The EU Directive on Tunnel Safety

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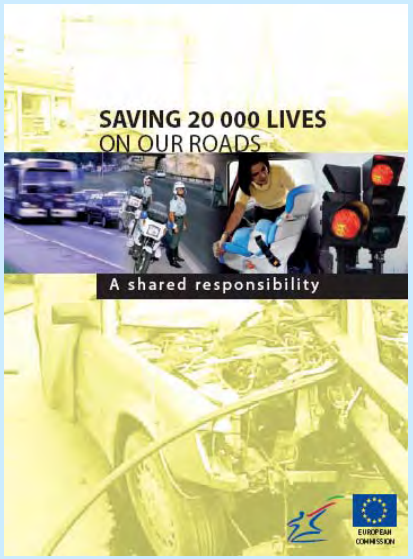
Policy (“a shared responsibility”)

White paper on Transport 2001



Road safety action programme 2003


COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 22/02/2006
COM(2006) 74 final

COMMUNICATION FROM THE COMMISSION

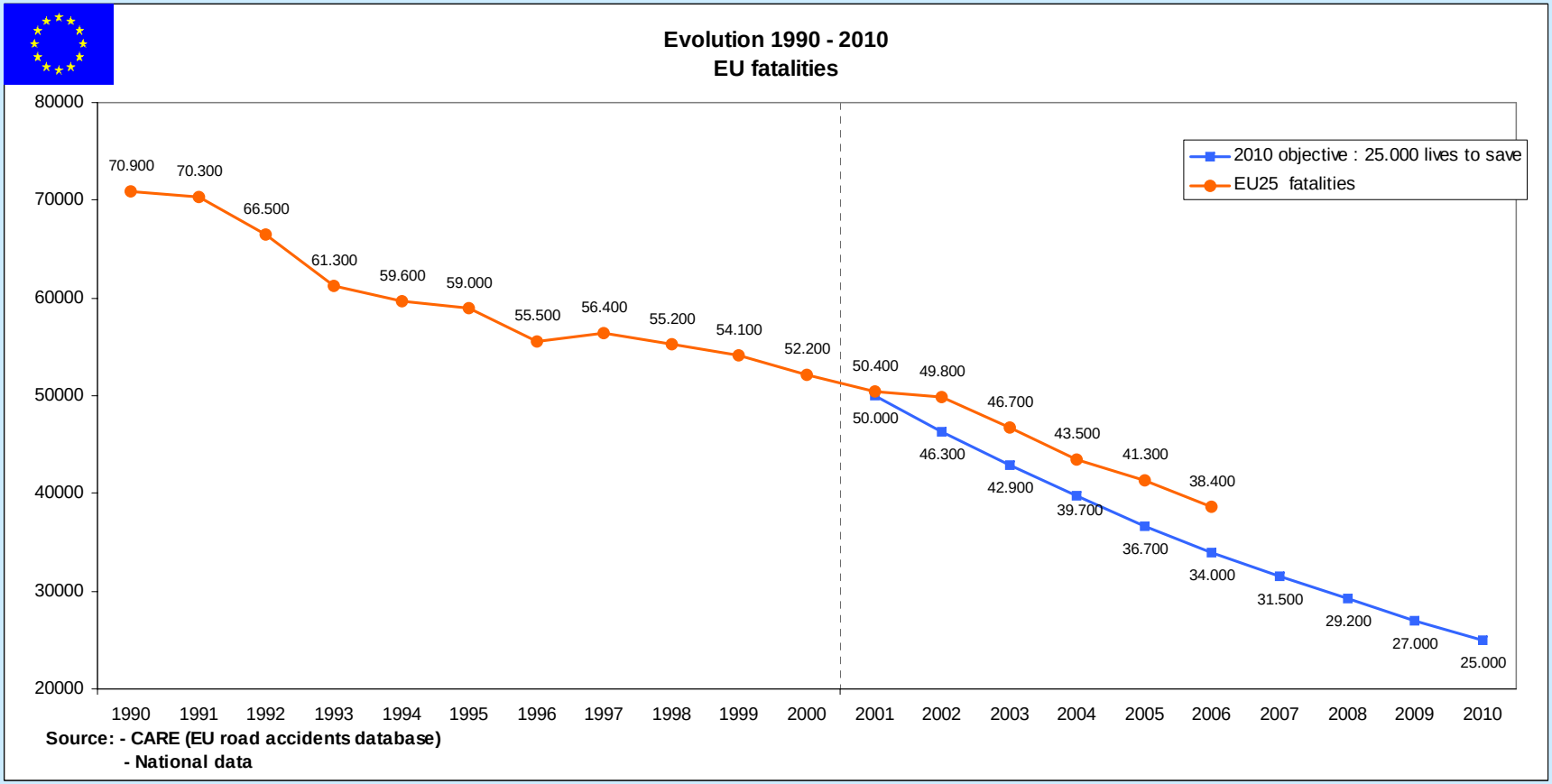
EUROPEAN ROAD SAFETY ACTION PROGRAMME
MID-TERM REVIEW

Mid term review of Road safety action programme 2006

Reminder...

- Over the period 2001-2010: -50% road accident victims (global target)
- A ’’shared responsibility’’
- Integrated approach at the EU level

Fatalities - evolution 1990-2010



Facts

- EU tunnels are aging (traffic conditions have changed, equipment obsolete, no mechanism to improve safety)
- Many lives have been lost in recent years
- Direct and indirect costs resulting from the closure of a tunnel are huge

DIRECTIVE 2004/54/EC

of the European Parliament and of the Council

on minimum safety requirements for tunnels in the Trans-European Road Network

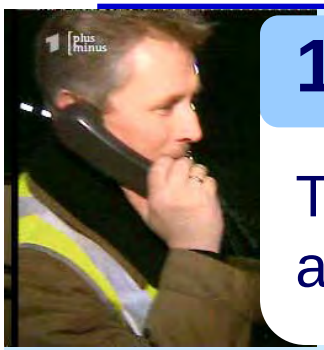
29 April 2004

http://ec.europa.eu/transport/road/roadsafety/roadinfra/tunnels/index_en.htm

Directive 2004/54/EC of 29 of April 2004

- It applies to all tunnels in the **Trans-European Road Network with lengths of over 500 m**
- To ensure safety in tunnels by **preventing critical events** that may endanger human life, the environment and tunnel installations, as well as by the provision of **protection in case of accidents**
- Tunnels shall meet **minimum safety requirements**

Requirements



1. Organisational requirements

To **harmonise** the **organisation** of safety at national level and to **clarify roles and responsibilities**.

2. Technical requirements (structural + equipment)

Based on existing harmonisation efforts at international level.
5 equipment classes according to traffic and tunnel type, as well as traffic volume and tunnel length.

The specified requirements deal with: infrastructure, operation, vehicles in road tunnels and tunnel user information.

Organisational requirements

Administrative Authority

Appointed by each Member State. Overall responsibility for safety. Authorises the commissioning of new tunnels. Can suspend the operation of a tunnel.

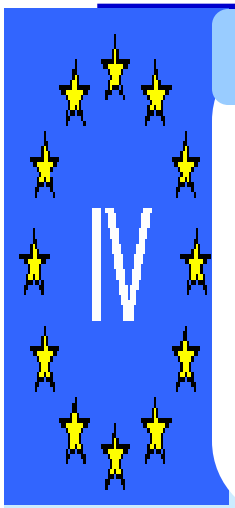
Tunnel Manager

Responsible for the safety of the tunnel. The two administrative authorities of bi-national tunnels recognise one and the same Tunnel Manager.

Independent Safety officer

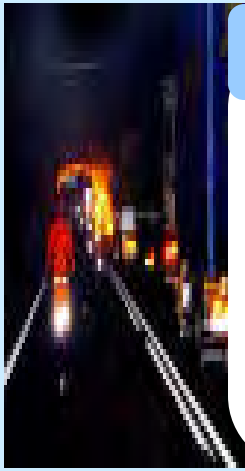
Nominated by the Tunnel Manager for each tunnel. Controls and supervises all preventive and safeguard measures.

Technical requirements



Tunnel classification

5 classes of tunnel equipment classes according to traffic and tunnel type, traffic volume and tunnel length. Class I tunnels need to comply with the strictest safety requirements

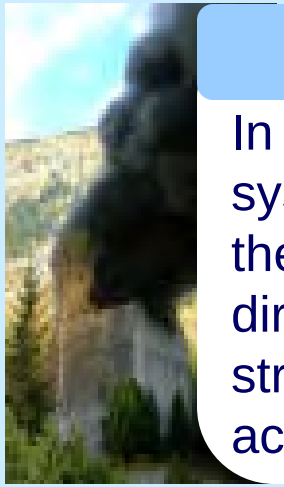


Escape routes

For class I and II tunnels with bi-directional traffic, the construction of special escape routes or safety galleries is mandatory.

Number of tubes

Single-tube tunnels should only be built if long-term forecasts show that traffic will remain moderate.



Ventilation

In the event of a fire the ventilation system either extracts smoke from the tunnel or pushes smoke in one direction. Tunnels should respect strict ventilation equipment rules according to their type.

Structural measures
Summary table

● mandatory for all tunnels ❍ not mandatory
* mandatory **with exceptions** ☯ recommended

INFORMATIVE SUMMARY OF MINIMUM REQUIREMENTS			**Traffic ≤ 2000 veh. per lane**		**Traffic > 2000 vehicles per lane**			**Additional conditions for implementation to be mandatory, or comments**
			500-1000m	**>1000m**	**500-1000m**	**1000-3000m**	**>3000m**	
Structural Measures	2 tubes or more	§2.1						Mandatory where a 15-year forecast shows that traffic > 10 000 veh./lane.
	Gradients ≤ 5 %	§2.2	*	*	*	*	*	Mandatory unless not geographically possible.
	Emergency walkways	§2.3.1 §2.3.2	*	*	*	*	*	Mandatory where there is no emergency lane. In existing tunnels where there is neither an emergency lane, nor an emergency walkway additional / reinforced measures shall be taken.
	Emergency exits at least every 500 m	§2.3.3 - §2.3.9	❍	❍	*	*	*	Implementation of emergency exits in existing tunnels to be evaluated case-by-case.
	Cross-connections for emergency services at least every 1500m	§2.4.1	❍	❍ / ●	❍	❍ / ●	●	Mandatory in twin-tube tunnels longer than 1500 m.
	Crossing of the central reserve outside each portal	§2.4.2	●	●	●	●	●	Mandatory outside twin- or multi-tube tunnels wherever geographically possible.
	Lay-bys at least every 1000m	§2.5	❍	❍	❍	❍ / ●	❍ / ●	Mandatory in new bi-directional tunnels >1500m without emergency lanes. In existing bi-directional tunnels >1500m depending on analysis. For both new and existing tunnels depending on extra usable tunnel width
	Drainage for flammable and toxic liquids	§2.6	*	*	*	*	*	Mandatory where transport of dangerous goods is allowed.
	Fire resistance of structures	§2.7	●	●	●	●	●	Mandatory where a local collapse can have catastrophic consequences.

Technical equipment
Summary table

● mandatory for all tunnels ❍ not mandatory
⁎ mandatory **with exceptions** ☯ recommended

INFORMATIVE SUMMARY OF MINIMUM REQUIREMENTS			**Traffic ≤ 2000 veh. Per lane**		**Traffic > 2000 vehicles per lane**			**Additional conditions for implementation to be mandatory, or comments**
			500-1000m	**>1000m**	**500-1000m**	**1000-3000m**	**>3000m**	
Lighting	Normal lighting	§2.8.1	●	●	●	●	●	
	Safety lighting	§2.8.2	●	●	●	●	●	
	Evacuation lighting	§2.8.3	●	●	●	●	●	
Ventilation	Mechanical ventilation	§2.9	❍	❍	❍	●	●	
	Special provisions for (semi-) transverse ventilation	§2.9.5	❍	❍	❍	❍	●	Mandatory in bi-directional tunnels where there is a control centre.
Emergency stations	At least every 250 m	§2.10	●	●	●	●	●	Equipped with telephone and 2 extinguishers.
Water supply	At least every 250 m	§2.11	●	●	●	●	●	If not available, mandatory to provide sufficient water otherwise.
Road signs		§2.12	●	●	●	●	●	For all safety facilities provided for tunnel users (see Annex III).
Control centre		§2.13	❍	❍	❍	❍	●	Surveillance of several tunnels may be centralised into a single control centre.
Monitoring systems	Video	§2.14	⁎	⁎	⁎	⁎	●	Mandatory where there is a control centre.
	Automatic incident detection and/or fire detection	§2.14	●	●	●	●	●	At least one of the two systems is mandatory in tunnels with a control centre.
Equipment to close the tunnel	Traffic signals before the entrances	§2.15.1	❍	●	❍	●	●	
	Traffic signals inside the tunnel at least every 1000m	§2.15.2	❍	❍	❍	❍	☯	Recommended if there is a control centre and the length exceeds 3000 m.
Communi-cation systems	Radio re-broadcasting for emergency services	§2.16.1	❍	❍	❍	●	●	
	Emergency radio messages for tunnel users	§2.16.2	●	●	●	●	●	Mandatory where radio is rebroadcasted for tunnel users and where there is a control centre
	Loudspeakers in shelters and exits	§2.16.3	●	●	●	●	●	Mandatory where evacuating users must wait before they can reach the outside.
Emergency power supply		§2.17	●	●	●	●	●	To ensure the functioning of indispensable safety equipment at least at during evacuation of tunnel users.
Fire resistance of equipment		§2.18	●	●	●	●	●	Shall aim to maintain the necessary safety functions.

Derogations

- Where requirements can be achieved only at disproportionate cost,
  - ➔ implementation of equivalent or improved risk reduction measures may accepted.
- **BUT**, efficiency of measures shall be demonstrated through risk analysis
- Design factors and traffic conditions shall be taken into account
  - ➔ traffic volume, type of traffic, number of heavy goods vehicles, tunnel characteristics, e.g. length, gradients and geometry
- By 2009 the Commission will publish a report on the practice followed in the Members States

The deadlines of the Directive

- **30-04-2006** — **Date of transposition**
- **30-10-2006** — **Assessment of compliance + timetable**
- **30-04-2007** — **Report on planned measures by MS**
- **30-04-2009** — **Report on MS practices by EC**
- **30-04-2014** — **Refurbishment of existing tunnels**
- **30-04-2019** — **Refurbishment of existing tunnels (*)**

(*) for MS where Km of Tunnels/Km of TERN > EU average

Conclusions

- **The Directive has been transposed by the majority of the MS**

- **In many MS, the minimum requirements will be applied also on tunnels beyond the scope of the Directive**

Focus on Road infrastructure: Today's main problems

- Decreasing budgets for road infrastructures vs. more attention to the level of safety of roads
- Inability of "old" roads to absorb the increasing traffic
- "High risk road sections" (even on modern roads!)
- Various levels of responsibility within each Member State (inefficient organisation)
- Heterogeneous signs, signals, road markings, road side features (even in a single Country!)

Road Infrastructure Safety Management: Objectives

- To bring about a common high level of safety of roads in all EU Member States along the TENs
- To ensure that safety is integrated in all phases of planning, design and operation of road infrastructure
- To use the limited funds for more efficient construction and maintenance of roads

Focus on Road Infrastructure: A coherent package of measures

- **Regulatory actions necessary on:**
  - **Safety Impact Assessment (new roads - pre-design phase)**
  - **Safety Audits (new roads - design, construction & early operational phases)**
  - **Network Safety Management - management of "High accident concentration sections" (existing roads)**
  - **Safety Inspections (existing roads)**
- **Package of measures recommended by the High Level Group on Road Safety**

Focus on Road Infrastructure: A coherent package of measures

- The procedures are internationally recognised as best practices in road safety engineering
- Their effectiveness is demonstrated by solid costs/benefits analyses.
- The Directive instrument would not impose a harmonisation of the methods. Member States having these procedures already would not be required to change their practices
- Positive comments on this proposal have been made in many occasions by several international organisations, often having different interests, like FIA, IRU, ERF, ACEM, FEMA, CEDR.

Diffusion of the procedures in the Member States

- A High Level Expert Meeting on “Infrastructure Safety” was organised in Vienna on 24-25 January 2006
- The table summarises in which of the 25 Member States the instruments are already in use

Road Safety Impact Assessment	AT	BE	CY	CZ	**DE**
	DK	EE	EL	ES	**FI**
	FR	HU	IE	IT	**LT**
	LU	LV	MT	**NL**	PL
	PT	SE	**SI**	**SK**	UK
Road Safety Audits	**AT**	BE	CY	**CZ**	**DE**
	DK	**EE**	**EL**	ES	**FI**
	FR	**HU**	**IE**	**IT**	**LT**
	LU	**LV**	**MT**	**NL**	**PL**
	PT	SE	**SI**	SK	**UK**
Network Safety + High-Risk Road Section Management	**AT**	BE	**CY**	**CZ**	**DE**
	DK	**EE**	**EL**	**ES**	**FI**
	FR	**HU**	**IE**	**IT**	**LT**
	LU	**LV**	**MT**	**NL**	**PL**
	PT	SE	**SI**	**SK**	**UK**
Road Safety Inspections	**AT**	BE	CY	**CZ**	**DE**
	DK	**EE**	**EL**	ES	**FI**
	FR	**HU**	**IE**	**IT**	**LT**
	LU	**LV**	**MT**	**NL**	PL
	PT	SE	SI	**SK**	UK

Direct Impacts on Safety

- **600 fatalities and 7000 injury accidents** per year if applied on TEN roads *
- **1.300 fatalities** per year could be saved if the safety management would be applied to the main road network in the EU *

* Source: Thematic network ROSEBUD

Thank you for your attention!