

Commission Directive 2009/149/EC of 27 November 2009 amending Directive 2004/49/EC of the European Parliament and of the Council as regards Common Safety Indicators and common methods to calculate accident costs (Text with EEA relevance) (repealed)

COMMISSION DIRECTIVE 2009/149/EC

of 27 November 2009

amending Directive 2004/49/EC of the European Parliament and of the Council as regards Common Safety Indicators and common methods to calculate accident costs

(Text with EEA relevance) (repealed)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety of the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (Railway Safety Directive)⁽¹⁾, and in particular Article 5(2) thereof,

Having regard to the recommendation of the European Railway Agency (ERA/REC/SAF/02-2008) of 29 September 2008,

Whereas:

- (1) Article 5(2) of Directive 2004/49/EC, as corrected, provides for the possibility to revise Annex I to the said Directive in order to include common definitions of the Common Safety Indicators (CSIs) and methods to calculate accident costs.
- (2) In accordance with Article 5(1) of Directive 2004/49/EC information on CSIs is to be collected to facilitate the assessment of the achievement of the Common Safety Targets (CSTs). In conformity with Article 7(3) of the said Directive, the CSTs should be accompanied by an assessment of the economic impact in terms of societal acceptance of risk. The main purpose of CSIs should be to measure safety performance and to facilitate the economic impact assessment of CSTs. Therefore, it is necessary to move from indicators related to costs of all accidents borne by railways to indicators related to the economic impact of accidents on society.
- (3) Attributing monetary values to improved safety should be seen in the context of limited budget resources of public policy actions. Therefore, in order to select initiatives that ensure an efficient allocation of resources, it becomes necessary to prioritise across the different actions.
- (4) Article 9 of Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European Railway Agency (Agency Regulation)⁽²⁾ mandates the Agency to set up a network with the national authorities

responsible for safety and the national authorities responsible for the investigations in order to define the content of the CSIs listed in Annex I to Directive 2004/49/EC. In response to this mandate, on 29 September 2008 the Agency delivered its recommendation on the revision of Annex I to Directive 2004/49/EC: common definitions for the CSIs and methods to calculate the economic impact of accidents (ERA/REC/SAF/02-2008).

- (5) Annex I to Directive 2004/49/EC should therefore be amended.
- (6) The measures provided for in this Directive are in accordance with the opinion of the Committee set up by Article 21 of Directive 96/48/EC,

HAS ADOPTED THIS DIRECTIVE:

Article 1

Annex I to Directive 2004/49/EC is replaced by the text in the Annex to this Directive.

Article 2

1 Member States shall adopt and publish, by 18 June 2010 at the latest, the laws, regulations and administrative provisions necessary to comply with this Directive. They shall forthwith communicate to the Commission the text of those provisions and a correlation table between those provisions and this Directive.

When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2 Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

Article 3

This Directive shall enter into force 20 days after its publication in the *Official Journal of the European Union*.

Article 4

This Directive is addressed to the Member States.

Done at Brussels, 27 November 2009.

For the Commission

Antonio TAJANI

Vice-President

ANNEX

ANNEX COMMON SAFETY INDICATORS

I

Common safety indicators shall be reported annually by the safety authorities. The first reporting period shall be 2010.

Indicators relating to activities referred to in Article 2(2), (a) and (b), should be accounted for separately, if they are submitted.

If new facts or errors are discovered after the submission of the report the indicators for one particular year shall be amended or corrected by the safety authority at the first convenient opportunity and at the latest in the next annual report.

For indicators relating to accidents under heading 1, Regulation (EC) No 91/2003 of the European Parliament and of the Council of 16 December 2002 on rail transport statistics⁽³⁾ shall be applied as far as the information is available.

1. Indicators relating to accidents

1.1. Total and relative (to train-kilometres) number of significant accidents and a break-down on the following types of accidents:

- collisions of trains, including collisions with obstacles within the clearance gauge,
- derailments of trains,
- level crossing accidents, including accidents involving pedestrians at level crossings,
- accidents to persons caused by rolling stock in motion, with the exception of suicides,
- fires in rolling stock,
- others.

Each significant accident shall be reported under the type of the primary accident, even if the consequences of the secondary accident are more severe, e.g. a fire following a derailment.

1.2. Total and relative (to train-kilometres) number of persons seriously injured and killed by type of accident divided into the following categories:

- passengers (also in relation to total number of passenger-kilometres and passenger train-kilometres),
- employees including the staff of contractors,
- level crossing users,
- unauthorised persons on railway premises,
- others.

2. Indicators relating to dangerous goods

Total and relative (to train-kilometres) number of accidents involving the transport of dangerous goods divided into the following categories:

- accidents involving at least one railway vehicle transporting dangerous goods, as defined by the Appendix,
- number of such accidents in which dangerous goods are released.

3. Indicators relating to suicides

Total and relative (to train-kilometres) number of suicides.

4. Indicators relating to precursors of accidents

Total and relative (to train-kilometres) number of:

- broken rails,
- track buckles,
- wrong-side signalling failures,
- signals passed at danger,
- broken wheels and axles on rolling stock in service.

All precursors are to be reported, both resulting and not resulting in accidents. Precursors resulting in an accident shall be reported under the CSIs on precursors; the accidents that occurred, if significant, shall be reported under the CSIs on accidents referred to in heading 1.

5. Indicators to calculate the economic impact of accidents

Total in euro and relative (to train-kilometres):

- number of deaths and serious injuries multiplied by the Value of Preventing a Casualty (VPC),
- cost of damages to environment,
- cost of material damages to rolling stock or infrastructure,
- cost of delays as a consequence of accidents.

Safety authorities shall report either the economic impact of all accidents, or the economic impact of significant accidents only. This choice shall be clearly indicated in the annual report referred to in Article 18.

The VPC is the value society attributes to the prevention of a casualty and as such shall not form a reference for compensation between parties involved in accidents.

6. Indicators relating to technical safety of infrastructure and its implementation

Percentage of tracks with Automatic Train Protection (ATP) in operation, percentage of train-kilometres using operational ATP systems.

6.2. Number of level crossings (total, per line kilometre and track kilometre) by the following eight types:

- (a) active level crossings with:
 - (i) automatic user-side warning,
 - (ii) automatic user-side protection,
 - (iii) automatic user-side protection and warning,
 - (iv) automatic user-side protection and warning, and rail-side protection,
 - (v) manual user-side warning,
 - (vi) manual user-side protection,
 - (vii) manual user-side protection and warning.
- (b) passive level crossings.

7. Indicators relating to the management of safety

Internal audits accomplished by infrastructure managers and railway undertakings as set out in the documentation of the safety management system. Total number of audits accomplished and the number as a percentage of audits required (and/or planned).

8. Definitions

Common definitions for the CSIs and methods to calculate the economic impact of accidents are laid down in the Appendix.

Appendix

Common definitions for the CSIs and methods to calculate the economic impact of accidents

1. Indicators relating to accidents

- 1.1. “significant accident” means any accident involving at least one rail vehicle in motion, resulting in at least one killed or seriously injured person, or in significant damage to stock, track, other installations or environment, or extensive disruptions to traffic. Accidents in workshops, warehouses and depots are excluded.
- 1.2. “significant damage to stock, track, other installations or environment” means damage that is equivalent to EUR 150 000 or more.
- 1.3. “extensive disruptions to traffic” means that train services on a main railway line are suspended for six hours or more.
- 1.4. “train” means one or more railway vehicles hauled by one or more locomotives or railcars, or one railcar travelling alone, running under a given number or specific designation from an initial fixed point to a terminal fixed point. A light engine, i.e. a locomotive travelling on its own, is considered to be a train.
- 1.5. “collision of trains, including collisions with obstacles within the clearance gauge” means a front to front, front to end or a side collision between a part of a train and a part of another train, or with:
 - (i) shunting rolling stock,
 - (ii) objects fixed or temporarily present on or near the track (except at level crossings if lost by a crossing vehicle or user).
- 1.6. “train derailment” means any case in which at least one wheel of a train leaves the rails.
- 1.7. “level crossing accidents” means accidents at level crossings involving at least one railway vehicle and one or more crossing vehicles, other crossing users such as pedestrians or other objects temporarily present on or near the track if lost by a crossing vehicle/user.
- 1.8. “accidents to persons caused by rolling stock in motion” means accidents to one or more persons who are either hit by a railway vehicle or by an object attached to, or that has become detached from, the vehicle. Persons who fall from railway vehicles are included, as well as persons who fall or are hit by loose objects when travelling on board vehicles.
- 1.9. “fires in rolling stock” means fires and explosions that occur in railway vehicles (including their load) when they are running between the departure station and the destination, including when stopped at the departure station, the destination or intermediate stops, as well as during re-marshalling operations.

- 1.10. “other types of accidents” means all accidents other than those already mentioned (train collisions, train derailments, at level crossing, to persons caused by rolling stock in motion and fires in rolling stock).
- 1.11. “passenger” means any person, excluding members of the train crew, who makes a trip by rail. For accident statistics, passengers trying to embark/disembark onto/from a moving train are included.
- 1.12. “employees (staff of contractors and self-employed contractors are included)” means any person whose employment is in connection with a railway and is at work at the time of the accident. It includes the crew of the train and persons handling rolling stock and infrastructure installations.
- 1.13. “level crossing users” means all persons using a level crossing to cross the railway line by any mean of transport or by foot.
- 1.14. “unauthorised persons on railway premises” means any person present on railway premises where such presence is forbidden, with the exception of level crossing users.
- 1.15. “others (third parties)” means all persons not defined as “passengers”, “employees including the staff of contractors”, “level crossing users” or “unauthorised persons on railway premises”.
- 1.16. “deaths (killed person)” means any person killed immediately or dying within 30 days as a result of an accident, excluding suicides.
- 1.17. “injuries (seriously injured person)” means any person injured who was hospitalised for more than 24 hours as a result of an accident, excluding attempted suicides.
- 2. Indicators relating to dangerous goods**
- 2.1. “accident involving the transport of dangerous goods” means any accident or incident that is subject to reporting in accordance with RID⁽⁴⁾/ADR section 1.8.5.
- 2.2. “dangerous goods” means those substances and articles the carriage of which is prohibited by RID, or authorised only under the conditions prescribed therein.
- 3. Indicators relating to suicides**
- 3.1. “suicide” means an act to deliberately injure oneself resulting in death, as recorded and classified by the competent national authority.
- 4. Indicators relating to precursors of accidents**
- 4.1. “broken rails” means any rail which is separated in two or more pieces, or any rail from which a piece of metal becomes detached, causing a gap of more than 50 mm in length and more than 10 mm in depth on the running surface.
- 4.2. “track buckles” means faults related to the continuum and the geometry of track, requiring track obstruction or immediate reduction of permitted speed to maintain safety.
- 4.3. “wrong side signalling failure” means any failure of a signalling system (either to infrastructure or to rolling stock), resulting in signalling information less restrictive than that demanded.
- 4.4. “Signal Passed at Danger (SPAD)” means any occasion when any part of a train proceeds beyond its authorised movement.

Unauthorised movement means to pass:

- a trackside colour light signal or semaphore at danger, order to STOP, where an Automatic Train Control System (ATCS) or ATP system is not operational,
- the end of a safety related movement authority provided in an ATCS or ATP system,
- a point communicated by verbal or written authorisation laid down in regulations,
- stop boards (buffer stops are not included) or hand signals.

Cases in which vehicles without any traction unit attached or a train that is unattended run away past a signal at danger are not included. Cases in which, for any reason, the signal is not turned to danger in time to allow the driver to stop the train before the signal are not included.

National Safety Authorities may report separately on the four indexes and shall report at least an aggregate indicator containing data on all four items.

4.5. “broken wheels and broken axles” means a break affecting the essential parts of the wheel or the axle and creating a risk of accident (derailment or collision).

5. **Common methodologies to calculate the economic impact of accidents**

5.1. The Value of Preventing a Casualty (VPC) is composed of:

1. Value of safety *per se*: Willingness to Pay (WTP) values based on stated preference studies carried out in the Member State for which they are applied.
2. Direct and indirect economic costs: cost values appraised in the Member State, composed of:
 - medical and rehabilitation cost,
 - legal court cost, cost for police, private crash investigations, the emergency service and administrative costs of insurance,
 - production losses: value to society of goods and services that could have been produced by the person if the accident had not occurred.

5.2. Common principles to appraise the value of safety *per se* and direct/indirect economic costs:

For the value of safety *per se*, the assessment of whether available estimates are appropriate or not shall be based on the following considerations:

- estimates shall relate to a system for valuation of mortality risk reduction in the transport sector and follow a WTP approach according to stated preference methods,
- the respondent sample used for the values shall be representative of the population concerned. In particular, the sample has to reflect the age/income distribution along with other relevant socio-economic/demographic characteristics of the population,
- method for eliciting WTP values: survey design shall be such that questions are clear/meaningful to respondents.

Direct and indirect economic costs shall be appraised on the basis of the real costs borne by society.

5.3. “Cost of damage to environment” means costs that are to be met by Railway Undertakings/Infrastructure Managers, appraised on the basis of their experience, in order to restore the damaged area to its state before the railway accident.

5.4. “Cost of material damage to rolling stock or infrastructure” means the cost of providing new rolling stock or infrastructure, with the same functionalities and technical parameters as that damaged beyond repair, and the cost of restoring

repairable rolling stock or infrastructure to its state before the accident. Both are to be estimated by Railway Undertakings/Infrastructure Managers on the basis of their experience. Also includes costs related to leasing rolling stock, as a consequence of non availability due to damaged vehicles.

- 5.5. “Cost of delays as a consequence of accidents” means the monetary value of delays incurred by users of rail transport (passengers and freight customers) as a consequence of accidents, calculated by the following model:

VT = monetary value of travel time savings

Value of time for a passenger of a train (an hour)

$$VT_P = [VT \text{ of work passengers}] * [Average \text{ percentage of work passengers per year}] + [VT \text{ of non-work passengers}] * [Average \text{ percentage of non-work passengers per year}]$$

VT measured in EUR per passenger per hour

Value of time for a freight train (an hour)

$$VT_F = [VT \text{ of freight trains}] * [(Tonne-Km)/(Train-Km)]$$

VT is measured in EUR per freight tonne per hour

Average tonnes of goods transported per train in one year = (Tonne-Km)/(Train-Km)

C_M = Cost of 1 minute of delay of a train

Passenger train

$$C_{MP} = K_1 * (VT_P/60) * [(Passenger-Km)/(Train-Km)]$$

Average number of passengers per train in one year = (Passenger-Km)/(Train-Km)

Freight train

$$C_{MF} = K_2 * (VT_F/60)$$

Factors K_1 and K_2 are between the value of time and the value of delay, as estimated by stated preference studies, to take into account that the time lost as a result of delays is perceived significantly more negatively than normal travel time.

Cost of delays of an accident = $C_{MP} * (\text{Minutes of delay of passenger trains}) + C_{MF} * (\text{Minutes of delay of freight trains})$

Scope of the model

Cost of delays is to be calculated for all accidents, both significant and non-significant.

Delays are to be calculated as follows:

- real delays on the railway lines where accidents occurred,
- real delays or, if not possible, estimated delays on the other affected lines.

6. Indicators relating to technical safety of infrastructure and its implementation

- 6.1. “Automatic Train Protection (ATP)” means a system that enforces obedience to signals and speed restrictions by speed supervision, including automatic stop at signals.
- 6.2. “level crossing” means any level intersection between the railway and a passage, as recognised by the infrastructure manager and open to public or private users. Passages

between platforms within stations are excluded, as well as passages over tracks for the sole use of employees.

- 6.3. “passage” means any public or private road, street or highway, including footpaths and bicycle paths, or other route provided for the passage of people, animals, vehicles or machinery.
- 6.4. “active level crossing” means a level crossing where the crossing users are protected from or warned of the approaching train by the activation of devices when it is unsafe for the user to traverse the crossing.
- Protection by the use of physical devices:
 - half or full barriers,
 - gates.
 - Warning by the use of fixed equipment at level crossings:
 - visible devices: lights,
 - audible devices: bells, horns, klaxons, etc.,
 - physical devices, e.g. vibration due to road bumps.

Active level crossings are classified as:

1. “Level crossing with crossing-user-side automatic protection and/or warning” means a level crossing where the crossing protection and/or warning are activated by the approaching train.

These level crossings are classified as:

- (i) automatic user-side warning,
- (ii) automatic user-side protection,
- (iii) automatic user-side protection and warning,
- (iv) automatic user-side protection and warning, and rail-side protection.

“Rail-side protection” means a signal or other train protection system that only permits a train to proceed if the level crossing is user-side protected and free from incursion; the latter by means of surveillance and/or obstacle detection.

2. “Level crossing with crossing-user-side manual protection and/or warning” means a level crossing where protection and/or warning is manually activated and there is not an interlocked railway signal showing, to the train, a running aspect only when protection and/or warning of level crossing are activated.

These level crossings are classified as:

- (v) manual user-side warning,
- (vi) manual user-side protection,
- (vii) manual user-side protection and warning.

- 6.5. “Passive level crossing” means a level crossing without any form of warning system and/or protection activated when it is unsafe for the user to traverse the crossing.

7. **Indicators relating to the management of safety**

Status: This is the original version (as it was originally adopted).

7.1. “audit” means a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

8. **Definitions of the scaling bases**

8.1. “train-km” means the unit of measure representing the movement of a train over one kilometre. The distance used is the distance actually run, if available, otherwise the standard network distance between the origin and destination shall be used. Only the distance on the national territory of the reporting country shall be taken into account.

8.2. “passenger-km” means the unit of measure representing the transport of one passenger by rail over a distance of one kilometre. Only the distance on the national territory of the reporting country shall be taken into account.

8.3. “line km” means the length measured in kilometres of the railway network in Member States, whose scope is laid down in Article 2. For multiple-track railway lines, only the distance between origin and destination is to be counted.

8.4. “track km” means the length measured in kilometres of the railway network in Member States, whose scope is laid down in Article 2. Each track of a multiple-track railway line is to be counted.

- (1) [OJ L 164, 30.4.2004, p. 44.](#)
- (2) [OJ L 164, 30.4.2004, p. 1.](#)
- (3) [OJ L 14, 21.1.2003, p. 1.](#)
- (4) RID, Regulations concerning the International Carriage of Dangerous Goods by Rail, as adopted under Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods ([OJ L 260, 30.9.2008, p. 13](#)).