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Work-related Road Safety 2015

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Transport

CONTENTS

1 Overview

What is work-related road travel?

Many people use the road network for work and while commuting to and from their place of work. Work-related road travel ranges from use of publicly or privately owned or leased motor vehicles, or travel by bicycle or on foot. Additionally, many people work on or near the road. Work-related road travel thus comprises activity at the site of work, work journeys on the road and commuter journeys to and from work. Research in one Member State indicates that travelling for work comprises around 30% of all travel, rising to 50% if commuting is included.

Work-related travel is a hazardous activity

High risk of serious health loss: The EU Strategic Framework on Health and Safety at Work 2014-2020 states that every year in the EU more than 4.000 workers die due to accidents at work and more than three million workers are victims of a serious accident at work leading to an absence from work of more than three days. Work-related motor vehicle crashes are a leading cause of death and long-term injury in the workplace and in driving associated with work. While systematic monitoring of work-related road deaths and serious injuries for the EU as a whole is lacking, it is estimated that between 40-60% of all work accidents resulting in death are road crashes while using the road for work and while commuting.

Most work-related crashes involve company cars. High mileage work-related driving in cars and light vans leads to a higher risk of crash involvement than similar non-work driving, although crash causes are similar. Professional driving involves far higher risks than those encountered in virtually any other occupation or most other daily activities. Despite the fact that the rate of death in road crashes is lower for professional drivers than for other groups of road users, substantial risks of serious and fatal injury exist for other road users in crashes involving commercial road transport.

High costs: The costs of work-related crashes are high both for society and employers. The real costs of road crashes to organisations are nearly always significantly higher than the resulting insurance claims and poor safety records can adversely affect efforts to demonstrate corporate social responsibility. Improving road safety in itself can contribute to economic growth by addressing avoidable costs.

Barriers to effective activity

Researchers and practitioners have highlighted a range of factors which impede success in managing occupational road safety. These include limited collection of basic data e.g. 'purpose of journey' data, operational procedures and structures, lack of senior management commitment, lack of awareness of the organisational costs of road crashes and their consequences, poor integration between fleet safety and occupational health and safety, reliance on 'claims-led' procedures, inadequate crash investigation, a reactive rather than proactive response to injury prevention, lack of attention to the evidence-base for intervention, inflexible attitudes to change and poor management.

Work-related road safety management

Improving work-related road safety requires a planned, systematic approach and is a shared responsibility requiring careful leadership and management.

Management frameworks: Work-related road use is both a road safety and occupational safety issue covered within the framework of international and national road traffic law and health and safety law. EU legislation requires employers to conduct risk assessments for occupational health and safety and sets out a range of requirements for professional drivers of road transport.

Work-related road safety is a key *Safe System* integration strategy which is being included increasingly in country and organisational road safety management systems. At the same time, there are indications that work-related road safety is not yet a mainstream activity, neither at EU level nor in many countries, within the management of occupational health and safety. Much activity remains fragmented, is insufficiently focused on societal goals to reduce death and long-term injury in road crashes or takes too little account of the evidence-base.

Global guidance from international organisations on a jurisdictional road safety management framework and a new global road safety management systems standard for organisations set out the current state of the art in road safety management and its assessment. The ISO standard: ISO 39001 (2012) has been developed to assist employers of organisations of all types and sizes in establishing and implementing a road safety management system. Its aim is to assist organisations in integrating road safety as a core objective into their management system as well as aligning with country road safety goals and strategies. It is expected that widespread adoption of the standard, which has been carefully aligned to international best practice in road safety management, will greatly assist the improvement of work-related safety.

At EU level, regional advice for the business sector is being developed increasingly by the non-governmental sector. EU projects such as PRAISE, together with national networks, help to identify and promote good practice in current work-related safety management and enhanced corporate social responsibility.

These global and regional initiatives provide mutually reinforcing approaches and guidance to decision-makers and practitioners at country and organisational levels on the development of systematic management frameworks and on steps to achieve the ambitious results sought in the global Decade of Action for Road Safety.

Employer policies: Employers in the public and private sectors are increasingly active. In some northern European countries and some Australian States, the lead road safety agency, local and state authorities, insurance and research organisations lead by example with safe travel and fleet policies and/or procurement policies aimed at reducing occupational road safety risk. Many companies have embarked upon work-related road safety activities, but there is much scope for well-monitored systematic activity. Typical reasons for engaging in work-related road safety include:

- Cutting organisation road crash and incident costs.
- Improving organisation profile and increasing business.
- Contributing to ambitious road safety goals, targets and policies.
- Responding to transport system quality goals.
- Responding to new national government policy.
- Desire of government departments to lead by example.
- Responding to award schemes which highlight good practice.

Key management functions and processes: Successful intervention to improve organisational or country road safety performance is always underpinned by a range of institutional management

functions and processes. Without this foundation, experience shows that intervention strategies and programmes may not be effectively implemented and results not achieved. These functions include coordination, funding and resource allocation, legislation, promotion, monitoring and evaluation and research and development and knowledge transfer. A strong focus on results is the overarching function which provides the rationale for activity, achieved by:

- Leadership, ownership and accountability Achieving road safety results in a work-related context or more generally requires long-term ownership, leadership and political will by government and the top management of organisations in business and civil society.

- Safety management review Comprehensive performance review is an essential first step in good practice road safety management. The OECD, World Bank and ISO all recommend periodic full road safety management capacity review covering all elements of the RTS management system and its linkages.

- Safety culture and Safe System The importance of a strong 'safety culture' within an organisation is confirmed by research. *Safe System* represents the prevailing 'safety culture' for a growing number of organisations.

- Setting goals and targets and a safety performance framework ISO 39001 stands out amongst other occupational risk management guidance, since it promotes a strong focus on achieving measurable results. It requires the adoption by top management of the long-term *Safe System* goal of zero death and long-term injury to be reached by interim, step-wide targets (including outcome and output targets). The ISO 39001 standard on road traffic safety management systems (ISO, 2012) requires organisations to follow a process that starts with review of current road safety performance, quantified wherever possible, determines the risks and opportunities, selects road safety performance factors to work on, analyses what can be achieved over time and sets appropriate road safety objectives, targets and plans to achieve them taking account of the context of the organisation, its leadership and the management functions, processes and associated activities that can have an impact on road safety.

- Key intervention strategies System-wide measures are required aimed at preventing fatal and long-term injury in work-related crashes. These include the planning, design and operation and use of the road network and the products and services used within it; the entry and exit to and from the network of vehicles, drivers and riders and the recovery and rehabilitation of victims. As one research review highlighted in 2011, less promising intervention appears to have had far wider application and support to date over the years than more promising applications.

- Driver training Post-licence training is a popular intervention. While one study in the late 1990s showed that formal defensive driver training at the workplace and training combined with incentive systems for crash-free driving can reduce the crash rate amongst professional drivers in a well-defined framework, research reviews continue to find no evidence of an impact on reductions in deaths and serious injuries from post-licence training in general.

- Fleet safety policies There are large benefits in ensuring that vehicle fleets are as safe as possible in their construction and fitted with demonstrably effective safety equipment (such

as speed assistance, alcolocks and seat belt reminders). The European New Car Assessment Programme safety ratings provide a useful reference for selecting new car fleets. Public procurement and safer travel policies also provide a useful means of encouraging purchase of cars with high safety ratings and the fitment of state of the art safety technology.

Scientific evaluation of the effectiveness of different approaches in specific work-related road safety contexts is at an early stage of development and needs encouragement.

2 Work-related travel is a hazardous activity

2.1 Introduction

What do we mean by work-related road safety?

Definitions of work-related crashes vary widely in different EU Member States. The comprehensive definition used here is: 'road crashes at the site of work, during work journeys and commuting to and from work'.

Who is involved?

Work-related road use comprises the driving and riding of various types of vehicle (e.g. company cars, vans, pickups, large goods vehicles, buses, taxis, minicabs, emergency vehicles, construction and agricultural machinery, motorcycles, mopeds and bicycles) used for a range of purposes, as well as walking. Vehicles may be company-owned or leased solely for business; company-owned vehicle use for both work and private purposes, or privately owned but used for work purposes. In 2009, of the 11.6 million passenger cars registered across 18 EU Member States, over 50% are company car registrations with the highest being in Germany (60%) and the lowest in Greece (24%) (Polk, 2009). Driving/riding takes place at the workplace, on the road network for work or while commuting to and from the place of work. Data from the UK show that business travel makes up about 30% of all travel, rising to over 50% if commuting is included (Murray, 2011). Additionally many people work on or near the road e.g. maintenance workers, refuse collectors, postal workers and emergency and vehicle breakdown service personnel (Clarke et al., 2005; Stradling, 2001). Different types of work-related road travel require periodic monitoring at national and EU levels to understand any changing patterns of risk such as increases in home shopping delivery, by increases in motorcycle and bicycle use or changes in numbers of heavy goods vehicles.

Who is responsible?

Work-related road use is both a road safety and occupational safety issue and at the core of public and corporate shared responsibility. Road traffic law and road safety management policy provides the framework for use of public roads. Occupational health and safety law generally focuses on the duties of employers to establish safe systems of work.

In some national occupational health and safety legislation, the vehicle is considered to be the 'workplace' if driven both on the public highway and at the organisation's site. In such cases employers have an obligation to ensure that vehicles and their operation comprise a working environment that is safe and with as few risks to health as possible. In other countries, employers' responsibilities are confined to the site. While employers, in general, have an obligation to ensure the safety of workers who use large and dangerous machines as part of

their employment, no equivalent measures are usually taken with employees who are expected to use vehicles as part of their work (Corbett, 2003; Stradling, 2001).

The different responsibilities and limited datasets for various aspects of work-related road safety have, no doubt, contributed to different levels of awareness of the importance of this issue to both road and occupational safety in Europe. Work-related road safety requires careful leadership and management by governments at jurisdictional level and by the top management of organisations. Close coordination between the transport and occupational health and safety sectors is needed for effective work-related road safety strategy development.

There is, however, a wide body of international research on specific issues and many are common to road safety in general. These inform an increasing body of advice available to employers. More and more countries and employers are starting to acknowledge the size and cost of the problem, the need for a systematic approach to work-related road safety and the opportunities for integrating this area into general road safety management. See also Erso web texts on Road Safety Management and Integration of Road Safety in Other Policy Areas.

At the same time, this area requires on-going scientific evaluation to inform the developing knowledge base. A recent research review (Helman et al., 2014) concluded: "While there is some ground for optimism in the increase in the number of reports that focus explicitly on targeting known risk factors, it is more than offset in the recent literature by the continuing advocacy of theory over data (Newnam and Watson, 2011), by papers that describe the Cochrane approach as inadequate (Pedersen *et al*., 2012), or hold that the usefulness of crash rates as an outcome measure is questionable (Beanland et al., 2013). Also discouraging is the prevalence of self-report data, which although undoubtedly useful as safety indicators (e.g. de Winter and Dodou, 2010) were never designed as direct proxies for accidents, and cannot always be assumed to be good indicators of the behaviours to which they refer."

2.2 Work-related road traffic injury

Number of crashes and injuries

Some data exists in countries internationally on the numbers of road traffic crashes and vehicles involved in work-related activity. Regulation (EC) No 1338/2008 of the European Parliament and of the Council on Community Statistics on public health and health and safety at work requires the provision of information on those workers injured on the roads, at sea, in the air and on the railway. Few countries, however, currently collect systematic, comparable information.

Under-reporting and different definitions of work-related road travel present challenges when collecting and analysing work related road safety data. While work-related road deaths are usually reported at the site of work, few European countries record 'journey purpose' in their national road crash reporting systems which means that the total number and characteristics of crashes and injuries occurring during work journeys are not recorded. Consequently, problems related to work-related safety are significantly under-reported.

Where 'commuting' is identified in national crash records it is clear that it comprises a significant proportion of all fatal work-related accidents (see Table 1). Surveys in several EU countries indicate that between 40-60% of all work accidents resulting in death are road crashes

(including crashes while driving for work and commuting crashes) (Eurogip, 2009; Eurogip, 2013; ORSA, 2011). The majority of work-related road deaths occur on the public highway.

Table 1: Work-related deaths involving commuting in selected EU countries

Country	% of work-related deaths involving commuting
Belgium	45%
Finland	45%
France	47%
Germany	43%
Italy	21%
Portugal	16%
Spain	29%
Note: different country definitions of 'commuting' apply.	

Source: MRG, 2004 reported in ETSC, 2011b.

In fleet management, there has been a general emphasis on counting crashes (particularly 'preventable' crashes) and repair costs rather than the deaths and serious injuries and performance factors targeted in national strategies (Haworth et al., 2000). Legal, claims-handling, establishing liability/mitigating circumstances and insurance cost minimisation requirements have driven crash reporting and recording. Systems have typically focused on claim and cost minimisation rather than risk management analysis and investigation (Murray et al., 2001).

Risks of crashes and injuries

All work-related driving: The comparative risks of different types of work-related travel by mode are unlikely to be different than for general travel by that mode. Road travel presents the highest death risk by distance travelled of all transport modes and motorcycling/moped use the highest risk within road travel (ETSC, 2003a).

Table 2: Risk of death (per 100 million person kilometres) in transport crashes by mode

Road (All road travel)	0,95
Car	0,7
Bus and coach	0,07
Air (civil aviation)	0,035
Ferry	0,25
Rail	0,035

Source: ETSC, 2003a

Work-related motor vehicle crashes present the leading risk of loss of life and long-term health for employees in most organisations. As with road crash risk in general, young drivers and riders bear the highest risks. Eurostat data for 2012 indicates that the incident rate (number of non-fatal accidents at work per 100.000 people employed) of young workers (18 - 24) is almost 41% higher than for older workers (ETSC, 2014). A German study indicated that the risk of crash involvement is higher for young commuters up to 25 years of age (2,5 higher than for commuters between 25 and 50 years) (Geiler et al, 2003). Older workers also have elevated risk. One US study showed that between 2003 and 2008 workers with an age of 65 years and older had an occupational highway transportation fatality rate ratio of 3,77 compared to workers with an age of 16–24 years (Myers et al., 2011). Another study indicated that multiple risk factors contribute to elevated risk amongst this age group including hazard exposure,

organisation of work, physical fragility, and normative cognitive, sensory, and psychomotor changes that occur with age. (Walters et al, 2013)

Professional driving: A Norwegian study found that professional driving is a highly hazardous activity involving risks far higher than those encountered in virtually any other occupation or most other activities of daily life. In addition, and despite the fact that their rate of death in road crashes is lower than for other groups of road users, professional drivers impose substantial risks on other groups of road users (Elvik, 2007). In Britain, heavy commercial vehicles, light vehicles, pickups and company cars had a lower risk of involvement in work-related crashes (defined nationally as excluding commuting) than that associated with emergency vehicle, minicab and taxi driving (Clarke et al., 2005).

Dangerous goods: Research shows that tankers carrying flammable goods have a 70 to 80% lower risk of crashes than heavy goods vehicles in general. Factors may include more stringent training of drivers of tankers for flammable goods, stricter standards for vehicles, and differences in the selection of road and traffic environments in which tankers carrying flammable goods and other heavy goods vehicles travel (Elvik et al., 2009).

Cars and light vans: Research in Britain indicates that car and light van (up to 3.500kg gross vehicle weight) drivers with high proportions of work-related mileage (excluding commuting) have a 53% greater risk of injury crashes than other drivers of similar age, sex, annual mileage and motorway mileage. Those with 80% or less of their total mileage engaged in work driving had, on average, about 13% more crashes than non-work drivers who were otherwise similar in terms of age, sex and annual mileage (Broughton et al., 2003). This study confirmed earlier research which found that car drivers with high proportions of work-related mileage have a much greater risk of crashes (including damage only of between 29% and 50%) than other drivers of similar age, sex, and annual mileage (Lynn & Lockwood, 1998). Research has shown that those driving company cars included in a company perks package and sales staff appear to be particularly at risk of crashes whilst those either driving their own car or liveried vehicles experienced similar risks to those of the general population (Chapman et al., 2000). The reasons for the increased liability of occupational drivers, termed by researchers as the 'fleet driver effect' are not well understood, although several tendencies have been noted.

Motorcycles: The high injury risks associated with motorcycle and bicycle dispatch riding have also been highlighted confirming earlier research (Elliot et al, 2003, EUOSHA, 2010).

Crash characteristics by type of work-related use (excluding commuting crashes)

An in-depth study of work-related crashes in Britain explored the different crash circumstances of different types of work-related motor vehicle crashes (Clarke et al., 2005). The crash-involved drivers were almost all male.

- Company car drivers had more of their crashes on slippery roads, or while under the influence of alcohol, or while speeding, than would be predicted by chance compared with drivers of other vehicles used for work purposes.
- Lorry drivers had a higher proportion of close following, fatigue/illness crashes as well as crashes resulting from load/handling problems associated with this type of working vehicle.
- Bus drivers showed a higher proportion of close following and failure to signal crashes although another driver shared blame with the 'at fault' bus driver in the majority of cases.

- Taxi drivers were the only group (albeit very small) that showed over-involvement in crashes caused by deliberate recklessness or failure to correctly judge gaps in traffic before making a manoeuvre.
- Emergency vehicle drivers showed over-involvement in crashes involving understandable time pressure and excess speed.

Key risk factors and hazards associated with work-related road crashes

Research shows that most work-related crashes are not fundamentally different in their causal structure to any other type of road crash, except in certain conditions such as the risks engaged in, of necessity, by emergency drivers (Clark et al., 2005).

Reducing the risk of death and long-term injury in work-related safety road crashes will include attention by public and private sector organisations to factors associated with the planning, design, operation and use of the road network and the products and services used within it, entry and exit rules and standards of vehicles and drivers and riders as well as factors associated with the recovery and rehabilitation of users. Various road safety performance factors have been identified for these within ISO 39001 on road traffic safety management systems (ISO, 2012). Attention to the measurement and targeting of intermediate outcomes/safety performance indicators which are causally-related to deaths and serious injuries allows closer management of road safety.

Road network safety quality

The safety quality of the planning, design, operation and use of the network will affect work-related safety outcomes. Responsibilities for the network largely fall to the public sector, but private organisations also have a key role. Failure to manage and integrate land-use planning of the siting of establishments with safety considerations, choice of unsafe routes for or by employees, failure to integrate setting speed limits with safe infrastructure design and layout in private and public road networks, or provide crash-protective medians or roadsides where necessary are all key risk factors which have been identified.

Vehicle fleet safety quality

The safety quality of the vehicle in terms of its construction and equipment can have a significant influence on crash and injury outcomes. Specific risk factors include a larger than average engine size of fleet car (Clark et al., 2005), a low Euro NCAP safety rating and in-vehicle distraction. Safety rating is influenced by the quality of design to address state of the art protocols for car frontal, car side and pedestrian protection as well as the fitment of proven technologies such as electronic stability control, seat belt reminders, speed management technologies, event data recorders, alcohol interlock systems and whiplash prevention systems (ETSC, 2009). In-vehicle distraction from the use of nomadic devices or in-vehicle features have also been identified as key risk factors (ETSC, 2009, 2010) See Erso web texts on Vehicle Safety, eSafety, Safety Ratings and Driver Distraction, Praise Thematic Report 1 and Praise Thematic Report 2, (Elvik, 2011).

Speeding

Studies show that for both urban and rural environments, small differences in speed can have a substantial effect on the occurrence and severity of road crashes and injuries (Nilsson, 2004; Elvik et al, 2004, Taylor et al, 2000). The chances of survival for an unprotected pedestrian hit by a vehicle diminish rapidly at speeds greater than 30 km/h, whereas for a properly restrained

motor vehicle occupant the critical impact speed is 50 km/h (for side impact crashes) and 70 km/h (for head-on crashes) (Tingvall and Haworth, 1999). Non-compliance with speed limits is widespread and excess speed is identified as a primary factor in about one third of EU fatal road collisions (OECD/ECMT, 2006). Speeding (over the posted speed limit) amongst company car drivers is common. Research has shown that company car drivers, on average, drive faster than other drivers (Stradling, 2001). A study amongst taxi drivers in Taiwan indicated that daily driving distance is a determinant factor of taxi driver speeding violations (Tseng, 2013).

Employers have a strong role to play in making sure that their employees are driving safely and respect the speed limit; checking that speed-limiting devices are not tampered with; establishing schedules that allow drivers enough time to obey speed limits; maximising opportunities for passive and active vehicle safety technologies on the market that can assist with speed management and monitoring and controlling driving hours within recommended safe limits and legal requirements (ETSC, 2014).

Drinking and driving, illegal drugs and prescription medicines

About 25% of all road fatalities in Europe are alcohol-related. However, studies of commercial drivers of heavy vehicles indicate that the prevalence of drinking and driving is low and lower than for other vehicle drivers. At the same time alcohol-related crashes result in more serious outcomes due to vehicle crash incompatibility caused by increased size and mass of commercial vehicles (ETSC, 2011a). See Erso web text on Alcohol. The use of illegal drugs and prescription medicine is an increasing cause for concern, often in combination with the use of alcohol, and there is evidence of rising use in several EU countries.

Fatigue, time-pressure and distraction

Research indicates that fatigue, time-pressure and distraction are key risk factors in work-related driving.

Heavy commercial vehicle driver fatigue: Research undertaken in various EU Member States indicates that driver fatigue is a significant factor in approximately 20% of heavy commercial transport crashes (ETSC, 2001). The results from various surveys carried out at different times show over 50% of long-haul drivers have at some time fallen asleep at the wheel (Hamelin, 2000). An Australian study indicated that work-related fatigue-involved crashes tended to occur around dawn whereas work-related non-fatigue crashes occurred in peak hour traffic (Williamson & Boufous, 2007).

French research into lorry driver working times and habits showed that risk levels vary with three key factors as regards the general problem of fatigue (Hamelin, 1987, 1992 and 1999). There is an increased risk of crashes at night with peak levels often being 10 times higher than daytime levels (Hamelin, 2000; Zużewicz and Konarska, 2005), an increased risk as the length of the working day increases, and also with irregular working hours. Driving time is only a part of the total working time for commercial drivers who have many more tasks than driving. Most studies show that it takes around nine or ten hours of driving, or eleven hours of work, before accident risk starts to rise (Hamelin, 1987; Mackie & Millar, 1978). After 11 hours of work, the risk of being involved in an accident doubles (Hamelin, 1987).

Employers of professional drivers have clear requirements in regard to setting out driving time for their employees and complying with the EU legislation under Regulation (EC) 561/2006

covering Driving and Rest Times. Whilst the EU drivers' hours rules place limits on driving times and rest periods, they do not place any specific limits on overall working time. The provisions of Regulation (EC) 561/2006 are supplemented by the EU Parliament and Council Directive 2002/15/ ECof 11 March 2002 laying down minimum requirements with regard to the organisation of the working time for all persons performing mobile road transport activities, including self-employed drivers. Non-compliance with obligations for minimum rest periods is estimated to produce an increase in the societal cost of collisions of 2,8 billion Euro a year (ETSC, 2014).

Car and light vehicle driver fatigue: A British study found that car and light vehicle drivers with very high proportions of work-related mileage tend to have an elevated crash risk and tend also to drive while fatigued (e.g. driving on long journeys more than 50 miles after a full day's work, under time-pressure to reach a destination (so they speed) and while distracted by in-car tasks such as mobile phone conversations, eating and drinking (Broughton et al, 2003). An earlier survey of car drivers in the United Kingdom found that 29% admitted to having felt close to falling asleep while driving in the previous year (Maycock, 1997). An Australian study reported that over a third of driver fatigue crashes or near crashes occurred on work-related journeys (Fell & Black, 1996). In another study 43% of respondents who had a fatigue incident (a crash, near miss or moved out of their lane because of fatigue) stated that their trip was work-related (Haworth et al, 2000). See Erso web texts on Fatigue, Driver Distraction and Cell Phone Use for further information.

2.3 Costs of work-related road crashes and injuries

Socio-economic costs

Little systematic information is available as yet for the EU as a whole about the specific socio-economic costs of work-related road traffic crashes. Crashes during commuting journeys cannot be identified readily in many national databases. Many organisations do not count the hidden costs of crashes (e.g. lost time and productivity) (Haworth et al., 2000).

However, the socio-economic costs of work-related road crashes and injuries are substantial both for countries, employers and employees and experience shows that sound business cases can be made for investment in work-related road safety. Research indicates that typically workplace injury costs are met 40% by the employee, 30% by the employer and 30% by the community as a whole (Murray, 2011). The real costs of road crashes to organisations are nearly always significantly higher than the resulting insurance claims. UK research into workplace accidents suggests that for every £1 recovered through insurance between £8 and £36 may be lost via uninsured costs. Typical crash costs comprise:

- Lost work time, lost orders and production losses.
- Emergency medical costs.
- Vehicle repair and maintenance costs (the average repair cost of a car is £700 in Britain).
- Legal and insurance costs (annually, 66% of company cars in Britain are involved in claims).
- Damage to employer reputation – especially when liveried vehicles are involved.
- Environmental costs – due to spillages of dangerous substances (ORSA, 2011).

Effect on corporate image

Many organisations work to demonstrate Corporate Social Responsibility which forms part of the Europe 2020 strategy for smart, sustainable and inclusive growth. In March 2010 the European Commission made a commitment to "renew the EU strategy to promote Corporate Social Responsibility as a key element in ensuring long term employee and consumer trust". A poor road crash record or road crashes involving company vehicles visible to the passer-by or reported in the media can cause significant harm to the company brand and reputation. The manner in which company employees use the road can significantly harm the company's public image. Court cases following crashes or prosecutions for driving offences are also reported in the local and national media (ORSA 2011).

IRU advice to taxi-drivers
"Professionally driven taxis are an essential link in the mobility chain. However, any accident or incident involving a taxi, regardless of who is to blame, can have a negative impact on the image of your profession."

Source: The Taxi Driver's Checklist, IRU, 2011

See also Erso web text on Integration of Road Safety in Other Policy Areas.

2.4 Benefits of work-related safety

A range of benefits have been identified with managing work-related road safety as illustrated in the example below. Principally, road safety, in itself, can contribute to economic growth by addressing largely avoidable crash costs (DfT, 2011).

Benefits of managing work-related road safety

- Control over costs, such as wear and tear, fuel, insurance premiums, legal fees and claims from employees and third parties
- Informed decisions about matters such as driver training and vehicle purchase and identifying where health and safety improvements can be made
- Fewer days lost due to injury
- Reduced risk of work-related ill health
- Reduced stress and improved morale
- Less need for investigation and paperwork
- Less lost time due to work rescheduling
- Fewer vehicles off the road for repair
- Reduced running costs through better driving standards; fewer missed orders and business opportunities so reduced risk of losing the goodwill of customers
- Less chance of employee driving bans e.g. as a result of points on their licences

Source: Health and Safety Executive, GB, 2003

Detailed discussion of the general costs and business case for investment in work-related road safety and examples of current good practice in organisations are set out by the European Transport Safety Council (ETSC, 2014).

2.5 Barriers to effective work-related road safety activity

A review of UK and Australian activities identified ten barriers to effective work-related road safety activity: the absence of 'purpose of journey' data, the nature of operational procedures and structures, the lack of senior management commitment, lack of integration between fleet safety and occupational health and safety, the focus on 'claims-led' procedures, lack of crash investigation, lack of standard definitions and conventions, a reactive rather than proactive response to injury prevention and inflexible attitudes to change and poor management (Murray, 2001; Murray et al., 2001).

3 Work-related road safety management

3.1 Management frameworks

As with safety management in general, there is growing awareness that good practice work-related safety management requires a systematic, planned *Safe System* approach. This entails establishing a road safety management system and providing appropriate capacity for the main organisational functions and processes needed to identify the main road safety problems and deliver effective actions to achieve desired results.

Work-related road safety is a key *Safe System* integration strategy which is being included increasingly both in country and organisational road safety management systems. See also Erso web text on Integration of Road Safety in Other Policy Areas.

However, even in countries and regions with better road safety performance, there are indications that work-related road safety is by no means a mainstream activity within the management of general health and safety (MORR, 2014; European Commission, 2013).

3.1.1 Global frameworks

Recent global guidance from international organisations on a jurisdictional road safety management framework and a new draft global standard for organisations set out the current state of the art in road safety management and its assessment. They aim to provide complementary approaches and guidance to decision-makers and practitioners at country and organisational levels on systematic frameworks and steps to achieve the ambitious results sought in the global Decade of Action for Road Safety.

An international ISO standard, ISO 39001 – 'Road traffic safety (RTS) management systems Requirements with guidance for use' (2012) – aims to assist organisations in establishing and implementing a road safety management system. This will help organisations to integrate road safety into other organisational management systems covering other key needs and also aligning with country road safety goals and strategies. It is expected that wide adoption of the new standard will greatly assist the contribution that can be made in improving work-related road safety.
The standard is directed at organisations of all types and sizes and has received support from many countries (37 member countries have been involved in its development). The standard is a requirement for certification and is included in a family of ISO management system standards. It is based on a new, common management system standard framework developed by ISO and a Plan, Check, Do and Act process. The aim is for the road safety management system to be

integrated with the general management system of an organisation and with several parallel disciplines of management system standards, e.g. ISO 9001 (Quality) and ISO 14001 (Environment), OHSAS 18001 (Occupational Health and Safety).

Employers are required to assess the context for the organisation's activity in relation to the road traffic system. Examples include:

- employees' use of the road network whether on duty travel or commuting by any publicly or privately-owned or leased vehicle or on foot;
- goods and passenger transport carried out by the organisation or its contractors;
- the provision of products and services by the organisation e.g. infrastructure, vehicles, enforcement, emergency medical response and trauma care;
- organisation activities which generate traffic to or from locations controlled or influenced by the organisation.

Unique elements include the requirements for an organisation to a) adopt the Safe System goal and decide on targets and objectives for the interim and b) consider a range of measurable safety performance factors areas within its sphere of influence that are known to reduce the risk of fatal and serious injury. Requirements for key management functions are set out focusing on achieving these results though planning and establishing a safety performance framework, coordination, funding and resource allocation, rules, promotion, monitoring and evaluation and knowledge building and transfer.

The aim is both to guide organisations through a process of continual improvement in road safety performance towards zero death and long-term injury and support the transfer of knowledge about successful activity. A further summary and commentary of the development of ISO 39001 is provided in ISO Focus and ISO 39001: A New Tool for Safe Systems. National Standardisation Bodies will assist in providing further information concerning the standard. Competence requirements for the auditing and certification of RTS/road traffic safety management systems to ISO 390001 has also been produced in a new annex to ISO/IEC 17021:2011 (ISO, 2014).

3.1.2 EU policy

EU occupational health and safety sector

In social policy, the Treaty on the functioning of the European Union states that the Commission shall encourage cooperation between the Member States and facilitate the coordination of their action in a range of fields, including the prevention of occupational accidents and diseases (Article 156).

The continuous improvement of safety and health at work is a key objective of European social and employment policy and a range of health and safety strategies have been produced. The European Directive 89/391 and amendments requires every employer in EU Member States to undertake a risk assessment. The European Commission together with the Advisory Council of Health and Safety at Work has prepared guidance on applying the Directive 89/391/EEC (EU-OSHA 2010).

The European Agency for Safety and Health at Work (EU-OSHA) was formed in 1994 and acts as a catalyst for developing, analysing and disseminating information that improves occupational safety and health in Europe. The principal activities are data collection and

awareness-raising activities which in the transport field include a broad range of occupational risks to transport drivers. This sector has recently started to address issues relating to work-related road safety.

The Commission proposed, in a previous health and safety at work strategy, the ambitious goal of achieving by 2012, a 25% reduction in the accident rate at work (number of accidents at work per 100,000 workers) in the EU 27 (European Commission, 2007). A reduction of 27,9% in the incidence rate of accidents leading to absences of more than three days was achieved in the EU between 2007 and 2011. Although probable, due to the lack of up-to-date statistical data, it has not been possible to establish with whether the 25% target was reached in 2012. The Commission concluded that setting a quantitative target (25%) for reducing the number of accidents at work had positive effects because it gave more visibility to this policy area and encouraged Member States to focus on measures to reduce the number of accidents. The Commission also concluded that it may, however, have diverted attention from preventing occupational diseases (European Commission, 2013). With the aim of better protecting over 217 million workers in the EU from work-related accidents and diseases, the European Commission has recently adopted a new Strategic Framework on Health and Safety at Work 2014-2020, which identifies key challenges and strategic objectives for health and safety at work, presents key actions and identifies instruments to address these. (European Commission, 2014). At the same time, neither measurable goals and targets are set nor any mention is made of work-related road accidents as a significant cause of death and serious injury in the workplace.

The need for specific EU-wide action on work-related road safety is highlighted in a recommendation by the EU Council of Ministers at the end of 2010.

Council Conclusions on Road Safety, Transport, Telecommunications and Energy Council meeting Brussels, 2–3 December 2010

"7. RECALLS that road safety is an issue of shared responsibility which requires that actions are undertaken at various levels within the public and private sectors; INVITES the Commission and the Member States to stimulate the development and use of safety management systems, in order to promote responsibility for road safety among all relevant stakeholders and ENCOURAGES employers to draft work-related road safety action plans."

The European Commission has proposed that, by 2050, the EU should move close to zero fatalities in road crashes and aim at halving road casualties by 2020 (European Commission White Paper, 2011; European Commission, 2011).

EU road transport sector

The EU is active in road safety in general and a range of measures have been introduced. In the road transport field these have include road safety action plans (which have included initiatives on data systems, road infrastructure, the type approval of vehicles, driver and rider licensing standards, enforcement initiatives, plans on intelligent transport systems and initiatives on eSafety best practice exchange and research and development).

Most specific attention to work-related road safety within road traffic law has been to regulate large commercial and passenger road transport operations and the carriage of dangerous goods. Various legislative initiatives have been taken at EU level which include EU driving and rest period rules and their enforcement via digital tachographs, the transport of and checks on dangerous goods by road, a Directive on training, safety advisers for the transport of dangerous goods, the provision of visual and audible seat belt reminders, compulsory seat belt wearing, safety markings on vehicles, blind spot mirror requirements and harmonising key traffic offence penalties for international hauliers. A range of other initiatives include best practice guidelines on securing cargo. EU projects on weigh in motion (WIM) technologies to assist the prevention of vehicle overloading and European truck crash causation, carried out by the European road haulage industry. The European Road Safety Charter was launched in 2004 and now has over 2,000 members including stakeholders from local government, SMEs, global business and the NGO community.

The Commission Communication Towards a European Road Safety Area: Policy Orientations on Road Safety 2011-2020 (European Commission, 2010) anticipates further activity on work-related safety such as review of the case for the fitment of speed limiters in light commercial vehicles, the compulsory installation of alcohol interlock devices in professional transport vehicles (e.g. school buses) and event data recorders (Black boxes) on professional vehicles. An independent evaluation of Policy Orientations concluded that new additional focus is warranted on work-related road deaths and serious injuries given their prevalence and cost to employers (Breen, 2015).

PRAISE

European projects such as PRAISE developed and conducted by the European Transport Safety Council are assisting in helping to identify and promote good and best practice in current work-related safety management and enhanced corporate social responsibility across the EU. Many recommendations have been made within the framework of this project for the further development of EU policy in work-related road safety and its key potential contribution to meeting long term EU road safety goals and interim targets. See PRAISE report links for full recommendations and box below for key, overarching recommendations.

PRAISE
Work-Related Road Safety

PRAISE report links see www.etsc.eu

- Work-related Road Safety Management Programmes
- In-vehicle safety equipment
- From risk assessment to training
- Fitness to drive
- Safer commuting to work
- Minimising in-vehicle distraction
- Road safety at work zones
- Fatigue: EU Social Rules and HGV Drivers
- Driving for Work; Managing Speed

PRAISE aims to:

- advance the need for work-related Road Safety Management and provide the know-how to employers who must take on that challenge.- raise the work-related road safety standards of EU Member States and carry out advocacy work at the EU level: work-related road safety is an area of road safety policy that needs renewed political commitment.
- communicate the message that work-related road safety should include road safety 'at' work (driving on duty) but also road safety 'to' work (commuting).

Key ETSC PRAISE recommendations for EU and Member State level action:

- Set new EU-wide targets and adopt measures which address the safety of driving for work and commuting to 2020.
- Improve data collection and monitoring to include purpose of journey and commuting data.
- Adapt the EU Directive 2009/33 on the promotion of clean and energy-efficient road transport vehicles to include in-vehicle safety technologies in public procurement.
- Ensure that employers draft a road safety plan in compliance with EU legislation and based on a solid business case to improve the health and safety of workers.
- Encourage companies to adopt the new ISO international standard for road safety management (ISO 39001).
- Lead by example and adopt work related road safety management programmes for the EU institutions and their vehicle fleets including vehicle safety in public procurement.
- Take EU system-wide action to improve work-related road safety in the field of data collection and risk assessment, evidence-based training, in-vehicle equipment aimed at reducing speeds (e.g. ISA), increasing seat belt use (seat belt reminders) reducing excess alcohol (e.g. alcolocks) and fatigue, fitting event data recorders, as well as minimising in-vehicle distraction (e.g. mobile and in-car telephones) improve work-related road safety; improving fitness to drive and improving the safety of work zones.

3.1.3 National approaches

Work-related road safety can fall within the framework of health and safety policy, public health policy, policies for the asset and quality management of road transport as well as specific road safety policy. Typical policy tools in use include data collection and in-vehicle monitoring, funding research, legislation, national guidance to employers, stipulating safety demands in procurement policies, leading by example with safe fleet policies and encouraging effective delivery partnerships.

National approaches to managing work-related road safety vary in definition of the problem, form and coverage from one country to the next. Relatively few countries have taken steps to investigate and address the problem systematically or have foreseen activity on work-related road safety in their national road safety strategies. While others have made a start. For example, in 2013 the Danish Road Traffic Directorate analysed road fatalities as a result of driving for work to provide baseline data. The intention is that it will then commission four pilot projects to explore the impact of intervention approaches (ETSC, 2014). No specific national work-related road safety targets or safety performance indicators have been identified during the course of this review.

Examples of national initiatives are presented below, although these are by no means the only examples of work related road safety in EU countries and beyond.

Sweden

Vision Zero provides the framework for the national road safety strategy and interim targets and states that public authorities should apply quality assurance principles to work-related travel. Work-related road safety is a key *Vision Zero* strategy and is integrated into national road safety policy. The operational strategy of *Vision Zero* states that public authorities should apply quality assurance principles to work-related travel. "The operational strategy of *Vision Zero* means that public authorities should, for example, take considerably greater responsibility for the quality assurance of their road transports, official business trips, and trips to and from work, so-called work-related trips, from a road safety and environmental point of view. If this is done in an organized way throughout society, there will be a significant impact on the road traffic safety within the country" (Ministry of Transport and Communications, 1997).

The Swedish Transport Administration and the Swedish Work Authority have adopted a strategic approach to improving the safety of the national vehicle fleet through fleet safety policies.

Swedish Government policy on promoting travel and fleet safety

Guided by Governmental Decree (2009:1) Environmental and Road safety has:

- established a travel policy pushing further demands on vehicles, such as lease vehicles, short term rental vehicles and private vehicles used on duty,
- required alcohol interlock from suppliers of transport and road maintenance services,
- been active in the development of ISO 39001 (Road Traffic Safety Management System Standard).

In Sweden, fleet safety forms part of quality management of the transport component of an institution (whether government or private). The quality assurance of transport aims to ensure that people and goods arrive at the right place, at the right time and in the right way (i.e. without any related danger of serious injury or damage to goods or the environment). Road safety and environmental outcomes are linked and there is emphasis on ensuring the quality of outsourced transport as well as the use of own vehicles. In specifying high safety standards, corporate purchasers of vehicles and transport services can create an economic imperative for providers of vehicles and transport services to meet these standards (Haworth et al., 2000).

What can a country/organisation/company do to promote safer vehicles?

- Develop and implement travel policies.
- Look at management systems (ISO 39001).
- Include vehicle safety in traffic safety work.
- Support Euro NCAP and actively use the results.
- Support every organisation that wants to focus on safety.
- Be the market (Everyone must only buy....).
- Get occupational health and safety on-board.
- Follow up new technologies (to give advice).

Source: Lie, 2010

The Swedish Work Environment Authority has provided national guidance for employers on occupational road safety including the relevance of the EC Directive 89/391 on health and safety and acknowledge that the vehicle is part of the workplace. The Authority encourages employers who operate vehicles as part of their work to develop road safety policies and programmes (e.g. seat belt use, driving without alcohol and drugs), monitoring of employees compliance with these rules by the employer, and the installation of safety equipment in vehicles (e.g. seat belt reminders, alcohol ignition interlock for commercial vehicles).

Local authorities are also showing leadership with 23% of municipalities and 18 % of county councils stipulating the need for alcolocks when purchasing new vehicles (Lie, 2010).

The National Society for Road Safety, Sweden (NFT) is a key supporter of national work- related safety activity and advocates for improvements and monitors the work-related road safety contributions of companies and organisations.

NTF work-related safety demands

- Road safety in commercial traffic is a responsibility for management and transport buyers.
- Transport companies and buyers should introduce transport safety quality systems. Minimum demands in a transport safety quality system are a sober driver, who always follows speed limits and uses a seat belt. The essence of the quality system is the control of these demands.
- Transport companies and transport buyers that introduce genuine systems for safe transport should be highlighted as good examples.
- Legislation and wage-conditions that encourage illegal high speeds and violations of regulations of driving-time and resting-time should be changed.
- The Work Environmental Act should be applied even when it comes to safe transport.
- Permits for commercial traffic should be connected to the companies traffic safety work.
- In the case of travel to and from work, employers should encourage the use of, for example, cycle helmets and reflectors even if there is no relevant legislation.

United Kingdom

The approach in the UK is characterised by a specific legislative framework for work-related road safety, stiff penalties for serious breaches of duty of care and periodic guidance. Following a research programme carried out since the late 1990s into work-related road safety, the UK made provision for the application of health and safety at work law to on-the-road work activities. Going beyond EU legislation, employers have a duty to manage risk on the road as

part of their health and safety responsibilities. This entails carrying out risk assessments to see what 'reasonably practicable measures' are needed to ensure 'safe systems of work' for their employees while on the road. More recently, the Corporate Manslaughter and Corporate Homicide Act 2007 specified that companies and organisations can be found guilty of corporate manslaughter as a result of serious management failures resulting in a gross breach of a duty of care.

Developments have been assisted by the independent Work-related Road Safety Task Group, which was foreseen in the national road safety strategy and was established in 2000. It comprised expertise of a wide range of organisations: employers, both large and small, worker representatives, law enforcement agencies, road safety experts, driving standards, transport groups, the insurance industry and policy makers with a secretariat of officials from the Health and Safety Executive (Health and Safety Executive, 2003) and the Transport Department. It produced a report with a series of recommendations for national policy development, some of which have been implemented.

Various measures are promoted through national guidance to employers. Work-related road safety management is expected to cover several key strategies: policy, responsibility, organisation, systems and monitoring. In 2014 previous work-related road safety management guidance (2003) was updated. The guidance clarifies that the vehicle is classed as part of the workplace under health and safety regulations, and that organisations need to have risk assessments in place for drivers, vehicles and the journeys they undertake.

Several work-related safety networks support UK initiatives. The Department for Transport funds Driving for Better Business run by the industry-led ROADSAFE partnership to champion work-related road safety in the business community and public sector by using advocates drawn from these communities to promote the business benefits of managing it effectively. The virtual Occupational Road Safety Alliance (ORSA) network was established by the Royal Society for the Prevention of Accidents (RoSPA) which was active in the occupational safety area between 2002 until recently (Bibbings, 2003). ORSA brought together 150 organisations and aimed to facilitate networking, joint working, information exchange and technical cooperation between key stakeholders. The BRAKE and PACTS organisations also play a key role in knowledge transfer and advocacy for improvements to work-related road safety in Britain.

France

In France the government set up the National Steering Committee for the Prevention of Road Risk Incurred by Employees – Programme of Action with the aim of improving work-related road safety. Voluntary agreements have been drawn up between government, insurance companies, the national occupational health fund and companies. The programme aims to motivate companies to undertake road safety programmes by increasing awareness of the high cost of road crashes to the company and by decreasing workers compensation and vehicle insurance premiums if programmes are implemented (Haworth et al., 2000; Royal Society for the Prevention of Accidents, 2006). Clubs Enterprises are organised as associations in nine regions. The objectives of the association are to lessen the human and economic costs of road crashes and to work cooperatively to mobilise companies around a common plan, and to facilitate the exchange of ideas and experiences among the partners. For example, the association in Haute-Garonne has 38 partner companies which correspond to about 69.000 employees, 17.500 vehicles and 218 million kilometres of vehicle travel per year.

Belgium

The Belgian Road Safety Institute (BIVV-ISBR) has set up a forum to encourage employers to manage road risk within the context of its 'Go for Zero' campaign. Companies can sign a commitment to road safety and in that way show their engagement in traffic safety. As of March 2014, 257 organisations and 237 companies had signed the charter (ETSC, 2014). The TRUCKSAFE charter is an awareness campaign designed by the Flemish Foundation for Traffic Knowledge (FFT), with the support of the Flemish government and all major national employer federations, driver unions and other representatives of the industry, targeting all individual truck drivers and transport companies or companies that have a fleet of HGVs in Flanders, Belgium.

Australia

There have been significant developments in work-related road safety activity in Australia over the last decade. Health and safety at work legislation makes employers responsible for minimising the risks involved in driving for work. This has mainly comprised implementing safety policies and procedures, ensuring vehicle safety, and providing adequate training for employees. In addition to this, 'chain of responsibility laws' have been introduced which increases the accountability of employers, managers and all other workers involved in the chain of commercial transport (Williamson & Boufous, 2007).

The important role of parliamentary committees in work-related road safety management has also been recorded (Murray et al., 2002). In New South Wales, Australia the Staysafe committee produced the highly influential Staysafe36 report, and several other relevant publications and related events. Staysafe36 covered a range of road safety and Occupational Health and Safety issues, and can be seen as a very important starting point for many of the current fleet safety initiatives in Australia. In Queensland the Travelsafe Committee co-organised and hosted a symposium on work-related road trauma and fleet risk management and released Travelsafe Report No. 34. This has led to a range of recommendations for different government agencies in Queensland, including the collection of purpose of journey data, more fleet safety in the road safety action plan and closer collaboration between key Government agencies including police, transport and OH&S. Several participant organisations have also implemented fleet safety reviews, programs and specific countermeasures as a direct result of the symposium."

Most Australian States have developed policies on improving work-related road safety and an example is presented below (VicRoads, 2006).

VicRoads Safer Driving Manual outlines four steps for policy development

1. Gain management commitment
In order to begin the process of developing a Safer Driving Policy, senior management needs to accept the important role that driving and cars play in your organisation.
2. Identify key people
Decide who is going to be involved in the development of your policy. People such as fleet managers, human resource managers, OH&S managers and industrial relations managers may be suitable. Others to include could be employees with a particular interest in road safety issues. Involving employees in the policy development stage will ensure their ideas and input are considered. A consultative and collaborative approach will lead to greater acceptance of the policy at the implementation stage. Ideally, appoint a manager to co- ordinate the Safer Driving Program, who reports directly to senior management.
3. Develop a policy suited to your organisation, targeting key road safety issues
Since no two organisations are exactly alike, you will need to devise a Safer Driving Policy that suits your particular needs and meets your organisation's specific activities and priorities. Your fleet's crash data/insurance claims and also information such as WorkCover claims involving motor vehicles can guide the development of the policy. The policy should be suitable for implementation in your organisation. Sample policies have been included in this kit and can be used as a starting point. As a minimum, the policy should cover:

- Buying safer cars
- Education of employees
- Monitoring of crash data.

The policy should clearly outline the responsibilities of employees and management.
4. Gather support
Consultation is the key to a successful Safer Driving Policy. Once the draft policy has been developed, consider making it available to staff for comment to their future support. Also identify which key decision makers will need to support the policy and its implementation throughout your organisation. Key decision makers may include the Chief Executive Officer (CEO), board members, support. Support from senior managers is essential.

Work-related road safety is integrated into the National Road Safety Strategy 2011-2020 which outlines corporate responsibilities, as shown below.

Extract from National Road Safety Strategy 2011-2020, Australia

Corporate responsibility

Companies and other employers will play a major role in building a road safety culture for Australia, particularly in the area of workplace reforms.

The links between work and road crashes are well established. On average, company drivers travel more than twice the annual distance of private car drivers and have about 50% more incidents. This suggests fertile ground and great potential rewards from improving road behaviour by working closely with organisations and employers.

The potential costs of inaction are high. Overall, work-related road crashes in Australia account for about half of all occupational fatalities and 15% of national road deaths, and many people are killed or seriously injured in motor vehicles or as bicyclists or pedestrians getting to and from work.
Corporate action can reduce employee involvement in road crashes through workplace policies and practices that value and promote road safety, encourage safe road user behaviour among employees and contractors, and provide for the purchase of vehicles with high safety ratings.

Organisations have legal responsibilities to provide a safe workplace and actively manage for a safety-focused environment. Specific Australian legislation designed to ensure organisations meet this primary obligation can be found in:

- The Corporations Act 2001, and
- Occupational Health and Safety Act 2004.

A number of Australian companies and organisations have already implemented road safety related policies. Important innovations include:

- Introducing workplace road safety policies (for example, requiring strict compliance with the road laws from employee drivers and encouraging a focus on reducing driver distractions by requiring pulling over to answer mobile phone calls).
- Focusing on safety behaviours in recruitment and selection.
- Including road safety requirements and skills in induction programs to embed a safe driving culture.
- Prioritising road safety records in fleet selection and maintenance (for example, requiring 5-star ANCAP rated vehicles where possible and ensuring key safety features are fitted to all new vehicles).
- Providing ongoing training and education of staff to build road safety.
- awareness and skills.

3.1.4 Local policy initiatives

Local and city government also plays a role in developing policies on improving work-related road safety as outlined in examples from Britain and Australia.

Transport for London WRRR requirements for vehicles above 3.5 tonnes

In February 2012 and following a series of fatal injuries in HGV and cyclist impacts, Transport for London (TfL) implemented Work-Related Road Risk (WRRR) requirement clauses into their existing and new contracts. TfL introduced these changes as part of its commitment to improving road safety and minimising the risk of commercial vehicles being involved in collision with vulnerable road users (VRUs). These requirements are now part of the TfL's standard contract 'terms and conditions' and are applicable to all contracts that require a commercial vehicle to be used for delivery and servicing activities. This typically includes construction, maintenance and servicing contracts and excludes management, HR, software, IT support or design contracts.

The key requirements comprise:

- Driver training, including approved driver training (Safe Urban Driving) and FORS e-learning.
- Close proximity sensors.
- Front mounted rear facing CCTV or Fresnel lens.
- Sideguards.

Transport for London has subsequently introduced a toolkit to assist compliance – Work-Related Road Risk requirements: Managing contract compliance.

Derbyshire's Road Safety Interagency Group

The Derbyshire Road Safety Interagency Group was established in 1996 and comprised representatives from Derbyshire County Council, Derby City Council, North Derbyshire Health Authority, South Derbyshire Health Authority, and Derbyshire Constabulary. The Group formed, following a number of years of informal working, to provide a structure to share expertise, opportunities and goals, such as crash reduction and health improvement. A key objective of the work of this group, which is reinforced in Derbyshire's Road Safety Strategy, was road safety in the wider community which provided a focus for workplace activities. A workplace register was formed to enable contact with companies who were interested in promoting safe practices for drivers. Initiatives include, a document outlining policies to put in place, regular newsletters and a biennial conference (Dykes, 2001).

The FleetSafe Project

The FleetSafe Project was coordinated by the Southern Sydney Regional Organisation of Councils (SSROC) and funded by the Roads and Traffic Authority of New South Wales. The rationale was that the 12 Councils with a combined fleet of about 2.720 light and heavy vehicles had an annual crash rate of about 50%, which is approximately double the average for fleets. This corresponded to a $AUS 1,2 million annual repair bill and annual insurance premiums of approximately $AUS 900.000. The FleetSafe program implemented in these Councils is divided into three sections: 1) Model FleetSafe Policy: This is a general model that Councils can incorporate with minor individual changes. 2) Recommended Guidelines: A detailed set of best practice procedures. 3) Implementation: Implementing and Maintaining the FleetSafe Program - A guide to successful implementation (Haworth et al, 2000).

3.2 Employer policies

Over the last 10 years, awareness of the importance of work-related road safety together with developing national governmental policy in this field has led to an increasing level of activity on

the part of employers both in the private and public sectors. The rationale for development includes:

- Responding to new national government policy
- Desire of government departments to lead by example in adopting in-house work-related safety policies
- Contributing to national and regional road safety policies and targets
- Responding to transport system quality goals
- Cutting organisation road crash and incident costs
- Responding to award schemes which highlight good practice
- Improving organisation profile and increasing business

3.2.1 Government

Public sector as exemplar

In Sweden and some of the Australian States, the lead agency for road safety has adopted a travel and procurement policy aimed at reducing occupational road safety risks. See Section on Fleet Safety Policies. Local government also plays a key role and examples from Sweden are shown below.

Local municipalities as exemplar in Sweden

In 1997, the Borlänge municipality in Sweden started a programme to purchase transport services featuring safety as a key element. Transport providers had to provide a safe service in terms of vehicle used, drivers used and the way the vehicle is driven. The contracts between the local government and the providers specified that the provider must have a quality system in place to be able to guarantee the safety standard. A local non-governmental traffic safety organisation was contracted to audit the activity to ensure that safety systems were in place (Haworth et al., 2000).

The municipality of Gothenburg purchases bus and tram services from a corporation and sets out specific contractual requirements in terms of speed etc. which are often lower than posted speed limits.

In Lund, buses have to be equipped with an intelligent speed adaptation (ISA) warning system with an audible warning for exceeding the speed limit and this practice is being adopted increasingly by Swedish local authorities.

3.2.2 Private sector

Many companies are embarking upon work-related road safety activities in European countries encouraged by governmental strategies, legislation and initiatives, promotion of good practice and non-governmental sector award-schemes. Efforts to establish the effectiveness of the variety of the approaches and measures adopted are in an early phase.

For example, a survey of over 1.000 organisations in Scotland about work-related road safety indicated that just under two thirds of organisations (64%) claimed to have a policy relating to safe driving procedures (70% of large organisations and 60% of medium sized organisations). About one third of those with a safety policy reported that they had demonstrated positive results. However, when these were followed up in order to identify case studies, it appeared that organisations reported having a policy if they had a general health and safety policy, even where this was not specific to work-related road safety. Where organisations had taken some action, usually training, this often could not be backed up with evidence of improvement, partly due to

the lack of data on which to compare before and after training intervention (Lancaster & Ward, 2002).

Some examples of current practice in large companies in Europe are listed below including examples from the ETSC PRAISE awards and monitoring by standards organisations.

Private sector initiatives – Swedish, Belgian and UK examples

Swedish insurance companies are responsible for approximately half of the rental car market with most of this demand comprising replacement cars for cars under repair (Folksam Research, 1999). The Folksam insurance company has developed environmental and safety requirements based on Euro NCAP safety ratings that must be met by the rental car companies with which it forms agreement.

A wide range of companies are using the ISA advisory system to inform drivers when speed exceeds the posted limit. These are:

- Transport companies: SITA, Panaxia. Alltransport
- Taxi companies: Gävle taxi, TaxiBil Syd
- Rental car companies: Hertz
- Elevator supplier and service: Kone

A taxi company in Sodertalje, a city with many large companies, developed and implemented a safety and environmental policy in order to provide especially large clients with a safe and environmentally sound transport service. The policy relates mainly to driving, requiring that speed limits should be complied with and that special consideration is given to unprotected road users. The policy is perceived by the company to offer competitive advantage, gaining more clients and having a positive impact on some of its larger clients.

SchenkerAkeri AB in Sweden has equipped every new vehicle since 2006 with alcolocks and the company carries out random alcohol checks at its terminals; cruise control systems cannot be set above 80 km/h and speed checks at different speed levels are carried out.

A taxi company in Mechelen, Belgium – N Taxi – adopted a zero tolerance policy on alcohol and drugs and has fitted alcolocks as part of a trial, leading to a 20% increase in company business.

Napp Pharmaceuticals base in Cambridge UK ensures that all its fleet vehicles are equipped with electronic stability control.

Source: ETSC, 2009, Haworth et al., 2000

Examples for ETSC PRAISE Awards.
ETSC PRAISE awards were established in 2010. To enter into the ETSC awards competition run by the PRAISE project, employers have to show evidence of measures taken to reduce the number of road collisions at their work place. A panel of judges put together by ETSC evaluates entries based on criteria including setting road safety targets, evidence of progress and sustainability of achievements. Since 2011, the competition is divided in two categories: large companies and small-medium sized companies. One example is provided below:

ESB – the large company winner in 2011 is a leading Irish energy utility with international operations and employs 7.150 people. Established in 1927, ESB has always had a strong safety culture. It has been promoting work related road safety since the 1960s through in-house safe driving awards. In 2004, the ESB Safe Driving Bureau was set up and the first of the safe driving programmes was introduced which aim to reduce the risk to staff drivers and to all road users through ongoing safe driving initiatives. A range of key initiatives such as Driving and Transport Risk assessment, a Fleet Management System and a new ESB Road Safety Strategy: Our journey to Excellence 2013-2020 have been introduced. The number of serious and fatal collisions recorded annually for the commercial fleets fell from 63 in 2004 to 13 in 2013. Other benefits included reduced costs for lost time and lower costs for damage repair (€1million in 2003 vs €650.000 in 2013); a substantial reduction in insurance costs (ESB commercial fleet insurance costs in 2013 were 25% of costs of insurance in 2004) and less exposure to potential compensation claims and associated costs (152 at fault collisions versus 67 in 2013 – 85 fewer compensation cases).

Source: ETSC, PRAISE, 2011, 2014

Two examples are provided below of companies which have been certified to ISO 39001 (See Section 3.3) and who have reported reduced costs and other benefits:

The Mark Group
Type of business: Green energy services provider

Company objectives in certifying to ISO 39001:
- Stop deaths and injuries from road traffic accidents
- Maintain best practice through audit processes
- Reduce insurance premiums and accident repair costs
- Minimize customer service disruption

Benefits of certifying to ISO 39001:
- Improved road traffic accident results
- Reassurance to internal and external stakeholders
- Badge on the wall - best practice in road safety
- Lower financial and 'lost opportunity' costs
- Improved employee engagement and customer service

"You may think your management system is the best in the world, but can you prove it? We wanted our system audited and certified so we could see it was as robust as we thought it was – and to show others that we are serious about road safety. We want to shout it from the rooftops"

Jamie Bogg, Environmental and Road Safety Manager, Mark Group Limited

FM Conway Ltd
Type of business: Construction and highway maintenance services

Company objectives in certifying to ISO 39001:
- Improve road traffic safety standards throughout vehicle fleet

- Comply with recommendations suggested by
- Transport for London
- Practice high standards of corporate social responsibility
- Reduce insurance premiums

Benefits of certifying to ISO 39001:

- Improved road safety
- Reduced risk of road traffic accidents
- £56.000 (10%) cut in insurance premium, after Stage One audit
- 60% decrease in insurance claims in 1st 3 months
- Boost to employee morale
- Increased competitiveness as industry leader in road traffic safety

"You can't put a price on increased road safety: from a Corporate Social Responsibility viewpoint, it makes total sense. But it also makes financial sense: we've already saved enough to cover the cost of certification and of maintaining it for the next seven years".

Dave Conway, Quality and Environmental Manager, FM Conway Ltd

Source: Brisitsh Standards Institution, 2013.

3.3 Key management functions and processes

Successful intervention and improvements in organisational or country road safety performance are always underpinned by a range of institutional management processes. Without this foundation, experience shows that interventions will not be effectively implemented and results not achieved. See Erso web text on Road Safety Management.

Results focus

Leadership, ownership, and accountability

Achieving road safety results in a work-related context or more generally requires long-term ownership, leadership and political will by government and the top management of organisations in business and civil society.

The OECD and World Bank recommend that government agencies commit to ensuring an effective jurisdictional road safety management system, commit to a strong results focus through their institutional management arrangements and resolve any capacity weaknesses which will inhibit implementation. This focus requires clear identification of: a lead agency/ department; the accountable involvement of a core group of government agencies with defined roles and responsibilities; high-level strategic performance review; adoption of the Safe System goal; definition of step-wise targets towards this and transparent reporting of results (Bliss & Breen, 2009; Bliss, 2004; OECD, 2008).

The ISO standard (39001) promotes similar objectives for all organisations. If adopted, it will require a high level of commitment to be demonstrated by persons in top management to the establishment and sustainability of the management systems and sets out a range of key requirements. It requires top management to adopt the elimination of death and serious injury in road crashes as the long term road safety objective of the management system, as well as considering what RTS results it wants to achieve in the interim.

ISO 39001, Road traffic safety management systems

Top management responsibilities and commitments

- Focus on health and prevention of loss of life
- Focus on results
- Leadership
- Partnership and collaboration
- Process approach
- Continual improvement
- Transparent and inclusive process
- Tailored implementation
- Part of decision making
- Emergency response
- Responsibility
- Capacity
- Compliance with statutory and regulatory requirements

Source: Lie, 2010, ISO, 2012

Safety culture and Safe System

'Safety culture' is a widely used term in occupational health and safety and a general discussion can be found. See AAA Foundation Conference, 2006.

The presence of 'safety culture' in road transport has been characterised in one Dutch research study as:

- the extent to which the management has a safety policy and acts accordingly.
- the extent to which a company wants to learn from failures;
- the extent to which a company has insight into its own safety and is willing to adopt structural measures to improve safety.

The absence of 'safety culture' was characterised by the absence of indicators for measuring safety performance; an acceptance of crashes as the price of business compensated for by insurance premiums; lack of understanding of the importance of planning (e.g. work/trips (influencing fatigue and time pressure); the tendency of employees to want to work hard for their company but to want to have freedom of the road (TNO, 2002).

The importance of a strong safety culture within an organisation is confirmed by research. A British study of fleet trainers, fleet managers, fleet drivers and the insurance industry indicated that the culture within an organisation may place an emphasis on business needs, such as delivery quotas, before safety. A strong safety culture within a company led to safety concerns being addressed more rigorously in that company. In addition, companies with strong safety cultures were found to be more satisfied with the outcomes of safety measures that had been implemented (Downs, et al., 1999). The organisation's safety culture also has an important effect on the crash liability of company drivers. A British study of company vehicle drivers in both small and large companies (using mainly company cars and LGVs) showed a relationship between safety culture, driver attitudes and crash liability (Bomel Ltd, 2004).

Safe System represents the prevailing 'safety culture' for a growing number of organisations. In Sweden, the Netherlands and Australia concepts known collectively as Safe System are contributing to the establishment of a national safety culture and are being championed increasingly in road and work-related safety management. This approach has seen a long evolution in road safety management and is promoted by the international organisations which are active in road safety. The ISO standard (39001) on road traffic safety management systems promotes the Safe System approach and requires top management to adopt its ultimate objective to eliminate death and long-term injury. Safe System characteristics are summarised below.

Adopting a Safe System approach

A Safe System approach is of the only way to achieve the vision of zero road fatalities and serious injuries and requires that the road system be designed to expect and accommodate human error.
A Safe System approach has the following characteristics:

- It recognises that prevention efforts notwithstanding, road users will remain fallible and crashes will occur.
- It stresses that those involved in the design of the road transport system need to accept and share responsibility for the safety of the system, and those that use the system need to accept responsibility for complying with the rules and constraints of the system.
- It aligns safety management decisions with broader transport and planning decisions that meet wider economic, human and environmental goals.
- It shapes interventions to meet the long term goal, rather than relying on "traditional" interventions to set the limits of any long term targets.

The basic strategy of a Safe System approach is to ensure that in the event of a crash, the impact energies remain below the threshold likely to produce either death or serious injury. This threshold will vary from crash scenario to crash scenario, depending upon the level of protection offered to the road users involved. For example, the chances of survival for an unprotected pedestrian hit by a vehicle diminish rapidly at speeds greater than 30km/h, whereas for a properly restrained motor vehicle occupant the critical impact speed is 50km/h (for side impact crashes) and 70km/h (for head-on crashes).

Source: OECD, 2008

Reviewing safety performance, organisational context, long-term goal and targets

Reviewing safety performance

Comprehensive safety performance review is essential in good practice road safety management. The OECD (2008), World Bank (Bliss and Breen, 2009, 2013) and ISO (39001) recommend periodic full management review covering all elements of the RTS management system and its linkages. EU legislation requires employers to conduct risk assessments for occupational health and safety.

The ISO 39001 standard on road safety management systems requires organisations to follow a process that starts with review of its current road safety performance which should be quantified wherever possible, taking account of the context of the organisation, its leadership and the management functions, processes, and associated activities that can have an impact on road safety.

Assessing the organisation's context

The ISO standard requires organisations to assess the context of their organisation in relation to the road traffic system and to consider the use of relevant safety performance factors. Review of the context of the organisation allows it to identify the actual and potential risks faced by employers and their employees which it can influence. The standard outlines a range of contexts to assist organisations in identifying how they interact with the road traffic system and consequently the scope of their exposure to risk.

Different Organisational Contexts: ISO 39001 - Annex A

A. Employees' use of the road transport system

- To and from work
- On duty travel using own car, company car and rental car (or other types of vehicle) or walking
- On duty travel using public transport, taxi or with contracted parties

B. Goods and passenger transport in the road traffic system

- Transport carried out by the organisation
- Transport contracted out to another organisation
- Delivery of goods and people from another organisation

C. Major generation of traffic flow

- Activities that generate traffic to and from locations controlled or influenced by the organisation
- Transport infrastructure related to locations where the organisation operates
- Organisations like supermarkets, schools and locations with many visitors are relevant. It is also relevant to organisations that own their own road infrastructure.

D. Service delivery and products for the road traffic system

- Core activities and processes delivered as service and/or products in the road traffic system, such as transport service, planning, design, construction and maintaining infrastructure, vehicles and other products.
- Traffic management, emergency response, trauma care, rehabilitation, enforcement and legislative activities.

Source: ISO 39001 (2012)

Requirement to consider road traffic safety performance factors

The organisation is required to consider a range of measurable road traffic safety (RTS) performance factors for use within its sphere of influence that are known to reduce the risk of fatal and serious injury.

ISO 39001: Road traffic safety management systems, 2012

RTS performance factors to include:

a) Risk exposure factors

- Distance travelled and road traffic volume, including vehicle and road user type, whether influenced or not influenced by the organisation;
- Volume of product and/or service provided by the organisation.

b) Final safety outcome factors

- E.g. numbers of deaths and serious injuries

c) Intermediate safety outcome factors

These safety outcome factors are related to the safe planning, design and use of the road network and of the products and services within it, the conditions for entry and exit of those products, services and users, as well as the recovery and rehabilitation of road traffic crash victims:

- Road design and safe speed especially considering separation (on-coming traffic and vulnerable road users), side areas and intersection design
- Use of appropriate roads depending on vehicle type, user, type of cargo and equipment
- Use of personal safety equipment especially considering seat belts, child restraints, bicycle helmets, motorcycle helmets, and the means to see and be seen
- Using safe driving speed also considering vehicle type, traffic and weather conditions
- Fitness of drivers especially considering fatigue, distraction, alcohol and drugs
- Safe journey planning including consideration of the need to travel, the amount and mode of travel and choice of route, vehicle and driver
- The safety of vehicles especially considering the occupant protection, protection of other road users (vulnerable as well as other vehicle occupants), road traffic crash avoidance and mitigation, roadworthiness, vehicle load capacity and securing of loads in and on the vehicle.
- Appropriate authorization to drive/ride the class of vehicles being driven/ridden
- Removal of unfit vehicles and drivers/riders from the road network
- Post-crash response and first aid, emergency preparedness and post-crash recovery and rehabilitation.

Adopting long-term goals and setting targets

Adoption of the long-term Safe System goal of eliminating death and long-term injury to be reached by interim, step-wide targets is widely accepted as international good practice. See Erso web texts on Road safety management and Quantitative road safety targets.

Accordingly, in an organisational context, the draft ISO standard 39001 requires adoption of the Safe System goal and decisions on objectives and targets for the interim. The organisation is required to follow a process that reviews its current RTS performance, selects RTS performance factors to work on, analyses what it can achieve over time and sets appropriate objectives, RTS targets and plans to achieve them. These can include targets for final and intermediate outcomes, as well as organisational outputs. When establishing its targets, the organisation is required to take into account its risks and opportunities, its RTS performance factors as well as give consideration to its management capacity. It shall also consider its technological options, its financial, operational and business requirements, and the views of interested parties.

ISO 39001 - Road traffic safety (RTS) management systems

The RTS objectives shall:

- be consistent with the RTS policy
- be measurable (if practicable)
- take account of applicable requirements
- be monitored and updated as appropriate

To achieve its RTS objectives, the organisation shall determine:

- who will be responsible
- what will be done
- what resources will be required
- when it will be completed
- how the results will be evaluated

Source: Hartzell, 2011, ISO 2012

Coordination

Consultation, communication and active engagement with key partners are important not only in the target-setting process but also in implementing organisational activities to achieve results. Horizontal coordination across different parts of the organisation and vertically to different levels is a characteristic of good practice road safety management as is engagement with all relevant parties. See Erso web text on Road Safety Management.

In the ISO 39001 standard, the organisation has to establish the internal and external context in order to ascertain its sphere of influence. Top management is required to work in partnership and collaboration with interested parties in developing a safe road traffic system.

In addition, policy, objectives and targets are required to be aligned and supported throughout relevant levels of the organisation.

Funding and resource allocation

As for road safety in general, sustainable annual sources of funding for the road safety programme and interventions are needed to improve work-related road safety management.

Procedures such as cost-benefit analysis should be used to guide allocation of resources across safety programmes and ensure that the case for road safety investment can be assessed objectively against competing priorities. See Erso web text on Road Safety Management.

The draft ISO 39001 standard requires top management to ensure that it provides the resources to establish, implement, maintain and continually improve the RTS management system. The organisation has to determine and provide the resources and allocation framework needed for the management system to achieve its established RTS objective(s).

Legislation
Legislation typically addresses land use, road network, road user, vehicle and post-crash medical care safety standards and rules and compliance with them. Some organisations will have a legislative role in road safety, all will be concerned with compliance of health and safety and road network legislation, others will have some involvement in setting out company standards, guidelines and rules.

Promotion
Promotion and communication of the need for a long term focus on achieving results and the means by which they can be achieved is recognised as a key function. See Erso web text on Road safety management. In the ISO 39001 standard, the organisation is required to establish a communication strategy as well as promote its own responsibility as well as the shared RTS responsibility of each interested party.

Monitoring and evaluation
This is a key management system function. Some countries include 'journey purpose' in their national crash reporting; conduct linkage studies; require employers to conduct risk assessments; encourage gathering, recording, analysis and monitoring of road incident data (including damage only), injury crashes, driver and vehicle history.

ISO management system standards in general have a strong focus on monitoring and measurement of outcomes. The ISO 39001 standard requires the organisation to monitor and evaluate the key characteristics of its operations that impact on road safety results and to undertake periodic review of the management system and its performance.

Research and development and knowledge transfer
In large organisations, research and development and knowledge transfer is an important management function. The main means of national, regional and local knowledge transfer is through guidance, funded and directed by central government. In some countries, research organisations and the non-governmental road safety sector are active in identifying the key problem areas and contributing to knowledge transfer about effective countermeasures.

3.4 Strategy development and key interventions

Strategy development
Guidance for employers for establishing work-related road safety strategies and programmes has been developed at national, State, and local levels as well as by non-governmental road safety organisations and trade unions. Examples include:

Driving at work: Managing work-related road safety (UK)
Reducing at-work road traffic incidents (UK)
Vic Roads Safer Driving Manual (Victoria, Australia)
Managing Occupational Road Risk Road: the RoSPA guide (UK)
Safer Driving at Work: A guide for Unison Safety Representatives (UK)
Roads and Traffic Authority of NSW. Safe driving policy: Safe vehicles operated safely.
Roads and Traffic Authority: Sydney, Road Safety Council. Guidelines for a safe driving policy for fleet operators.

Source: PRAISE, ETSC, 2011.

An overview of work-related initiatives indicated that the following initiatives have potential to be effective (Haworth et al., 2000):

- Selecting safer vehicles
- Defensive driver training and education programmes
- Incentives (not rewards). Incentive programmes appear to be most effective when the time period in which the desired outcome is expected is short. They may also be more effective in younger drivers. Drivers with good records who are given a reward either show no difference or an increase in their crash rate.
- Safety programmes in companies with an overall safety emphasis.

Key intervention strategies

Planning, design, operation and use of the network

Some organisations have specific responsibilities for the provision of safe roads and streets and aspects of their use. Consideration of the safety impact of land-use planning, road hierarchies which take safety into account through specification of separated use, speed limit, median and roadside crash protection and safety at work zones will all be relevant. See Erso texts on Roads, Safety Ratings, Speeding, Pedestrians and Cyclists, Alcohol, Speed Enforcement, Fatigue, eSafety, PRAISE Report 6.

Safer journey planning

Nearly all organisations use the road network in some manner. Important considerations for safer journey planning include the necessity for travel, identification of the safest and most appropriate modes of travel (pedestrian, private vehicle, public transport) for each journey and the safest and most appropriate routes. Ratings of road safety quality such as EuroRAP and iRAP) are useful tools as well as internet based journey planners.

Entry and exit of vehicles

Organisations that manage vehicle fleets will be concerned with the selection of safer vehicles, their routine maintenance and the duration of their use.

Fleet safety policies

The safety quality of motor vehicles makes a significant contribution to road safety and many improvements have been made over the last fifteen years. See Erso web texts Vehicle Safety, eSafety, Safety Ratings, Powered Two Wheelers.

Legislative standards produce a minimum level of protection and there is now quite large variation in the safety of different car models as shown by new car assessment programmes. A recent study showed that a 5-star rated Euro NCAP cars were found to have a 68% lower risk of fatal injury and a 23% lower risk of serious injury compared to 2-star rated cars (Kullgren et al., 2010). Car mass, also plays a major role in crash protection. In general, the risk of a serious injury is reduced by 5-10% for every extra 100 kg of car mass, in two car collisions (Buzeman, 1997; Nygren, 1984).

A large number of new vehicles in the EU will be purchased for private sector and government fleet use and these are generally sold for private use within a few years. There is an opportunity, therefore, to improve the uptake of safety features in EU vehicles by encouraging demand from

fleet purchasers. Encouraging safer fleets therefore is a major work-related safety strategy which can be stimulated by government by travel and procurement policies.

Some fleet policies identify lists of vehicle safety features which are to be sought in fleet buying. Others use safety performance ratings based on real-world crash data which show a 1 to 5 ratio between the best- and the worst-performing cars.

Examples of safer fleet policies include:

- The Monash University Accident Research Centre (MUARC) fleet purchase policy
- The Transport Accident Commission Vehicle Purchase Policy, Victoria
- The ETSC Travel Policy
- The Swedish Transport Agency Travel and Procurement Policies (see below).

Swedish Travel Policy with Vehicle Environmental and Safety Demands (2010)

Cars rented for less than 6 months must meet the following requirements:

- Be awarded 5 stars for occupant protection by Euro NCAP (pre 2009)
- Be awarded 31,5 points for occupant protection by Euro NCAP (2009)
- Be awarded 14 points for pedestrian protection by Euro NCAP (2009) Be equipped with an anti-skid system (Electronic Stability Control, ESC)
- Be equipped with a seatbelt reminder on the driver and passenger seats that meets Euro NCAP requirements
- Protection against whiplash at least 2 points Euro NCAP
- Mass between 1.000-1.600kg for normal car, 1.000-1.900kg for large car.

Cars rented for more than 6 months must also meet the following requirements:

- Be equipped with a seatbelt reminder on the driver, passenger and rear seats that meets Euro NCAP requirements (3 points)
- Be equipped with an alcohol ignition interlock
- Be equipped with an informative or supportive Intelligent Speed Assistance system (telling the local speed limit and/or issuing a warning if this is exceeded)

Swedish procurement policy for all vehicles controlled by Government

Decree (2009:1) Environmental and Road safety - Purchasing demands on governments (state agencies, administrations) vehicles and travel:

- 31,5 points Occupant protection Euro NCAP 2009+
- 2 points whiplash protection
- Seat belt reminder front seats
- Alternative fuels, low CO_2 emissions, low in particulates
- Alcolock (at least 75% of the fleet)
- Crash safety pedestrians (9,5 points Euro NCAP/1 star)
- Electronic Stability Control System (ESC)

Australian national road safety strategy 2011-2020

Key fleet safety provisions include:

15. Facilitate the adoption of nationally-agreed best-practice fleet purchasing policies:
    Develop nationally agreed fleet purchasing policies with practical, evidence-based safety criteria that drive an increase in the safety features required for vehicle purchases.
    Require all government fleets to implement nationally-agreed fleet purchasing policies and encourage adoption by other fleet operators.
19. Investigate incentives relating to vehicle purchases:
    Investigate incentives (including tax-based, registration-based and insurance incentives) and promote options to encourage the purchase of safer vehicles, greater turnover of the vehicle fleet and/or the inclusion of enhanced safety features.
    Investigate incentives to encourage young drivers and their parents to purchase safer new or used cars.

Source: Australian Transport Council, 2011

Vehicle safety features: A range of proven vehicle safety features may be included in fleet safety requirements such as driver-side airbags, side airbags, anti-whiplash protection, electronic stability control, daytime running lights, alcolocks, event data recorders and advisory intelligent speed adaptation (ISA). Many of these features are taken into account in Euro NCAP safety ratings.

Other in-vehicle equipment: At the same time, there is a need for fleet safety policies to minimise in-vehicle distraction from nomadic devices such as car telephones used while driving or other in-vehicle equipment (e.g. hands free telephones and office equipment). See Erso web texts Vehicle Safety, Safety Ratings, Euro NCAP, PRAISE Reports 1, 3 and 5.

Entry and exit of drivers and riders

Driver selection

Research has highlighted the potential scope for recruitment of safer drivers based on personality profiles, risk perception, experience, age, and medical screening (Lancaster & Ward, 2002).

Little evaluation, however, seems to be available of driver selection strategies. The general focus of driver selection strategies has been on trying to identify potentially risky drivers on the basis of their previous driving record. It has been noted, however, that while this approach may identify a small number of highly risky drivers (e.g. disqualified drivers or repeat drink drivers), it may fail to predict later crash involvement for the majority of drivers (Haworth et al., 2000).

An Australian overview concluded that many drivers of fleet vehicles are not selected on the basis of their ability to drive safely, but on other characteristics necessary for their main job which necessitates driving. In general, driver selection has only been considered important for drivers of commercial vehicles (Haworth et al, 2000).

Driver testing and training

Conventional fleet training: There is no scientific evidence in the literature in the form of scientific controlled studies that conventional fleet driver training is effective in reducing crashes (Downs et al, 1999) despite the strong belief in the effectiveness of driver training courses by those involved (Haworth, 2000).

Defensive driver training: However, formal defensive driver training for professional drivers, taught at the workplace, combined in larger companies with motivation and incentive systems for crash-free driving, has been found to reduce the crash rate by around 20%. Other types of instruction for professional drivers, including skid training, both amongst ambulance drivers and drivers of lorries and articulated lorries have been found to increase the crash rate (Elvik et al., 2009).

See PRAISE Thematic Report 2.

Table 3: Effects of training and testing professional drivers on the number of crashes

	Percentage change in the number of crashes		
Crash severity	**Type of crash affected**	**Best estimate**	**95% confidence interval**
Course in defensive driving for experienced drivers (crashes per km driven)			
Unspecified (all)	All types of crashes	-20	(-33; -5)
Skid training for ambulance drivers (crashes per driver)			
Unspecified (all)	Crashes in icy conditions	+45	(-35; +220)
Skid training for drivers of heavy vehicles (accidents per km driven)			
Unspecified (all)	Crashes in icy conditions	+22	(+9; +36)
More stringent driving tests for drivers of heavy vehicles (total crash figure)			
Injury crashes	All types of injury	+5	(+4; +6)

Source: Elvik et al., 2009

Group discussions: A Swedish study of countermeasures implemented by Televerket showed statistically significant reductions of crash risks in the groups which had participated in defensive driver training and group discussions (Gregersen et al., 1996).

Driver testing: More stringent driving tests do not appear to lead to fewer crashes (Elvik et al., 2009).

Work scheduling: Company drivers, who travel longer distances during the hours most associated with sleep or after a hard day's work, are more likely to be at risk of fatigue than are most private motorists. Driving hours of long haul commercial heavy goods vehicles and public transport driving and rest are covered by European legislation. Examining work schedules to ensure that drivers are not pressured by time and ensuring that people do not drive long journeys after a full day's work are two means by which companies can help to create a framework for safer driving (Broughton et al., 2003.) Research suggests that unless companies adopt such policies, the effectiveness of any driver-centred interventions such as selection and training may be undermined by day to day working practices and pressures (Broughton et al., 2003).

Incentives: A review (Haworth et al., 2000) of the effects of incentive and disincentive programmes reported in the literature indicates that:

- Some programmes had negative effects
- Incentive programmes (where benefits are conditional upon future safe driving) are more effective than reward programmes where benefits are conditional upon past safe driving. Incentive programmes appear to be most effective when the time period in which the desired outcome is expected is in the near future. Incentive programmes may be more effective for younger drivers.

- Drivers with good records who are given a reward either show no difference or increase their crash rate.

Recovery and rehabilitation of victims

This is an important *Safe System* strategy aimed at managing the prevention of death and long term injury. The severity of injury outcomes following a crash can be influenced by timely and efficient access to the emergency medical system, swift diagnosis and treatment such that victims can be rehabilitated back into normal life. A range of organisations will be involved in this chain of activity from lay bystanders from organisations employing professional drivers to those with medical expertise. The training of professional drivers in emergency first response is recommended by international organisations who can assist, particularly in rural areas where emergency response by ambulance services might take time.

See Erso web texts on Road Safety Management and Post-Impact Care.

4 Further research

Effective work-related road safety requires an evidence-based approach. With some exceptions, systematic investigation of the problems and solutions is just beginning in most European countries.

International differences in data collection make international comparisons difficult. European-wide research is necessary to inform cooperative approaches. Further knowledge is needed about crash and injury causation, the costs of work-related crashes and the effectiveness of different approaches to work-related road safety management.

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Notes

1. Country abbreviations

	Belgium	BE		Italy	IT		Romania	RO
	Bulgaria	BG		Cyprus	CY		Slovenia	SI
	Czech Republic	CZ		Latvia	LV		Slovakia	SK
	Denmark	DK		Lithuania	LT		Finland	FI
	Germany	DE		Luxembourg	LU		Sweden	SE
	Estonia	EE		Hungary	HU		United Kingdom	UK
	Ireland	IE		Malta	MT			
	Greece	EL		Netherlands	NL		Iceland	IS
	Spain	ES		Austria	AT		Liechtenstein	LI
	France	FR		Poland	PL		Norway	NO
	Croatia	HR		Portugal	PT		Switzerland	CH

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3. All Traffic Safety Syntheses of the European Road Safety Observatory have been peer reviewed by the Scientific Editorial Board composed by: George Yannis, NTUA (chair), Robert Bauer, KFV, Christophe Nicodème, ERF, Klaus Machata, KFV, Eleonora Papadimitriou, NTUA, Pete Thomas, Un.Loughborough.

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5. Please refer to this Report as follows:
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