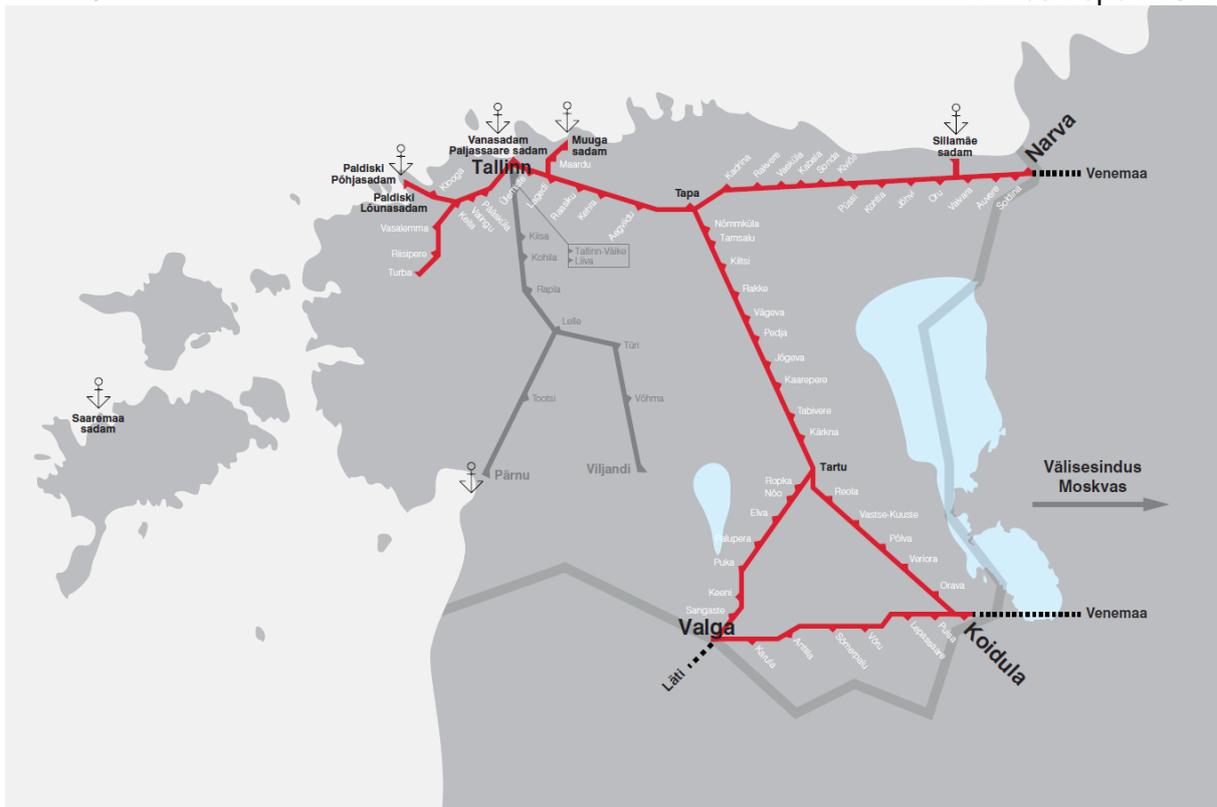




REPUBLIC OF ESTONIA
SAFETY INVESTIGATION BUREAU

Report of the railway accidents
investigated in 2021

Tallinn 2022



Estonian Railways Ltd and Edelaraudtee Infrastructure Ltd infrastructure

(Source: Estonian Railways Ltd)



Preface to the report

The new version of the Railways Act approved by the Riigikogu came into force in Estonia on 31 March 2004. Thus the provisions of the Railway Safety Directive 2004/49/EC were legalised in the Estonian judicial area. On the same day the safety investigation unit of railway accidents was formed as part of the Crisis Regulation Department of the Ministry of Economic Affairs and Communications. With this a legal as well as an organisational basis for conducting safety investigations in the country were set. There was already an investigation unit for aviation accidents at the Crisis Regulation Department and later an investigation unit for maritime accidents was added.

On January 1, 2012, a unified multimodal Safety Investigation Bureau (ESIB) was formed on the basis of the transport accident investigation units of the Crisis Regulation Department. The ESIB conducts safety investigations of maritime, aviation and railway accidents and incidents.

Subsequent changes came into force on 31 October 2020 by which the European Parliament and Council Directive (EC) 2016/798 on railway safety was applied to the Estonian judicial area. In Estonia, occurrences affecting railway safety are accident, serious accident and incident. This list is pursuant to the classification of occurrences affecting railway safety in the Railway Safety Directive. Safety investigations take place independently from all other investigations of the same occurrence. National legislation in line with the Safety Directive has been established for the organisation of safety investigations.

During the reporting year, the intensity of rail traffic started to recover from the negative effects of Covid-19. With the increase in the intensity of railway traffic, the same tendency appears with indicators reflecting safety violations. During the reporting year no serious accidents or incidents took place that required a safety investigation. The ESIB processed all occurrences they were informed about.



Contents

Public railways in the Republic of Estonia	2
PREFACE	3
CONTENTS	4
1 INTRODUCTION TO THE INVESTIGATION BODY	5
1 Legal basis	5
2 Role and aim	10
3 Organisation	13
4 Organisational flow	14
2 INVESTIGATION PROCESSES	17
1 Cases to be investigated	17
2 Institutions involved in investigations	18
3 Investigation process and approach of the Investigation Body	20
3 SAFETY INVESTIGATIONS	24
1 Overview of completed investigations	24
2 Safety Investigations completed and commenced in 2021	24
3 Summary of the safety investigations concluded in 2021	26
4 Comments on investigations	26
5 Accidents and incidents investigated during the past five years (2012-2016)	27
4 RECOMMENDATIONS	29
1 Short review and presentation of recommendations	29



1. Introduction to the Investigation Body

1.1 Legal basis

Independent safety investigations began in Estonia on 31 March 2004 when the European Parliament and Council Directive 2004/49/EC on Railway Safety was applied to the Estonian judicial area. The task of conducting safety investigations from that date was given to the railway investigation unit that was created at the Crisis Regulation Department of the Ministry of Economic Affairs and Communications on the same day.

The European Parliament and Council Directive (EC) 2016/798 of 11 May 2016 regarding railway safety was applied to the Estonian judicial area with amendments to the Railways Act that came into force on 31 October 2020. The new version of the Railways Act specifies the relevant provisions in accordance with the principles of the directive.

For the establishment of the new structural unit of the Ministry of Economic Affairs and Communications, which based on the three modes of transport on the Estonian Safety Investigation Bureau (ESIB) was established 1 January 2012 by making amendments to the Aviation Act, Maritime Safety Act and Railways Act. Each Act listed provides the legal basis and regulates the safety investigations of the relevant field. In addition to its own field the Aviation Act also established the legal basis for the Safety Investigation Bureau in general.

Part 2 "Safety Investigation" of the Railways Act which came into force at the end of 2020 is entirely dedicated to safety investigations of railway accidents, and consists of nine sections (sections 47 - 55).

Section 47 of the Act "Safety Investigation Bureau" establishes that the safety investigations of accidents, serious accidents and incidents are conducted by the ESIB, a structural unit of the Ministry of Economic Affairs and Communications. The ESIB is independent in conducting safety investigations and making any related decisions and is guided only by legal acts and other legislation and any international treaties that are binding in Estonia. There is no supervisory control of the ESIB's investigative activities. To clarify circumstances that require specialist knowledge the ESIB has the right to involve experts and form committees. The official conducting the investigation directs and supervises the experts and committees. Authorities involved in the safety investigation are obligated to provide necessary assistance to the ESIB within their competence. The official conducting the safety investigation must provide his certificate of employment while performing his work duties.



Corresponding laws and regulations have been established for conducting safety investigations in the areas of transport concentrated in the Safety Investigation Bureau on a sector-by-sector basis. Subsection 48 (2) of the Aviation Act provides additional conditions that give the Safety Investigation Bureau greater independence than the other structural units of the Ministry have. Unlike the directors of other structural units of the Ministry, the director of the ESIB is appointed and relieved of its duties by the Government of the Republic on the recommendation of the relevant minister. The director of the ESIB appoints the employees of the ESIB and relieves them of their duties as well as enters into and terminates the employment contracts with them. In addition, the budget of the Safety Investigation Bureau is independent and has been approved by the parliament – the Riigikogu of the Republic of Estonia which in the 2021 State Budget Act was provided with item code 20SE070004.

Section 48 of the Railways Act “Cases affecting railway safety” defines the concept of a serious accident, accident and incident and uses a common notion for them as cases affecting railway safety. The definitions are identical to those presented in Section 3 of the Directive 2016/798. In addition, it is required that the driver involved in a serious accident or accident is prohibited from consuming alcohol, narcotic, psychotropic or psychotoxic substances immediately after the occurrence. At the same time, the railway infrastructure company or owner is obliged to eliminate the consequences of the occurrence and restore railway traffic as soon as possible. Also, he must check the efficiency of the restoration works and, if necessary, implement measures to organise the works better. If necessary, the local government and the state must provide assistance for restoration. The right of the supervisory authority to process the relevance of the reasons for the time taken to restore railway traffic after a traffic interruption lasting more than 12 hours is also stipulated. Reference has been made to the obligation of the railway transport company to provide victim assistance in accordance with Regulation No. 1371/2007 of the European Parliament and of the Council.

Pursuant to Section 49 of the Railways Act “Cases affecting railway safety” railway infrastructure managers or other railway infrastructure possessors and railway undertakings, as well as in the case of having been notified in the process of surveillance activities, the Consumer Protection and Technical Regulatory Authority, immediately must notify the Safety Investigation Bureau of an occurrence affecting railway safety via means of public communication. The same Section also specifies submission of a written notification of an accident and a serious accident with clarified and verified facts within three working days. Additional information about an accident or serious accident is also provided verbally, immediately and in writing within three working days of receiving the information. Additional information for incidents is submitted as a report within three working days if the ESIB requests it. The obligation of the railway undertaking to take all necessary measures to find out



the causes of an occurrence affecting railway safety is stipulated. Subsection 7 of the same Section provides the provision delegating authority for notifying about the occurrences affecting railway safety to enact the Minister's Directive. Pursuant to the provision delegating authority of the Minister of Economic Affairs and Infrastructure Directive No. 83 "Safety Management System, Safety Indicators, Verification of Compliance with Railway Infrastructure, Traffic Management and Safety Requirements, their Reporting, Forms and Deadlines and Notification of Incidents Affecting Railway Safety" entered into force on 12.12.2020. Annex 11 of the Directive provides the format for written notification of a serious accident or an accident. Annex 12 of the Directive provides the format for reporting an incident.

Section 50 of the Railways Act "Initiation of a safety Investigation" provides the obligation of the Safety Investigation Bureau to immediately initiate a safety investigation in the case of a serious accident. In order to initiate a safety investigation in other cases, the conditions for making a discretionary decision have been legalized. The same section allows a decision to be made within 2 months of the occurrence of an accident and incident to initiate a safety investigation. The principal legal aim of the safety investigation is to determine whether the occurrence affecting railway safety was caused by an action, inaction, an event, a circumstance or a combination thereof and propose recommendation to prevent such occurrence in the future and to improve railway safety.

Section 51 "Proceedings of a Safety Investigation" establishes the obligation by railway infrastructure managers and third persons to provide any relevant information they hold when requested by the ESIB. The obligation of the railway undertaking to submit to the ESIB the materials collected on all serious accidents and accidents is stipulated. The materials about an incident are presented by the railway undertaking if ESIB demands it. The Safety Investigation Bureau organises the investigation of the scene within the shortest possible time. The safety investigation is conducted as publicly as possible with the parties being given the opportunity to provide explanations. Subsection 6 of the same Section provides the provision delegating authority to establish the format for safety investigations by the Minister's Directive.

Section 52 of the Act "Procedural rights of the Safety Investigation Bureau" stipulates the rights of the official conducting the safety investigation to access information, equipment, recordings, results of expert examinations, other materials of investigations of the same case. In the event of non-cooperation, the official conducting the safety investigation may issue a precept to the obligated person to ensure compliance with the obligations related to the safety investigation activities. In the event of non-compliance with the precept the official conducting the safety investigation has a right to impose a penalty charge pursuant to the same Section.



Railways Act Section 53 “Safety Alert” provides the conditions for issuing a safety alert during a safety investigation. The alert may be issued when circumstances and facts come to light during the investigation of the case that have significance to more than one railway infrastructure manager or railway undertaking or one or more European Union member states. When issuing the alert, the ESIB assesses the determined circumstances affecting safety of the relevant rolling stock, railway infrastructure installations, railway traffic regulation, maintenance arrangements, handling processes and technical and legal guidelines. The safety alert includes only facts and descriptions but no recommendations or assessments. The safety alert is issued to those concerned and the European Union Agency for Railways.

Section 54 of the Railways Act “Cooperation with the safety investigation and safety authorities of other countries” provides cooperation for the organisation of safety investigations into a case affecting railway safety at a border facility, for the involvement of the investigative bodies of another Member State and the European Union Agency for Railways, as well as for exchange of information and expertise, exchange of experience and participation in the expert assessment programme. Cooperation with third countries is provided based on a special agreement.

The ESIB compiles different reports in the course of its work pursuant to Section 55 of the Railways Act “Reports Relating to a Safety Investigation”. The ESIB must complete a written report of a safety investigation in the shortest possible time and publish it immediately but no later than 12 months after the occurrence. The safety investigation report does not assess anyone’s guilt of responsibility. The safety investigation report is forwarded to all parties involved such as the railway infrastructure managers, railway undertakings, the safety investigation bodies of other European Union member states, victims and their families, owners and manufacturers of damaged property, Rescue Board, representatives of the employees and passengers and the European Union Agency for Railways. The requirements of the Commission’s implementing regulation 2020/572 for the content of the report are listed as a summary. The same section provides the obligation of the Consumer Protection and Technical Regulatory Authority, other authorities, businesses or organisations that were subject to the ESIB’s recommendations, to submit a report to the ESIB annually by the 01 April about the measures taken or planned based on the recommendations. Pursuant to the same Section the Safety Investigation Bureau publishes an annual report on the cases investigated in the previous year, the recommendations, and proceedings, on its website by 30 September each year. A copy of the annual report is forwarded to the European Union Agency for Railways.

In order to specify the rights and obligations established by law the Statutes of the Safety Investigation Bureau have been established and this regulates the ESIB’s relationships, connections, tasks and obligations. The Statutes specifies the ESIB’s



accountability to the Secretary General and the Minister regarding organisation of work and other matters. Legislation of the Ministry of Economic Affairs and Communications, the Secretary General's Directives, internal procedure rules, operations procedures, current statutes, and other legislation are binding in the organisation of the Safety Investigation Bureau's work. The Ministry ensures the functioning of the ESIB in organisational and general matters. The Minister approves the list of employees for the Safety Investigation Bureau. On the proposal of the Director of the Safety Investigation Bureau, the duties of the employees are determined in the job descriptions approved by the Secretary General of the Ministry. Each ESIB employee is responsible for the legality, accuracy, and timely completion of their duties. The Safety Investigation Bureau Statutes form a part of the legal framework affecting the work of railway safety investigations and it has been approved by a Minister of Economic Affairs and Communications Directive.

The Safety Investigation Bureau is one of the structural units of the Ministry of Economic Affairs and Communications. As it performs specific duties it has been granted with special rights and independence. The ESIB is functionally independent of the safety authority and the railway regulating authorities. The ESIB's organisation, legal structure and decision-making process are independent of all parties whose interests might conflict with the duties assigned to it, including railway infrastructure managers, railway undertakings, the charging body, the capacity allocation body and the conformity assessment body. While investigating, the official responsible for railway accident safety investigations performs the tasks of the investigator-in-charge. Nationally the ESIB's independence is pursuant to Article 22 of the Directive on Railway Safety 2016/798.

Pursuant to the Directive 2016/798 requirements the Ministry of Economic Affairs and Communications Directive No 72 "Safety Investigation Procedures" has been established for the organisation of safety investigations. The safety investigation procedures are common to all three ESIB's areas of transport. Pursuant to the Directive the safety investigation ascertains the causes of the occurrences. During the safety investigation recommendations are developed and presented in the report with a view of preventing similar occurrences in the future. The Directive determines areas of a safety investigation according to modes of transport and its coordinator. It stipulates the procedures for commencing a safety investigation and notification of those involved. Depending on the complexity and workload associated with the occurrence, formation of a safety investigation committee is provided. The Directive establishes the procedures for a safety investigation and the tasks of the investigator-in-charge, issuing a safety alert, the format, signing, confirmation and publication of the safety investigation report, completing the safety investigation, proceedings of the safety recommendations, if necessary, the reopening of the safety investigation and procedures for registration of the cases being investigated. The Directive contains annexes of which Annex 3 provides the format "Report to the Safety Investigation Bureau on the action taken or planned in response to a recommendation in an



accident, serious accident or incident safety investigation report". The safety investigation report is prepared in accordance with the European Commission Implementing Regulation 2020/572 on the reporting structure to be followed when compiling investigation reports on railway accidents or incidents.

1.2 Role and aim

The Safety Investigation Bureau is a link in the transport network and its role in increasing traffic safety is defined by performing safety investigations of individual cases. The purpose and task of each individual safety investigation of an accident or incident is to determine the circumstances and causes of the occurrences investigated. The safety investigation ascertains the connections between causes and traffic safety. Based on the circumstances, direct and other causes of the case under investigation, a sequence is constructed through logical connections to various circumstances affecting road safety and from there to the formulation of recommendations. Every recommendation is case-specific, and its implementation will help to reduce or even prevent cases with similar causes in the future. The role of safety investigations is realised through reports of safety investigations of maritime-, aviation- and railway accidents. The report completed at the end of the safety investigation presents recommendations for improving traffic safety in the relevant transport sector. Additionally, it is the task of the Safety Investigation Bureau to contribute to the formulation of legislation related to maritime, aviation and railway safety. The ESIB has the authority to make recommendations for additions or amendments to current legislation. Within its areas of activity ESIB participates in formulation and implementation of projects, policies, strategies, development and international projects and plans.

The Safety Investigation Bureau Statutes have defined the following obligations:

- 1) Complete all its tasks in a timely manner and to a high standard.
- 2) Ensure the confidentiality of the professional information pursuant to legislation.
- 3) Utilize any assets and resources that it has been allocated purposefully and rationally.
- 4) Forward to other structural units of the Ministry information that is necessary for them to perform their tasks.

The objective of the safety investigation has been provided by Section 1 of the Minister's Directive "Safety Investigation Procedures". The objective of the safety investigations of accidents and incidents is to determine the causes and make



recommendations and proposals to prevent such occurrences in the future. The purpose of a safety investigation is not to appoint blame or liability.

The Statutes of the Safety Investigation Bureau specify the following rights to fulfil its role and aim:

- 1) Access to documents and information necessary for fulfilling the tasks assigned to the Safety Investigation Bureau from ministers, secretaries general and deputy secretaries general, other departments, government authorities within the jurisdiction of the Ministry and legal persons governed by private law which are subject to the Ministry's founding, membership, stockholder or shareholder rights.
- 2) In accordance with arrangements or agreements, engage employees of other departments in resolving issues within the Safety Investigation Bureau remit.
- 3) Work in cooperation with other government and local authorities and legal persons governed by private law and make recommendations to form committees and working groups within its areas of activity.
- 4) Within limits of its competence, communicate information to other authorities and persons.
- 5) Make proposals for contracts required for fulfilling its tasks.
- 6) Get further training to improve the specialist, occupational or professional level of the Safety Investigation Bureau employees.
- 7) Receive necessary office equipment, resources and literature and technical and information support.

Pursuant to the Statutes, while fulfilling its main objective, The Safety Investigation Bureau

- 1) Works in cooperation with other government departments, local government units, foundations, non-profit associations, business and consumer organisations, businesses, private persons and respective authorities of other countries and international organisations.
- 2) Represents the state in the international organisations related to its areas of activity in agreement with the Ministry.
- 3) Takes part in fulfilling any duties of the Republic of Estonia pursuant to the international agreements relating to the ESIB areas of activity.
- 4) Prepares the draft budget for ESIB and the report on the execution of the previous year's budget.
- 5) Develops and implements its development plan and work schedules.
- 6) Monitors, analyses and assesses the situation in its areas of activity and informs The Aviation Authority, Consumer Protection and Technical Regulatory Authority and Estonian Maritime Administration, the Aviation and Maritime



Department and the Roads and Railways Department of the Ministry as well as other authorities and businesses of its findings.

- 7) Performs tests and expert analysis on machinery, engines, equipment, their details and assemblies and other devices to assess their compliance with requirements to clarify the circumstances of a case under investigation.
- 8) Makes recommendations and takes decisions within its jurisdiction provided by legislation.
- 9) Ensures the confidentiality of information containing business and technical details and personal data if legislation does not provide that it should be published.
- 10) Implements measures for witness protection.
- 11) Performs the duties assigned by legislation as a chief or authorised processor of the database of cases investigated.
- 12) Preserves the items, equipment, assemblies, and details in its possession that are relevant to ascertaining the causes of the occurrence.
- 13) Organises information days about safety and development activities.
- 14) Possesses, uses, and disposes of public property in its possession in cases provided by and in accordance with legislation.
- 15) Advises individuals in matters relating to the Safety Investigation Bureau's areas of activity.
- 16) Performs other tasks assigned by legislation.

Section 52 (1) of the Railways Act provides that the official conducting the safety investigation has the right to

- 1) Immediate access to the rolling stock, railway infrastructure and traffic control and signalling devices involved in an accident, serious accident, or incident.
- 2) Restrict unauthorised access to the scene of the accident and prohibit handling, removing, or destroying items from the scene of the accident.
- 3) Ensure immediate inventory of all evidence and controlled removal of the wreck, rolling stock, infrastructure equipment or components for investigation or analysis.
- 4) Immediate access to the on-board and other recording equipment and their recordings and to subject them to their control.
- 5) Immediately receive into their disposal autopsy reports of the casualties and the results of the analysis of any samples taken from the deceased.
- 6) Question witnesses and persons who might have important information regarding the safety investigation and demand confirmation or provision of information necessary for the safety investigation.
- 7) Access to all relevant information and documents independently or in cooperation with the authority conducting the preliminary criminal investigation.



- 8) Immediate access to the results of an investigation of a person connected to the case.
- 9) Have access to the relevant information and documents held by the Infrastructure Manager involved in the occurrence, the entity in charge of maintenance and the Consumer Protection and Technical Regulatory Authority.

1.3 Organisation

The Ministry of Economic Affairs and Communications consists of many structural units, one of which the Safety Investigation Bureau. The ESIB is located in the same building as other structural units of the Ministry but on a separate floor. In order to perform specific tasks, a corresponding special status has been granted to the ESIB. In order to ensure the special status in practice, the ESIB officials have their workplaces in offices, while other officials of the Ministry mostly work in an open office. Legally the ESIB's special status has been guaranteed by relevant articles of the Aviation Act, Maritime Safety Act and Railways Act. The ESIB utilises other departments' competencies and works in cooperation with them but maintains complete independence in decisions relating to the requirement of cooperation and the extent of utilising of their competencies. Other structural units of the Ministry have the role of providing ancillary services to the ESIB. The ESIB's work schedule forms a part of the Ministry's work schedule and it reflects its main activities.

The Safety Investigation Bureau has its own logo, letterhead, website, and an independent budget that has been approved by the Parliament. All other departments use the Ministry's relevant general attributes. An ESIB official has a certificate of employment. The certificate of employment enables its carrier to exercise the special rights granted to him by legislation while carrying out his official tasks. The certificate of employment can be used as a form of identification and includes a brief list of the objects to which it grants access as well its European Union and national legal bases. The certificate of employment of a railway accidents investigator is valid until 1 February 2022.

The Safety Investigation Bureau's work is led by a director. There are three officials working under him, an aviation accident investigation expert, a chief specialist in marine accident investigation and a chief specialist in railway accident investigation. In 2021 an additional working committee of officials was formed whose task is to give an initial assessment of the circumstances of the sinking of the passenger ferry "Estonia" in 1994.

Only the Safety Investigation Bureau has the right to make the decision whether to initiate a safety investigation of an accident, serious accident, or an incident. The



safety investigation must be conducted within 12 months during which an investigation report must also be completed. The report is signed by all members of the committee or in the absence thereof, the investigator-in-charge who conducted the investigation. The report is signed off by the director of the ESIB. The report is then forwarded to all relevant parties and published on the ESIB website. An interim report is published after 12 months if during this time the safety investigation has not been completed.

1.4 Organisational flow

The Safety Investigation Bureau is an organic part of the Ministry of Economic Affairs and Communications. The Safety Investigation Bureau is the only structural unit within the Ministry that does not bear the name of a department. Depending on the size the departments may be divided into services. The building that houses the Ministry of Economic Affairs and Communications is also home to several other ministries which are the Ministry of Finance, Ministry of Justice and Ministry of Social Affairs. In the interest of rational financial costs and work organisation, they share some of the departments such as the HR department and a clerical office.

The ESIB has a small number of officials and is therefore not divided into smaller structural units. The ESIB fulfils tasks requiring special rights so therefore is different and legally more independent than other departments. In 2021, the Government of the Republic decided to give the Safety Investigation Bureau a temporary task of conducting a preliminary assessment of the circumstances of the sinking of the passenger ferry "Estonia" in 1994, as a result of which it will be decided whether to restart the investigation of the case. The Government of the Republic allocated separate financial resources, which are not part of the ESIB's budget, to form a working group on the sinking of "Estonia". For the preliminary assessment of the fate of "Estonia", 8 specialists, who are not civil servants, working on a fixed-term employment contract, have been employed. Their work is separate from the officials conducting the safety investigation.

The Safety Investigation Bureau's work is managed by the director. Officials who work at the ESIB are permanent staff. Each official is responsible for conducting safety investigation of the specific area of transport assigned to them.

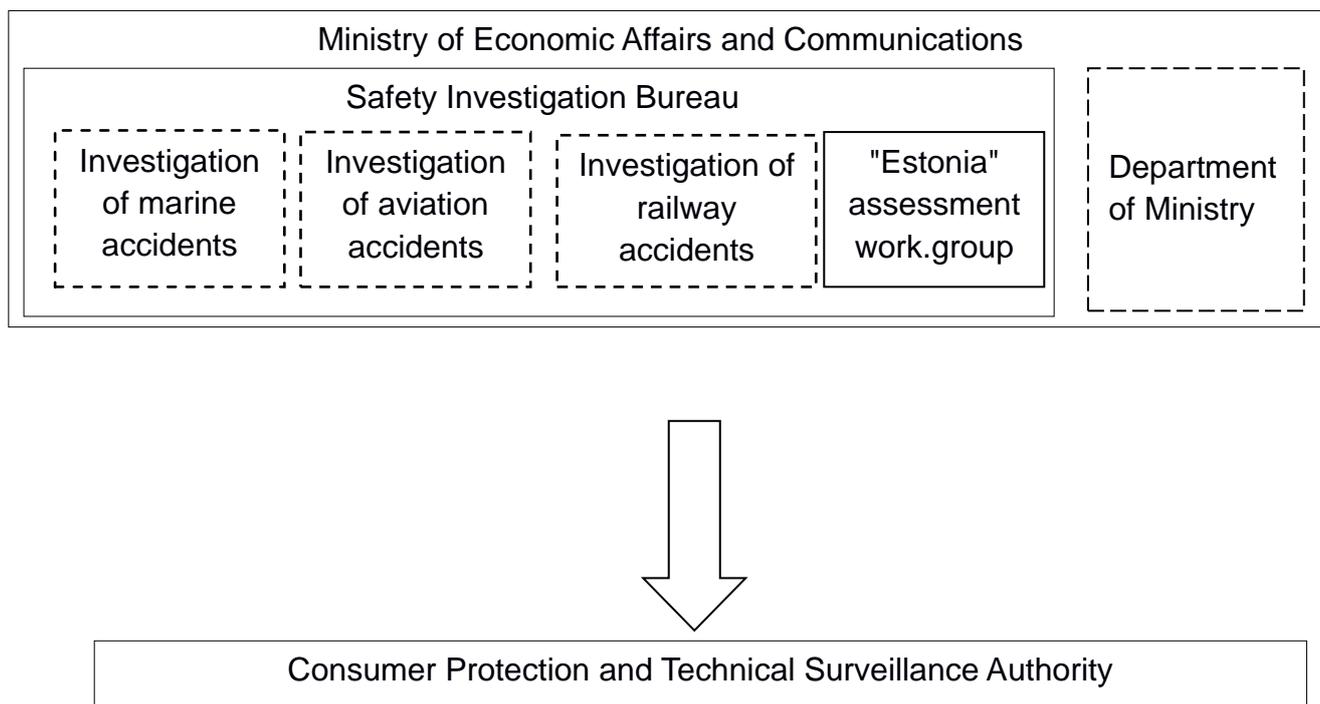


Figure 1 The Safety Investigation Bureau in the organisational structure of the Ministry

The title of each official contains the name of the transport sector within which they are responsible for conducting safety investigations. An official is independent in conducting safety investigations within his field and is responsible for the accurate, lawful, and timely completion of the duties. Officials of the other sectors of transport may assist their colleague in their investigation if necessary. All officials can be substituted by a colleague for a limited period during extended absences. The substitution is documented in digital document management. Upon their return, the official shall receive all relevant information in order to continue and complete the work.

Only the Safety Investigation Bureau has the right to conduct safety investigations in Estonia. An ESIB safety investigation is independent of any other investigation or procedures of a given case that might be taking place in parallel. The safety investigation is a completely independent process. The independence of the safety investigation must be maintained even in the event of possible cooperation with other proceedings of the same case. No other investigation or proceedings conducted by law enforcement, surveillance authorities or other authorities and institutions is related to the safety investigation. Only the ESIB decides the content and results of a safety investigation.



The Consumer Protection and Technical Regulatory Authority (CPTRA) is an independent department in the administrative area of the Ministry of Economic Affairs and Communications with a separate budget, structure, and management. The CPTRA performs the function of the railway safety authority and a regulator in Estonia.

All railway infrastructure managers and rail operators and other undertakings that manage or own other railway infrastructure or rolling stock are independent manufacturing enterprises acting as legal persons. The Ministry of Economic Affairs and Communications is a shareholder for three of the infrastructure managers. These are the railway infrastructure manager Estonian Railways Ltd, railway freight transport undertaking AS Operail and the railway passenger transports undertaking AS Eesti Liinirongid (Elron). The Estonian state does not participate in the ownership of the rest of the infrastructure and freight companies. The relationships between the Safety Investigation Bureau and railway undertakings are regulated by legal acts and directives.



2. Investigation processes

2.1 Cases to be investigated

Mandatory safety investigations of occurrences affecting railway safety by Safety Investigation Bureau are specified by the Railways Act. The list of occurrences affecting railway safety in Estonia is identical to the classification presented in the European Parliament and Council Directive (EC) 2016/798 from 11 May 2016 about railway safety. The terminology concerning railway safety is in accordance with that used in the Directive.

The Safety Investigation Bureau must immediately initiate a safety investigation of a severe or serious accident. The ESIB has a right to initiate a safety investigation if in certain circumstances an accident or incident might have caused a serious accident, as well as a technical failure of a sub-system or component of the inter-European railway system. In making the decision the ESIB must consider the severity of the accident or incident and whether it is part of a series of accidents or incidents that affect the system as a whole and its effect on railway safety. When initiating a safety investigation of an accident or incident the ESIB considers applications submitted by a safety investigation body of another European Union member state, the Consumer Protection and Technical Regulatory Authority and infrastructure managers and railway undertakings.

In addition to law and the Minister's Directive the Safety Investigation Bureau also has an organisational "Safety Investigation manual". Appendix R3 of the manual is called "Characteristics of a railway accident or incident for making the decision to begin a safety investigation or formulating an opinion". It describes the process of making the decision to begin or not to initiate a safety investigation and what will be addressed in the process. At the same time, in addition to the legal bases, a risk-based assessment of the case, which is part of the decision-making process, is provided for. While collecting additional information about the occurrence the ESIB assesses the potential risk of the occurrence, the number of fatalities or injuries, fatality of a person who was known to the railway infrastructure manager to be or work at the railway as a result of the railway infrastructure manager's equipment failure, obvious mistake or oversight of the railwayman as a probable cause of the occurrence, circumstances of similar cases, collision of rolling stock with a group of people, depending on the number of injuries and fatalities.



2.2 Institutions involved in investigations

The Railways Act and the Directive include provisions on the organisation of safety investigations that regulate involvement of institutions or individuals in safety investigations. Involvement and cooperation take place under the direction and supervision of the official conducting the safety investigation who is the investigator-in-charge of the case in hand. The rules and principles of involvement are common and compulsory to all parties. Interference in the safety investigation decision-making process in the event of a potential interest is prohibited by law. The purpose of inclusion is first and foremost to obtain the necessary information about the occurrence and the circumstances surrounding it and to achieve the required standard of safety investigation. Infrastructure managers and third parties are obliged to provide the relevant information they hold when requested by the ESIB. The official conducting the safety investigation has the right to question railway employees and other witnesses involved in the case. The official conducting the safety investigation has a legal right to make a precept to the person under obligation to fulfil the obligations related to the safety investigation. In the event of non-compliance, the official conducting the safety investigation has the right to impose a penalty charge of up to 60 000 euros to a legal person and up to 1500 euros to a natural person.

A cooperation agreement between the Safety Investigation Bureau and the Police and Border Guard Board, the Office of the Prosecutor General, the Rescue Board and the Emergency Centre was signed in the spring of 2015. The cooperation agreement ensures the coordinated activities of the various authorities when fulfilling the duties assigned to them by legislation. Cooperation partners shall mutually ensure that criminal investigations and safety investigations are not interfered with. The Emergency Centre sends an immediate notification to the ESIB email address of any occurrence they have been informed of which will arrive in the inbox of all the ESIB officials. If possible, the Police and Boarder Guard Board and the Rescue Board ensure safeguarding of the scene. If necessary, they will assist the ESIB with the investigation once the rescue operations have finished. All parties allow access to evidence and information, unless forbidden by law. Disclosure of data collected as part of the criminal proceedings is decided by the prosecutor's office. Ensuring access and disclosure of evidence cannot hinder the safety investigation or criminal proceedings. If necessary, the parties consult each other and where possible, exchange information. Criminal proceedings and the safety investigation are conducted separately even if they work in cooperation with each other.

During safety investigations, pragmatic cooperation methods have evolved with various businesses, authorities, institutions and private individuals. The Safety Investigation Bureau has signed cooperation agreements with the safety



investigation authorities of neighbouring European Union member states Latvia and Finland.

If an accident involves a railway infrastructure manager established or licensed in another Member State of the European Union and a railway rolling stock that has been involved in an occurrence affecting railway safety that has been registered or maintained in that Member State, the legislation provides an obligation to invite investigative bodies of that country to participate in the safety investigation and they are given access to the relevant information. Thus far, there has been no requirement to use this provision. Neither has it been necessary to ask for help from the safety investigation bodies of other countries or the European Railways Agency with specialist knowledge, technical inspection, performing analysis and giving assessments although legislation allows this.

The investigator-in-charge has all the powers when conducting a safety investigation, to decide on inclusion, interpretation of the information obtained and systematic treatment of facts, knowledge, and circumstances. The results will be reflected in the content of the investigation report. During the investigation, the investigator-in-charge contacts all parties involved, listens to their viewpoints and opinions and if necessary, asks clarifying questions. Before the end of the investigation the investigator-in-charge provides the parties concerned an extended summary of the results of the safety investigation. In accordance with established practice, the extended summary has included discussion, conclusions, additional observations, actions taken and recommendations for improving railway safety. Since the Directive 2016/798 was adapted to the Estonian judicial area and the establishment of the implementing regulation 2020/572 no amendment to application of relevant experience has been established due to the absence of relevant cases. The summary is always discussed with the relevant authorities, companies, institutions and, if interested, individuals. As a result of the discussion, the investigator-in-charge has prepared the safety investigation report for signing and subsequent publication.

Since 2004 when the safety investigations of railway accidents and incidents began, neither the investigator-in-charge nor members of the investigation committee have ever been part of a police criminal investigation, railway company internal investigation, misdemeanour proceedings of the Consumer Protection and Technical Regulatory Authority or any other proceedings or investigation of the given case conducted by another authority. Neither has any person involved in the investigation of a given case participated in a safety investigation.



2.3 Investigation process and approach of the Investigation Body

The proceedings of all accidents, serious accidents and incidents start from the moment the Safety Investigation Bureau receives the initial, verbal notification from the railway undertaking. The immediate initial notification arrives from the Emergency Centre into the ESIB information mailbox. This is usually duplicated by the railway infrastructure manager verbally by phone if they have anything to add to describe the occurrence. The Emergency Centre notifies the ESIB 24 hours a day by email of all occurrences in air, water, and rail that it has become aware of. In the railway sector, railway infrastructure managers and possessors and railway undertakings and if they have become aware during regulatory activities, the Consumer Protection and Technical Regulatory Agency, notify the Safety Investigation Bureau by means of public communication immediately. The publicly available means of communication is the phone that the investigator of railway accidents has access to 24 hours a day. In the case of an accident or a serious accident the infrastructure manager that made the initial notification also makes a written notification to the ESIB in the agreed format within three working days. The written notice contains the location of the occurrence, specified and verified factual details about the rolling stock, casualties, victims and measures taken. In addition, it contains a short summary of the occurrence and the causes that have been ascertained by the time the notice being drawn up. If the ESIB requests it, a written report with additional information about an incident will also be made within three working days in an agreed format. The incident report is analogous in content to the accident report. All written documents received by the ESIB are systematically stored within a digital document management system Delta as part of the ancillary services.

Over time, a pragmatic and rational agreement has developed with the undertakings that enables the safety investigator to be notified faster without needlessly burdening the ESIB 24 hour emergency phone line. The railway infrastructure manager is immediately informed of any railway accidents and incidents through its internal information channels. He forwards the notification by phone to the official dealing with safety investigations of railway accidents. Since occurrences affecting railway safety are rare it is not practical to use an intermediate link in the form of a helpline telephone. Information is relayed to the helpline if the caller does not know the phone number of the official conducting the safety investigation. This has happened a couple of times in ten years. In the spring of 2021, the ESIB general helpline was suspended for economic and organisational reasons. The official dealing with safety investigations of railway accidents acknowledges the initial notification, assesses the circumstances, asks additional questions, and if necessary, requests clarification of any circumstances but in summary, takes note of the initial notification. Based on the Railways Act and the safety investigation manual, the official dealing with the safety



investigation makes an initial assessment of the occurrence and makes a proposal to the Director of the ESIB either to initiate a safety investigation or not. The official will propose deferring the decision of initiating an investigation only if gathering necessary additional information requires more time. The decision about a requirement to visit the scene is based on the verbal notification. If the occurrence turns out to be a serious accident based on the initial verbal notification the official notifies the Director of the Safety Investigation Bureau immediately by telephone, in other cases an email is sufficient. The Director of the ESIB maintains records of notifications received. The official responsible for safety investigations of railway accidents collects and stores the concentrated information in tabular form in his database. If necessary, the official conducting the safety investigation and the ESIB Director keep in regular contact to clarify the initial circumstances. The Director's position on whether to initiate a safety investigation is final and binding to the official dealing with the railway accident investigations.

The decision whether to initiate an investigation of an accident, serious accident or incident is made within two months after receiving notification of the occurrence. The decision whether to initiate an investigation is made pursuant to Section 50 of the Railways Act and the Railway Safety Directive 2016/798. To notify the European Union Agency for Railways, after collecting the relevant information the investigator of railway accidents enters the information in the correct format to the database, at the latest one week after the decision to initiate a safety investigation has been made. The obligation to notify the ERA has been specified in Section 50 (7) of the Railways Act. Up till now the deadline for notifying the European Union Agency for Railways has never been missed.

The Safety Investigation Bureau applies a unified multi-modal approach to conducting safety investigations of accidents and incidents of the different modes of transport. This has been confirmed by The Ministry of Economic Affairs and Communications Directive No 72 "Safety Investigation Procedures" and the ESIB Director has approved the "Safety Investigation Manual" of work procedures. The manual consists of a common main part and annexes which can be common to all three areas of transport or can be area specific. In 2021 the manual contained one common annex and 5 annexes specific to railways.

The whole safety investigation is usually conducted by the official responsible for investigating accidents in the relevant field who performs the duties of investigator-in-charge. The investigator-in-charge informs all relevant parties of the launch of a safety investigation and drafts an investigation plan. He may make changes and clarifications to the draft during the safety investigation but is fully responsible for conducting of the entire safety investigation as well as its quality and compliance. The investigator-in-charge coordinates the gathering, storage and analysis of data and evidence as well as the contracting of experts and communications with relevant



individuals or organisations. The investigator-in-charge organises and performs all necessary activities.

Depending on the specifics of the case, the investigator-in-charge selects the working methods and style that are suitable for him and most appropriate for achieving the objective. When communicating with natural as well legal persons he chooses the means of communication and methods that seem the most expedient. The objective is to ascertain the causes and circumstances of the occurrence in cooperation with the victims, state and local government authorities, businesses, and organisations. The more important verbally obtained information is recorded and written information is stored within the document management system Delta. Railway undertakings retain all evidence and details of items, technical assemblies, documents, recordings of the data recording equipment and other information which might be important in determining the causes of the occurrence. If requested by the investigator-in-charge, they would present this to the ESIB. The safety investigation identifies the causes and circumstances of the case, which shall be in accordance with the requirements established by the European Commission implementing regulation 2020/572 regarding the reporting structure to be followed when compiling the investigation reports. The provisions of Annex R5 of the Safety Investigation Manual are also considered when determining the causes of the occurrence. Information about the safety investigation is usually issued by the investigator-in-charge. By prior agreement, a member of the investigation committee or the Director of the ESIB may also do this. An alert is issued on behalf of the Safety Investigation Bureau in the event of a persistently high risk.

A joint Annex (AMR1) of the Safety Investigation Manual includes instructions for hearing, questioning, and taking statements from all individuals and parties concerned, specifies the objectives, planning, conducting, and documenting the activities. A safety investigation is conducted as publicly as possible. Disclosure must not start hindering identification of causes or development of recommendations necessary for increasing safety. All parties concerned whom the investigator-in-charge addresses or who turn to the investigator-in-charge themselves have an opportunity to present their opinions, attitude, position and understanding of the proceedings of the safety investigation and its results. Information that has restricted access pursuant to cases specified by The Public Information Act is not disclosed during or after the safety investigation. Specific dates have been designated by law to restrictions of disclosure.

In most cases connections with human behaviour play an important part in the circumstances of occurrences affecting railway safety. Analysis of human factors during the safety investigation is based on the implementation regulation 2020/572 and the guidelines set out in Annex R6 of the Safety Investigation Manual.



The effect and impact of the infrastructure manager's safety management system in the context of the case under investigation is important for ensuring railway safety. The safety investigation assesses the aspects of the safety management system that are connected to the case under investigation. Guidelines on what to concentrate on are provided in Annex R4 of the Safety Investigation Manual. In cases that are not related to the management of infrastructure managers, an assessment is given to the operation of the infrastructure manager's safety management system as part of the ascertainment of the causes of the occurrence and elimination of consequences. As a rule, the safety management of other companies involved in the case does not fall under the competence of the safety investigation.

The investigator-in-charge is responsible for the investigation report to be completed in a timely manner and in the prescribed format. The recommendations presented in the report are subject to proceedings by the addressees of these recommendations. Once a year, the body conducting proceedings submits a report on the current status or results of the proceedings to the ESIB. The ESIB monitors the proceedings that take place prior to the report being presented. For this purpose, the investigator-in-charge contacts the recipient of the recommendation. Monitoring of the proceedings by the investigator-in-charge is set out in Annex R5 of the Safety Investigation Manual.



3. Safety Investigations

3.1 Overview of completed investigations

During the year the Safety Investigation Bureau received 8 verbal accident notifications of accidents. This does not include known suicides or suicide attempts which, as premeditated acts by one of the parties, are not classed as accidents. In addition, a verbal initial notification was received of 5 incidents which were all track breakages. Of the accidents, 4 were level crossing accidents, the rest were classified by individual cases.

Looking back to the previous year, 2020, the Safety Investigation Bureau received 10 verbal accident notifications of railway accidents, in 2019 it was 19, in 2018, 33 and in 2017 they received 24 initial notifications of railway traffic accidents. The ESIB received notifications of 1, 5, 9 and 3 incidents in the respective years.

No serious accidents took place during the year. None of the 8 accidents had characteristics that would have required initiating a safety investigation. All occurrences involved relatively minor damage. Regardless, the Safety Investigation Bureau assessed the circumstances of two track breakages that took place in December 2021 and formed an opinion based on this which was forwarded to the parties involved and the Consumer Protection and Technical Regulatory Authority for their information the following year.

Summary of the safety investigations completed in 2021

Table 1

Type of case investigated	Number of cases	Casualties		Estimated losses (EUR)	Trend compared to last year
		Deaths	Seriously injured		
-	-	-	-	-	-

3.2 Safety investigations completed and commenced in 2021

All safety investigations conducted in Estonia have always been concluded within the prescribed one-year period. The investigation report has been presented and



published immediately after the completion of a safety investigation. Of the safety investigations started in previous years, none remained to be completed in 2021. This is reflected in the table below.

Safety investigations completed in 2021

Table 2

Date of occurrence	Title of the investigation (Occurrence type, location)	Legal basis	Completed (date)
-	-	i	-

Basis for investigation: i = pursuant to the Safety directive

No safety investigations were launched during the reporting year that could not be completed in the same year.

Safety investigations commenced in 2021

Table 3

Date of occurrence	Title of the investigation (Occurrence type, location)	Legal basis
-	-	i

Basis for investigation: i = pursuant to the safety directive

During the last month of the year two similar incidents took place: track breakages in thermit welds. These took place 11.5 km apart, one in the morning and the other in the evening when there were large fluctuations in air temperature. The ESIB gathered additional information about the incident from the railway infrastructure manager as well as the company that performed the welding work. Addressing the circumstances of both cases as part of the preliminary assessment, the ESIB finally prepared an opinion the following year. The ESIB did not consider it expedient to initiate a safety investigation into either case.



3.3 Summaries of the safety investigations concluded in 2021

Pursuant to Directive 2016/798 the safety investigation body must decide within two months whether to initiate a safety investigation. Preliminary assessment of the occurrence starts with the receipt of the initial notification. During this time, the safety investigation officer processed all cases affecting railway safety reported to him during the year. The proceedings consisted of clarifying the data contained in the written notice following the initial notification and completed by processing the materials collected by the undertaking. Where necessary, the supervisory authority has also been consulted. The Safety Investigation Bureau has received materials about suicide cases, which have been noted.

The two-month period for the preliminary assessment has been sufficient for ESIB to have a complete overview of the case, the risks involved, the work organisation documents, the work culture based on them, and the measures planned and implemented by the undertaking to prevent similar incidents in the future. In its communication with the railway undertaking, the Safety Investigation Bureau expressed its views and asked questions during the answering of which the viewpoints of the partners were consolidated. There was no need to initiate a safety investigation.

3.4 Comments of investigations

Based on safety investigations conducted over the last five years, the following table shows the deaths and injuries.

Total number of deaths and injuries

Table 4

Year	Deaths	Injured in road vehicle / of them seriously	Injured in rolling stock / of them seriously
2017	2	-	-
2018		1/1	8/-
2019	-	-	-
2020	-	-	-
2021	-	-	-
Total	2	1/1	8/-



The following table shows the distribution of the number of injured and killed in the investigated cases over the past five years:

Breakdown of the injured and deaths

Table 5

Breakdown by type of persons		Year, number				
		2017	2018	2019	2020	2021
Deaths	Passengers	-	-	-	-	-
	Staff	-	-	-	-	-
	Third parties	2	-	-	-	-
	Total	2	-	-	-	-
Injured	Passengers	-	6	-	-	-
	Staff	-	2	-	-	-
	Third parties	-	1	-	-	-
	Total	-	9	-	-	-

3.5 Accidents and incidents investigated during the past five years (2017 – 2021)

During the past five years there have been two accidents where safety investigations were initiated. Both took place on a level crossing. The 2017 accident resulted in the deaths of 2 people and as a result of a collision with a truck a train derailed. The Safety Investigation Bureau initiated an investigation of a serious accident. There were no fatalities in the 2018 accident but altogether 9 people sustained injuries of various degree. At the start of the investigation, the Safety Investigation Bureau estimated the amount of damages to be less than 2 million euros. During the safety investigation, the case was classified as a level crossing accident, although during the investigation it became evident that the damages exceeded the 2-million-euro mark.

In cooperation with infrastructure managers and other institutions the Safety Investigation Bureau gathers information about every accident it has been notified of. During the initial assessment the ESIB evaluated the impact of the occurrence on the safety situation in general. The total number of accidents is relatively small, so their numerical change in different years does not provide reliable statistical information about the trend as a whole in the long term. The number of accidents that occurred in individual years and the safety investigations conducted reflect the current situation



in railway traffic as a whole. A reliable trend of changes in the safety of railway traffic is expressed by a time horizon considerably longer than five years in the statistics of railway accidents studied.

Breakdown of investigated cases by years

Table 6

Title of the case		Year, number of investigations					
		2017	2018	2019	2020	2021	Kokku
Art 19.1,2	Train collision	-		-	-	-	
	Train collision with an obstacle	-	-	-	-	-	-
	Train derailment	-	-	-	-	-	-
	Level crossing accident	1	1	-	-	-	2
	Accident to person caused by RS in motion	-	-	-	-	-	-
	Fire in rolling stock	-	-	-	-	-	-
	Accident involving dangerous goods	-	-	-	-	-	-
Art 21.6	Train collision	-	-	-	-	-	-
	Train collision with an obstacle	-	-	-	-	-	-
	Train derailment	-	-	-	-	-	-
	Level crossing accident	-	-	-	-	-	-
	Accident to person caused by RS in motion	-	-	-	-	-	-
	Fire in rolling stock	-	-	-	-	-	-
	Accident involving dangerous goods	-	-	-	-	-	-
Incident		-	-	-	-	-	-
Total		1	1	-	-	-	2



4. Recommendations

4.1 Short review and presentation of recommendations

Recommendations are part of the safety investigation report. The recommendations are presented to the safety authority (CPTRA) as well as the final executor of the recommendations that might be the safety authority itself as well as a railway undertaking or any other authority or institution responsible for resolving the given issue relating to railway safety. The Consumer Protection and Technical Regulatory Authority (CPTRA) receives the report with all recommendations even if it is not involved in the proceedings of any of the recommendations. All executors submit an annual report on the current status of the proceedings. The last report is presented to the ESIB by 1 April of the year following the completion of the proceedings. The Consumer Protection and Technical Regulatory Authority monitors and directs the proceedings of recommendations addressed to railway undertakings. The CPTRA also presents a summary report of the proceedings of the recommendations to the ESIB.

Recommendations for improvement of safety

Table 7

Field of activity of recommendation	Year, number of recommendations				
	2017	2018	2019	2020	2021
Maintenance and care of railway infrastructure	-	-	-	-	-
Care, maintenance and managing of rolling stock	-	-	-	-	-
Organisation of supervision	1	-	-	-	-
Road traffic management, road traffic control devices	-	2	-	-	-
Winter maintenance of roads	-	-	-	-	-
Dissemination of information concerning traffic, training	1	-	-	-	-
Amendments to legal	-	1	-	-	-



acts and regulating instructions					
Operation of traffic lights, railway traffic control	-	1	-	-	-
Organisation of operation of railway communication devices	/	-	-	-	-
Use of information recording equipment	-	-	-	-	-
Professional qualifications of railwaymen	-	-	-	-	-
Other arrangements	-	1	-	-	-
Total	2	5	-	-	-

The following table shows the status of implementation of recommendations of the past five years based on data as of 1 April of each year.

Implementation of recommendations

Table 8

Recommendations issued		Recommendation implementation status							
		Implemented		In progress		Not to be implemented		Implementation suspended	
Year	No	No	%	No	%	No	%	No	%
2017	2	2	100	-	-	-	-	-	-
2018	5	2	40	3	60	-	-	-	-
2019	-	3	60	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-	-
Total	7	7	100	-	-	-	-	-	-