

[^{F1}SCHEDULE 3

Regulation 20(1)(c)

COMMON SAFETY INDICATORS

Textual Amendments

- F1** Sch. 3 substituted (26.8.2011) by [The Railways and Other Guided Transport Systems \(Safety\) \(Amendment\) Regulations 2011 \(S.I. 2011/1860\)](#), regs. 1, **2(12)**

(This Schedule substantially reproduces, with minor modifications, the provisions of Annex I to the Directive and its Appendix)

Part 1

COMMON SAFETY INDICATORS

Interpretation

1. In this Part, the definitions for the common safety indicators and the methods used to calculate the economic impact of accidents in Part 2 apply.

Indicators relating to accidents

2.—(1) Total and relative, to train-kilometres, number of—

(a) significant accidents and a break-down of the following types of accidents—

- (i) collisions of trains, including collisions with obstacles within the clearance gauge;
- (ii) derailments of trains;
- (iii) level crossing accidents which includes accidents involving persons at level crossings;
- (iv) accidents to persons caused by rolling stock in motion, except for suicides;
- (v) fires in rolling stock; and
- (vi) any other types of accidents,

and each significant accident shall be reported under the heading of the primary accident even where the consequences of any secondary accident are more severe, such as where a fire follows a derailment;

(b) persons seriously injured or killed by type of accident divided into the following categories—

- (i) passengers;
- (ii) persons carrying out work or voluntary work directly in relation to the operation;
- (iii) level crossing users;
- (iv) unauthorised persons on premises of the transport system; and
- (v) any other types of person,

and the number of passengers seriously injured or killed shall also be indicated in relation to the total number of passenger-kilometres.

Status: Point in time view as at 26/08/2011.

Changes to legislation: There are currently no known outstanding effects for the The Railways and Other Guided Transport Systems (Safety) Regulations 2006, SCHEDULE 3. (See end of Document for details)

(2) The provisions of Regulation 91/2003 of the European Parliament and the Council on rail transport statistics shall be applied to any information provided under this paragraph.

Indicators relating to dangerous goods

3. Total and relative, to train-kilometres, number of accidents involving the transport of dangerous goods—

- (a) involving at least one vehicle transporting dangerous goods; and
- (b) number of such accidents in which dangerous goods are released.

Indicators relating to suicides

4. Total and relative, to train-kilometres, number of suicides.

Indicators relating to precursors of accidents

5. Total and relative, to train-kilometres, number of—

- (a) broken rails;
- (b) buckled rails;
- (c) wrong-side signalling failures;
- (d) signals passed at danger; and
- (e) broken wheels and axles on vehicles in service,

and all such precursors are to be reported, whether or not they result in accidents and where they result in a significant accident, they shall be reported under paragraph 2 of this Part of Schedule 3.

Indicators to calculate the economic impact of accidents

6.—(1) Total in Euros and relative, to train-kilometres—

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

(2) Each annual safety report submitted by the Office of Rail Regulation in accordance with regulation 20(3) shall include the economic impact of significant accidents only.

(3) The VPC is the value society attributes to the prevention of a casualty but is not intended to be used as a reference for the assessment of compensation between parties involved in accidents.

Indicators relating to technical safety of infrastructure and its implementation

7. The—

- (a) percentage of tracks with a train protection system, within the meaning of regulation 2(1) of the Railway Safety Regulations 1999, in operation;
- (b) percentage of train-kilometres with a train protection system falling within paragraph (a) in operation;
- (c) number of (total per line-kilometre and per track-kilometre)—
 - (i) active level crossings with—

- (aa) automatic user-side warning;
 - (bb) automatic user-side protection;
 - (cc) automatic user-side protection and warning;
 - (dd) automatic user-side protection and warning, and rail-side protection;
 - (ee) manual user-side warning;
 - (ff) manual user-side protection;
 - (gg) manual user-side protection and warning; and
- (ii) passive level crossings.

Indicators relating to management of safety

8. Internal audits carried out by transport operators pursuant to the procedures referred to in paragraph 2(k) of Schedule 1 and the number of such audits which have been carried out and that number expressed as a percentage of the audits which were planned for that year.

PART 2

COMMON DEFINITIONS AND METHODS TO CALCULATE THE ECONOMIC IMPACT OF ACCIDENTS

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.

(2) “Significant damage to stock, track, other installations or environment” means damage that is equivalent to [euro]150,000 or more.

(3) “Extensive disruptions to traffic” means that train services on a main railway line are suspended for six hours or more.

(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.

(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—

- (a) shunting rolling stock; or
- (b) objects fixed or temporarily present on or near the track (except at level crossings if lost by a crossing vehicle or user).

(6) “Train derailment” means any case in which at least one wheel of a train leaves the rails.

(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.

(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

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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.

(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.

(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).

(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.

(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.

(13) “Level crossing users” means all persons using a level crossing to cross the railway line by any means of transport or by foot.

(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.

(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”.

(16) “Deaths (killed person)” means any person killed immediately or dying within 30 days as a result of an accident, excluding suicides.

(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.

Indicators relating to dangerous goods

2.—(1) “Accident involving the transport of dangerous goods” means any accident or incident that must be reported in accordance with RID section 1.8.5., as revised or reissued from time to time.

(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) In this paragraph “RID” means the 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 24th September 2008 on the inland transport of dangerous goods.

Indicators relating to suicides

3. “Suicide” means an act to deliberately injure oneself resulting in death, as recorded and classified by the Railway Safety and Standards Board.

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 50mm in length and more than 10mm in depth on the running surface.

(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.

(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) “Signal passed at danger (SPAD)” means any occasion when any part of a train proceeds beyond its authorised movement to an unauthorised movement; “unauthorised movement” means to pass—

- (a) a trackside colour light signal or semaphore at danger, order to STOP, where an Automatic Train Control System (ATCS) or train protection system (as described in paragraph 7(a) of Part 1 of this Schedule) is not operational;
- (b) the end of a safety related movement authority provided in an ATCS or train protection system;
- (c) a point communicated by verbal or written authorisation laid down in regulations; or
- (d) stop boards (buffer stops are not included) or hand signals,

but excludes cases in which—

- (e) vehicles without any traction unit attached or a train that is unattended run away past a signal at danger; or
- (f) for any reason, the signal is not turned to danger in time to allow the driver to stop the train before the signal.

(The Office of Rail Regulation may report separately on items (a) to (d) and shall report at least an aggregate indicator containing data on all four items).

(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).

Common methodologies to calculate the economic impact of accidents

5.—(1) The Value of Preventing a Casualty (VPC) is composed of—

- (a) value of safety *per se*: Willingness to Pay (WTP) values based on stated preference studies carried out in Great Britain;
- (b) direct and indirect economic costs, appraised in Great Britain, composed of—
 - (i) medical and rehabilitation costs;
 - (ii) legal and court costs, police, private crash investigations and emergency service costs and administrative costs of insurance;
 - (iii) production losses: value to society of goods and services that could have been produced by the person if the accident had not occurred.

(2) Common principles to appraise the value of safety *per se* and direct / indirect economic costs—

- (a) for the value of safety *per se*, the assessment of whether available estimates are appropriate or not shall be based on the following considerations—
 - (i) 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;
 - (ii) 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;
 - (iii) method for eliciting WTP values: survey design shall be such that questions are clear / meaningful to respondents;
- (b) direct and indirect economic costs shall be appraised on the basis of the real costs borne by society.

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(3) “Cost of damage to environment” means costs that are to be met by transport undertakings or infrastructure managers, appraised on the basis of their experience, in order to restore the damaged area to its state before the railway accident.

(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 transport undertakings or 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) “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, and is calculated by the following model—

VT = monetary value of travel time savings

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

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

VT measured in EUR per passenger per hour

Value of time for a freight train (an hour)

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

VT is measured in EUR per freight tonne per hour

$$\text{Average tonnes of goods transported per train in one year} = (\text{Tonne-Km}) / (\text{train-Km})$$

C_m = Cost of 1 minute of delay of a train

Passenger train

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

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} * (Minutes of delay of passenger trains) + C_{MF} * (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.

Indicators relating to technical safety of infrastructure and its implementation

6.—(1) “Automatic Train Protection” means a system that enforces obedience to signals and speed restrictions by speed supervision, including automatic stop at signals.

(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.

(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.

(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, as follows—

- (a) protection by the use of physical devices, including half or full barriers or gates;
- (b) warning by the use of fixed equipment at level crossings, including lights, audible devices such as bells, horns or klaxons and physical devices such as vibration due to road bumps;

active level crossings are classified as—

- (c) “level crossing with crossing-user-side automatic protection and/or warning” which 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; such freedom from incursion to be achieved by means of surveillance and/or obstacle detection;

- (d) “level crossing with crossing-user-side manual protection and/or warning” which 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—

- (i) manual user-side warning;
- (ii) manual user-side protection;
- (iii) manual user-side protection and warning.

(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.

Indicators relating to the management of safety

7. “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.

Definitions of the scaling bases

8.—(1) “Train-kilometre” (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.

(2) “Passenger-kilometre” (passenger-km) means the unit of measure representing the transport of one passenger by rail over a distance of one kilometre.

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(3) “Line-kilometre” (line-km) means the length measured in kilometres of the railway to which these Regulations apply. For multiple-track railway lines, only the distance between origin and destination is to be counted.

(4) “Track-kilometre” (track-km) means the length measured in kilometres of the railway, to which these Regulations apply. Each track of a multiple-track railway line is to be counted.]

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