had a safety management system for some years are using this actively and have become aware of many of the benefits of working with these systems.

Safety certification

A safety certificate comprises a part A and a part B. Together, the two parts of the certificate cover the undertaking's safety-related activities.

Part A of the safety certificate sets general requirements for the undertaking, including developing a safety management system. The railway undertaking must have a safety certificate part A in the country where it has its main operations. This is valid throughout the EU for a maximum of five years.

²⁸ Internal Security Assessor.

Part B focuses on the specific infrastructure that the railway undertaking uses. The railway undertaking must have been issued with a safety certificate part B for each country in which it wishes to carry out railway transport.

Safety certificate part A

In 2011 the Danish Transport Authority did not issue any new safety certificates to railway undertakings.

The Danish Transport Authority is aware that there is one railway undertaking with safety certificate part A from Denmark, which has two safety certificates part B in Sweden and Germany respectively.

Safety certificate part B

In order to be issued with part B, checks are required to ensure that the railway undertaking's safety management system covers national requirements and conditions relating to the infrastructure intended to be used. A check is carried out on conformity between part A of the safety certificate and the new application for part B.

All railway undertakings with a safety certificate part A in Denmark simultaneously receive a safety certificate part B to operate in Denmark. The requirements for both safety certificates are dealt with in one and the same process.

For railway undertakings with a safety certificate part A from another EU Member State, an application for a safety certificate part B is dealt with as a separate process. Safety certificates part B have been issued in Denmark to 3 railway undertakings with safety certificates part A issued in another EU country. In all 3 cases the undertakings are based in Sweden.

The Danish Transport Authority attaches importance to the undertaking ensuring coherence between the solutions the undertaking has described in part A and the solutions it has chosen to fulfil the requirements for part B. This can lead to the Authority asking about parts of the safety management system that have already been approved by a national authority in another EU country.

During 2011, the Danish Transport Authority did not issue any new safety certificates part B, but did make 1 amendment to a B certificate. The amendment to the safety certificate was because the undertaking wanted to expand operations on a new section of railway.

Safety authorisation

Safety authorisation requires the infrastructure manager to have developed a safety management system and to be able to document that it is able to control risks on the railway network. The infrastructure manager must also undertake a coordinating role with respect to the railway undertakings that operate on its sections of track.

During 2011, the Danish Transport Authority did not issue any new safety authorisations to infrastructure managers.

The Danish Transport Authority did not amend any safety authorisations in 2011.

Personal certification

The Danish Transport Authority approves training programmes for persons who carry out safety-classified functions on the railway. The Authority also issues licences to train drivers and approved instructors and examiners.

Train driver licences

At the end of 2011 there were 3 209 persons with a valid train driver's licence registered with the Danish Transport Authority. Of these, 120 licences had been issued

in 2011. The number of valid licences has increased fractionally, while the number of active train drivers is presumed to be stable. The difference between the number of valid licences and active train drivers is most likely due to the fact that the licences are valid for 10 years, and not all certified train drivers actively use their licences.

The Danish Transport Authority revoked 3 licences in 2012. The revocations were justified by, among other things, the lack of compliance with professional and medical requirements.

From 2013, train drivers must be certified for a-functions (drivers, drivers of work vehicles, etc.).²⁹ The requirements for drivers are thus being tightened with additional requirements relating to professional skills, prior training and also requirements concerning vocational psychological assessment.

In the light of this, in 2011 the Danish Transport Authority initiated a fact-finding mission in collaboration with representatives from all railway undertakings and infrastructure managers. The aim of the mission is to define the boundaries for certification, necessary training, meeting access requirements, etc. The work will be completed in 2012.

Medical certificates

The Danish Transport Authority issues medical certificates to persons who carry out safety-classified functions on the railways. In 2011, 2 389 medical certificates were issued, while 5 were revoked. Over the year, 9 applications for medical certificates were refused.

In 2011 there were no complaints concerning decisions on medical certificates taken by the Danish Transport Authority.

The Authority continued its practice of recognising Swedish medical certificates issued for all types of safety-classified function. In addition, the Authority is continuing its practice of recognising German medical certificates for train drivers and employees in the undertakings not covered by the current agreements on mutual recognition.

Instructors and examiners

People who instruct and examine train drivers in safety-related subjects must be approved by the Danish Transport Authority. This applies to both theoretical and practical subjects. Approval is based on presentations from undertakings to the Danish Transport Authority. The register of approved instructors and examiners can be found on the Danish Transport Authority's website.

²⁹ Pursuant to Executive Order No 985, implementing Directive 2007/59/EC.

Chapter 6. Important amendments to legislation and regulations

2011 was largely used to prepare for the introduction of the CSM-RA from 1 January 2012. In the international sphere, the Danish Transport Authority continued its efforts to shape the development of the common European railway by taking part in working groups in the European Railway Agency.

2011 was used to prepare and train the industry in the use of the new tools that are being introduced with the CSM-RA: significance assessment, system definition and assessors.

In 2010 the first two executive orders were enacted, documenting the Danish Transport Authority's practice for authorising railway infrastructure and railway vehicles [1], and beginning integration with European legislation. In 2011 the Danish Transport Authority followed up on this work with two new orders, which came into force on 1 January 2012. The aim was the further integration of European requirements for authorisations to be placed into service, type approvals of vehicles and the management of changes to technical systems [2].

However, there were also other requirements for the orders. The CSM-RA will not apply directly to metro, metropolitan and light rail systems. With the new orders, the Copenhagen Metro will nevertheless be subject to the same requirements for risk assessment as conventional railways.

With the new orders it remained compulsory for all proposed changes to technical systems to be assessed in terms of their significance to safety, and for all changes deemed to be of significance to safety to be followed by a risk assessment method to be described in greater detail, which must also be reviewed by an independent assessor.

CSM school

At the end of 2010 the Danish Transport Authority launched the 'TSI school', the first in a series of educational initiatives aimed at the Danish railway industry and designed to expand knowledge of European railway requirements.

The 'TSI school' was designed to introduce the railway industry to the European technical requirements for vehicles and infrastructure, and was held in December 2010 and January 2011. A total of around 250 representatives of the Danish railway industry took advantage of the offer.

In December 2011 the 'TSI school' was superseded by the 'CSM school', which was designed to introduce the railway industry to the European requirements for risk

^[1] See 'Safety report for the railways 2010'.

^[2] Namely Regulation (EC) No 352/2009 on the adoption of a common safety method on risk evaluation and assessment (CSM-RA), which came into force on 19 July 2010.

assessment and management, including requirements on the use of independent assessors and the use of system definitions and significance assessment.

The 'CSM school' was aimed partly at Danish infrastructure managers and railway undertakings that must use the European risk assessment methods, and partly at those undertakings that traditionally work as consultants on railway projects. Around 300 people from the railway industry took part.

Safety conference

The Danish Transport Authority holds an annual conference on railway safety, with the participation of the Danish railway industry.

The safety conference is designed to provide general information on questions relating to railway safety, Danish and European railway legislation, and the Danish Transport Authority's initiatives and activities in relation to the railway industry.

Topics for the 2011 safety conference included (new) rules for the authorisation of vehicles and infrastructure, EU requirements for training, safety management in undertakings and the prevention of accidents at level crossings.

Relevant changes to the Railways Act³⁰

Executive Order on the authorisation of railway vehicles

As part of the implementation of EU legislation (including the Interoperability Directive and the Commission Regulation on a common safety method for risk evaluation and assessment (CSM-RA) for the railways), there was a need to revise the Vehicles Executive Order.

The Order establishes procedures for applying for the authorisation of vehicles, including the issuing of authorisations to be placed into service, type approvals, transport and test licences. The new order contains both rules for vehicles covered by the Interoperability Directive and rules for vehicles not covered by the Directive.

The Order is a so-called 'process order'. This means that it does not contain detailed technical requirements for vehicles. Instead, the Order describes the process to be applied to verify that relevant technical requirements have been identified and satisfied in connection with applications for type approval, authorisations to be placed into service or test and transport licences.

The technical requirements for vehicles that must be verified are as follows:

- 1) requirements in TSIs, to the extent that they apply
- 2) requirements in national technical rules
- 3) project-specific safety requirements identified using the common method for safety assessment (CSM-RA)

Executive Order on authorisations to be placed into service for sub-systems in the rail infrastructure

The purpose of the Order is to create a more simple and uniform legislation concerning

³⁰ For a complete overview, see Annex 7

applications for authorisations to be placed into service. The processes apply the main principles of the Interoperability Directive and the CSM-RA for risk assessment.

The main changes in the Order are:

- Clarification of the division of responsibility between applicant and authority
- Application of the main principles of the Interoperability Directive
- Application of the main principles of the CSM-RA
- Less documentation when applying for authorisation to be placed into service

Provisions (RP) on modules for procedures for assessing compliance, suitability for use and EC verification to be used in Technical Specifications for Interoperability (TSIs)

The RP implement the Commission's decision on the various procedures for assessing the conformity of components or for EC verification of a sub-system.

The Commission's decision contains common procedures for all TSIs, and these must be applied by the notified body (NoBo) when assessing whether TSI requirements have been met in a specific project.

The procedures apply to all TSIs that come into effect on or after 1 January 2011. It also follows from this that the procedures must be applied to those TSIs that are revised after 1 January 2011.

Provisions (RP) for operating and traffic management rules on the railways

On 21 October 2010 the Commission took a decision concerning amendments to the technical specifications for the sub-system 'Operation and Traffic Management' applicable to conventional and high-speed trains. The Danish Transport Authority has therefore updated the existing RP.

The rules must be applied on lines equipped with ERTMS. The rules may be applied on other lines if the operating conditions make this appropriate.

This is a technical update of TSI OPE operation and traffic management, which is reflected in the rules for operation and traffic management.

Provisions implementing the Commission's decision amending Decision 2006/920/EC and 2008/231/EC on technical specifications for interoperability applicable to the sub-system 'Operation and Traffic Management' in trans-European conventional and high-speed rail systems

The RP implement the Commission's decision on operation and traffic management. This is a technical update of the TSI.

The main amendment to the TSI is that the provisions on train drivers in TSI OPE points 4.5. 'Professional qualifications' and 4.7. 'Health and safety provisions' have been removed from TSI OPE and included in the Train Drivers Directive. The provisions of TSI OPE will not in future concern train drivers; they will only apply to other groups of employees with safety-critical functions in cross-border traffic.

Provisions implementing the Commission's decision 2011/274/EU on a technical specification for interoperability applicable to the sub-system Energy in the trans-European conventional rail system

The RP implement the Commission's decision on TSI Energy. The TSI contains requirements on such things as voltage and frequency, energy supply, regenerative braking, power capacity in stationary trains, electricity consumption and overhead contact lines, including compatibility with pantographs.

The requirement in the TSI concerning electrified infrastructure or electrically powered rolling stock need not be satisfied in connection with new or upgraded infrastructure and rolling stock that is not electrified or electrically powered.

Provisions implementing the Commission's decision 2011/275/EU on a technical specification for interoperability applicable to the sub-system Infrastructure in the trans-European conventional rail system

The RP implement the Commission's decision on TSI Infrastructure.

Among other things, the TSI imposes requirements on track gauge and axle load, fitness for particular train lengths and speeds, switches and crossings, curves and gradients, service installations for trains, safety and locking systems.

The TSI divides the infrastructure into several categories of line, including TEN main lines³¹ and other TEN (not main) lines. The TSI imposes different requirements on the infrastructure depending on the category of line.

Executive Order on the certification of train drivers (Train Drivers Order)

The revision of the Train Drivers Order is intended to prepare Danish legislation for the new EU rules.

The first deadline was 29 October 2011 for the issuing of new licences and certificates to train drivers involved in cross-border traffic.

Since the number of such licences and certificates is modest, the Danish Transport Authority has decided to issue all new licences and certificates under the EU requirements.

All other licences and certificates will be issued in accordance with the EU's requirements by 29 October 2013, which will mean that the Danish Transport Authority must have issued new EU licences to all train drivers in the course of 2012-13.

This also applies to licences for the category of train drivers with A-certificates³², who did not previously hold a train driver's licence or certificate.

Executive Order on health requirements on the railways (Health Order)

The Health Order has been amended under new EU rules, including health requirements for train drivers laid down in the Train Drivers Directive and requirements for other staff in the TSI for Operation and Traffic Management (TSI OPE).

³¹ TEN = The Trans-European conventional rail system Network

³² The EU certificate distinguishes between two categories of train driver:

- Train drivers with A-certificate, who carry out working services and/or shunting (including trolley drivers, shunting drivers, drivers, etc.)
- Train drivers with B-certificate, who drive passenger and/or goods trains (normally referred to as train drivers)

The main changes to the Health Requirements Order are as follows:

- Periodisation for health checks for train drivers changed under the Train Drivers Directive, i.e. the intervals for health checks have been changed.
- The intervals for health checks for other safety-classified functions have been changed under the TSI for Operation and Traffic Management (TSI OPE).
- Tests are being introduced for substances, alcohol, etc. at the first examination, i.e. prior to being taken on.
- The Health Order does not apply to carrying out safety-classified functions on historic lines' own infrastructure.
- Health authorisations will be mutually recognised in the EU.

Provisions implementing the basic parameters for registers of licences and additional certificates for train drivers

The RP implement the Commission's decision on the basic parameters for register of licences and additional certificates for train drivers. The RP establish the specific requirements for the content of the train drivers register and train drivers certificate registers.

For the licence register and certificate registers the basic parameters consist of (i.e. what minimum form and content the registers must have):

- information to be collected
- data format
- access rights
- data exchange
- data storage period
- procedure in case of bankruptcy (for certificate registers only)

The RP should be seen in conjunction with the Danish Transport Authority's order on the certification of train drivers. Meetings on the registers have been held with the industry.

Executive Order on the registration of railway vehicles

The previously applicable order has been updated, as the Commission's decision contains new requirements for the registration of vehicles in the national vehicles register (NVR).

The additional information that undertakings must provide consists of the business registration number of whoever is responsible for maintenance, which must be provided for vehicles that have already been registered in the vehicles register. The business registration number of whoever is responsible for maintenance must be given, which clearly identifies the party responsible for maintaining the individual vehicle. This also applies to vehicles registered before the Commission's decision comes into force.

The Commission's decision also contains requirements for additional information in the vehicles register which the Member States must ensure is recorded.

Executive Order on the use of locomotives and passenger wagons used on the Danish rail network.

The Order implements the TSI for the sub-system rolling stock 'locomotives and passenger wagons', which is the first TSI for vehicles. The Order expands the TSI's scope of application to the entire Danish rail network. Among other things, when

drafting the TSI, EN norms and UIC standards were taken as a starting point³³. The TSI therefore to a large extent reflects existing requirements currently applied in the industry.

The Commission has produced a guide to the TSI, a so-called application guide. The guide is available on the website of the Danish Transport Authority under Legislation, together with the order.

Executive Order amending the executive order on interoperability in the rail system

The amendment of Annexes II, V and VI of the Interoperability Directive specifies the structure of a sub-system and the procedures for the notified and designated bodies in connection with the inspection of TSIs and national rules.

Annex II is being amended, since the sub-system train control and signals (control command and signalling) is being divided into 2 separate sub-systems: 'fixed train control and signal equipment' and 'mobile train control and signal equipment'.

The annex has been amended because a new point 2 has now been added, which specifies what requirements there are for a declaration when the designated body (DeBo) has to inspect the national rules under Article 17(3) of the Interoperability Directive.

In annex VI point 2 there has been an editorial restructuring of the text and a precision of the concept 'intermediate statement verifications (ISV)', which was previously simply referred to as 'provision declaration of verification'.

The annex has also been amended because a new point 3 has been added, specifying which verification procedure must be used in situations where national regulations apply, see the explanation above of the amendment of Annex V, the verification procedure must be carried out by the designated body (DeBo).

Executive Order on the requirement for notified bodies for the railways

The Order establishes a requirement of accreditation if one wishes to be chosen and notified as a notified body (NOBO) under the Interoperability Directive.

The Order requires undertakings that have already been chosen and notified as notified bodies to obtain accreditation within 1 year of the Order coming into force.

The Safety Directive and secondary legislation

The implementation actions and experiences with the following legal instruments are described below:

- CSM for RA³⁴ (Common Safety Method for Risk Analysis)
- CSMs for CA³⁵ (Common safety Method on Conformity Assessment)

³³ UIC = Union Internationale des Chemins de fer or International Union of Railways. An international railways organisation.

³⁴ Commission Regulation (EC) No 352/2009 of 24 April 2009 on the adoption of a common safety method on risk evaluation and assessment as referred to in Article 6(3)(a) of Directive 2004/49/EC of the European Parliament and of the Council.

³⁵ Commission Regulation (EU) No 1169/2010 of 10 December 2010 on a common safety method for assessing conformity with the requirements for obtaining railway safety authorisation and Commission Regulation (EU) No 1158/2010 of 9 December 2010 on a common safety method for assessing conformity with the

- The Reporting Executive Order³⁶

CSM-RA:

The CSM-RA is a regulation issued by the Commission in 2009. The regulation lays down requirements on the application of a common safety method for risk evaluation and assessment to all changes to a Member State's rail system that are deemed to be significant. The changes can be of a technical, operational or organisational nature. Where organisational changes are concerned, only those changes that could affect operating conditions are taken into account.

The Danish Transport Authority has drawn up the following guides with regard to undertakings' use of the CSM-RA:

- Guide on the use of health-oriented risk assessment of 22 December 2010
- Guide on assessors of 16 September 2011
- Guide on significance assessment of 13 January 2012
- Guide on system definitions of 21 December 2011

The Danish Transport Authority also organised a CSM school, where it provided instruction on the regulation and its application in particular with regard to those areas in respect of which the regulation came into force in the summer of 2010. Find out more about the CSM school at the start of this chapter. In 2011, the Danish Transport Authority issued two new executive orders³⁷ that refer to the regulation.

CSM-CA:

The CSM-CA is two regulations that were issued by the Commission in 2010 and which came into force on 31 December 2010.

The regulations contain common methods for the assessment by national authorities of compliance with the requirements placed on safety management systems in connection with the issue of certificates to railway undertakings and safety authorisations to railway infrastructure managers.

They also describe general guidelines for the authorities' work in connection with the issue and monitoring of certificates and authorisations.

The Danish Transport Authority has assessed the regulations and found that they fundamentally correspond to the authority's existing practice when issuing safety certificates and safety authorisations and its associated supervision.

The Danish Transport Authority issues safety certificates under Executive Order No 14 of 4 January 2007 on safety certificates for railway undertakings and safety authorisations under Executive Order No 13 of 4 January 2007 on safety authorisations for railway infrastructure managers.

requirements for obtaining railway safety certificates.

³⁶ Executive Order No 575 of 25 May 2010 concerning the reporting of data on accidents, precursors to accidents and safety irregularities, etc. to the Danish Transport Authority.

³⁷ Executive Order No 1030 of 7 November 2011 on the authorisation of railway vehicles and Executive Order No 1031 of 7 November 2011 on authorisations to be placed into service for sub-systems in the rail infrastructure.

The Danish Transport Authority conducts supervisory operations with safety certificates and safety authorisations on the basis of the provisions of the Railways Act and rules issued pursuant to this Act.

The Reporting Executive Order:

In 2010 a new Reporting Executive Order was issued. The issue of a new Reporting Executive Order was due to the revision of Annex 1 of the Safety Directive and a desire to reduce undertakings' administrative burden. Undertakings were thus only required to report consequences in connection with significant accidents or accidents with less seriously injured persons.

The number of details of the consequences of accidents was also reduced. Undertakings' duty to report details of their recommendations as a result of accidents or precursors to accidents was also struck out.

The purpose of the undertakings' reports is to establish a statistical basis that can contribute towards a continuous assessment of efforts made to ensure safe railways. The division of responsibilities for ensuring safety on the railways was therefore not changed.

The Order came into force on 1 January 2011, and undertakings will therefore have to apply it when reporting data to the Danish Transport Authority for 2011.

Regulation on the certification of entities in charge of maintenance of freight wagons³⁸

In May 2011 the Commission issued the regulation, which came into force on 31 May 2011. The regulation lays down provisions on a system of certification of entities in charge of maintenance for freight wagons. The purpose of the certification system is to create a framework for the harmonisation of requirements and methods for assessing the suitability of entities in charge of maintenance in the EU.

Certifying bodies under the regulation can be accredited bodies, recognised bodies or national safety authorities.

Denmark informed the Commission by letter of 30 November 2011 that certifying bodies under the regulation must be accredited in Denmark. In other words, Denmark does not wish to make use of the opportunity to *appoint* certified bodies.

International work

In 2011 the Danish Transport Authority's international work in the field of safety and interoperability unfolded within three main areas. Taking decisions in RISC, participation in the European Railway Agency's working groups and chair of the Corridor B Executive Board.

Taking decisions in RISC

Like the previous year, 2011 was productive for the EU Commission's Railway Interoperability and Safety Committee (RISC). At three meetings, 12 new legislative instruments were adopted, and the Danish Transport Authority had previously left its mark on several decisions and the process of prior consultations. Among other things, this involved:

³⁸ Commission Regulation (EU) No 445/2011 of 10 May 2011 on a system of certification of entities in charge of maintenance for freight wagons and amending Regulation (EC) No 653/2007.

- The Danish Transport Authority was respected subject to the so-called omnibus resolutions that correct errors in TSIs (Technical Specifications for Interoperability).
- The Commission and the European Railway Agency showed understanding for Denmark's rejection of the compulsory introduction of derailment mechanisms, which was deemed to be unnecessarily obstructive to competition for the industry, and which does not clearly promote safety.
- The Commission and the European Railway Agency incorporated Denmark's proposal for change in what will become a permanent secretariat, which within the Agency can guarantee an improved decision-making process from working groups in the Agency to the Commission's committee.
- The Commission recognised Denmark's need to be offered control of the translation of all legal instruments adopted in the committee, such that Denmark is guaranteed quality before they are implemented in national legislation. This will address the problem of erroneous Danish translations of European legal instruments, which the Danish Transport Authority has previously spent a great deal of time having corrected after they have been implemented.
- Finally, the Commission modified its proposal for a resolution on the infrastructure register, such that the risk of duplication in relation to existing instruments can be reduced.

Participation in the European Railway Agency's working groups

In 2011 the Danish Transport Authority continued its participation in some 25 working groups – primarily in the European Railway Agency. This is where the foundations are laid for resolutions in the RISC committee, which is why the efforts lead partly to a marking of recommendations to the Commission and partly constantly provide information on opportunities, limitations and positions in other Member States' safety authorities.

One example of this is the work in the WP CSM Supervision³⁹, which has given Denmark a significant influence. Even after the Agency's drafting of a recommendation to the Commission, the Danish Transport Authority was able to introduce changes to the text of the provision, which will be put to the vote in 2012. This means that all safety authorities that oversee operators that work on a cross-border basis must coordinate their monitoring methods. This should ensure that operators' safety management systems remain effective and include all relevant activities.

In a Task Force under the RISC, the Danish Transport Authority participated in the mapping of telematics with a view to subsequently advising the Commission on future legislation in the area. In a recommendation to the RISC committee, the Danish Transport Authority incorporated targets so that:

- the recording of certified ECM⁴⁰s must include both EU and OTIF members⁴¹,
- the infrastructure register must not duplicate other instruments where this would be superfluous,
- and where dangerous goods are concerned there is a need to develop an IT instrument that can provide information on the position of wagons with dangerous goods in the trainset.

³⁹ Working Party on Common Safety Methods on Supervision. A working group that works with common safety rules for supervision.

⁴⁰ Entities in charge of maintenance.

⁴¹ OTIF = The Intergovernmental Organisation for International Carriage by Rail.

Chair of the Corridor B Executive Board

The 3600 km long railway line between Stockholm and Naples, corridor B, is one of six lines which the EU has designated as strategically important corridors for rail freight traffic.

On these lines, particular attention is being paid to improving infrastructure, relieving bottlenecks, harmonising procedures for train operation and not least to promoting technical cohesion when rolling out the common European train control and communication system, ERTMS. Ideally, the line must be controlled entirely by ERTMS by 2020.

The Danish Transport Authority acts as chair of the Corridor B Executive Board for Denmark. To account for the practical roll-out of ERTMS in the corridor, a management committee was established under Austria's leadership consisting of the countries' infrastructure managers.

In 2011 an Executive Summary was produced for ministers on the implementation plan for Corridor B from Stockholm to Naples, where the Common European train control and communication system, ERTMS, must form the technical basis for increasing the EU's freight transport and safety on the railways. The Danish-Swedish STM (Specific Transmission Module) challenge has been resolved, such that the two countries' trains will continually be able to use each other's infrastructure, even if the two neighbours roll out ERTMS according to different schedules.

The Board also highlighted the major challenge that lies in the fact that the German transport ministry has announced that instead of rolling out ERTMS along its corridor lines, they want to develop an STM for mounting in locomotives. Finally, a draft implementation plan for ERTMS was produced for a final decision by the Board.

Annex 1: The railways in figures

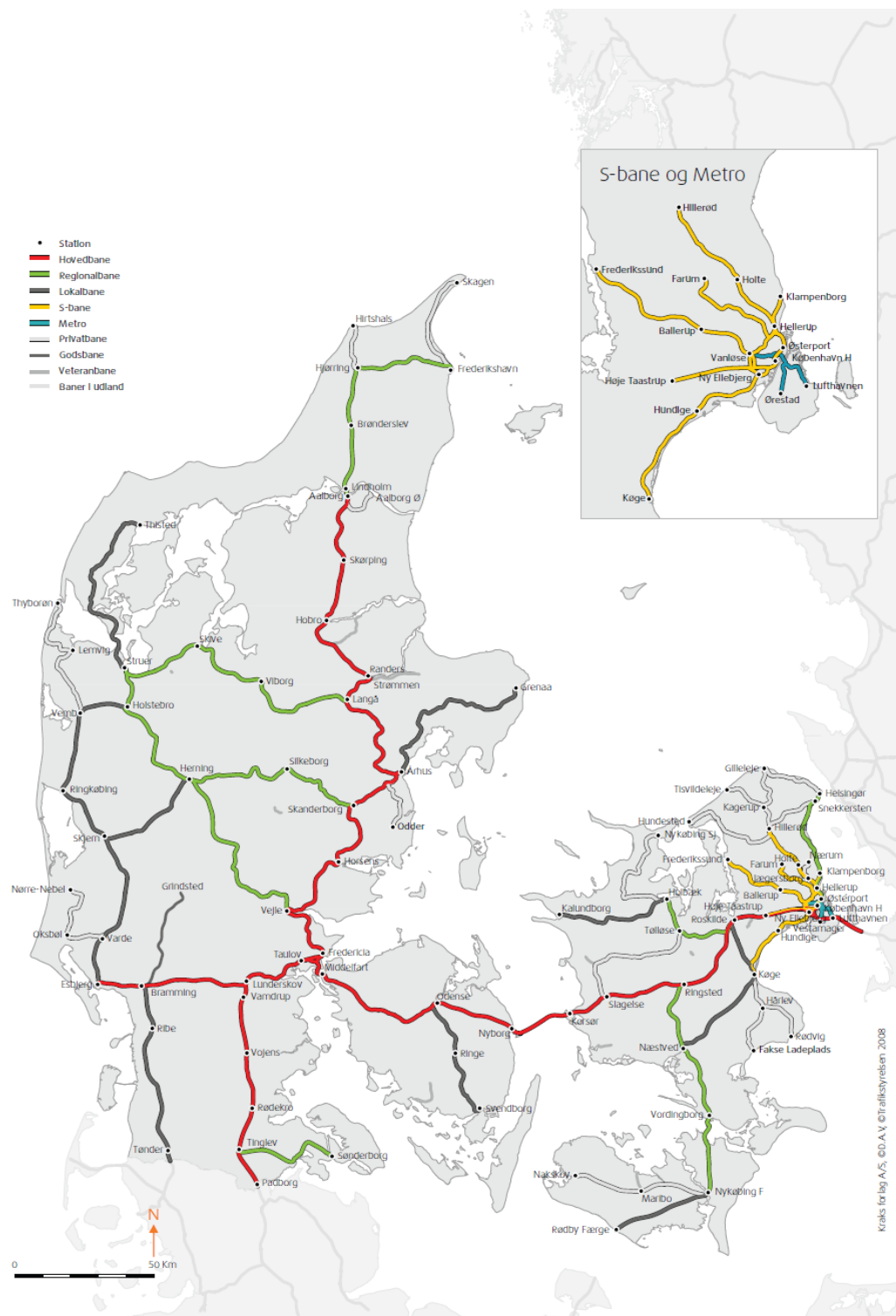


Figure 12. Map of the various classes of line and their distribution in Denmark

Table 5. Information on railway infrastructure

Railway infrastructure	2010	2011
Number of infrastructure managers	9	9
Total length of lines*	2667	2650
Total length of track	4094	4094
Length of electrified lines *	642	642
Km of lines with ATC, ATC train stopping/ACT equipment	1447	1447
Total number of level crossings	1526**	1390
- automatic level crossings with half or full barriers	538	534
- automatic barrier systems and track-side protection	169	172
- manually operated barrier systems	36	15
- level crossings with warning signal systems	190	182
- manually operated automatic warning signal systems	1	1
- level crossings without automatic protection	592**	486

Figures from railway infrastructure managers. Source: infrastructure managers' safety reports for 2010 and 2011. However, data marked * are from Statistics Denmark. ** The 2010 figure for the number of level crossings without automatic protection differs from last year's safety report because an error has been corrected.

Table 6. Information on railway undertakings

Railway undertaking	2010	2011
Number of railway undertakings	16	15
Number of locomotives	169	168
Number of trainsets (passenger transport)	681	685
Number of train drivers	2676	2661
Volume of passenger transport (million passenger-km)*	6586	6889
Volume of freight transport (million tonne-km)*	2240	2615
Total number of kilometres travelled (million train-km)*	83,14	***

Figures from railway undertakings. Source: railway undertakings' safety reports for 2010 and 2011. However, data marked * is from Statistics Denmark. The total number of kilometres travelled (million train-km) for 2011 (marked ***) has not yet been published.

Overview of railway undertakings

Table 7. National railway undertakings

Safety certificates issued under Executive Order No 14 of 4 January 2007 on safety certificates for railway undertakings

Bus. Reg. No	Railway undertaking	Scope	Certificate No	Valid until
27 97 37 95	CFL Cargo Danmark ApS	Goods traffic, including transport of dangerous goods. Banedanmark's and DSB's infrastructure in Denmark, Nordjyske Jernbaner, Lokalbanen, Øresundsbro Konsortiet's infrastructure in Denmark, and sidings and dock sidings on the above lines.	A: DK1120090023 B: DK1220110001	31-03-2014
26 15 90 40	Lokalbanen A/S	Passenger traffic, not high-speed traffic. Passenger and stock services: Hillerød – Hundested, Hillerød – Gilleleje/Tisvildeleje, Hillerød – Snekkersten, Helsingør – Hornbæk – Gilleleje, Jægersborg – Nærum, Snekkersten – Helsingør. Stock services: Snekkersten – Copenhagen H/Copenhagen G – Høje Taastrup (remote), S-Banen. DSB infrastructure for Kh/Gb and Høje Taastrup	A: DK1120090027 B: DK1220090028	31-05-2014
26 13 93 25	NJ Holding Nordjylland A/S	Passenger and goods traffic. Frederikshavn – Skagen, Hjørring – Hirtshals and Frederikshavn – Aalborg	A: DK1120070001 B: DK1220070002	10-12-2012
12 24 59 04	Arriva Tog A/S	Passenger traffic, not high-speed traffic Århus – Struer, Struer – Thisted, Struer – Skjern, Århus – Skjern, Skjern – Esbjerg, Esbjerg – Tønder, Holstebro – Herning, Tønder – national border, and DSB's infrastructure in association with the above Banedanmark lines. Varde – Nr. Nebel.	A: DK1120080005 B: DK1220080007	24-01-2013
26 09 24 85	DB Schenker Rail Scandinavia A/S	Goods transport including dangerous goods. Infrastructure managed by Banedanmark and by Øresunds Konsortiet with affiliated locally and privately owned stock sidings, dock sidings and sidings. The infrastructure owned by DSB and DSB S-tog, including terminal sidings, sidings, depot sidings and workshop sidings, and affiliated locally and privately owned stock	A: DK1120090029 B: DK1220090030	07-07-2013

Bus. Reg. No	Railway undertaking	Scope	Certificate No	Valid until
		sidings, dock sidings and sidings managed by DSB or by DSB S-tog. Infrastructure belonging to Nordjyske Jernbaner A/S		
21 82 77 38	DSB S-tog A/S	Passenger traffic, not high-speed traffic. TIB lines: 8.1 Copenhagen H – Køge, 8.2 Høje Taastrup – Copenhagen H, 8.3 Frederikssund – Valby, 8.4 Copenhagen H – Hillerød, 8.5 Svanemøllen – Farum, 8.6 Vigerslev – Hellerup, 8.7 Hellerup – Klampenborg. Sidings and depot sidings connected to the above lines.	A: DK1120080020 B: DK1220080021	31-12-2013
31 48 54 60	Midtjyske Jernbaner Drift A/S	Passenger traffic, not high-speed traffic, also transport of dangerous goods. Odder – Århus, Holstebro – Vemb – Lemvig – Thyborøn, Århus – Herning – Holstebro. Only materials trains are run on the line Århus – Herning – Holstebro.	A: DK1120080012 B: DK1220080013	26-11-2013
25 05 00 53	DSB	Passenger traffic, not high-speed traffic. Infrastructure managed by: Banedanmark, Øresundsbro Konsortiet and by DSB, including depot and workshop sidings. Sidings from Randers station to Bombardier Transportation. Infrastructure managed by Nordjyske Jernbaner.	A: DK1120090025 B: DK1220120004	31-05-2014
57 34 47 17	Regionstog A/S	Passenger traffic, not high-speed traffic: Nykøbing Falster – Nakskov, Køge – Hårlev – Rødvig /Fakse Ladeplads, Slagelse – Tølløse, Tølløse – Holbæk, Holbæk – Nykøbing Sjælland, Maribo – Bandholm. Stock services: All lines east for Korsør including S-train lines, except for Copenhagen Metro lines.	A: DK1120090031 B: DK1220090033	31-12-2013
21 26 38 34	Metro Service A/S	Passenger traffic, not high-speed traffic. Copenhagen Metro lines in conjunction with metro stage 1+2+3	A: DK1120080014 B: DK1220080015	31-12-2013
29 30 82 41	DSB Øresund A/S	Passenger traffic, not high-speed traffic: TIB 1: Copenhagen H – Høje Taastrup TIB 10: Copenhagen H – Helsingør TIB 11: Copenhagen H – Peberholm TIB 26: Høje Taastrup - Vojens Øresundsbro Konsortiet's infrastructure in Denmark	A: DK1120120001 B: DK1220120003	09-12-2013

Bus. Reg. No	Railway undertaking	Scope	Certificate No	Valid until
18 63 22 76	Banedanmark	Goods transport, not transport of dangerous goods. All lines in Denmark except for Copenhagen Metro	A: DK1120090035 B: DK1220090036	26-11-2014

Table 8. Foreign railway undertakings

Safety certificates issued under Executive Order No 14 of 4 January 2007 on safety certificates for railway undertakings

Registration No	Railway undertaking	Scope	Certificate No	Valid until
556663-0132	Hector Rail AB	Goods transport including transport of dangerous goods. TIB 11. Peberholm – Vigerslev/Copenhagen H. TIB 1. Copenhagen – Fredericia/Taulov, including infrastructure on and around the goods/combi terminals in Taulov and Høje Tåstrup. TIB 26. Fredericia – Padborg, including infrastructure in Kolding Havn and at Fredericia station	A: SE112007001 B: DK1220090022	25-03-2014
556196-1599	SJ AB	International passenger traffic and stock services, not high-speed traffic: Line 1: Copenhagen H – Odense, Line 10: Copenhagen H – Helsingør and Line 11: Copenhagen H/Vigerslev – Peberholm (DK/Se national border). Øresundsbro konsortiet's and Banedanmark's infrastructure and access to sidings for deployment in Copenhagen H, Østerport, Helgoland, Helsingør and Odense	A: SE1120080015 B: DK1220090034	26-11-2013
556619-3479	Railcare Tåg AB	Goods transport, not transport of dangerous goods. The infrastructure managed by Banedanmark and Øresundsbro Konsortiet with affiliated locally and privately owned stock sidings, dock sidings and sidings managed by Banedanmark or Øresundsbro Konsortiet. The infrastructure managed by DSB, including terminal, sidings, depot sidings and workshop sidings, and also affiliated locally and privately owned stock sidings, dock siding and sidings managed by DSB.	A: SE1120080021 B: DK1220100002	24-08-2015

Overview of infrastructure managers

Table 9. Infrastructure managers

Infrastructure managers safety-authorized pursuant to Executive Order No 13 of 4 January 2007 on the safety authorisation of railway infrastructure managers

Bus. Reg. No	Infrastructure manager	Scope	Certificate No	Valid until
12 24 59 04	Arriva Tog A/S	Track and sidings belonging to Vestbanen A/S <ul style="list-style-type: none"> Varde – Nr. Nebel 	DK132009006	14-12-2014
18 63 22 76	Banedanmark	Goods transport, not transport of dangerous goods. All lines in Denmark except for Copenhagen Metro	DK1320100008	26-01-2015
25 05 00 53	DSB	Infrastructure: <ul style="list-style-type: none"> Owned by DSB Owned by DSB Ejendomsudvikling A/S Owned by DSB S-tog (Infrastructure primarily used for travel to and from workshops and staging areas and by goods operators). Including the agreed sharing of tracks and switches between DSB and Banestyrelsen under profit sharing businesses rev. 1 of 08.01.2007.	DK1320100003	14-07-2015
26 15 90 40	Lokalbanen A/S	Infrastructure: <ul style="list-style-type: none"> Hillerød-Hundested Hillerød-Gilleleje/Tisvildeleje Helsingør-Gilleleje Hillerød-Snekkersten Jægersborg-Nærum And the track area of Lokalbanen A/S workshop at Hillerød station	DK1320100001	20-04-2015
21 26 38 34	Metro service A/S	Infrastructure: <ul style="list-style-type: none"> Copenhagen Metro: stage 1, 2 and 3 	DK1320080002	31.12.2013
64 64 00 11	Midtjyske Jernbaner A/S	Infrastructure: <ul style="list-style-type: none"> Vemb – Lemvig – Thyborøn Odder - Århus H 	DK1320080001	09.10.2013
29 81 89 83	Nordjyske Jernbaner A/S	Infrastructure: <ul style="list-style-type: none"> Hirtshals – Hjørring (Hjørring station only own platform tracks and workshop area) 	DK1320090007	17-12-2014

Bus. Reg. No	Infrastructure manager	Scope	Certificate No	Valid until
		<ul style="list-style-type: none"> Skagen (including dock railway) – Frederikshavn (excluding station) Both lines including safety and remote control equipment 		
57 34 47 17	Regionstog A/S	<p>Infrastructure:</p> <ul style="list-style-type: none"> Nakskov – Nykøbing Falster Maribo – Bandholm Køge – Hårlev – Rødvig Hårlev – Fakse Ladeplads Tølløse – Slagelse <p>Nykøbing Sjælland - Holbæk</p>	DK1320100002	31-12-2013
24 24 67 87	Øresundsbro Konsortiet I/S	The infrastructure managed by Øresundsbro Konsortiet on the Øresund link's Danish section, including the Danish system section from km 12.854 to the system border at km 18.235 and the Swedish system section from the system border at km 18.235 to the territorial border at km 23.6.	DK1320090004	30-06-2014

Annex 2: Relations between different parties involved in the railways

The Danish Transport Authority is an authority which falls under the auspices of the Ministry of Transport. With two mergers between different authorities in 2010, it now has responsibilities and tasks covering railways, roads and aviation.

The Authority deals with a wide range of tasks in the fields of railways, ferries and other public transport, as well as within road transport, automotive technology and in connection with postal legislation. The Authority has nearly 350 employees.

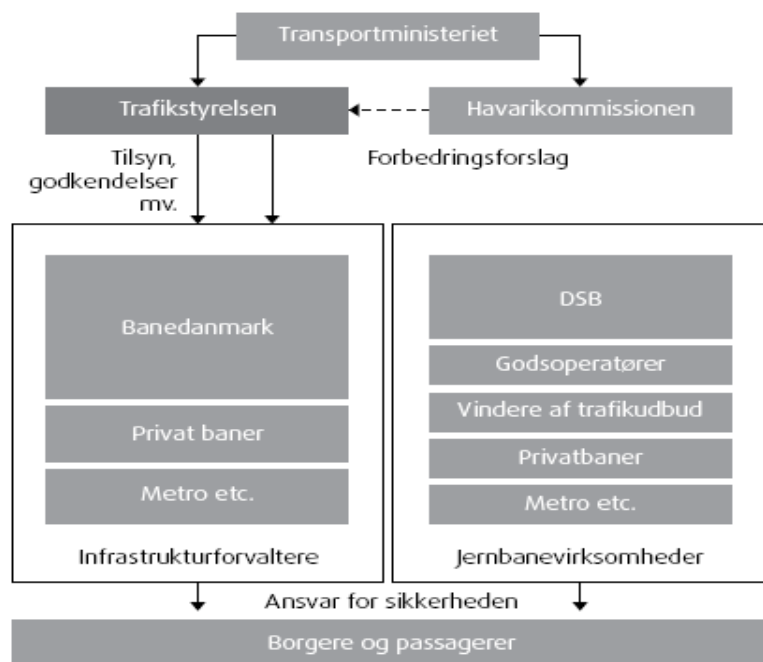
As a railway authority, it is the Danish Transport Authority's task to take care of the rules for safety and interoperability. The Ministry of Transport drafts the general bills.

At the same time, it is the Authority's role to safety-approve infrastructure managers and certify railway undertakings. Employees and technical systems, safety rules, etc. must also be approved by the Authority if related to safety or covered by rules on interoperability.

Railway undertakings and infrastructure managers are responsible for safety. They manage day-to-day operation, as well as the development and maintenance of technical systems.

The Accident Investigation Board is the investigating authority in the event of an accident. It carries out independent investigations and makes recommendations to prevent accidents.

Figure 14. Parties involved in railway safety



DK		EN	
Transportministeriet		Ministry of Transport	
DK	EN	DK	EN
Trafikstyrelsen	Danish Transport Authority	Havarikommisionen	Accident Investigation Board
Tilsyn, godkendelser mv.	Supervision, authorisation, etc.	forbedringsforslag	Suggestions for improvement
Banedanmark	Banedanmark	DSB	DSB
		goodsoperatører	Goods operators
Privat baner	Private lines	Vindere af trafikudbud v	Winners of transport service tenders
Metro etc.	Metro etc.	Metro etc.	Metro etc.
infrastrukturforvaltere	Infrastructure managers	Jernbanevirksomheder	Railway undertakings
DK		EN	
Ansvar for sikkerheden		Responsibility for safety	
Borgere og passagerer		General public and passengers	

The principal players in the railway sector today. Railway undertakings and railway infrastructure managers are each separately responsible for safety, operation etc. in relation to passengers and the public. The Danish Transport Authority deals with authorisations and carries out supervision to check that these players fulfil their responsibilities responsibly. The Ministry of Transport owns Banedanmark and DSB.

Annex 3: Definitions used

Accidents

- *Accident* is understood to mean an unwanted or unintended sudden incident or a specific chain of such incidents that has harmful consequences. Accidents are broken down into the following categories: train collision, train derailments, accidents at level crossings, personal injury caused by moving rolling stock, fire and other⁴².
- *Train collision* is understood to mean a train collision, including a collision with obstacles within the structural gauge limits (collision), a head-on collision between two trains or a collision between the front and rear of two trains or a sideways collision between part of one train and part of another train, or a train in collision with shunting rolling stock or objects that are fixed in place or are temporarily on or near the track, except at level crossings, if the objects have been lost by crossing vehicles or persons.
- *Derailment* is understood to mean any incident in which at least one of the train's wheels comes off the rails.
- *Accidents at level crossings* is understood to mean accidents at level crossings involving at least one railway vehicle and one or more crossing vehicles, other crossing users, e.g. pedestrians, or objects temporarily on or near the track if these have been lost by crossing vehicles or users.
- *Personal injury caused by moving rolling stock* is understood to mean injury to one or more persons who are either hit by a railway vehicle or by an object attached to or which has been dislodged from the vehicle. The definition also covers persons who fall out of railway vehicles, and persons who fall or are hit by loose objects while travelling in railway vehicles.
- *Fire in rolling stock* is understood to mean fires and explosions, including of loads, under way between a departure station and a destination, including while stopped at the departure station, the destination or while stopped on the way and while shunting.
- *Other types of accident* is understood to mean all accidents other than train collisions, derailments, accidents at level crossings, personal injury caused by moving rolling stock and fire in rolling stock.

Significant accidents

- *Significant accidents* is understood to mean any accident involving at least one moving railway vehicle and which results in at least one person being killed or seriously injured, or in the extensive destruction of rolling stock, track or other plant or the environment or in extensive disruption to traffic. Accidents in workshops, warehouses and depots are excluded.⁴³

⁴² §3 of Exec. Order No 575 of 25 May 2012 on the reporting of data on accidents, precursors to accidents and safety irregularities, etc. to the Danish Transport Authority.

⁴³ Commission Directive 2009/149/EC of 27 November 2009, Annex 1. Implemented by Exec. Order No 1293 of 23/11/2010.

– *Extensive destruction of rolling stock, track or other plant or the environment* is understood to mean destruction valued at at least DKK 1.2 million.

– *Extensive disruption to traffic* is understood to mean that train traffic is at a standstill for six hours or more on a main line.

Suicide

– *Suicide* is understood to mean an action by which a person intentionally takes his own life, and which is recorded as such by the competent authorities.

Dangerous goods

– *Dangerous goods* is understood to mean substances and objects that may not be transported under the Regulation concerning the International Carriage of Dangerous Goods by Rail (RID), or may only be transported under conditions defined in the RID.

– *Accidents in connection with the transport of dangerous goods* is understood to mean any accident or incident that must be reported in accordance with Chapter 1.8.5 of the RID or the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

Precursors to accidents

– *Precursors to accidents* is understood to mean broken rails, track buckles, signal failure, passing a stop signal, broken wheels and axles on rolling stock in operation.⁴⁴

– *Broken rails* is understood to mean any rail that has broken into two or more pieces, or any rail from which a piece of metal has broken away, leaving a hole more than 50 mm long and more than 10 mm deep on the running surface.

– *Track buckles* is understood to mean a fault in the continuum or geometry of the track which for safety reasons requires the immediate closure of the track or a reduction of the permissible speed.

– *Signal failure* is understood to mean any failure in the signal system, either on the infrastructure or on the rolling stock, that results in a less restrictive signal than required.

– *Passing a stop signal* is understood to mean any situation where any part of the train travels further than allowed.

– *Broken wheels and axles* is understood to mean a breakage that affects the key components of the wheel or axle, thereby creating a risk of accident in the form of derailment or collision.

Personal injury

Personal injury is recorded according to five different types of person (passenger, employee, level-crossing users, unauthorised persons on railway property and others) and according to the seriousness of the injury (fatality, serious injury and less serious injury).

⁴⁴ §3 para.2 of Exec. Order No 575 of 25 May 2012 on the reporting of data on accidents, precursors to accidents and safety irregularities, etc. to the Danish Transport Authority.

- *Passenger* is understood to mean anyone who undertakes a journey by railway, excluding train staff. In accident statistics this also includes persons who attempt to board or alight from a moving train.
- *Staff, including contract staff* is understood to mean any person employed in connection with a railway and who is at work at the time of the accident. The definition includes train staff and persons operating rolling stock and infrastructure plant.
- *Level-crossing users* is understood to mean anyone who uses a level crossing to cross the railway with the help of a vehicle or on foot.
- *Persons on railway property without permission* is understood to mean all persons on railway property where this is prohibited, excluding level-crossing users.
- *Other persons* is understood to mean all persons not covered by the definitions of passenger, staff, level-crossing users or persons on railway property without permission.
- *Fatality* is understood to mean a person who is killed immediately or dies within 30 days as a result of an accident. Suicides are not included.
- *Seriously injured person* is understood to mean a person who has been admitted to hospital for more than 24 hours as a result of an accident. Attempted suicides are not included.
- *Less seriously injured person* is understood to mean a person who has suffered injury. Deaths and serious injuries are not included.

Costs

- *Costs of environmental damage* is understood to mean costs that must be met by railway undertakings and infrastructure managers, estimated on the basis of their experience, in returning a damaged area to its condition before the railway accident.
- *Costs of material damage to rolling stock or infrastructure* is understood to mean the costs of purchasing new rolling stock or constructing new infrastructure with the same functionality and technical parameters as the rolling stock or infrastructure damaged in the accident, as well as the costs of returning rolling stock or infrastructure that can be repaired to its condition prior to the accident. Both parts must be estimated by the railway undertakings and infrastructure managers on the basis of their experience. Costs of leasing rolling stock to replace damaged vehicles that are not available are also covered by this definition.

Level crossings

- *Level crossing* is understood to mean any level crossing between the railway and roads and paths that is recognised by the railway infrastructure manager, and which is open to general traffic. Footbridges and walkways over tracks that may only be used by employees are not covered by this definition⁴⁵.

⁴⁵ Exec. Order No 1142 of 07/12/2011. Executive Order on safety measures at level crossings managed by Banedanmark that are open to general traffic.

– *Level crossing with automatic protection or user-side warning signal system* is understood to mean a level crossing where the protection or warning signal is activated by the approaching train.

– *Track-side protection* is understood to mean a signal or other operational safety system that only allows trains to pass if the level crossing is protected on the user side, and no-one is about to cross; this is checked by means of monitoring or detection of obstacles.

– *Level crossing with manually operated protection or warning signal system* is understood to mean a level crossing where the protection or warning signal system is activated manually and is not linked to a railway signal that only allows the train to pass if the protection or warning signal system has been activated.

– *Unprotected level crossing* is understood to mean a level crossing where no form of warning system or protection is activated if users cannot use the crossing safely.

Annex 4: Safety indicators for 2011

Data

The statistical data in the annex were recorded by railway undertakings and railway infrastructure managers in the period 2007-2011. Some of the figures in the report are based on data that go back to 1999, but data for private and local lines is only available to a limited extent before 2003.

Data are reported in accordance with the Reporting Executive Order (Order No 575 of 25 May 2010). The definitions used can be found in annex 2 and are described in greater detail in the guidelines on the reporting of accidents, precursors to accidents and safety irregularities.

Some categories of data contain relatively small quantities of data, and can give rise to big fluctuations in the statistics from year to year. This is why five-year cumulative averages are calculated for comparison with annual figures.

Calculation methods and definitions have changed in the course of the last five-year period, and the statistical information may be subject to a certain degree of inaccuracy. The tables use () to indicate calculations of five-year averages where data are unreliable.

Current overview of national safety indicators

Table 10. Safety indicators for 2011

Indicators	Total in 2011	Total in 2011/million train-km	5-year average/million train-km
Significant accidents	20	0.24	0.27
Minor accidents	326	3.92	7.60
Precursors to accidents	538	6.47	7.97
Safety irregularities	2395	28.81	32.10
Persons killed	6	0.07	0.12
Serious injuries	13	0.16	0.14
Suicides	26	0.31	0.34

Safety indicators for the railways. Significant accidents are recorded in situations giving rise to serious personal injuries, damage in excess of DKK 1.2 million or significant delays to traffic. The figures for persons killed exclude suicides.

Table 11. Indicators relating to significant accidents

Significant accidents	Total in 2011	Total in 2011/million train-km	5-year average/million train-km
Collision of trains	1	0.01	0.01
Derailment	1	0.01	0.01
Level-crossing accidents	2	0.02	0.06
Accidents involving persons	14	0.17	0.16
Fire	1	0.01	0.00
Other	1	0.01	0.03

Significant accidents are recorded in situations giving rise to serious personal injuries or material damage in excess of DKK 1.2 million. The total number of accidents in 2011 was 20.

Table 12. Indicators relating to persons killed

Persons killed	Total in 2011	Total in 2011/million train-km	5-year average/million train-km
Passengers	0	0.00	0.00*
Staff	0	0.00	0.00*
Level-crossing users	0	0.00	0.04
Persons on railway property without permission	6	0.07	0.08
Other	0	0.00	0.00*

The figures for persons killed do not include suicides. *zero indicates that the five-year average is extremely small (< 0.01).

Table 13. Indicators relating to serious injuries

Serious injuries	Total in 2011	Total in 2011/million train-km	5-year average/million train-km
Passengers	3	0.04	0.04
Staff	3	0.04	0.02
Level-crossing users	3	0.04	0.03
Persons on railway property without permission	3	0.04	0.05
Other	1	0.01	0.00*

The figures for serious injuries do not include attempted suicides. * zero indicates that the five-year average is extremely small (< 0.01).

Table 14. Indicators relating to minor accidents

Minor accidents	Total in 2011	Total in 2011/ million train-km	5-year average/million train-km
Collision of trains	94	1.13	4.42
Derailment	22	0.26	0.66
Level-crossing accidents	6	0.07	0.20
Accidents involving persons	70	0.84	0.60
Fire	70	0.84	1.16
Accidents involving spillage of dangerous goods	2	0.02	0.01
Other accidents	64	0.77	0.56

Minor accidents not causing serious injuries and where any material damage is below DKK 1.2 million.

Table 15. Indicators relating to precursors to accidents

Precursors to accidents	Total in 2011	Total in 2011/ million train-km	5-year average/million train-km
Broken rails	28	0.34	0.40
Track buckles	1	0.01	0.05
Signal failure	48	0.58	1.15
Signals passed at danger	446	5.36	6.17
Broken wheels and axles	15	0.18	0.20
Incidents involving dangerous goods	1	0.01	0.01

Figures for precursors to accidents with no harmful consequences.

Table 16. Indicators in connection with safety irregularities

Safety irregularities	Total in 2011	Total in 2011/ million train-km	5-year average/million train-km
Risk of collision with person	327	3.93	3.91
Fault in braking system	45	0.54	0.68
Irregularity at level crossing	105	1.26	1.38
Deformation of tracks	11	0.13	0.16
Signalling error	189	2.27	4.39
Gauge conditions	143	1.72	2.04
Vandalism	191	2.30	4.04
Other	1384	16.65	15.50

Figures for safety irregularities with no harmful consequences.

Annex 5: Certification, safety authorisation and supervision

When issuing licences to railway undertakings and infrastructure managers, the Danish Transport Authority must check compliance with a number of basic economic, insurance and legal conditions. The Authority's supervision of licences is usually based on documents. The undertaking submits documentation showing compliance with the current requirements. Relevant authorities such as the Danish tax authority, municipalities and the National Police Board are consulted, and the submitted documentation is assessed.

The Danish Transport Authority did not issue any new licences to either railway undertakings or railway infrastructure managers in 2011.

One railway undertaking's continued fulfilment of the conditions for holding a licence was reassessed. The Danish Transport Authority also carried out close economic supervision of another undertaking to ensure that it still satisfies the requirements of the law on the size of equity capital. The Danish Transport Authority also received statements concerning changes in directors and changes to the boards respectively.

The Danish Transport Authority has received insurance documentation from all the railway undertakings and infrastructure managers (apart from those infrastructure managers covered by the state self-insurance scheme).

Safety certificates

Table 17. Safety certificates part A under Directive 2004/49/EC

	New	Updated/ amended	Renewed	Issued previously
Number of valid safety certificates part A issued to railway undertakings in 2011	0	0	0	12

Figures for safety certificates part A in 2011.

Table 18. Safety certificates part B under Directive 2004/49/EC

		New	Updated/ amended	Renewed	Issued previously
Number of valid safety certificates part B issued to railway undertakings in 2011	Registered in Denmark	0	1	0	11
	Registered in other Member States	0	0	0	3

Figures for safety certificates part B in 2011.

Table 19. Applications for safety certificate part A (broken down into accepted (a), rejected (r) and pending (p))

			A	R	P
Number of applications for safety certificates part A submitted by railway undertakings in 2011	Registered in Denmark	New certificates	0	0	0
		Updated/amended certificates	0	0	0
		Renewed certificates	0	0	0
	Registered in other Member States	New certificates	0	0	0
		Updated/amended certificates	0	0	0
		Renewed certificates	0	0	0

Applications for safety certificate part A in 2011. Note that a safety certificate part A issued in 2011 may be the outcome of an application in a previous year. A: Application accepted, certificate issued. R: Application rejected, no certificate issued. P: case pending, no certificate issued as yet.

Table 20. Applications for safety certificate part B (broken down into accepted (a), rejected (r) and pending (p))

			A	R	P
Number of applications for safety certificates part B submitted by railway undertakings in 2011	Registered in Denmark	New certificates	0	0	0
		Updated/amended certificates	0	0	0
		Renewed certificates	0	0	0
	Registered in other Member States	New certificates	0	0	1
		Updated/amended certificates	0	0	0
		Renewed certificates	0	0	0

Applications for safety certificate part B in 2011. Note that a safety certificate part B issued in 2011 may be the outcome of an application in a previous year.

Safety authorisations

Table 21. Safety authorisations under Directive 2004/49/EC

	New	Updated/ amended	Renewed	Issued previously
Number of valid safety authorisations issued to infrastructure managers by the Danish Transport Authority in 2011	0	0	0	9

Number of safety authorisations in 2011.

Table 22. Safety authorisations (broken down into accepted (A), rejected (R) and pending (P))

		A	R	P
Number of applications for safety authorisations submitted to the Danish Transport authority by infrastructure managers in 2011	New certificates	0	0	1
	Updated/amended certificates	0	0	0
	Renewed certificates	0	0	0

Number of safety authorisations in 2011 broken down in A: application accepted, certificate issued.
R: application rejected, no certificate issued. P: case pending, no certificate issued as yet.

Annex 6: Authorisation of rolling stock

Table 23. Authorisation of rolling stock in 2011

Authorisations	Number
Traction units, locomotives and trainsets	27
Passenger wagons	0
Goods wagons	0
Special vehicles	44
Transport and trial runs	41
Safety rules	37
Total	149

An authorisation can cover several vehicles.

Annex 7: Amendments to legislation and regulations

Table 24. Amendments to legislation and regulations in 2011. RP=Railways Provision;
EO=Executive Order

Legislation	Instru ment	Date of entry into force	New or amended legislation	Comments
Provisions on modules for procedures for assessing compliance, suitability for use and EC verification to be used in Technical Specifications for Interoperability (TSIs)	RP 4-1-2011	8 February 2011	New RP	<p>The RP implement the Commission's decision on the various procedures for assessing the conformity of components or for EC verification of a sub-system.</p> <p>The Commission's decision contains common procedures for all TSIs, and these must be applied by the notified body (NoBo) when assessing whether TSI requirements have been met in a specific project.</p> <p>The procedures apply to all TSIs that come into effect on or after 1 January 2011. It also follows from this that the procedures must be applied to those TSIs that are revised after 1 January 2011.</p>
Provisions for operating and traffic management rules on the railways	RP 5-1-2011	1 June 2011	Amending RP	<p>On 21 October 2010 the Commission took a decision concerning amendments to the technical specifications for the sub-system 'Operation and Traffic Management' applicable to conventional and high-speed trains.</p> <p>The Danish Transport Authority has therefore updated the existing RP.</p> <p>The rules must be applied on lines equipped with ERTMS. The rules may be applied on other lines if the operating conditions make this appropriate.</p> <p>This is a technical update of TSI OPE operation and traffic management, which is reflected in the rules for operation and traffic management.</p>

Provisions implementing the Commission's decision amending Decision 2006/920/EC and 2008/231/EC on technical specifications for interoperability applicable to the sub-system 'Operation and Traffic Management' in trans-European conventional and high-speed rail systems	RP 5-2-2011	1 June 2011	Amending RP	<p>The RP implement the Commission's decision on operation and traffic management. This is a technical update of the TSI.</p> <p>The main amendments to the TSI are as follows:</p> <p>The provisions on train drivers in TSI OPE points 4.5. 'Professional qualifications' and 4.7. 'Health and safety provisions' have been removed from TSI OPE and included in the Train Drivers Directive. The provisions of TSI OPE will not in future concern train drivers; they will only apply to other groups of employees with safety-critical functions in cross-border traffic.</p>
Provisions implementing the Commission's decision 2011/274/EU on a technical specification for interoperability applicable to the sub-system Energy in the trans-European conventional rail system	RP 3-1-2011	30 June 2011	New RP	<p>The RP implement the Commission's decision on TSI Energy.</p> <p>The TSI contains requirements on such things as voltage and frequency, energy supply, regenerative braking, power capacity in stationary trains, electricity consumption and overhead contact lines, including compatibility with pantographs.</p> <p>The requirement in the TSI concerning electrified infrastructure or electrically powered rolling stock need not be satisfied in connection with new or upgraded infrastructure and rolling stock that is not electrified or electrically powered.</p>
Provisions implementing the Commission's decision 2011/275/EU on a technical specification for interoperability applicable to the sub-system Infrastructure in the trans-European conventional rail system	RP 3-2-2011	30 June 2011	New RP	<p>The RP implement the Commission's decision on TSI Infrastructure.</p> <p>Among other things, the TSI imposes requirements on track gauge and axle load, fitness for particular train lengths and speeds, switches and crossings, curves and gradients, service installations for trains, safety and locking systems.</p> <p>The TSI divides the infrastructure into several categories of line, including TEN main lines and other TEN (not main) lines. The TSI imposes different requirements on the infrastructure depending on the category of line</p>

Executive Order on the certification of train drivers	Executive Order No 985 of 11 October 2011	29 October 2011	Amending EO	<p>The revision of the Train Drivers Order is intended to prepare Danish legislation for the new EU rules.</p> <p>The first deadline was 29 October 2011 for the issuing of new licences and certificates to train drivers involved in cross-border traffic.</p> <p>Since the number of such licences and certificates is modest, the Danish Transport Authority has decided to issue all new licences and certificates under the EU requirements.</p> <p>All other licences and certificates will be issued in accordance with the EU's requirements by 29 October 2013, which will mean that the Danish Transport Authority must have issued new EU licences to all train drivers in the course of 2012-13.</p> <p>This also applies to licences for the category of train drivers with A-certificates, who did not previously hold a train driver's licence or certificate.</p>
Executive Order on health requirements on the railways	Executive Order No 986 of 11 October 2011	29 October 2011	Amending EO	<p>The Medical Requirements Order has been amended under new EU rules, including health requirements for train drivers laid down in the Train Drivers Directive and requirements for other staff in the TSI for Operation and Traffic Management (TSI OPE).</p> <p>The main changes to the Health Requirements Order are as follows:</p> <p>Periodisation for health checks for train drivers changed under the Train Drivers Directive, i.e. the intervals for health checks have been changed in relation to previous health requirements.</p> <ul style="list-style-type: none"> • The intervals for health checks for other safety-classified functions have been changed under the TSI for Operation and Traffic Management (TSI OPE) • Tests are being introduced for substances, alcohol, etc. at the first examination, i.e. prior to being taken on. • In the future, the Health Order will not apply to carrying out safety-classified functions on historic lines' own infrastructure. • Health authorisations will be mutually recognised in the EU

Provisions implementing the basic parameters for registers of licences and additional certificates for train drivers	RP 2-1-2011	11 October 2011	New RP	The RP implements the Commission's decision on the basic parameters for registers of licences and additional certificates for train drivers. Meetings on the registers have been held in the industry.
Executive Order regulating compensation and insurance amounts pursuant to the Railways Act	Executive Order No 1029 of 7 November 2011	1 January 2012	New EO	The Order regulates the annual compensation and insurance amounts for railway undertakings' and infrastructure managers' mandatory liability insurance.
Executive Order on the authorisation of railway vehicles	Executive Order No 1030 of 7 November 2011	1 January 2012	Amending EO	<p>As part of the implementation of EU legislation (including the Interoperability Directive and the Commission Regulation on a common safety method for risk evaluation and assessment (CSM-RA) for the railways), there was a need to revise the Vehicles Executive Order.</p> <p>The Order establishes procedures for applying for the authorisation of vehicles, including the issuing of authorisations for being placed into service, type approvals, transport licences and test permits. The new order contains both rules for vehicles covered by the Interoperability Directive and rules for vehicles not covered by the Directive.</p>
Executive Order on authorisations to be placed into service for sub-systems in the rail infrastructure	Executive Order No 1031 of 7 November 2011	1 January 2012	Amending EO	<p>The purpose of the Order is to create a more simple and uniform legislation concerning applications for authorisations to be placed into service. The processes apply the main principles of the Interoperability Directive and the CSM-RA for risk assessment.</p> <p>The main changes in the Order are:</p> <ul style="list-style-type: none"> • Clarification of the division of responsibility between applicant and authority • Application of the main principles of the Interoperability Directive • Application of the main principles of the CSM-RA • Less documentation when applying for authorisation to be placed into service

Executive Order on the registration of railway vehicles	Executive Order No 1071 of 23 November 2011	1 December 2011	Amending EO	<p>The previously applicable order has been updated, as the Commission's decision contains new requirements for the registration of vehicles in the national vehicles register (NVR).</p> <p>The additional information that undertakings must provide consists of the business registration number of whoever is responsible for maintenance, which must be provided for vehicles that have already been registered in the vehicles register. The business registration number of whoever is responsible for maintenance must be given, which clearly identifies the party responsible for maintaining the individual vehicle. This also applies to vehicles registered before the Commission's decision comes into force.</p> <p>The new Commission's decision also contains requirements for additional information in the vehicles register which the Member States must ensure is recorded.</p>
Executive Order on safety measures at level crossings managed by Banedanmark and which are open to general traffic	Executive Order No 1142 of 7 December 2011	1 January 2012	New EO	The Order determines responsibility for the establishment of and amendments to safety measures at level crossings. The Order also contains technical provisions. The Order applies to level crossings managed by Banedanmark and which are open to general traffic.
Executive Order on locomotives and passenger wagons used on the Danish rail network	Executive Order No 1190 of 12 December 2011	1 January 2012	New EO	The Order implements the TSI for the sub-system rolling stock 'locomotives and passenger wagons', which is the first TSI for vehicles. The Order expands the TSI's scope of application to the entire Danish rail network. Among other things, when drafting the TSI, EN norms and UIC standards were taken as a starting point. The TSI therefore to a large extent reflects existing requirements currently applied in the industry.

Executive Order amending the executive order on interoperability in the rail system	Executive Order No 1267 of 13 December 2011	31 December 2011	Amending EO	<p>The amendment of Annexes II, V and VI of the Interoperability Directive specifies the structure of a sub-system and the procedures for the notified and designated bodies in connection with the inspection of TSIs and national rules.</p> <p>Annex II is being amended, since the sub-system train control and signals (control command and signalling) is being divided into 2 separate sub-systems: 'fixed train control and signal equipment' and 'mobile train control and signal equipment'.</p> <p>The annex has been amended because a new point 2 has now been added, which specifies what requirements there are for a declaration when the designated body (DeBo) has to inspect the national rules under Article 17(3) of the Interoperability Directive.</p> <p>In annex VI point 2 there has been an editorial restructuring of the text and a precision of the concept 'intermediate statement verifications (ISV)', which was previously simply referred to as 'provision declaration of verification'.</p> <p>The annex has also been amended because a new point 3 has been added, specifying which verification procedure must be used in situations where national regulations apply, see the explanation above of the amendment of Annex V, the verification procedure must be carried out by the designated body (DeBo).</p>
Executive Order on the requirement for notified bodies for the railways	Executive Order No 1195 of 13 December 2011	31 December 2011	New EO	<p>The Order establishes a requirement of accreditation if one wishes to be chosen and notified as a notified body (NOBO) under the Interoperability Directive.</p> <p>The Order requires undertakings that have already been chosen and notified as notified bodies to obtain accreditation within 1 year of the Order coming into force.</p>

The summary shows where amendments have been made to acts or regulations with reference to the relevant instrument and a short description of what the amendment involved.

Safety on the railways in Denmark in 2011 remains high. The number of fatalities and people injured in collisions is stable in relation to previous years, while happily no-one was killed in accidents at level crossings in 2011.

2011 was also the year when undertakings were prepared for the introduction of new EU legislation on safety regulations, the CSM-RA.

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