



Europe's voice for sustainable transport



Position paper on tunnel safety requirements

by the
European Federation for Transport & Environment (T&E)
and the
European Transport Safety Council (ETSC)

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The European Federation for Transport and Environment (T&E) and the European Transport Safety Council (ETSC) welcome the initiative of the European Commission to propose a Directive on minimum safety requirements for tunnels in the Trans-European Road Network¹. Safety requirements in road tunnels are needed in order to reduce the risk of future accidents.

However, T&E and ETSC have also general reservations with regard to the approach followed by the Commission:

- This Directive applies only to tunnels on the trans-European road network, among the safest roads in the EU. Moreover, the tunnels do not represent the most dangerous part of the TERN² and many other actions with higher safety potential should be given priority if the EU is to meet its ambitious target of halving road deaths by 2010 (to 20,000 deaths)³.
- There is a lack of any supporting basis for the Commission's proposal in terms of cost-effectiveness. T&E and ETSC recognise that definite cost-effectiveness analysis of the proposal is rendered difficult since information is lacking about the underlying frequency of catastrophic events and the underlying average cost of such events. However, such analysis would need to be carried out in terms of a range of assumptions about those frequencies and costs and would probably have mixed implications on the case for implementing the measures foreseen in this Directive.
- Notwithstanding the specially horrifying circumstances of death that a tunnel catastrophe involving fire and suffocation might represent, a cost-effectiveness analysis might indicate for expensive infrastructure changes, especially to already existing tunnels, the high costs per expected life saved. This may cast doubt on the case for the measure.
- The emphasis of the instruments and requirements is laid on the infrastructure, whereas the other three elements (operation, vehicles and road users) are playing a lesser role. Less expensive measures like signing, marking, communication systems for operators and rules for users (speed, spacing of vehicles) might prove to be much more cost-effective.
- The approach is instrument oriented including an extensive technical annex with a long list of measures which must be implemented but it contains no safety performance indicators. Adequate indicators would for example look at the frequency of routine incidents or the speed and effectiveness of response to such incidents.

¹ COM (2002) 769 final.

² See UNECE 2001, p. 16

³ See White Paper on Common Transport Policy 2001 (European Commission 2001b).

T&E and ETSC fear that the approach followed by the Commission does not go far enough in terms of effectively and efficiently improving road tunnel safety in the near future:

- The rigid application of the same instruments for all tunnels belonging to a certain category (characterised by the number of tubes, the length of the tunnel and the traffic volume) does not respond to the real risks which are differing strongly between tunnels within the same category⁴. Furthermore, a number of studies show that unidirectional tunnels may have the same level of risk and accident rates as bi-directional tunnels⁵. It is per se not clear at what level of traffic a twin tube tunnel is sufficiently safer to justify the cost of the second tube.
- The implementation of infrastructure measures is usually more expensive and requires more time than the implementation of operational measures, which could improve road safety in tunnels in the short to medium term.
- The effectiveness to increase transport safety by building twin tube tunnels on current links with single tube tunnels must be questioned. The construction of twin tube tunnels on existing single tube links will also lead to an increase of transport volume and hence is likely to make road transport less safe.
- The extremely high risk of heavy goods vehicles is not sufficiently reflected. The fire load of a car is much lower than that of a truck and a truck that has caught fire will burn for much longer and produce a much higher fire power.⁶ Therefore, accidents with heavy goods vehicles have much more important consequences than accidents with passenger cars.

T&E and ETSC expect from a tunnel safety Directive that it seeks to achieve harmonization in signing, marking and rules for users and advocates for safety audits so that decisions on expansive infrastructure measures could be taken case-by-case rather than being imposed as an overall requirement. T&E and ETSC also expect that a tunnel safety Directive is in line with the stated policy to protect Alpine regions from negative impacts of transport⁷ and that it does not contradict the objective of European transport policy to move freight transport from road to rail.⁸

T&E and ETSC ask the European Parliament and the Council to amend the current proposal for a Directive as follows:

- **The Directive should establish a list of safety performance indicators for road tunnels. These indicators could for example measure the frequency of routine incidents or the speed and effectiveness of response to**

⁴ See e.g. PIARC 1995.

⁵ See e.g. Lemke 2000, p. 99f, Hidber et al 1999, p. 10-2ff ; 2000; Schrammel et al 2000.

⁶ See UNECE 2001, p.19: a car has a fire power of 3– 10 MW and burns for 10 to 30 minutes. The fire power of a truck is 30 to 150 MW and it burns 1 to 4 hours.

⁷ See Alpine convention 1991 and 2000.

⁸ See Sustainable Development Strategy 2001 (European Commission 2001a) and White Paper on Common Transport Policy 2001 (European Commission 2001b).

routine incidents (including the speed of responses by emergency services)⁹.

- **Member States should be asked to record uniformly those safety performance indicators**
- **The European Commission should analyse those safety performance indicators and use the outcome of this initial period of data gathering as a basis for the possible setting of a safety target.**
- **Prior to safety inspections, the Directive should mandate safety audits for each individual existing and planned tunnel on the TERN of at least 500 metres length.**
- **Safety audits would need particularly to address the organisational aspects of accident detection and adequate and timely response: the level of accident prevention measure, the organisation of the human part of the traffic monitoring, the mitigation measures, the effective maintenance of aforesaid provisions and effective training and instruction of traffic control crews and public rescue organisations involved.**
- **Member States should be encouraged to emphasise operational measures which can be implemented in a short to medium term.**
- **The Directive should concentrate on cost-effective measures, be they infrastructural, operational or related to vehicle and the driver. Costly measures, like twin tube tunnels, would divert public funds from priority actions with higher safety potential, not yet addressed by the European Commission.**
- **The Directive should contain a maximum level of permitted average traffic volume per hour and lane in unidirectional and in bi-directional tunnels.**
- **The Directive should also contain upper limits of vehicle units present in each tube. This is basically important for rush hours and compliance with the limit should be enforced.**
- **The Directive should pay special attention to the high risk potential of heavy goods vehicles. The maximum amount of heavy goods vehicles using tunnels must be defined as well as the maximum share of heavy goods vehicles within a tunnel.**

⁹ Experience of the aviation sector could help increasing the effectiveness of tunnels evacuation. Aviation could help transferring/translating knowledge on cabin evacuation. For example, each aircraft (also big ones) needs to be evacuated in less than 90 seconds. Possibly tunnels could also be certified on evacuation aspects, just as aircrafts. Means and provisions for influencing a safer (rescue oriented) road user's behaviour, such as active warning system, should be included.

- **The European Commission shall be encouraged to collect and disseminate best practices in tunnel safety.**
- **The European Commission shall encourage measures to improve road user's behaviour in tunnels.**

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