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Priority safety and health issues in the road transport sector

Sectoral Policies Department

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Report for discussion at the Tripartite Sectoral Meeting on Safety and Health in the Road Transport Sector
(Geneva, 12–16 October 2015)

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Executive summary

Road transport operations transcend national boundaries and play a fundamental role in linking global supply chains and enhancing personal mobility. Transport operations and logistics performance have the power to stimulate national development and economic activities. However, while the road transport sector contributes substantially both to gross domestic product (GDP) and to employment, social justice and decent work for all remain an aspirational goal to be realized in the sector. Accordingly, the sector's resilience in the future lies not only in its environmental efficiency but also in its ability to address decent work challenges.

The sector is one in which non-standard forms of employment and outsourcing influence job security and in which liberalization and reform have gone hand in hand with high levels of competition. These factors have had a negative impact on conditions of work and have hampered, in some cases, the development and continuance of collective bargaining in the sector. They have also led to increases in the demands placed on transport workers and in stress levels, as well as decreased wages. Furthermore, the lack of level playing fields in transport service regulation can have a negative impact on the respect for, and protection and fulfilment of, the rights of workers who play by the rules.

The occupational safety and health (OSH) concerns in the sector include a risk of road accidents, physical hazards, violence, dangerous operational situations and exposure to harmful substances. Research supports the theory that long-haul road transport drivers might find it challenging to combine their work and family life because of the irregular and split shifts involved in transport service provision, which can have a negative impact on their work–life balance. Transport workers find themselves in a unique situation, as OSH concerns in their workplace can have a direct impact on other road users and on overall traffic and public safety. Market pressures can, in certain cases, lead to contraventions of OSH rights and responsibilities. The need to make ends meet might also put workers under pressure to disregard prevailing working-time arrangements or to overload their commercial vehicle, with negative consequences.

Transport workers are susceptible to a range of work-related disorders, including fatigue, stress, sleep deprivation, kidney disorders, obesity and substance abuse. As patterns of social protection vary from country to country, access to health care, pensions and sickness, occupational injury, family, maternity and invalidity benefits might not be available to all road transport workers. Informal workers in the sector might be particularly vulnerable, as they may lack access to social protection mechanisms and work with low levels of income, productivity, skills, technology and capital.

The mandate of the International Labour Organization (ILO) to pursue social justice encompasses a constitutional obligation to promote full employment and the raising of standards of living. OSH concerns need to be addressed at the global level by tripartite action to promote decent work in the road transport sector. The ILO has issued Conventions, Recommendations and diverse tools on this subject, providing guidance on principles for social dialogue on OSH matters. Social dialogue plays a critical role in achieving the ILO's objective of advancing opportunities for women and men to obtain decent and productive work in conditions of freedom, equality, security and human dignity.

Abbreviations and acronyms

AIDS	acquired immunodeficiency syndrome
ASEAN	Association of Southeast Asian Nations
BRT	bus rapid transit
BMI	body mass index
CEACR	Committee of Experts on the Application of Conventions and Recommendations of the ILO
CTU	cargo transport units
CTU Code	IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units
ECOWAS	Economic Community of West African States
EU	European Union
EU-OSHA	European Agency for Safety and Health at Work
GDP	gross domestic product
HIV	human immunodeficiency virus
IBRD	International Bank for Reconstruction and Development
ILO	International Labour Organization
IMO	International Maritime Organization
IRU	International Road Transport Union
ISSA	International Social Security Association
ITF	International Transport Workers' Federation
NURTW	National Union of Road Transport Workers (Nigeria)
OECD	Organisation for Economic Co-operation and Development
OECD-ITF	OECD International Transport Forum
OSA	obstructive sleep apnoea
OSH	occupational safety and health
SADC	Southern African Development Community
STI	sexually transmitted infection
TfA	Transport for Athens
TNC	transport network company
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe

UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNRSC	United Nations Road Safety Collaboration
USAID	United States Agency for International Development
WTO	World Trade Organization

Introduction

Purpose of the Meeting

At its 317th Session (March 2013), the Governing Body of the International Labour Office decided that a Tripartite Sectoral Meeting on Safety and Health in the Road Transport Sector would be held in Geneva. At its 322nd Session (November 2014), the Governing Body agreed that the Meeting would be held from 12 to 16 October 2015, and that its purpose would be for tripartite constituents to discuss priority safety and health issues in both passenger and freight road transport with a view to adopting conclusions on future programme development and to inform policy-making on the selected topic at the international, regional and national levels. It was also agreed that the promotion of HIV and AIDS tools and the IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units would be discussed. [1]

Report and outcome

This five-part report is intended to serve as a basis for discussion at the Meeting. It is published under the authority of the International Labour Office. Part 1 reviews recent developments in the road transport sector. These include modal split and fleet data and supply chain management impacts on road freight transport services. Part 2 includes employment data and covers other related features such as recruitment and retention and working time, and presents three case studies on establishing level playing fields. Parts 3 and 4 are intended to inform the Meeting of OSH risks and work-related disorders. The relevant ILO instruments and tools and suggestions relating to policy coherence and responses are discussed in Part 5.

The Office trusts that this report will stimulate the discussions of the Meeting, and that its recommendations will signal what measures might be adopted in the medium term with a view to resolving problems encountered by the road transport sector and to improving the situation of its workers. The Meeting is expected to provide clear guidance to the ILO and its member States in planning, developing and implementing their activities in this sector.

[1] ILO: *Minutes of the 322nd Session of the Governing Body of the International Labour Office*, Governing Body, 322nd Session, Geneva, Oct.–Nov. 2014, GB.322/PV, para. 446.

1. Recent developments in the road transport sector

1. Roads are an integral part of any transport network and a country's road network efficiency lies at the heart of its economic and social development. Transport investments and operations have the power to stimulate activities in other sectors. Road transport operations also play a fundamental role in promoting mobility, including commuting mobility which allows workers to access their place of work. The road transport sector in many countries contributes significantly to overall employment.

2. Achieving social justice and decent working conditions often remains a challenge in the sector, which in some countries – for both passenger and freight services – is highly fragmented and segmented. The enhanced prevalence of self-employment, informality and outsourcing influences job security among transport workers and high levels of competition hamper the development of social dialogue, including collective bargaining, in the sector. In addition, prospects for acquiring new skills and moving into better paid positions are not always present.

3. Social dialogue should be at the heart of any policy or programme for the road transport sector, and both productivity and environmental gains can be achieved when social dialogue and consultative involvement are taken into consideration. Accordingly, reform must go hand in hand with social dialogue practices.

4. Significant changes can be observed in respect of road freight transport. Globalization, liberalization and supply chain management practices have provided world market access and opportunities to transport enterprises and logistics companies. Positive consequences of these developments have included employment creation in response to increased demand for road transport services. Negative consequences can also be observed in certain cases on the working conditions of road transport drivers, which can include increased stress levels, decreased wages and excessive demands being made on drivers, influencing working and resting times.

1.1. Relevance of the sector

1.1.1. Freight transport services

5. Most freight transport services are provided by private enterprises, barring a few exceptions. The industry can, generally speaking, be divided into two categories. The first consists of a plethora of small operators: either individually or family-owned enterprises with one or a few vehicles. These transport operators usually provide low-cost basic trucking services that meet a substantial share of demand. The second category consists of small, medium-sized and, to a limited extent, large enterprises, which typically combine trucking with integrated logistics (freight forwarding, storage, consolidation and distribution) services.

6. Most reform policies since the 1950s, and especially during the 1980s, have focused on deregulation. The most immediate impacts of deregulation have included lower rates for haulage and sharpened competition among carriers. Profit margins have decreased, while the vulnerability of owner–operators and smaller carriers has increased. Large trucking companies can provide reliable operations in addition to having the physical and managerial capacity to enter into long-term contracts with traders. Moreover, they are better able to secure cargo for return trips, which reduces the number of empty backhauls, enhancing their profitability and competitiveness. Despite their operating network and

scope density efficiency, they tend to have higher unit costs than small operators and hence mostly cater to medium-sized and large traders in need of reliable transport and logistics suppliers.

7. The prevalence of outsourcing and new distribution channels have fuelled a shift in transport operations over the past two decades, from "own-account" freight transport services (by a company that has its own fleet) to "hire and reward" transport services (by a trucking company). Road freight transport services can also be characterized as truckload and less than truckload operations. Truckload carriage is characterized as a less sophisticated and lower price service. Less than truckload operations are more akin to distribution networks and require more capital and skills.

8. The lifting of restrictions on transport operations with regard to market access on the supply side stimulated new hire and reward operators to enter the sector, increasing competition at higher levels. Intensified competition for larger hauliers translated into logistic chain management practices that encouraged the development of long-term relationships between shippers, receivers or large international purchasers that were willing to outsource transport activities. Larger trucking companies, in order to reduce their fixed costs, subcontracted smaller companies, often owner–operators, to carry out the growing number of transport operations. Liberal markets and integration strategies broadened the scope for logistic services, which encouraged a shift among the larger transport operators towards forwarding, consolidating, warehousing and value added services.

9. The Organisation for Economic Co-operation and Development (OECD) predicts that the scale of growth in world road freight volumes will depend on the freight intensity of future GDP growth. [1] Transport intensity can be affected by the "dematerialization" of production, mainly driven by growing services shares in GDP. Growing service sector shares in advanced economies or increasing production and trade of lighter weight goods like electronic devices reduces actual tonnages shipped.

10. The pace, scale and importance of freight road transport services vary widely from one country to another. Appendix I includes data on the modal split of freight road transport in different countries. [2] When compared to rail and inland waterway transport, the road transport mode plays:

- a fundamental role with respect to freight movements in Argentina, Greece, Republic of Korea, Spain, Thailand and Turkey, where modal split is higher than 90 per cent;
- a predominant role with respect to freight movements in Bulgaria, Canada, China, Colombia, Czech Republic, Denmark, Finland, France, Italy, Kenya, Mexico, Norway, South Africa and United Kingdom, where modal split is higher than 75 per cent; and
- an important role with respect to freight movements in Austria, Belgium, Brazil, Croatia, Germany, India, Japan, Netherlands, Sweden, Switzerland and United States, where modal split is higher than 50 per cent.

[1] International Transport Forum at the OECD (OECD-ITF): *ITF Transport Outlook 2015* (Paris, 2015).

[2] The modal split of freight transport is an indicator based on cargo movements on a national territory. It measures the share of each transport mode (road, rail and inland waterways) in total inland freight transport movements. In this case, it was measured as the percentage obtained by dividing tonnes of freight by the distance covered in kilometres.

11. The share of the modal split accounted for by road freight transport in the 28 Member States of the European Union (EU-28) overall was just over 75 per cent. Although the poor availability of data made it impossible to document modal split in African countries, the mode plays a predominant or fundamental role in most countries, and more specifically in landlocked countries. In the Commonwealth of Independent States region, rail plays a fundamental role in moving freight. Thus, road movements did not account for a significant modal share in that region.

12. A list of the top 30 countries in terms of van and truck fleet size and the ratios for these countries of such vehicles available per 100,000 inhabitants is included in Appendix II. It is noteworthy that the United States, which has the highest ranking in terms of overall fleet size, has a fleet that is almost three times the size of Japan's, which is ranked second. In terms of fleet ratios, Canada ranks first, closely followed by Saudi Arabia and the United States. Some countries, such as China, India and Indonesia, which have a high ranking per overall fleet size, fall out of the top 30 category when ranked by vehicle availability per 100,000 inhabitants.

1.1.2. International and intercity passenger transport services

13. A long-distance, international or intercity bus or coach service is a public transport service that operates according to published timetables. This service competes directly with rail and air modes. Conditions of demand and competition for passengers in this sector are diverse. In Canada, the European Union (EU) and the United States, coaches generally address the mobility needs of less wealthy citizens. In low- and middle-income countries, services range from no-frills to luxury first-class buses. The perception of this sector as a public service meant that a high degree of regulation was maintained until the 1990s or 2000s. Bus and coach services also include drivers working for the tourism industry.

14. In the case of the EU, for example, two distinct regulatory environments have shaped this sector's development. Within a "market initiative" environment, transport operators seek new markets to service and develop a service proposal. Operators are free under this regime to request authorities' permission to provide a service. These initiatives can be combined with different regulatory interventions, but authorities might grant licences without market analysis or fee intervention. Within "authority initiative" regimes, transport authorities are responsible for the creation of transport services. Authorities can directly provide the service or grant operator concessions through competitive tendering. [3] Table 1.1 shows how both systems are in play in the EU.

[3] See D. van de Velde: "Long-distance coach services in Europe", in M. Finger and T. Holvad (eds): *Regulating transport in Europe* (Cheltenham, Edward Elgar Publishing Limited, 2013).

Table 1.1. Organizational forms and regulatory environments in intercity coach services in selected EU countries

Authority initiative	*Public sector*	*France*: The national rail company (SNCF) had a long-distance transport monopoly until 2012. That same year, the SNCF launched the idBus network.
	Private licences	*Spain*: Exclusive concessions are increasingly awarded by competitive tendering at the national and regional levels.
Market initiative	*Regulated*	*Germany*: Until 2012, a market initiative was in play. However, the national railway service monopoly delayed deregulation.
	Deregulated	*Italy, Norway, Poland, Sweden, United Kingdom*: These countries have a mix of open market operations with limited regulatory rights from local or regional authorities. There is no state railway protection.

Source: D. van de Velde: "Long-distance coach services in Europe", in M. Finger and T. Holvad (eds): *Regulating transport in Europe* (Cheltenham, Edward Elgar Publishing Limited, 2013).

15. Curbside intercity bus services have emerged in different regions. [4] These are generally characterized as carriers conducting intercity scheduled trips with an origin or destination other than a traditional bus terminal. Buses pick up or discharge passengers at one or more curbside locations.

16. The scale of growth in global road passenger travel will depend on future fuel prices. [5] Growth will be driven mostly by low and middle-income countries. [6] The importance of passenger road transport services and the pace and scale of their growth vary widely from one country to another. Appendix I also includes data on the modal split of passenger road transport in different countries. [7] The data take into account transport by car, bus or coach, and train. Few sources of data disaggregate information at this level and data were more readily available for high-income than for low and middle-income countries. Intercity bus and coach movements do not play a significant role in most high-income countries, where most trips are taken by car. For example, the share of the modal split accounted for by passenger road transport in the EU-28 overall was 9.2 per cent. However, they do play an important role in Cameroon, the Commonwealth of Independent States region, Thailand, and Turkey. Thus, it would seem that bus and coach services play a more significant role in low- and middle-income countries.

17. A list of the top 30 countries in terms of bus and coach fleet size and the ratios for these countries of such vehicles per 100,000 inhabitants is included in Appendix II. China, Indonesia and India lead the ranking by fleet numbers. However, China and India fall out of the top 30 category when taking into account the number of vehicles available per 100,000 inhabitants, with Jamaica, Republic of Korea and Cuba leading the rankings in that respect. Other countries with large fleets, such as Brazil, India, Mexico and the United States, also do not maintain a similar ranking when comparing the fleet to their population.

[4] M.H. Belzer: *Crisis in the North American motorcoach bus industry: Threats and opportunities created by growth in intercity bus traffic* (Detroit, Wayne State University, 2010).

[5] OECD-ITF, op. cit.

[6] ibid.

[7] The modal split of passenger transport is an indicator based on passenger movements on a national territory. It measures the share of each transport mode (based on transport by car, bus or coach, and train) in total passenger movements. In this case, it was measured as the percentage obtained by dividing the number of passenger trips by kilometres.

In other words, large differences can be observed between world fleet percentages and fleet per inhabitant ratios. The Republic of Korea, however, maintains a very similar ranking: it is ranked fourth for overall fleet size and second for vehicle availability per 100,000 inhabitants. The latter ranking reflects that intercity travel by bus and coach is extremely popular and the country's geography and distances might be well suited for this mode. The recent development of the Seoul-Busan high-speed rail corridor might change this proportion in the future.

1.1.3. Urban passenger transport services

18. Authorities can make a strong commitment to promote public transport and sustainable urban mobility options. However, they also have the choice of promoting the use of private cars. High motorization rates, levels of infrastructure development, parking facility availability and land planning practices (whether preventing or promoting urban sprawl) influence urban transport planning and regulation. The decision lies with each local or regional authority. Multimodality and cohesiveness in urban network planning are crucial to promoting attractiveness to service users. These policy options can have strong impacts on the provision of urban passenger transport services and ultimately on the prevailing working conditions in this sector.

19. In the case of the EU, the European Commission can issue recommendations on harmonization and disseminate good practices on urban public transport regulation. The structure and award of public transport contracts follows the principles set out in secondary EU regulation, EU jurisprudence, European Commission interpretative communications and regional and local rules. Thus, no single legal framework or approach for transport service structure and regulation is available for this region. [8]

20. In the case of low- and middle-income countries, the growing population and economic concentration in urban areas call for particular attention to be paid to urban transport policies. [9] Demand for urban transport services – which is expected to increase – will pose a challenge for urban authorities in those countries. Increased demand should not translate into severe financial constraints for transport operators, as this would promote the growth of informal transport services and jobs in the informal sector. Long-term urban transport planning and policy alignment – supporting private transport or public transport-oriented urbanization – will translate into significant differences in urban transport systems in low- and middle-income countries. [10]

21. Table 1.2 shows modal split [11] in major cities in China, Latin America and India. Both public transport and car trips compete and play an important role in mobility in these regions/countries.

[8] See R. Macário: "Urban public transport", in M. Finger and T. Holvad (eds): *Regulating transport in Europe* (Cheltenham, Edward Elgar Publishing Limited, 2013).

[9] See OECD-ITF, op. cit.

[10] ibid.

[11] In this case, urban passenger transport "modal split" measured the share of motorized passenger trips among public transport, two and three wheelers, and four wheelers. Thus, walking and other soft mobility options were not taken into consideration.

Table 1.2. Modal split in major cities in China, Latin America and India, 2010 (percentage of total passenger-kilometres accounted for by a single mode of transport)

	Public transport (%)	**Two- and three-wheelers*** (%)	**Four-wheelers** (cars and light trucks) (%)
China	51	6	43
Latin America	49	2	49
India	42	26	32

* Data on three-wheelers only for India.

Source: Based on data from the OECD-International Transport Forum (OECD-ITF): *ITF Transport Outlook 2015* (Paris, 2015).

22. Formal bus services can expect a privileged status (through franchises and concessions) in relation to other modes, and especially vis-à-vis informal transport. [12] However, growth in the use of informal buses and in the numbers of passengers using informal services has been accompanied by the decrease of use of formal transport options in some cities. Bus reform processes are taking place in several regions through the implementation and financing of bus rapid transit (BRT) structures.

Box 1.1
Promoting social dialogue in the *matatu* industry in Kenya

Matatus (urban minibuses) are an informal industry in Kenya that services millions of people every day. The ILO Law-Growth Nexus II (LGN) project * is directly linked to initiatives by the Ministry of Manpower designed to improve the situation of micro-, small and medium-sized enterprises. *Matatus* are one of the sectors targeted by these initiatives. In Kenya, the project baseline survey indicated that, although the *matatu* sector employed hundreds of thousands of people and has significant job-creation potential, the jobs in the sector were precarious, with high levels of casualization. The LGN project, funded by the Norwegian Agency for Development Cooperation, engaged in a strategy of massive dissemination of information regarding labour laws. It directly worked with *matatu* stakeholders to catalyse transformation in the sector's employment behaviour. An assessment conducted in Kenya at the end of 2013 indicated some improvement in terms of the implementation of terms and conditions of work. This may be attributed to the work done through the LGN project to increase exposure by industry players to the labour laws. The project disseminated knowledge about business owners' obligations under the law and also about workers' rights. Equilibrium in the marketplace was promoted by the development of social dialogue pathways for small businesses, where workers often do not have the capacity or the power to discuss their rights with their employers. The project has also helped business owners to understand that compliance with labour laws is advantageous both economically and for the effective management of human resources.

* ILO: *Employment creation through the promotion of sustainable enterprises in Southern and Eastern Africa: Snapshot 2014* (Geneva, 2014).

1.2. Supply chain impacts on road freight transport

1.2.1. Liberalization

23. Road transport is an industry with international ramifications. It plays a vital part in facilitating international trade. Opportunities for international exchanges and cooperation are numerous and the results of international action can be fruitful from a trade and business perspective. International forums and policy-making machinery set up through different international and regional governmental organizations are available to serve the transport and development agenda of different countries. For example, the Inland Transport Committee of the United Nations Economic Commission for Europe (UNECE) has played a crucial role in shaping transport policies in the European region over the last 70 years.

[12] ILO: *Recent developments in inland transport*, Report I, Inland Transport Committee, 12th Session, Geneva, 1992.

24. Low- and middle-income countries have been managing to improve their terms of trade by enhancing their logistics platforms and curbing external debt and inflation. Structural adjustment policies have gained traction as countries seek to rank high in international performance, connectivity, logistics and competitiveness indexes. In some regions, foreign direct investment is driven by a country's logistics and competitiveness performance. In certain cases, a dichotomy between the need for foreign direct investment and the protection of regulatory frameworks achieving decent work conditions can be observed. Increased pressure for competitiveness has led to liberalization and trade facilitation paradigms that have diminished labour rights in some countries.

25. Efforts to liberalize the road transport sector are currently under review by a number of organizations. For example, further liberalization of trade in services has gained momentum through the negotiations for the Trade in Services Agreement, conducted by a subset of World Trade Organization (WTO) members back-to-back with WTO meetings since 2012. [13] The terms of such an agreement might be drafted in order to allow compatibility with the General Agreement on Trade in Services, potentially enabling other WTO members to join this effort later. [14] Another example is the Protocol on Transport, Communications and Meteorology of the Southern African Development Community (SADC). Chapter 5 of the protocol (road transport) provides a framework for achieving harmonization in the region. Transport services were identified by the United Nations Conference on Trade and Development (UNCTAD) in 2009 as a priority sector to be liberalized. [15] In 2010, a report outlining a five-phase strategy was published to facilitate the work of the SADC's Task Force on Transport Liberalisation. [16] The Association of Southeast Asian Nations (ASEAN) area seems to be encouraging the progressive liberalization of transport and logistics services. [17, 18] Trade facilitation ranks high on the transport agenda of this region. Coordination efforts have included the creation of the Committee on Transport of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) secretariat. In addition, in recent years, UNESCAP has organized working groups and subregional networks of technical experts and has developed guidelines for the logistics sector. [19]

[13] As of March 2015, the following WTO members are involved in negotiations on a Trade in Services Agreement: Australia; Canada; Chile; Colombia; Costa Rica; European Union; Hong Kong; Iceland; Israel; Japan; Liechtenstein; Mexico; New Zealand; Norway; Panama; Peru; South Korea; Switzerland; Taiwan, China; Turkey; United States; Pakistan; Paraguay; and Uruguay. China has submitted a request to form part of the negotiations.

[14] See Permanent Mission of the EU to the WTO: *EU to chair plurilateral talks to open services markets* (Geneva, Press Corner, 2014).

[15] See UNCTAD: *Towards SADC services liberalization: Balancing multiple imperatives* (New York and Geneva, 2009).

[16] N. Porée and Associates: *Facilitation of road transport market liberalisation in the SADC Region* (Gaborone, SADC, 2010).

[17] See USAID: *Toward a roadmap for integration of the ASEAN logistics sector: Rapid assessment & concept paper – Executive summary* (Washington, DC, 2007).

[18] See UNESCAP: *Guide to key issues in development of logistics policy* (Bangkok, 2013).

[19] See UNESCAP: *Guidelines for minimum standards and codes of professional conduct for freight forwarders, non-vessel operating common carriers and multimodal transport operators* (Bangkok, 2011).

Box 1.2
West African transport – Quotas and queuing system

In two 1982 treaties, * the Economic Community of West African States (ECOWAS) lays out a legal framework under which member States (one coastal, one landlocked) are paired with a view to entering into bilateral treaties regulating the sharing of transport rights for imported goods in transit from the port in the coastal State to the destination in the landlocked State. Thus, these bilateral freight-sharing treaties specify that the haulage of all freight defined by the destination country as "strategic" shall be reserved for trucks registered in the country of destination. In the case of "non-strategic" freight, one third may be allocated to truckers from the coastal country and two-thirds to truckers from the landlocked country. The underlying goal is a fair allocation of transit freight from coastal ports to landlocked Sahelian countries.

In addition to these quotas, queuing systems (known as *tour de role* systems) – not regulated by ECOWAS – generally ensure that each operator secures a freight load at the port. Trucks can queue for long periods for their next load. A common outcome of this arrangement is that trucks return empty to their place of origin rather than endure the long wait for a return load. Another consequence is that older fleets tend to service these corridors, as even old vehicles with poor maintenance records will have a load guaranteed. If there are not enough trucks from the landlocked country in the port, the transporters' association in charge of managing the queuing system has the right to assign the northbound freight to a trucker with a truck registered in another country.

According to the International Bank for Reconstruction and Development (IBRD), quotas and queuing systems were found to be driving up transport costs for the ECOWAS region and Sahelian landlocked countries. The IBRD study called for government action to address structural distortions in the trucking sector. In 2010 a liberalization plan was proposed by the OECD and the WTO. In-depth analysis efforts by the US Agency for International Development (USAID) and the United Nations Economic Commission for Africa (UNECA) found that quotas and queuing systems mostly affect traffic to Niger. The studies further found that the implementation of quotas and queuing systems was uneven within the ECOWAS corridors analysed. Thus, transport costs in the region were not all affected by these practices. The number of delays and unofficial payments – at the port, at borders, at roadblocks, at customs – also contribute to higher transport costs in the region.

* Convention A/P2/5/82 regulating inter-State road transportation between ECOWAS. Member States; and Convention A/P4/5/82 relating to inter-State road transit of goods.

Sources: S. Teravaninthorn and G. Raballand: *Transport prices and costs in Africa: A review of the international corridors* (Washington, DC, IBRD, 2008); G. Sirpe: *Waiver of freight distribution and liberalization of access to road freight in the ECOWAS region* (Addis Ababa, UNECA, 2011); S. Zerelli and A. Cook: "Trucking to West Africa's landlocked countries: Market structure and conduct", in *West Africa Trade Hub Technical Report 32* (Accra, USAID, 2010); ECOWAS et al.: *Aid-for-trade case study: Gap analysis of the ECOWAS trade liberalization scheme* (Paris, OECD, 2010); USAID: *Impact of road transport industry liberalization in West Africa: Final report* (Washington, DC, USAID, 2012); and IBRD: *Niger: Modernizing trade during a mining boom. Diagnostic – trade integration study for the integrated framework* (Washington, DC, IBRD, 2010).

26. Governments have the important tasks – before and after deregulation and liberalization – of ensuring level playing fields for stakeholders and market players, encouraging fair competition by preventing excessive market concentration and ensuring that the benefits of liberalization are passed on to consumers. In reforming the transport sector, governments should ensure that road safety enforcement agencies inspection apparatus are a priority.

1.2.2. Employment relationship

27. In the late 1990s and early 2000s, companies seeking savings performed cost-benefit analysis on their in-house private transport operations. A vast majority decided to "transfer" their truck drivers to subcontracted enterprises or to "convert" them into self-employed or independent drivers. Former employer requirements with regard to owning or leasing vehicles often constituted a condition to continue to do the work. As a result, over the last 15–20 years, a sharp rise in the number of contracting entities has been observed. These include small freight operators and self-employed road transport workers. Truck drivers who have been legally separated from an enterprise might continue to perform essentially the same work, in a position of dependency in relation to their former employer. Nonetheless, having the status of a self-employed worker or independent contractor entails bearing the costs of the vehicle and a lack of labour protection.

28. As observed by the Director-General of the ILO in his Report to the 102nd Session of the International Labour Conference, "[t]oday, about half of the global workforce is engaged in waged employment, but many do not work full time for a single employer. The supposedly 'atypical' has become typical; the 'standard' has become the exception." [20] In a report on the scope of the employment relationship for discussion by the Conference at its 91st Session (2003), truck drivers were included in the category of disguised or objectively ambiguous relationships. [21] And, according to the report for discussion by the Meeting of Experts on Non-Standard Forms of Employment, ambiguous employment relationships are considered to be non-standard forms of employment. [22] The latter report also observes that transport and construction seem to be the sectors that uniformly employ the largest share of temporary workers across the world.

29. The report for discussion by the Meeting of Experts on Non-Standard Forms of Employment also notes that:

> Ambiguous employment relationships may arise when the respective rights and obligations of the parties concerned are not clear, or when inadequacies or gaps exist in the legislation … One area that sometimes lacks legal clarity is dependent self-employment, where workers perform services for a business under a civil or commercial contract but depend on one or a small number of clients for their income and receive direct instructions regarding how the work is to be done. [23]

Businesses and courts have long struggled trying to determine whether certain workers are employees or independent contractors. [24]

30. Misclassification of employees as independent contractors allows road transport workers to fall outside the scope of labour and employment protection laws. This situation also makes disguised employees ineligible for critical benefits such as disability compensation, health and unemployment insurance. [25, 26]

[20] ILO: *Towards the ILO centenary: Realities, renewal and tripartite commitment*, Report of the Director-General, Report 1(A), International Labour Conference, 102nd Session, Geneva, 2013, para. 71.

[21] ILO: *The scope of the employment relationship*, Report V, International Labour Conference, 91st Session, Geneva, 2003.

[22] ILO: *Non-standard forms of employment*, Report for discussion at the Meeting of Experts on Non-Standard Forms of Employment (Geneva, 2015).

[23] ibid, para. 8.

[24] R. Sprague: "Worker (mis)classification in the sharing economy: Square pegs trying to fit in round holes" in *Journal of Labor & Employment Law*, 2015, Vol. 31.

[25] R. Smith et al.: *The big rig: Poverty, pollution, and the misclassification of truck drivers at America's ports - A survey and research report* (New York, National Employment Law Project, 2010).

[26] R. Smith et al.: *The big rig overhaul: Restoring middle-class jobs at America's ports through labor law enforcement* (New York, National Employment Law Project, 2014).

Box 1.3
Employment misclassification initiative in the United States

In the United States, many independent short-distance (or "drayage") hauliers move freight from seaport to inland intermodal terminals. For example, Max is a drayage haulier at a southern California seaport. [1] He is working as an independent truck driver contractor paid by the load, and not by the hour, as is the case with company drivers. He is responsible for all truck costs, including leasing, fuel, taxes, maintenance and repairs. When he signed an exclusivity agreement with his company, he made a down payment and a security deposit for his truck. The drayage company deducts fees from his monthly cheques for truck washes, repairs, insurance, parking, physical damage and trip permits. Max has worked for the same drayage company over the last 13 years. The company does not let Max haul for any other company, by making his small business sign an exclusivity agreement. Max's average work week is 59 hours. His net earnings before taxes as an independent contractor are approximately US$28,783 (compared to the median salary earned by employee drivers in the United States of US$35,000). Should Max get injured while draying the goods, he would not be able to qualify for California's state disability insurance, as he is not an employee. [2, 3]

According to estimates in a 2014 report from the National Employment Law Project, there are a total of 75,200 port drivers in the United States, of whom 49,331 could be misclassified. In recent years, some 400 port drivers have filed labour law complaints with the California Division of Labor Standards Enforcement. The agency's hearing officers have issued 19 decisions finding that drivers are employees, and not independent contractors. The rulings have included statements that deductions from their wages for lease payments are illegal.

At the federal level, the Department of Labor Wage and Hour Division launched the Misclassification Initiative in September 2011. The initiative included the signing of a number of memoranda of understanding, including, as the first stage, between the US Department of Labor and the Internal Revenue Service. This agreement provides for both agencies to work together and share information to reduce the incidence of misclassification of employees, to help reduce the tax gap, and to improve compliance with federal laws. [4] As the second stage, the Department of Labor has signed independent memoranda of understanding with 20 States to foster cooperation and promote the initiative with state labour authorities. [5] At the state level, on 10 January 2014 New York issued the Commercial Goods Transportation Industry Fair Play Act. The law creates a new standard for determining whether a driver of commercial vehicles who transports goods is an employee or independent contractor. [6]

[1] R. Smith et al.: *The big rig: Poverty, pollution, and the misclassification of truck drivers at America's ports – A survey and research report* (New York, National Employment Law Project, 2010).

[2] ibid.

[3] R. Smith, et al.: *The big rig overhaul: Restoring middle-class jobs at America's ports through labor law enforcement* (New York, National Employment Law Project, 2014).

[4] United States Department of Labor: *Employee misclassification as independent contractors*, http://www.dol.gov/ [accessed 29 April 2015].

[5] ibid.

[6] State of New York, Department of Labor: *Commercial Goods Transportation Industry Fair Play Act*.

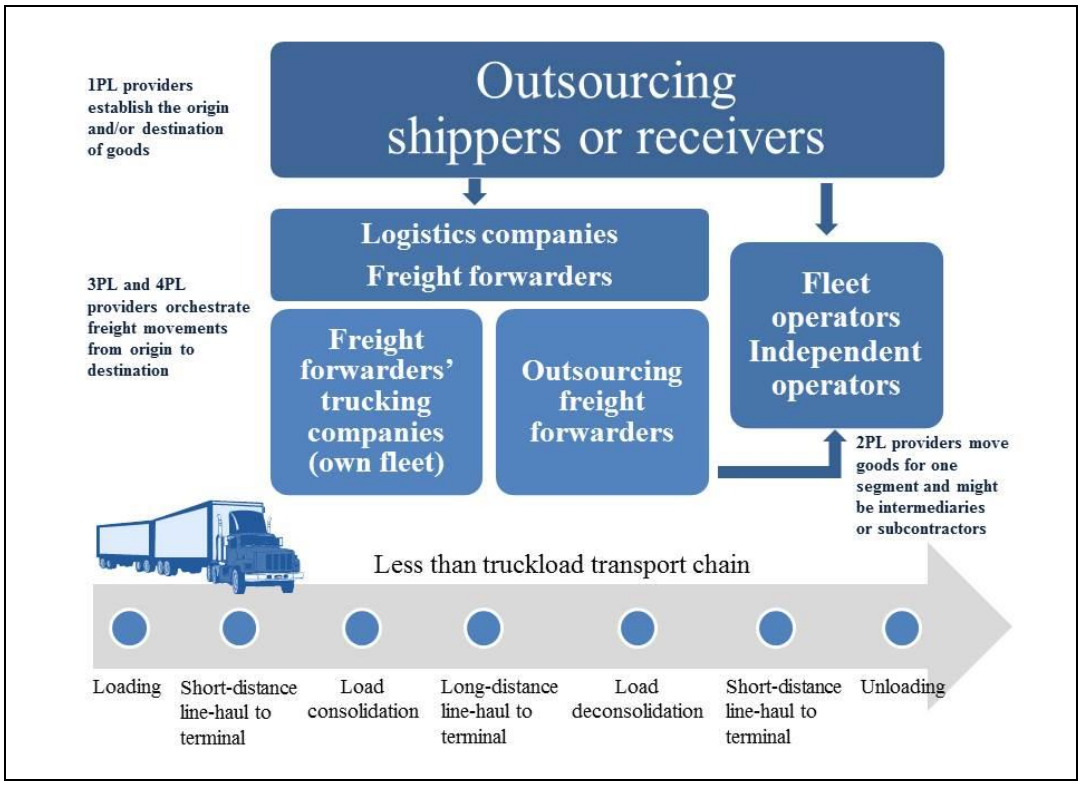
1.2.3. Segmentation and fragmentation

31. Figure 1 shows service provision patterns in the trucking sector and their relation with the different layers of logistics services and increasing levels of supply chain integration. At the first instance, shippers [27] or receivers arrange for sold or purchased goods to be transported – they constitute the first party logistics (1PL) providers. The arrangement of the service might involve receivers such as large purchasers, multinational enterprises or international buyers directly. As supply chains became more international, companies and retailers began outsourcing specific logistics functions, such as warehousing and long-distance transport, to second party logistics (2PL) providers. Pricing negotiations for the transport services might take place between receivers and one or several large specialized logistics firms (third party logistics (3PL) providers) or logistics consulting firms (fourth

[27] A shipper might involve a manufacturer, *maquiladora* or re-seller in these arrangements.

party logistics (4PL) providers). Most large 3PL providers also offer 4PL services. Logistics firms have contact with transport businesses and, in the case of road transport, with trucking companies authorized to haul goods. A trucking firm will be contacted with instructions to haul the load. Trucking firms may have their own fleet, but often hire the services of independent owner–operators, through a contractor agreement. The owner–operator may be paid a negotiated percentage of the price received. However, most commonly they are paid by the distance travelled. The trucking firm's dispatcher communicates the shipper's instructions to the owner–operator. These involve arrangements for the pick-up and delivery of the shipment. When the shipment involves less than truckload transport, warehouse consolidation and deconsolidation arrangements are made in order to make every shipment as efficient as possible.

Figure 1. Employment segmentation in road freight transport services and their connection with logistics providers



Sources: Bureau of Transport and Regional Economics of the Department of Transport and Regional Services (Australia): *An overview of the Australian road freight transport industry (Working Paper 60)* (Canberra, 2003); A. Clayton and R. Mitchel: *Study on employment situations and worker protection in Australia*: *A report to the International Labour Office* (Centre for Employment and Labour Relations Law of the University of Melbourne, 1999); F.J. Stephenson and T. Stank: Truckload Motor Carrier Profitability Strategies, in *Transportation Journal*, Vol. 34, No. 2 (Winter 1994), pp. 5–17; M. Rawling and S. Kaine: "Regulating supply chains to provide a safe rate for road transport workers", in *Australian Journal of Labour Law* (2012, Vol. 25); and ILO: "Road Freight Transport in Australia and the Road Safety Remuneration Regulation", in *New developments in labor economics: Safe rates and chain of responsibility*, Panel discussion at the 94th Annual Meeting of the Transportation Research Board, Washington, DC, 11–15 January 2015.

32. This segmentation of process lies at the heart of the subcontracting system within the road transport industry, and its extreme competitiveness, as transport companies and freight forwarders are able to introduce competition between drivers for separate components of this carriage chain. [28]

[28] A. Clayton and R. Mitchel: *Study on employment situations and worker protection in Australia: A report to the International Labour Office* (Centre for Employment and Labour Relations Law of the University of Melbourne, 1999).

33. Changing employment relationship patterns have had a profound impact on the composition of the sector's economic entities. For example, the abolishment of requirements for access to the profession has led to a predominance of small entities in the sector: most road freight transport markets are composed of a large number of small firms with only a few trucks or employees. [29] This has meant that road freight transport services are fragmented – though the degree of fragmentation varies from country to country. Market fragmentation has an impact on prices, profitability and bargaining power along the supply chain. None of the other freight transport modes have a level of fragmentation that can be compared to that of the road freight transport sector.

Box 1.4
Ji-ib Platform of the Republic of Korea

The Korean road freight transport sector is characterized by a multilayered structure of subcontractors and owner–operators. In 2008, owner–operator drivers accounted for 80–90 per cent of all truck drivers in the Republic of Korea. [1] Independent owner–operators have difficulty obtaining freight transport contracts. [2] Thus, they mostly depend on subcontracting practices by larger or intermediary companies. They are regarded as independent contractors or self-employed, although they might be subordinate to the control of particular freight transport companies. [3] Owner-drivers purchase their own trucks and bear the expenses of the operation of vehicles.

The Republic of Korea also has a unique system, known as the Ji-ib (or Ji-ip) platform. [4] Owner–operators are required to be part of this platform as their commercial licences are registered through existing trucking companies. The Ji-ib platform was set up after the Second World War and became institutionalized in the 1960s. [5] At that time, minimal fleet numbers established by law ensured a level playing field for trucking companies to enter the market. This restriction meant, however, that owner–operators had to depend on and register with trucking companies to obtain authorization for commercial operations. Minimum fleet requirements were abolished in 2004. Nonetheless, a limit on commercial licensed vehicles remained in law; thus most owner–operators continue to work through the Ji-ib platform.

In 2008, the Government of the Republic of Korea announced the introduction of a standard rates system. Standard rates would allow for more decent working conditions for owner–operators in this sector. A pilot rates programme was tested in 2010–11. Full implementation of the standard rates system is pending. Additional efforts to improve working conditions of owner–operators have included the introduction of legislation establishing a standard rates commission in 2013 and 2014. The bill has not yet come to a vote, however.

[1] W. Jang and I. Shin, "Explaining the different ownership structure in Korea and the US trucking industries", in *Journal of International Logistics and Trade*, Vol. 6, No. 1, June 2008.

[2] A. Yun: "Organizing workers beyond an employment relationship – A case of independent drivers in the road freight transport", in B. Sharit (ed.): The state of labour: The global financial crisis and its impact (New Delhi, Routledge, 2014).

[3] ibid.

[4] G. Smith et al.: *Assessing the effects of trucking regulation in Korea* (Washington, DC, IBRD, 1986).

[5] ibid.

34. Information on sector composition by type of economic entity, by type of registration or by driver population is heterogeneous, not published or non-existent in different countries. When available, data comparison was unfeasible because of the lack of established parameters for collecting entity or operator data. Truck registration databases and categories vary among jurisdictions.

1.2.4. Selected consequences of global supply chains

35. Transport occupies an irreplaceable socio-economic position linking supply to demand within the world's production system. Transport, in all its forms, provides the necessary link between industrial sectors and is a crucial element of global supply chains. Freight transport forms an indispensable set of links in global supply chains (both for finished and

[29] See P. Krausz: *Openness of international road freight transport markets in the UNECE region*, Inland Transport Committee, UNECE Working Party on Road Transport, 107th Session, Geneva, 2012.

intermediate goods) and as a consequence demand for freight transport reflects growth in sales or activity in diverse sectors. [30] Efficient transport services trigger competitive global supply chain design and patterns.

36. Demand for freight transport services has increased and will be further fuelled in the coming years by economic recovery and consumption patterns. Consumers are accustomed to ordering online and companies to sourcing overseas. Just-in-time management patterns further exacerbate the demands placed on drivers to deliver goods to meet the schedules of modern service provision planning and increase the impact of subcontracting chains. The fact that clients may be entitled to compensation for delays incurred may encourage drivers to disregard rules in relation to rest times or speed limits so that they can deliver on time and remain competitive.

37. Supply chain actors – and more prevalently large international buyers and multinational enterprises – are in a position to set OSH standards for their contractors. Solutions should include the management of health and safety risks for their contractors, including their logistics and transport contractors. [31] This, in turn, could encourage small and medium-sized enterprises (SMEs) and individual service providers at the national level to adopt OSH standards and improved working conditions. [32]

1.2.4.1. Wages

38. Increasingly prevalent sourcing practices through global supply chains have resulted in opportunities for economic development and employment in the road transport sector. Nonetheless, competitive processes at the global level have placed downward pressure on wages and working conditions for road transport workers. Many owner-drivers and small freight operators face difficult financial situations due to fierce competition. Smaller operators have little to no influence over major costs such as fuel, labour or the price they are able to charge their customers or shippers, which effectively makes them "price-takers".

39. Whereas a minimum wage may be understood to mean the minimum sum payable to a worker for work performed or services rendered within a given period, [33] a freight rate entails the calculation of the cost of shipping goods from one point to another. Thus, rates fluctuate frequently, based on a number of different factors, such as fuel and labour costs, to name a few. Minimum wage provisions might pose calculation challenges when also applicable to international commercial drivers.

40. Numerous studies linking wages and road safety outcomes have been carried out in Australia and the United States. [34]

[30] See OECD-ITF, op. cit.

[31] See European Agency for Safety and Health at Work (EU-OSHA): *Managing risks to drivers in road transport, Working Environment Information Working Paper* (Luxembourg, Publications Office of the European Union, 2011).

[32] ibid.

[33] ILO: *Minimum wages: wage-fixing machinery, application and supervision*, Report III (Part 4B), International Labour Conference, 79th Session, Geneva, 1992.

[34] See, for example: M. Belzer et al.: *Paying for safety: An economic analysis of the effect of compensation on truck driver safety* (Washington, DC, Federal Motor Carrier Safety

1.2.4.2. Visas

41. The evolution of global trade and production via the operation of global supply chains has had a major impact on international road transport, including by presenting challenges with regard to cross-border mobility for international drivers. Unlike seafarers and aircrews, professional truck drivers do not benefit from global arrangements for the issuance of visas to undertake international transport operations. Visa issuance regulation is at the centre of the national security and competitiveness dichotomy. Thus, international freight transport operations are greatly affected by general policies pursued by governments in areas like visa issuance; security rules; and insurance regulation concerning the driver, the transport operator, the vehicle, the cargo, and specific transport operations. [35] The ILO's 2006 Tripartite Meeting on Labour and Social Issues arising from Problems of Cross-border Mobility of International Drivers in the Road Transport Sector analysed the most prevalent challenges for international drivers. [36]

Administration, 2002); and M. Quinlan and L. Wright: *Remuneration and safety in the Australian heavy vehicle industry: A review undertaken for the National Transport Commission* (Melbourne, National Transport Commission, 2008).

[35] C. Kunaka et al.: *Quantitative analysis of road transport agreements (QuARTA)* (Washington, DC, IBRD, 2013).

[36] See ILO: *Note on the proceedings*, Tripartite Meeting on Labour and Social Issues arising from Problems of Cross-border Mobility of International Drivers in the Road Transport Sector, Geneva, 23–26 October 2006.

2. Employment and other features of the road transport sector

42. The road transport sector – which encompasses passenger transport modes such as buses, coaches and taxis, as well as commercial freight transport – employs large numbers of people. Innovation, competitiveness and productivity must be appropriately counterweighted with safety and decent work concerns to ensure the sector's resilience in the future.

43. Important obstacles need to be overcome in order to achieve equality in opportunity at work and equal pay in the road transport sector. Special consideration should be given to the issue of worker attraction and retention in the sector, with special emphasis on women. Another concern is how to ensure reasonable hours of work. In some countries, a living wage might not be possible without the need to work excessive hours. The lack of level playing fields in transport service regulation has a negative impact on the respect for, and protection and fulfilment of, the rights of workers who play by the rules.

2.1. Employment data

44. Overall "transport, warehousing and communications" or "transport" categories are common in statistical databases. However, data disaggregated at the road transport mode level or by passenger or freight variable were more challenging to come by. When discussing only the road transport sector, it should be noted that reliable statistical data are at best limited.

45. The road transport sector covers a wide range of activities. It has direct and indirect effects on employment. First, direct job creation is basically due to infrastructure construction and transport operations, and can include exploitation, maintenance and supervisory functions. Second, indirect job creation derives from the effect on the economy's competitiveness and productivity by road sector activities. [1]

46. Road transport contributes substantially to both GDP and employment. Overall transport sector share in GDP varies between 1 and 4 per cent. Data on road transport employment are less comprehensive and uniform due to the fragmentation of the industry. Table 2.1 shows employment in the road transport sector and, when available, data were disaggregated by freight or passenger mode. Official employment numbers and statistical databases do not include the informal workforce. Urban transport is often a large and important public employer. Road transport employment's share of total employment ranges from 0.36 to 5 per cent.

[1] European Union Road Federation (ERF): *ERF's position on the socio-economic benefits of roads to society* (Brussels, 2001).

Table 2.1. Road passenger and freight transport employment and share in total employment

Country	Year	Employment in road freight transport	Employment in passenger road transport	Total employment for road transport workers	Road transport sector percentage of total employment
Argentina	2005	n/a	n/a	476 223	5.00
Australia	2009	*162 600*	*81 300*	243 900	2.26
Canada	2011	406 111	168 441	574 552	3.34
Chile	2011	182 019	17 717	199 736	2.67
China	2012	n/a	n/a	2 778 125	0.36
EU-28	2011	*3 000 000*	*1 976 600*	4 976 600	2.25
Austria	2011	58 700	54 700	113 400	2.75
Belgium	2011	63 100	12 000	75 100	1.68
Bulgaria	2011	48 000	34 200	82 200	2.34
Czech Republic	2011	117 100	62 700	179 800	3.47
Denmark	2011	29 400	27 400	56 800	2.02
Finland	2011	45 300	*23 500*	*68 800*	2.81
France	2011	360 400	248 600	609 000	2.38
Germany	2011	386 800	336 100	722 900	1.79
Greece	2011	*53 100*	*54 000*	*107 100*	2.30
Italy	2011	327 800	171 200	499 000	2.02
Netherlands	2011	119 500	69 600	189 100	2.20
Poland	2011	289 400	144 000	433 400	2.73
Portugal	2011	65 200	35 300	100 500	2.04
Romania	2011	97 300	78 200	175 500	1.94
Spain	2011	*337 000*	179 300	*516 300*	2.75
Sweden	2011	79 300	68 000	147 300	3.26
United Kingdom	2011	269 300	*239 500*	*508 800*	1.63
India	2008	n/a	n/a	5 753 920	1.54
Mexico	2012	*1 333 333*	*666 667*	*2 000 000*	4.04
South Africa	2005	63 500	363 900	427 400*	3.35
United States	2014	2 422 300	835 750	3 258 050	2.22

* More current data indicate that road transport employment accounts for 481,618 jobs, 60 per cent of which are in formal employment and 40 per cent in the informal sector. (Statistics South Africa Quarterly Labour Force Survey, Quarter 2, 2013).

Note: Figures in italics are estimates (as per source estimations); n/a: not available; percentages of total employment calculated with data from Eurostat for EU countries and ILOSTAT country profiles for the rest of the countries according to data year.

Sources: Argentina: Centro Tecnológico de Transporte, Tránsito y Seguridad Vial [Transport, Road Traffic and Road Safety Technology Centre], National Technological University (2007); Australia: Australian Bureau of Statistics (2010); Canada: Transport Canada (2011); Chile: National Statistical Institute; China: National Bureau of Statistics (2013); EU: Eurostat; India: Ministry of Labour and Employment; Mexico: Ministry of Communications and Transport (2013); South Africa: Stellenbosch University and Department of Labour (2005); United States: Bureau of Labor Statistics, US Department of Labor (2015).

2.2. Recruitment, retention, ageing and gender balance

47. Vehicle operator performance is an essential element in the delivery of efficient and quality transport services. Accordingly, vehicle operator recruitment and retention issues directly affect the quality and effectiveness of the services provided. In Australia, Canada and the United States, operators have faced periodic or constant workforce shortages due to recent increasing demand, a phenomenon that could become a future trend for many countries. High turnover has significant financial consequences for transport operators, because the cost of recruiting, hiring and training drivers is absorbed by operators. Turnover reductions can allow the investment of these same resources in improved recruitment practices, training, compensation, performance bonuses, and better tools and support. In some cases, tackling working conditions challenges could improve retention and reduce turnover.

48. A number of factors appear to affect vehicle operator recruitment and retention. The adequacy of compensation appears to be one of the more significant factors. Relatively low compensation, particularly given the high demands of the job, can affect the quality of applicants and trainees.

49. The sector is dominated by male workers. Driver shortages in some regions could be addressed by attracting more women to truck or bus driver positions. Female employment is increasing, however, especially in certain modes such as bus services. [2]

Box 2.1
Women in transport

Challenging working conditions may render the transport sector unappealing to women, most notably in relation to working time, shift-working (round the clock), and the location of employment, involving driving a truck long distances from home. The lack of attraction is reinforced by gender stereotypes – received ideas about what women can do and what men can do – that are perhaps most deeply embedded in male-dominated sectors such as transport. Although the overall numbers of women employed in the bus industry has risen, a study by the International Transport Workers' Federation (ITF) found that the overall proportion of women drivers still remains low. [1]

In 2014, the ILO published a working paper [2] and policy brief focusing on the working conditions and management policies of transport companies designed to mainstream gender. These documents also address opportunities for success and advancement, and the barriers faced by women who work in the transport sector. In 2014, the ITF also published a special handbook on health and safety, specifically targeting women drivers. [3]

[1] ITF: *Women bus workers – Driving to equality: A best practice guide for road transport unions* (London, ITF, 2013).

[2] P. Turnbull: *Promoting the employment of women in the transport sector – Obstacles and policy options* (Geneva, ILO, 2014).

[3] ITF: *Road transport women's health and safety handbook* (London, ITF, 2014).

2.3. Working time

50. Focus on commercial driver fatigue is heightened by the economic impacts of working time rules. Impacts are felt at the driver, company and national levels, and include strong perceived conflicts between the interests of safety and prosperity. Working time rules for commercial drivers can create a level playing field as a fatigue countermeasure by carriers and independent drivers. Working time rules may contain numerous specific provisions to ensure reasonable driver schedules. These include rules relating to minimum daily off-duty

[2] EU-OSHA: *A review of accidents and injuries to road transport drivers* (Luxembourg, 2010).

hours, maximum daily driving hours, maximum daily tour-of-duty (elapsed time), required breaks from driving, weekly maximum work hours, restart provisions, [3] time off, and sleeper berth use (including "split sleep" provisions). Truck drivers can experience long working hours, substantial time away from home, irregular work schedules and working time, and contingent work. [4]

51. Countries can choose how to regulate hours of work and break and resting times in the road transport sector. For example, Australia, Bangladesh, Canada, Chile, the EU Member States, Ghana, India, Nigeria, Switzerland and the United States have specific legislation in place regulating hours of work for road transport workers. Other countries apply, by default, prevailing working-time rules applicable in their country.

52. Tools enabling the enforcement of rules concerning hours of work and break and resting times for road transport workers include tachographs, paper logs and electronic logging devices. The tachograph is the on-board data recording device with the longest history of application. It was designed to record driving performance in order to monitor compliance with working and break time rules. [5] Its mandatory implementation in the EU began in the 1970s. Tachographs are also mandatory in Brazil and Japan. However, paper logs constitute the most common tool for enforcing working-time regulation. Within the EU, Belgium and France have adopted additional enforcement measures to prevent drivers from spending their weekly resting period in their truck cabins. [6]

Box 2.2
Non-standard working times patterns in the road transport sector in Europe

A survey carried out by the European Parliament of non-standard working times and working patterns in the EU documented the following practices: *

- In Austria: employees in the sector carry out shift work on a regular basis more often than the national average.
- In Belgium: the percentage of transport employees on permanent night work (14 per cent) is much higher than the national average (2 per cent), while 60 per cent of drivers sometimes work at night, and 25 per cent work between one and three nights a week.
- In Spain: more than 75 per cent of surveyed employees sometimes drive at night.
- In Denmark: 42 per cent of employees in the sector work permanent day shifts, compared with a national average of 80 per cent, while as many as 31 per cent work irregular hours compared with a national average of 9 per cent.
- In the United Kingdom: drivers are less likely to work formal shift patterns than those in other occupations. Weekend work is common and working at night is extensively used to make use of the road network when it is relatively empty.

* G. Aresu: *Social and working conditions in the transport sector of the European Union* (Brussels, European Parliament, 2009).

[3] Consecutive hours off-duty in between each working week or fortnight to start recounting maximum weekly or fortnightly working hours.

[4] See M. Belzer: "Labor and human resources", in L. Hoel et al. (eds): *Intermodal transportation: Moving freight in a global economy* (Washington, DC, Eno Transportation Foundation, 2010).

[5] See R. Schmidt-Cotta et al.: *VERONICA: Vehicle event recording based on intelligent crash assessment*, Project final report (Brussels, European Commission, 2006).

[6] European Transport Workers' Federation (ETF): *Statement by the European Transport Workers' Federation concerning recent measures taken by Belgium and France to enforce Regulation (EC) No. 561/2006 on driving and rest time, particularly with regard to rest time taken in lorries* (Brussels, 2014).

2.4. Level playing fields

2.4.1. Transport network companies

53. Transport network companies (TNCs) or new online-enabled services fall outside the scope of general regulatory models for the taxi industry, as presented in table 2.2. TNCs are based on technological platforms that have provided additional supply.

Table 2.2. General regulatory models and variables common to taxi regulation

	Quality control	Quantity restriction	Economic regulation
Regulatory models and requirements	Vehicle safety Operator and driver fitness, driving hours Comfort, vehicle type (colour, disability/vulnerable population access) Appearance restrictions (colour, signage)	Licence numbers or medallion caps (upper limit cap): analysis of unmet, peaked or latent demand	Tariff and charges: taxi cost models typically consider vehicle purchase cost and cost of depreciation, cost of vehicle maintenance, insurance costs, infrastructure costs (permits, licences), and driver earnings

Source: J. Cooper et al.: *Taxi! Urban economies and the social and transport impacts of the taxicab* (Surrey, Ashgate Publishing, 2010).

54. Curb (formerly Taxi Magic) was the first service using an online-enabled application (app) to connect formal taxi supply and demand. It initiated a technological revolution of the taxi industry. Starting in 2008 in the United States, this service partnered with large existing formal taxi companies and provided unit tracking services, app-enabled hailing and credit card payment services. Curb still provides this service, working with already established formal taxi operators. The app connects customers to a formal taxi ride in minutes. The nearest available cab belonging to this programme – and regardless of the taxi company they operate under – will pick up the customer. [7] A similar service, called Taxi Deutschland, [8] has also emerged in Germany.

55. TNCs differentiate themselves from the Curb model, as they arrange for transport services similar to limousine and taxi services using a smartphone app. Existing since 2009, TNCs have publicly defended their services based on the premise of connecting owners of already-rolling vehicles with potential customers in need of a ride, thus disconnecting themselves from the vehicle operator and its labour. They have generally insisted that their service provision is based solely on the technological component and platform connecting supply and demand. TNCs were first defined by the California Public Utilities Commission as:

> an organization whether a corporation, partnership, sole proprietor, or other form, ... that provides prearranged transportation services for compensation using an online enabled application (app) or platform to connect passengers with drivers using their personal vehicles. [9]

[7] Transportation Fairness Alliance: *Frequently asked questions*, http://www.tfapdx.org/faqs.php [accessed 8 July 2015].

[8] See Taxi Deutschland: *Servicegesellschaft für Taxizentralen* [Services for taxi offices], http://www.taxi-deutschland.net/index.php/taxiapp [accessed 8 July 2015].

[9] California Public Utilities Commission: *Decision adopting rules and regulations to protect public safety while allowing new entrants to the transportation industry*, Order instituting rulemaking on regulations relating to passenger carriers, ridesharing, and new online-enabled transportation services, 19 Sep. 2013.

Companies covered by this definition might include Didi Dache, GrabTaxi, Hailo, InstaCab, Kuaidi Dache, Lyft, OlaCabs, SideCar, TaxiForSure and Uber.

56. TNCs have emerged to address demand that has not been satisfied by traditional taxi regulatory models. Potentially unreliable services led customers to favour the use of TNC services over formal taxi services. Currently, TNC business models have been strongly backed by venture capital support, allowing them to compete with traditional taxi and limousine services. Questions have been raised about whether, without significant amounts of venture capital support, TNC and ridesharing taxi business models can survive and become sustainable, including in the light of current and future legal challenges, [10] and about how the travelling public can ensure that policy-makers will favour their safety as well as decent working conditions for drivers.

57. Uber, [11] the San Francisco start-up, was launched in 2009 with the particularity of including surge pricing policies. Lyft also applies this type of pricing mechanism. Surge pricing is characterized as service rates that increase to ensure reliability when demand cannot be met by the number of drivers on the road. At times of high demand, the number of drivers becomes limited. Thus, service price increases to potentially encourage more drivers to become available. The company ensures that a special notification screen in the app will appear in situations where surge pricing will apply. The client needs to accept higher rates before being connected to a driver. [12]

58. An important aspect of the service includes rating the driver and experience. Instant evaluations provided by the customer could provide control over driver behaviour and the service provided. Poor performance reviews by users are taken seriously by drivers, as they can lead to a driver's app access being turned off, translating into job loss, as that driver will no longer be able to connect to demand through the TNC. Performance review mechanisms are also available for drivers to rate service users, potentially leading to certain users being deprived of the possibility of using the platform. Requirements on the vehicle type to be purchased are also imposed by TNCs. It has been asked whether this constitutes the type of control that creates an employment relationship. [13] These commercial drivers in their private vehicles remain in informal and flexible work arrangements with no job security or social protection. [14]

59. TNCs have faced strong opposition from taxi operators, especially since 2013. Taxi driver strikes have taken place and regulatory bans have been adopted in certain countries or states. Figure 2.1 shows the different locations where, as at February 2015, the TNC Uber has been operating without restrictions, faces regulatory challenges or has been banned.

60. TNCs have argued that they just provide a technological platform and will not respond to claims or be held liable for any road accidents involving TNC drivers. Formal taxi services

[10] See R. Mundy: *Regulatory reform: Impacts at curbside and effect of evolving technology providers and competition*, a submission to Workshop 185: Future taxis: The evolution of on-demand transport: Taxis, transportation network companies, and the implications of new technologies, Transport Research Board, 94th Annual Meeting (Washington, DC, 11 Jan. 2015).

[11] As of 1 April 2015, Uber operates in 55 countries and more than 200 cities.

[12] See *What is surge pricing?* Uber, https://help.uber.com/h/6c8065cf-5535-4a8b-9940-d292ffdce119 [accessed 8 July 2015].

[13] See Mundy, op. cit.

[14] ITUC: *ITUC Statement on UN Women and Uber*, 13 Mar. 2015 (Brussels).

are required to purchase commercial and liability insurance to cover user injury in the event of an accident. The question of imposing additional insurance requirements on TNC models has been raised after serious road accidents have resulted in TNC user injury. The insurance industry may ultimately provide an insurance product for the TNC or ridesharing driver. [15] However, pricing for existing commercial liability insurance according to the risks involved (distance driven in congested city streets) may end up translating into the same costs as for taxi or limousine insurance products. This additional financial burden, that is currently not part of the equation for casual or part-time TNC operations, might force the service provider out of the marketplace. [16] The cases of alleged assault by TNC drivers and one alleged rape have also highlighted the potential shortcomings of the driver self-screening methods used by TNCs and the insufficient safety requirements.

61. At its 6th International Taxi Forum, in November 2014, the International Road Transport Union (IRU) launched a new industry initiative to provide customers with a guarantee of safe, reliable, high-quality and formal taxi services. [17] The IRU's Global Taxi Network brings together taxi industry federations, leading taxi app providers using smartphone technology and companies existing within the regulatory framework in force. Its advisory committee comprises industry experts and representatives of the ITF and the OECD-ITF. Taxi smartphone app service providers can request to become a Global Taxi Network partner. One of the eligibility criteria is that orders must be sent and dispatched by properly licensed taxi companies. Other criteria relate to safety, service quality, non-discrimination and vetted rates. [18]

62. Analysis of the TNC phenomenon should not focus on re-identifying market entry points or on defining taxi and limousine operations. [19] Allowing TNCs to freely operate translates into completely deregulating the taxi, and in some cases, the limousine industries. [20] This might entail allowing open entry into the taxi and limousine marketplace, unlimited and unregulated flexible fare-setting, the self-vetting of drivers, an increase in unsettled insurance issues, and few restrictions on the age and type of vehicles. [21] Formal employment in the sector is negatively affected by TNCs. Governments could be losing tax revenue as a result of TNC models. The need for user safety, predictable rate calculation methods, measures to ensure a formal decent job for the driver and adequate insurance coverage justify the public oversight and regulation of TNCs. Policies applicable to TNCs should ensure a level playing field with existing services and with formal drivers.

[15] Mundy, op. cit.

[16] ibid.

[17] Another initiative ensuing from this forum was a joint IRU–ETF declaration: *Taxis - for a level playing field*, adopted on 19 Nov. 2014.

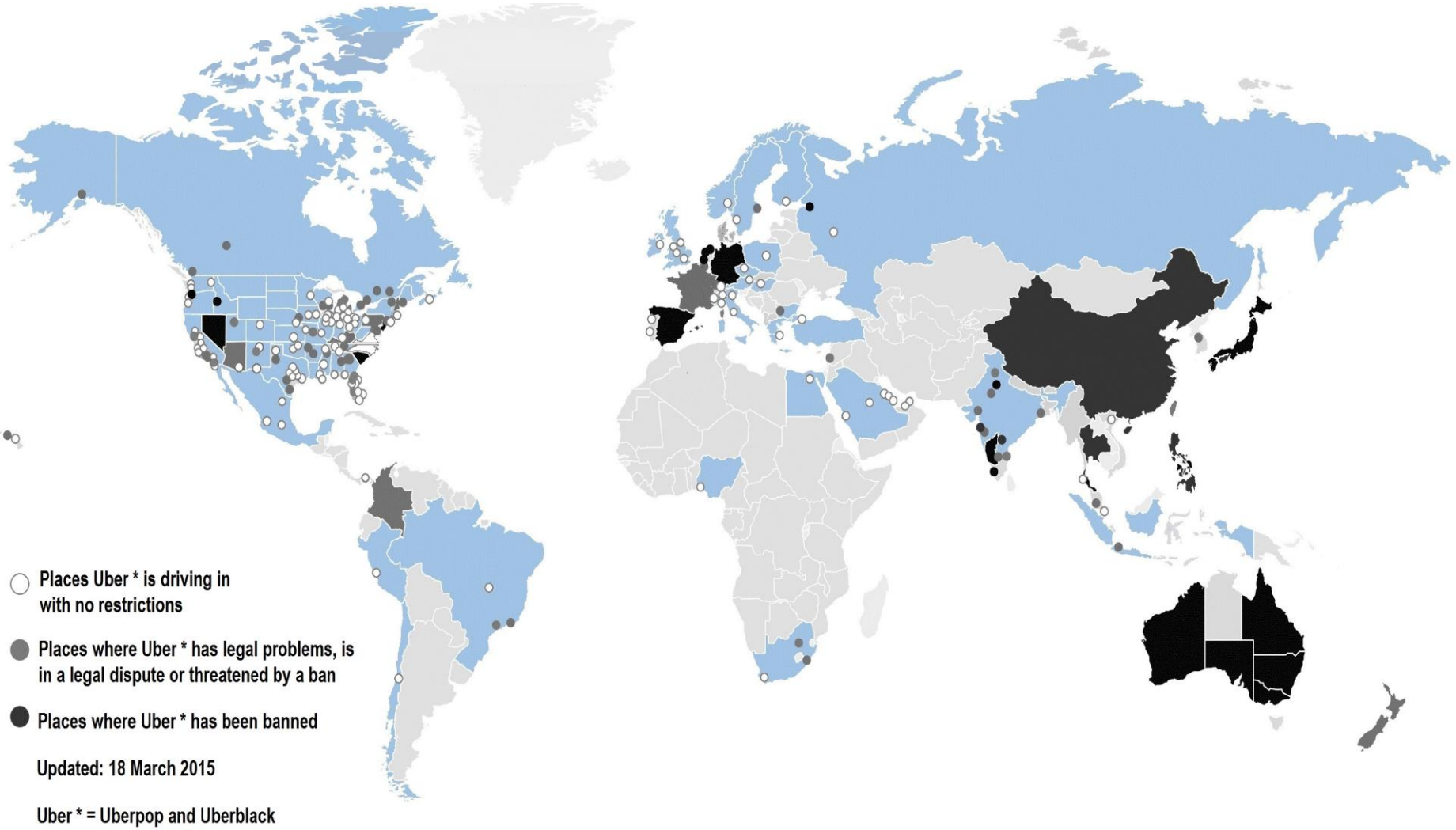
[18] IRU: *Global Taxi Network – Anytime, anywhere!* https://www.iru.org/en_global_taxi_network retrieved on [accessed 8 July 2015].

[19] See Mundy, op. cit.

[20] ibid.

[21] See Mundy, op. cit.

Figure 2.1. Locations where the TNC Uber operates without restriction, faces regulatory challenges or has been banned



Source: From private correspondence with Dieter Schlenker and Anja Floetenmeyer and published by courtesy of – *Taxi Deutschland* (Geneva, ILO archives, 7 Apr. 2015).

63. The complete deregulation of or the application of light regulatory frameworks to TNC services would represent a step backwards for the industry. Unsafe services where communities were poorly served or not served at all were the reason for regulation in the first place. One-size-fits-all approaches cannot be recommended at the current point in time, as taxis are generally regulated at the local, county, regional, state or provincial levels. The TNC phenomenon is still too recent to allow any conclusions to be drawn or best practices to be identified. Taxi industry regulators are best placed to tackle the challenges posed by TNCs, taking into account demand and the existing taxi regulatory framework, by adopting carefully examined policy solutions tailored to their region and their region's needs.

2.4.2. Public transport and austerity in Athens: Striking a balance in post-crisis conditions

64. Since 2008, the economic downturn and the financial crisis have presented a challenge to public authorities in charge of providing transport services. Agencies have had to strike difficult balances between austerity measures negotiated with creditors and public pressure to maintain or even improve public transport services. One response to the implementation of austerity measures has been strike action. For example, in Belgium, strikes were organized in December 2014 and April 2015 to oppose and call for the review of austerity measures and regulations increasing the retirement age of workers (from 65 to 67, as from 2030). The following paragraphs summarize the case of post-crisis public transport services in Athens. [22]

65. The Athens Urban Transport Organisation (OASA), recently renamed Transport for Athens (TfA), is the public transport authority responsible for planning and managing public transport services in Athens (except railways). TfA acts under the jurisdiction of the Ministry of Infrastructure, Transport and Networks of Greece. It has two subsidiaries that have operated and maintained the transport network since 2011: STASY SA (metro and tram) and OSY SA (thermal and trolley buses). TfA has faced a number of challenges related to the 2008 crisis, which have had a significant impact on its operations and finances, for example:

(a) There have been specific country commitments made to the International Monetary Fund, the EU and the European Central Bank (on accounting methodology and subsidies to STASY SA and OSY SA). As a result, agreement has been reached on reforms and on an action plan to comply with performance criteria, indicative targets, new accounting rules and subsidy ceilings.

(b) Ticket and travel card prices increased in 2011 with no positive impact on the agency's revenues. Consequently, in September 2014, a new product policy launched new products and decreased prices in order to promote mobility and inter-modality; it was coupled with increased measures to fight fare evasion.

(c) There has been a decrease in service provision to take into account TfA's new financial reality – such as reduced services on routes with low ridership and bus network adjustments in view of metro extensions.

[22] Based on private correspondence with the TfA and the City of Athens (Geneva, ILO archives, 17 Apr. 2015).

(d) There has been a 26 per cent decrease in ridership, because of high unemployment rates, lower consumption patterns and higher job and economic insecurity.

66. From a workforce perspective, no new hiring has taken place since 2009. TfA's employee numbers decreased by 33 per cent due to natural attrition from 2008 to 2014. Also, in 2011, approximately 150 OSY SA employees were laid off as reform procedures led to the review and discovery of falsified records and academic credentials. Approximately 80 STASY SA employees have been reassigned to ticket-selling and inspection duties. The employee numbers of TfA's holding company have decreased by 53 per cent. From 2008 to 2014, OSY SA's employee numbers decreased by 35 per cent and STASY SA's by 24 per cent. Because of financial constraints, new training has been minimal since 2008. However, in 2014, TfA started to implement the Human Resources Empowerment Project to support bus and trolleybus drivers. Also, TfA implemented a training programme for ticket collectors both in OSY SA and STASY SA.

67. Notwithstanding recent challenges, TfA leadership has adopted the perspective that post-crisis challenges can be translated into new opportunities to promote public transport service use. The agency has implemented the following improvements to attract passengers, increase the use of public transport and promote service modernization:

(a) In 2009, 320 new buses replaced older buses, improving environmental performance. These buses also accommodate customers with mobility challenges. The rest of the bus fleet has been equipped with low-floor vehicles, "lean-down" capacity or extendable ramps, facilitating wheelchair access.

(b) Bus lanes have been extended in the metropolitan Athens area to enhance travel time and efficiency.

(c) New revenue sources have been explored. Photovoltaic panels have been installed on rooftops belonging to the TfA group of companies, in cooperation with Public Power Corporation-Renewables SA and the Hellenic Transmission System Operator SA.

(d) The concept of a single ticket that is valid for the entire transport network has been implemented. The whole network can be accessed through e-ticketing, e-card and mobile ticketing features. In addition, the bus networks have been redesigned to promote inter-modality.

(e) Comprehensive passenger information and fleet management systems have been implemented. About 1,000 smart bus stops have been equipped with information panels and real-time information is available via the Web, smartphone app and text messages.

68. It can be said that 2014 was a recovery year. Revenues increased by 6 per cent, while operating expenses increased only marginally. Furthermore, after five years of continuous decline, passenger numbers increased by 1.4 per cent, reaching 651.1 million. A two-year action plan for 2015–16, targeting revenue increase, streamlining costs and reinforcing passenger-focused values, has already been endorsed by the International Monetary Fund, the EU and the European Central Bank. TfA is implementing the plan in coordination with, and with the technical support of, UNECE.

2.4.3. Cabotage

69. Cabotage is present when a truck driver registered and licenced in Country A picks up and transports domestic freight in Country B. In the absence of full liberalization of markets, bilateral agreements are the main instrument used to govern and regulate international road

transport services. These agreements vary in scope and depth, but the details they include often reflect the market openness for road transport services between the countries concerned. [23] The diversity of such agreements presents a challenge to transport operators in their compliance efforts.

70. Certain regions regulate through quota systems and bilateral agreements. In other regions, cabotage is strictly forbidden (zero quota). Provisions related to cabotage were included in the North American Free Trade Agreement. Different pilot programmes testing cabotage operations within the United States have been implemented by the US Federal Motor Carrier Safety Administration. The use of foreign registered vehicles for domestic movements is subject to specific rules in Canada.

71. The increased opening and liberalization of the European market has reshaped road freight transport in the region. The changes became even more pronounced after the EU was enlarged by 12 EU Member States in two steps, in 2004 and 2007. There has been an impact on the employment and working conditions of both resident and non-resident professional drivers. [24] Disparities between EU Member States create gaps that can lead to transport companies being encouraged to adopt disloyal competition and other practices (such as the creation of "letter-box companies", recourse to the use of drivers who falsely claim to be self-employed, or the introduction of performance-based employment schemes).

72. Unfair practices can lead to the decline in standards within the driving profession (including a deteriorating working environment and regressive steps as far as income levels, work–life balance, job demands and living standards are concerned). [25] Enforcement is crucial in order to prevent illegal and disloyal employment practices. [26] Innovation and technology are also being used to generate data on track cabotage operations. For example, in an app initiative created by the University of Lund in Sweden, users report positions and licence plate numbers to track foreign truck movements in Denmark, Norway and Sweden. [27]

2.4.4. Bus rapid transit systems: Urban bus service reform

73. Bus rapid transit (BRT) systems offer a sustainable solution to urban traffic and air pollution challenges. Figure 2.2 shows that BRT systems have been implemented in all continents. Originating in Curitiba, Brazil, BRT systems now exist in more than 191 cities around the world. [28]

[23] C. Kunaka et al.: *Quantitative analysis of road transport agreements (QuARTA)* (Washington, DC, IBRD, 2013).

[24] European Parliament: *Social and working conditions of road transport hauliers* (Brussels, EU Publications, 2013).

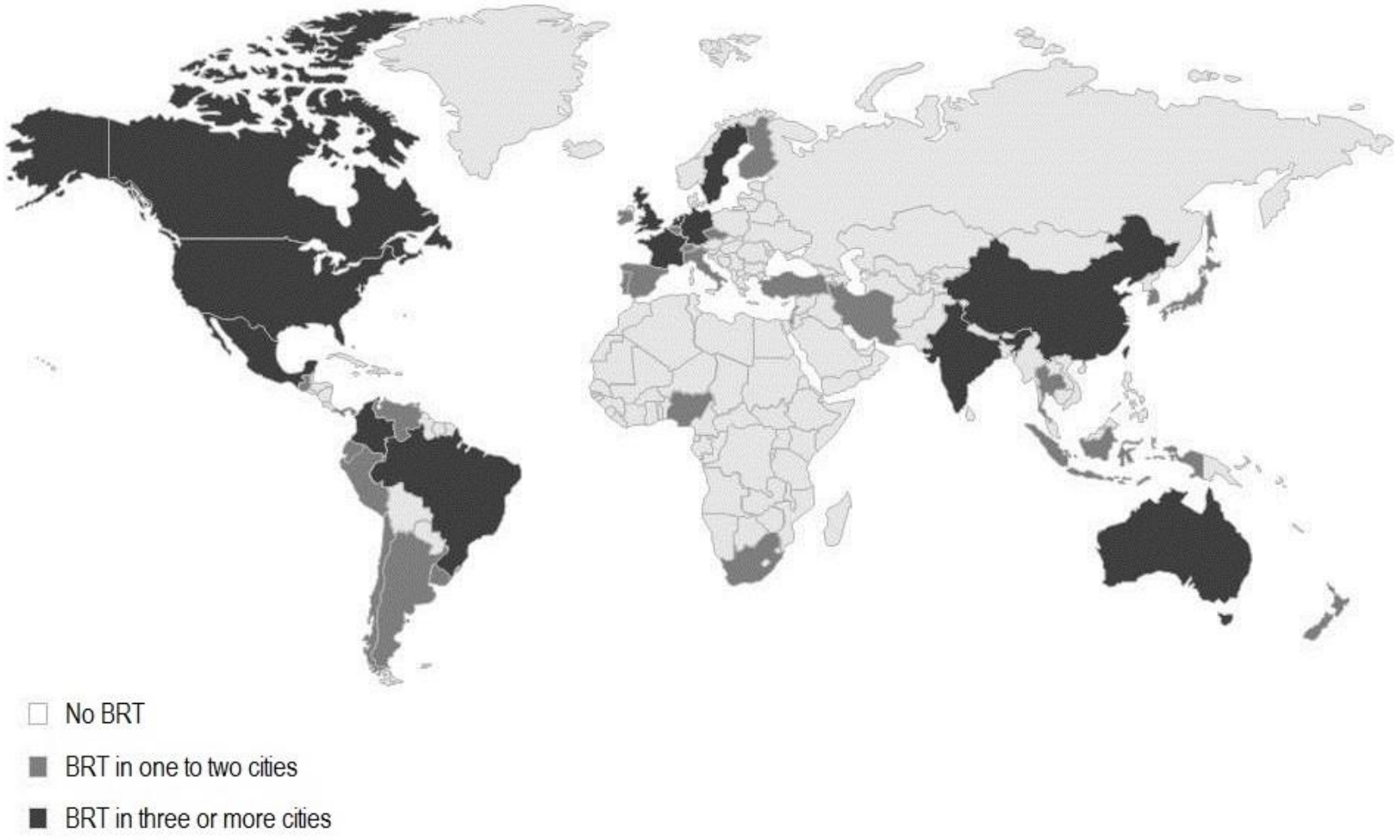
[25] ibid.

[26] ibid.

[27] H. Sternberg et al.: *Cabotagestudien: A study on trucking deregulation and cabotage in Scandinavia and beyond* (Lund University, 2015). Data available at: http://www.cabotagestudien.com/ [accessed 21 June 2015].

[28] EMBARQ, *Global BRT data*, www.BRTDATA.org [accessed 22 Apr. 2015].

Figure 2.2. BRT implementation – by number of cities per country



Source: EMBARQ (World Resources Institute Center for Sustainable Transport), Washington, DC.

74. From an infrastructure perspective, key BRT features include dedicated or preferential bus-only lanes and special boarding platforms. Services are provided by high-capacity articulated vehicles using cleaner propulsion technologies. BRT programmes in low- and middle-income countries have been accompanied by the implementation of fleet renewal and scrappage initiatives, intelligent transport systems and telematics, smart and electronic fare collection systems and new infrastructure (such as dedicated bus lanes). These elements have usually been funded by development banks and private sector investment. Accompanied by appropriate governance structures, BRT programmes have provided local governments in low- and middle-income countries with a tool to reform and formalize public transport services.

75. Figures 2.3 and 2.4 depict bus reform processes in Latin America, where usually fragmented private concession models have evolved to semi-public operation systems. BRT has mostly been introduced in countries where bus systems were already almost exclusively in private hands. Thus, private bus drivers continue to operate the system, but route, schedule and fare decisions are left to government authorities. BRT systems provide an opportunity to reform previously deficient private services. As shown by figure 2.4, the centralized fare collection processes make BRT projects attractive for private sector participation. Increased fares have ensured coverage of operations, maintenance and loan instalment payments. Operators become shareholders of a single corridor concession, generating private sector competition within a publicly controlled system. [29] BRT implementation is adapted to each country's needs. The BRT programmes of high-income countries do not usually cover their operating costs. In such cases, BRT implementation structure is different, as public sector participation is necessary.

76. In some cities, where unionized drivers were involved in providing public transport services, attempts to reform the system met with resistance until the unions were included in social dialogue processes. For example, in Lagos, Nigeria, the 22-kilometre Lagos BRT-Lite service was launched in March 2008. A combination of members of the National Union of Road Transport Workers (NURTW), senior politicians, government agencies, the Lagos Metropolitan Area Transport Authority and financial institutions were actively involved in the project. NURTW members are today the new operators of the BRT buses. However, specific actions paved the way for project implementation. For example, in 2006, a number of NURTW officials were sponsored by the IBRD, through the Lagos Metropolitan Area Transport Authority, to study BRT operations in major cities in South America. The full support of the NURTW was obtained. The Lagos State Government and IBRD officials and consultants made sure to visit the union's secretariat in Lagos and to involve the union in the process.

77. BRTs can have a positive impact on urban transport services. Social dialogue processes should take place from the very inception of BRT programmes. Existing transport service providers can represent an important group of supporters. Incentives to make existing operators part of the system are critical. [30] Decent working conditions need to accompany BRT implementation and worker transition to new schemes. Opportunities include relocation to alternative or feeder routes, re-entry (through retraining), vehicle scrappage programmes allowing BRT share purchase or the chance to pursue new business opportunities through the creation of small enterprises to provide services linked to the new system.

[29] See *Queries related to the Mexico urban transport project*, email correspondence between R. Khanna and S. Ratcliffe (Washington, DC, Climate Investment Fund archive, 2009).

[30] ibid.

Figure 2.3. Urban bus transport concession model in Latin America

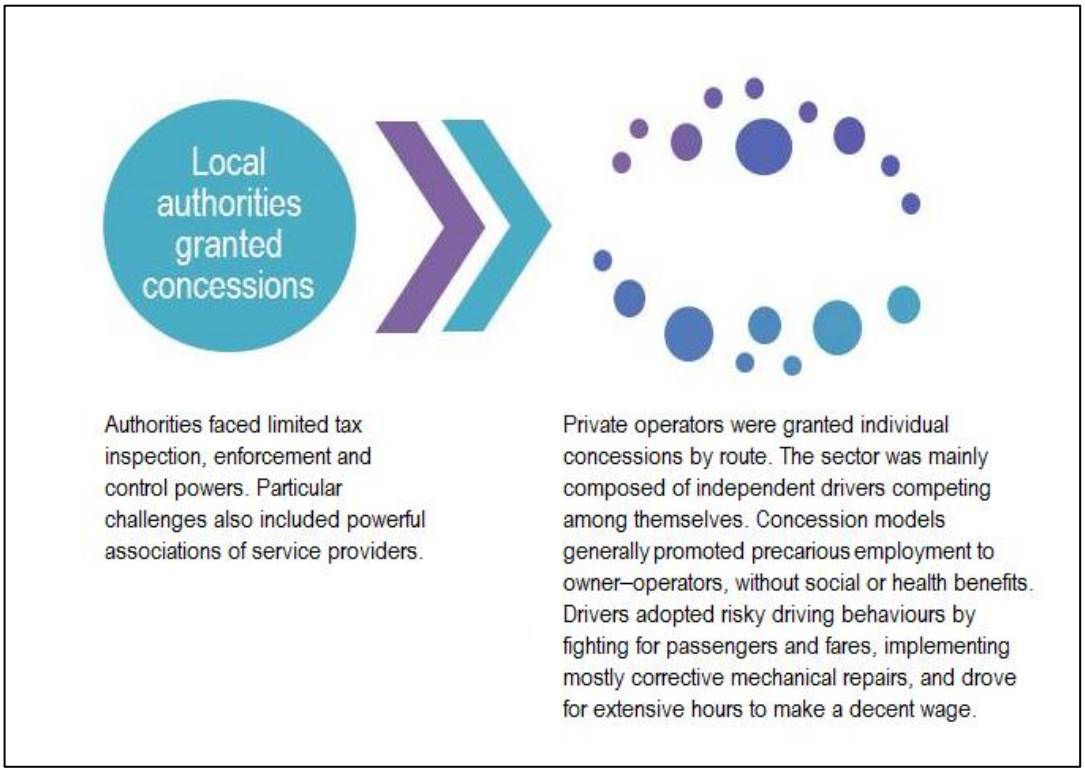
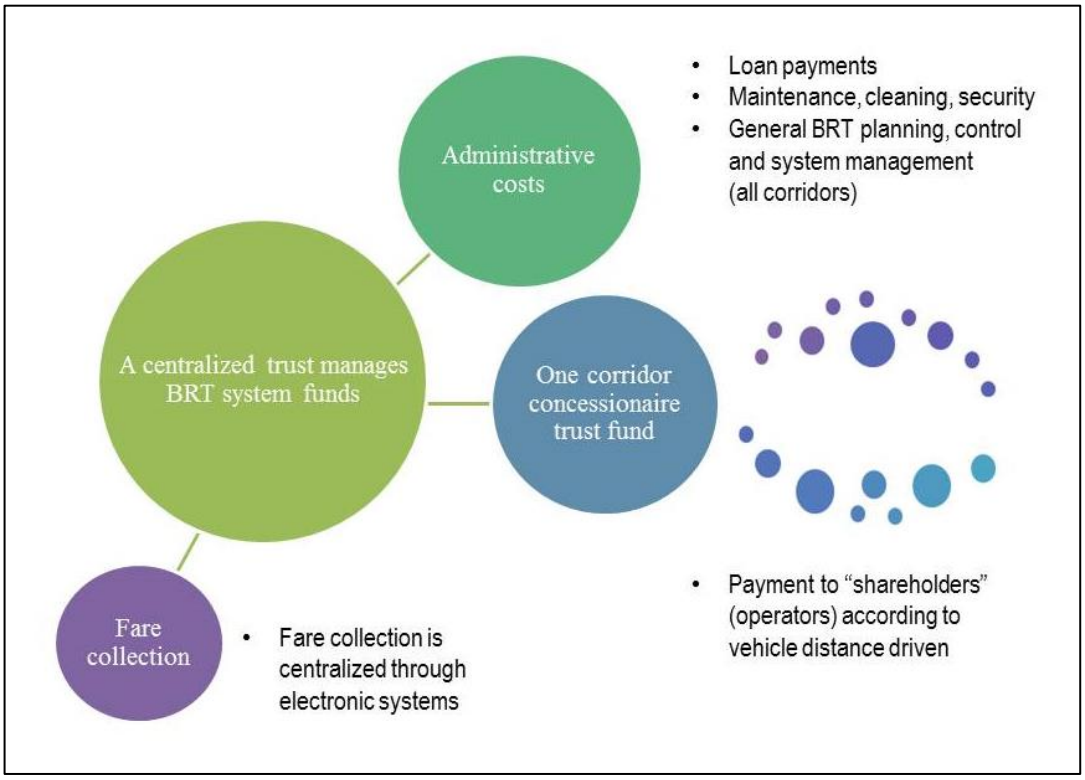


Figure 2.4. BRT reform process in Latin America



Source: Adapted from F. Lámbarry Vilchis et al.: "Planeación de los sistemas BRT y consensos entre transportistas y autoridades de gobierno durante su implementación: El caso de Metrobús y Mexibús" ["Planning of BRT systems and agreements between carriers and government authorities during their implementation: The case of Metrobús and Mexibús"], in *Administración & Desarrollo*, Vol. 39, No. 54 (2011).

78. Although databases on BRT implementation, passenger numbers and fleet size are currently available, there is a lack of information on BRT worker and shareholder numbers, training and concession or ownership structure. [31]

2.5. Future trends

79. In his Report to the 104th Session of the International Labour Conference, the Director-General of the ILO asked "Where will the jobs come from, and what will they be like?" [32] The world needs to create 600 million new jobs by 2030. Yet some recent technological developments make it questionable whether the transport sector will in the future continue to substantially contribute to worldwide employment.

2.5.1. Autonomous vehicles

80. Autonomous vehicle technology is still in its early stages and vehicles are far from being fully autonomous, with several technical challenges yet to be overcome. The timeline of widespread autonomous vehicle adoption is uncertain and contingent on a number of factors: legal, policy and public acceptance, infrastructure support, and the achievement of technological milestones. [33] Nevertheless, although a range of challenges are currently associated with the deployment of autonomous vehicles, the technology to allow evolving levels of driver control, vehicle autonomy and connectivity is under development and the focus of research. According to the United Kingdom's Automotive Council, "autonomous control describes a state where vehicles are controlled entirely by the system without any input from the driver". [34]

81. The states of Nevada and California in the United States have already established a legal definition of "autonomous vehicle" and the states of Florida and Michigan and the District of Columbia have anticipated the implementation of autonomous vehicles by enacting laws specifically regarding their use and testing. [35] In the case of the EU, two directives establish that, with effect from 1 November 2015, all newly introduced models of trucks 3.5 tonnes and over must be equipped with both advanced emergency braking systems and lane departure warning systems. [36] Both systems are integral elements of advanced driver assistance systems, and are key building blocks of what ultimately will become the

[31] Private correspondence with Dario Hidalgo, Director of Integrated Transport, World Resources Institute (Geneva, ILO archives, 12 Mar. 2015).

[32] ILO: *The future of work centenary initiative*, Report of the Director-General, International Labour Conference 104th Session, Geneva, 2015.

[33] J. DiClemente et al.: *Autonomous car policy report* (Pittsburgh, Carnegie Mellon University, 2014).

[34] Automotive Council UK: *Intelligent mobility: A national need?* (November 2011), [cited in International Road Safety and Connected Mobility Task Force – Michelin Challenge Bibendum 2014: *An overview report on the current status and implications of road safety and connected mobility* (Michelin Group, 2014)].

[35] A. Swanson: "'Somebody grab the wheel!': State autonomous vehicle legislation and the road to a national regime", in *Marquette Law Review*, 2014, Vol. 97, No. 4.

[36] Transport Business International: *Autonomous truck convoys: The question is when, not if*, http://www.transportbusiness.net/index.php/features/14--sp-803/1378-autonomous-truck-convoys-the-question-is-when-not-if [accessed 8 July 2015].

autonomous, or self-driven, commercial vehicle.[37] Early in 2015, the Netherlands announced it would become a testing ground for self-driving vehicles.[38]

82. Implementation forecasts indicate that, by 2020, autonomous vehicle technology will be available with a large price premium, by 2030 with a moderate price premium and by 2040 with a minimal price premium, and by 2050 will be a standard feature included on most new vehicles.[39] Both the partial and full implementation of autonomous vehicle technology will have an impact on employment. Widespread use of these vehicles is being analysed for public transport services. Early testing and use could potentially first affect the taxi industry.[40]

2.5.2. Three-dimensional printing

83. Three-dimensional (3D) printing has been described as a "factory in a box".[41] Logistics and transport movements within supply chains will likely be among the first affected by developments in 3D printing technologies, as the service parts industry experiences reduced demand. Manufacturing and construction distribution are also expected to experience reduced demand.[42] Centralized manufacturing operations in certain regions, such as Asia and Latin America, could be substituted by smaller manufacturing hubs near the end users or by the printing by businesses of their own product needs.[43] It has been said that 3D printing is likely to be a game changer for the transport industry.[44]

[37] ibid.

[38] Government of the Netherlands: *The Netherlands to become a test country for self-driving cars*, 23 Jan. 2015, http://www.government.nl/news/2015/02/05/the-netherlands-to-become-a-test-country-for-self-driving-cars.html [accessed 7 July 2015].

[39] T. Litman: *Autonomous vehicle implementation predictions: Implications for transport planning* (Victoria, Victoria Transport Policy Institute, 2015).

[40] See *Taxi Times* (Munich), "The autonomous car is the taxi of the future", 24 Sep. 2014.

[41] T. Birtchnell et al.: *Freight miles: The impacts of 3D printing on transport and society* (Lancaster University, 2013).

[42] See W.D. Ankner: "3D printers: Changing transportation as we know it", in *Eno Brief Newsletter* (Washington, DC), June 2014.

[43] ibid.

[44] ibid.

3. Occupational safety and health risks

84. Road transport workers generally face higher occupational risks than other workers, including risks of accidents, physical injury, violence and exposure to harmful substances. In addition, long-haul road transport drivers might find it challenging to combine work and family life because of the irregular and split shifts that their work involves, which can have a negative impact on their work–life balance.

85. Market pressures can, in certain cases, lead to the violation of OSH rights and responsibilities.

86. Informal transport service provision is mostly present in low- and middle-income countries, for both freight and passenger transport services. Low levels of income, productivity, skills, technology and capital are generally associated with informal working opportunities, which might also give rise to OSH and public safety concerns. These include low maintenance and inspection levels of vehicles, inadequate training opportunities and knowledge levels, and acute competition for passengers or loads. Informal workers might be poorly organized, a situation that often translates into performing riskier tasks or the absence of decent working conditions.

3.1. Data on occupational injuries

87. Main types of road transport worker injury include vehicle crashes, workers being struck or run over by moving vehicles (for example, during reversing or coupling), workers falling from vehicles, workers being struck by objects falling from vehicles, and vehicles overturning. [1]

88. Data compilation on injuries and accidents for the road transport sector is extremely diverse, and challenging to compare. A report by the European Agency for Safety and Health at Work (EU-OSHA) presented data from journals, newspaper reports, good practice web pages, workers' compensation bodies and statutory accident insurance organizations. [2] In the case of ILO data, one of the sectors of economic activity included in the LABORSTA database is transport, storage and communications. Data were available on categories of persons injured and fatal injuries in that sector from Australia, Canada, France, Germany, Italy, Japan, Poland and Spain, as presented in table 3.1. Data from other countries were included where available. However, in the case of both LABORSTA and ILOSTAT, [3] the last update for this sector was 2008, suggesting a potential under-reporting of occupational injury, fatalities and workdays lost.

[1] See EU-OSHA: *Managing risks to drivers in road transport* (Luxembourg, Publications Office of the European Union, 2011).

[2] EU-OSHA: *A review of accidents and injuries to road transport drivers* (Luxembourg, 2010).

[3] ILOSTAT, the ILO's central statistics database, does have information on persons injured for the period 2008–13.

Table 3.1. Occupational injuries in transport, storage and communications: Number of persons injured, fatal injuries and workdays lost

Country	R or C	Persons injured		Fatal injuries		Workdays lost	
		2005	2008	2005	2008	2005	2008
Australia	C	9 620	9 420	47	69	n/a	n/a
Canada	C	25 924	25 107	98	96	n/a	n/a
France	C	63 520	63 007	95	90	3 368 621	3 677 879
Germany	C	66 780	77 156	143	122	n/a	n/a
Italy	C	54 234	51 307	137	119	1 416 309	1 337 440
Japan	R	16 816	17 040	294	186	n/a	n/a
Republic of Korea	C	n/a	n/a	86	105	n/a	n/a
Mexico	R	n/a	24 183	n/a	224	n/a	n/a
Netherlands	R	n/a	n/a	11	11	n/a	n/a
Poland	R	5 506	6 389	65	80	263 323	310 727
Spain	R	55 551	53 632	127	89	1 379 711	1 187 585
Taiwan, China	R	1 806	n/a	41	n/a	n/a	n/a
Thailand	C	2 395	n/a	137	n/a	n/a	n/a
Turkey	R	255	256	169	n/a	133 197	127 269
United Kingdom	R	25 702	n/a	21	n/a	n/a	n/a
United States	R	n/a	n/a	950	843	n/a	n/a

Note: R: reported; C: compensated; n/a: not available.

Source: ILO LABORSTA database, 2015. Last update year available for this sector: 2008.

89. In Australia, the EU and the United States, work-related motor vehicle crashes are estimated to cause from about one quarter to over one third of all work-related deaths. [4] According to the European Transport Safety Council, the risk of work-related injury or death is particularly high among people commuting, and people driving company cars and sales staff. [5] Data from Employment and Social Development Canada – disaggregated to the level of industries under federal jurisdiction [6] – show that, in 2011, a vast majority (60 per cent) of work-related fatalities in federal jurisdiction industries occurred in the road transport sector. [7] According to EU-OSHA, accident statistics for 2007 show that

[4] European Road Safety Observatory: *Work-related road safety* (Brussels, European Commission, 2007).

[5] European Transport Safety Council: *Reducing road safety risk driving for work and to work in the EU – An overview*, http://archive.etsc.eu/documents/Reducing%20Road%20Safety%20Risk%20Driving%20for%20Work%20and%20To%20Work%20in%20the%20EU%20-%20An%20Overview_Final%202010.doc.pdf [accessed 20 July 2015].

[6] Industries under federal jurisdiction include aboriginal industries, air transport, banking, bridges and tunnels, broadcasting, communications, federal crown corporations, public service departments, feed, flour and seed mills, grain elevators, long shoring, energy and mining, pipelines, postal contractors, rail transport, inter-provincial road transport, and water transport.

[7] Government of Canada: *Occupational injuries amongst Canadian federal jurisdiction employers, 2007-2011* (Ottawa, Employment and Social Development Canada, 2014).

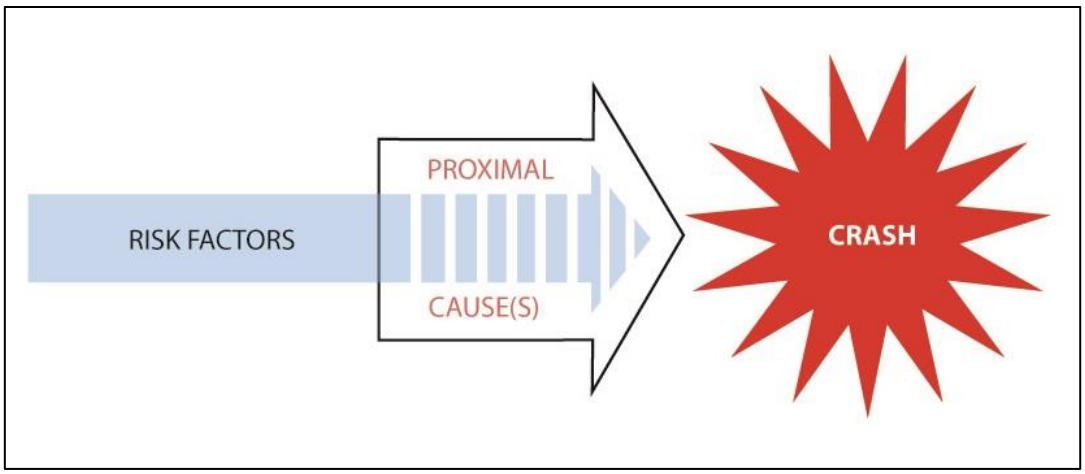
559 heavy goods drivers were killed in road traffic accidents within the EU. [8] Analysis of the Danish National Work Injury Register for the period 1993–2002 revealed that 92.6 per cent of the 5,896 registered injuries among goods transport drivers in Denmark during this period were the result of non-traffic related incidents. The most commonly reported incidents were falls from height, overexertion, crush injuries and slips and falls. [9] Clearly, non-driving activities such as loading and unloading or climbing in and out of the cabin account for a large number of accidents in which drivers sustain injuries. [10]

3.2. Road transport accidents

3.2.1. Crash risk factors

90. Road traffic accidents and crashes are leading causes of workplace death, injury and disability in many countries. Road transport drivers are regularly exposed to the dangers of the road and other road users. There are many categories and types of risk factor affecting the probabilities of a crash. Figure 3.1 shows the timeline of risk factors and proximal causes before a crash. The crash timeline includes two types of causal factor: predisposing risk factors and proximal causes. Risk factors (left column) set up a probability that driver errors or other proximal failures occur or have greater consequences. Proximal causes (right column) are driver mistakes, driver misbehaviours, vehicle defects or other failures.

Figure 3.1. Risk factors and potential proximal causes before a crash



Risk factors	Proximal causes/critical reasons
Driver factors	*Driver*
■ Enduring: personality, medical conditions ■ Temporary: mood, recent sleep, time of day, road familiarity, fatigue	■ Driver physical failure: asleep-at-the-wheel, seizure, heart attack … ■ Driver recognition failure: inattention, distraction… ■ Driver decision error: too fast for conditions, following too closely … ■ Driver's response execution error: difficult manoeuvre

[8] EU-OSHA: *Managing risks to drivers in road transport*, op. cit.

[9] ibid.

[10] See EU-OSHA: *OSH in figures: Occupational safety and health in the transport sector – An overview* (Luxembourg, Publications Office of the European Union, 2011).

Company factors

- Selected corporate structure – private operation or for-hire subcontracting
- Logistics firm procurement requirements
- Operations and management style, flexible scheduling
- Training, driver monitoring and evaluation

Truck or vehicle

- Break, tyre failure
- Shift of cargo, inappropriate packing of container

Government policies and practices

- Driver licensing
- Driving hours rules and inspection
- Enforcement practices

Other contributing factors

- Environment, highway or weather
- Road sign/road design
- Slippery roads

Other potential factors

- Market pressures, just-in-time delivery patterns, competition
- Roadway and environmental factors divided or undivided facility, traffic density, design
- Vehicle: mechanical conditions, safety features, technologies

Third-party fault

- Driver error by other motorist
- Vehicle failure by other motorist

Source: Adapted from R. Knipling, ed.: *Safety for the long haul; large truck crash risk, causation and prevention* (Arlington, American Trucking Associations, 2009).

91. Data concerning fatalities or injuries by road user (trucks, buses, taxis) and by cause of accident are either not collected or are heterogeneous. [11] The important issue of data collection is currently being examined by the United Nations Road Safety Collaboration (UNRSC). Most crash and injury and fatality databases do not include the level of disaggregation that is required for thorough analysis to calculate truck- or bus-related injuries and deaths. The most complete databases available include an effective link between police, transport agency and medical databases at all levels. Available collections of data, disaggregated by vehicle type, include:

(a) the International Road Traffic and Accident Database, covering OECD countries;

(b) the European Truck Accident Causation Study;

(c) the US Large Truck Crash Causation Study;

(d) the databases of Australia's Bureau of Infrastructure, Transport and Regional Economics at the national level, and those of each state (for example, Crashlink for New South Wales);

(e) a 2012 survey on truck safety in Brazil, China, Australia and the United States (a one-time effort, not regularly maintained). [12]

[11] Sound Science Inc.: *International comparison of fatalities related to goods vehicles* (London, ITF, 2014).

[12] D. Blower and J. Woodrooffe: *Survey of the status of truck safety: Brazil, China, Australia, and the United States* (Ann Arbor, University of Michigan Transport Research Institute, 2012).

Box 3.1
UN Road Safety Collaboration

In April 2004, the United Nations General Assembly adopted resolution 58/289 on improving global road safety. In the resolution, it invited the World Health Organization (WHO) to work in close cooperation with the United Nations regional commissions and to act as coordinator on road safety issues within the United Nations system. The World Health Assembly accepted this invitation in May 2004 and the WHO subsequently set up an informal consultative mechanism, called the UN Road Safety Collaboration, which holds biannual meetings to discuss global road safety issues and whose members are committed to road safety efforts. The goal of the mechanism is to facilitate international cooperation and to strengthen global and regional coordination among UN agencies and other international partners. This includes implementation of UN General Assembly resolutions and the recommendations of the WHO World Report on Road Traffic Injury Prevention, thereby supporting country programmes. Its vision is that death and injury should not be the price of mobility.

Source: WHO: About the UN Road Safety Collaboration, 2015, http://www.who.int/roadsafety/about/en/ [accessed 26 June 2015].

3.2.2. Seat-belt use

92. Seat-belt wearing is an effective road safety measure to prevent driver injury. However, observational studies conducted in Australia revealed that, although overall wearing rates have improved in recent years, around one quarter of heavy truck drivers failed to wear seat belts at all times. [13] Measures to improve this practice further include the development of reading materials, campaigns and employer safety programmes, as well as measures to improve seat-belt comfort and design (which might encourage seat-belt use among overweight drivers).

3.3. Physical hazards

3.3.1. Cabin ingress and egress

93. Measures that could prevent injuries could include improved design with regard to safe entry and access to the cabin. [14] Truck drivers are frequently injured entering and exiting their cabins. The insurance industry has researched mounting, dismounting, entering and exiting procedures. [15] Results show that tactics to enter and exit the truck cabin and the driver's body mass index (BMI) influence the likelihood of both cumulative and acute injury. [16]

[13] See L. Mooren and A. Williamson: *Why some truck drivers still do not use seatbelts*, Occupational Safety in Transport Conference, Sydney, 2014.

[14] See Truck and Bus Safety Committee: "Truck driver cabin ergonomics", in *Research needs statements* (Washington, DC, Transportation Research Board, 2014).

[15] See Liberty Mutual Insurance (Risk Control Services): *Three-point system for mounting and dismounting heavy trucks*, 2013, www.libertymutualgroup.com/docs/1240018974770/3 [accessed: 29 Apr. 2015].

[16] See M. Reed et al: "The influence of heavy truck egress tactics on ground reaction force", in *Research and Practice for Fall Injury Control in the Workplace: Proceedings of the 2010 International Conference on Fall Prevention and Protection* (National Institute for Occupational Safety and Health, 2011), pp. 192–195.

3.3.2. Ergonomics

94. Road transport workers often spend long hours seated in the cabin of the vehicle. This is their workstation. A well-designed cabin not only makes a significant difference in the working conditions of the driver but also has an impact on safety. If the design of the cabin is poorly fitted to the size and dimensions of the driver, the road may be less visible, driving controls may be more difficult to reach, and seat belts may be less comfortable and make them less likely to be used. [17] A recent anthropometric study highlights the pressing need to enhance ergonomic cabin designs for safe and efficient operations. [18] Non-ergonomic seating in trucks has been associated with lower back pain, which can result in injuries. [19] Seat adjustability could be optimized in order to suit all sizes and shapes of truck drivers. An ergonomically designed truck cabin can prove beneficial to prevent driver fatigue.

3.3.3. Loading, unloading and weather exposure

95. Road transport workers may be required to perform heavy lifting tasks during the loading and unloading of commercial vehicles. The conditions for the lifting and handling of loads will depend on the arrangements with shippers and receivers. Lifting aids or ergonomic equipment should be made available. [20] Especially during loading and unloading activities, transport workers may be exposed to extreme climate conditions. [21]

3.3.4. Vibration and noise exposure

96. One of the detrimental consequences of sustained sitting and being exposed to whole body vibration is the development of back disorders. The driver's seat can play a key role in reducing full-body vibrations, which can also affect the vision, coordination and the overall functional ability of drivers, and contribute to increased accident risk. [22] Drivers may also be exposed to loud noise levels caused by road traffic and older commercial vehicles.

3.4. Violence at work

3.4.1. Urban public transport

97. In 2003, the ILO documented mounting stress levels among, and increasing levels of violence against, urban bus drivers. [23] Bus drivers and other urban transport workers are

[17] J. Guan et al.: "US truck driver anthropometric study and multivariate anthropometric models for cab designs", in *Human Factors: The Journal of the Human Factors and Ergonomics Society,* 2012, Vol. 54, No. 5.

[18] ibid.

[19] J. Lyons: "Factors contributing to low back pain among professional drivers: A review of current literature and possible ergonomic controls", in *Work: a Journal of Prevention, Assessment and Rehabilitation* (Amsterdam, IOS Press), 2002, Vol. 19, No. 1, pp. 95–102 [cited in "Truck driver cabin ergonomics", op. cit.].

[20] See EU-OSHA: *OSH in figures: Occupational safety and health in the transport sector – An overview*, op. cit.

[21] ibid.

[22] ibid.

[23] B. Essenberg: *Violence and stress at work in the transport sector* (Geneva, ILO, 2003).

often an easy target of blame for any inadequacy in the standard of transport. Disputes over fares, bullying behaviour and traffic accidents heighten the risk of aggression against transport workers. Aggression against other passengers, insecurity and vandalism to property complete the picture. [24] A 2010 ITF booklet emphasizes the crucial role of transport unions in promoting measures to prevent driver violence. [25]

98. Violence against bus and taxi drivers has been documented through numerous studies and surveys. For example, in Brazil, a recent survey conducted on 782 drivers and 691 fare collectors found that 45 per cent of participants reported at least one act of violence in the workplace in the last 12 months, with passengers being predominantly responsible. [26] Another survey conducted in Maputo, Mozambique, documented that workplace violence, psychological as well as physical, is highly prevalent among drivers and conductors of registered buses, minibuses and taxi services. Survey results showed that 77 per cent of drivers reported being abused, with 64 per cent reporting that they had been abused during the past 12 months. [27] Australian and US research efforts suggest that a combination of the measures and improvements described in table 3.2 could help tackle this challenge.

Table 3.2. Technology, policy and policing measures to tackle violence

Technology	Policy	Policing
Video surveillance	Cooperation with police	Uniformed officers
Silent alarms and panic buttons	Work rules and policies/driver training enhancement	Plain-clothes officers
Barriers	Signage	Supervision
Radio communications	Prosecution of offenders	Police or driver collaboration
Fare payment changes	Management support, media campaigns, civil society efforts to raise awareness	Crime analysis and management
Automatic vehicle location systems	Committees	Photos of offenders
Integration of systems	Legislation increasing penalties	

Sources: Y. Nakanishi and W. Fleming: *Practices to protect bus operators from passenger assault, a synthesis of transit practice* (Washington, DC, Transit Cooperative Research Program, 2011), and R. Lincoln and A. Gregory: "Moving violations: A study of incivility and violence against urban bus drivers in Australia", in *International Journal of Education and Social Science* (2015, Vol. 2 No. 1).

[24] D. Chappell and V. Di Martino: *Violence at work*, third edition (Geneva, ILO, 2006).

[25] ITF: *"It's part of our job but it shouldn't be" – No to work-related violence!* (London, ITF Publications, 2010).

[26] A. Ávila Assunção and A. Mesquita de Medeiros: "Violence against metropolitan bus drivers and fare collectors in Brazil", *Revista de saúde pública*, 2015, Vol. 49, pp. 1–10.

[27] M.T. Couto et al.: "Violence against drivers and conductors in the road passenger transport sector in Maputo, Mozambique", in *African safety promotion: A journal of injury and violence prevention* (Pretoria), 2009, Vol. 7, No. 2.

3.4.2. Violent cargo theft and freight exchange platforms

3.4.2.1. Violent cargo theft

99. Vehicle and cargo theft in truck parking facilities and service areas has increased over the last decade on a global basis. [28] Pharmaceutical products, electronics, alcohol, tobacco and high-value shipments are the most targeted cargo. Violent cargo theft is more prevalent in low- and middle-income countries, including some Latin American countries and the Russian Federation, than, for example, in the EU. [29] A 2013 report highlights that the most prevalent method of violent cargo theft is hijacking by shooting at the vehicle while it is in motion or using other weapons, spraying the driver with gas, using bogus police or military vehicles or setting up roadblocks. [30] Recently, there has been an increase in the use of jamming devices which disable electronic tracking systems.

3.4.2.2. Freight exchange platforms

100. After completion of a transport service, many transport operators, especially small and medium-sized carriers, return to their depots with empty vehicles because no suitable return freight could be found. [31] Reducing the number of empty trips is therefore a key cost-saving strategy for transport operators. Increasingly, they have turned to internet-based freight exchange platforms to address this issue. Shippers without transport use these platforms to advertise their load, targeting carriers looking to haul freight back to their country of origin or depot location. A carrier who sees a load of interest can contact the shipper via the platform. [32] The contractual negotiations are then conducted directly between the partners. Thus, these platforms are operated independently of any shipper for the brokerage of loads and load space within the context of day-to-day business. They can be accessed by all the companies registered with the corresponding service provider. [33] Most popular international freight exchange companies include Timocom, Teleroute (Wolters Kluwer), Trans.eu Road Transport System, and Redwood Logistics F/X Freight.

101. Freight exchange is an important part of transport and logistics operations. [34] Up to 70 per cent of the companies for which the use of an open freight exchange is an option already make use of at least one of these facilities. In addition, between 10 and 15 per cent of day-to-day transport business is exchanged through these platforms. [35]

[28] See IRU: *Attacks on drivers of international heavy goods vehicles – Facts and figures* (Geneva, 2008).

[29] FreightWatch International - Supply Chain Intelligence Center: *European cargo crime threat assessment 2014/15* (Austin, FreightWatch International, 2015).

[30] See FreightWatch International - Supply Chain Intelligence Center: *2013 global cargo theft threat assessment* (Austin, FreightWatch International, 2013).

[31] IRU: *Guidelines for the safe use of freight exchanges*, Goods Transport Council (Geneva, 2013).

[32] E. Eijkelenboom: *Vehicle crime in the Netherlands: A research into freight exchange fraud* (Rotterdam, Erasmus University, 2012).

[33] IRU: *Guidelines for the safe use of freight exchanges*, op. cit.

[34] See Eijkelenboom, op. cit.

[35] IRU: *Guidelines for the safe use of freight exchanges*, op. cit.

102. The use of freight exchange platforms leads to long transport chains, with repeated subcontracting. The road transport industry is highly competitive and platforms serve to increase general price pressure within the sector as transport operators often compete to make the lowest possible bid to transport the load. This practice ultimately penalizes hauliers who strive for sustainable, trustworthy, long-term business relationships with their customers. [36] Freight exchange platforms have also created opportunities for criminal behaviour. [37] According to a survey conducted on IRU members, most common criminal practices include the use of false or invalid documentation (such as insurance documents and driving licences), failure to pay for the transport service and the use of information received via the platform for vehicle or load theft. Both the IRU and an insurance provider [38] have issued guidelines and recommendations to address criminal practices through freight exchange platforms.

3.5. Work organizational and operational factors

3.5.1. Training, licensing, medical check-ups and vehicle inspection

103. Commercial drivers greatly influence the efficiency of road transport operations. Good driving practices can reduce crash proneness, and can also lead to fuel and vehicle maintenance savings. Training for drivers might be mandatory, and stipulated in rules and regulations, or informal, based on experience. [39] Completing an apprenticeship or obtaining truck driver competency certification can be a prerequisite for receiving a licence to operate certain long-combination vehicles. Opponents of mandatory training argue that the emphasis should be on driver competency rather than on learning hours.

104. Since 2013, the OECD-ITF Group on Road Transport has been working on the Quality Charter for International Road Haulage Operations under the Multilateral Quota System established by the European Conference of Ministers of Transport. This charter would seek to set standards with regard to admission to the road haulage profession and the training of drivers across Europe.

105. In most low-income countries, training is predominantly informal, resulting in the potential transfer of bad driving habits from one bad driver to another. For example, a recent survey in Ghana found that 12 per cent of drivers are self-taught. In addition, although 70 per cent of drivers claim to have valid licences, the survey revealed that only 19 per cent of them are currently driving with valid licences. It also found that driver knowledge on rules and regulations is generally good or acceptable, but that knowledge on road signage and markings could be improved. [40] Increased levels of driving skills and knowledge can result from either training efforts or experience, or both.

106. Formal driver education is available through proprietary or accredited training schools, not-for-profit educational institutions and in-house training programmes. Driving schools

[36] ibid.

[37] See Eijkelenboom, op. cit.

[38] Zurich Insurance Company: *Be aware of freight exchange scams* (Zurich, 2012).

[39] See OECD: *Training truck drivers* (Paris, 1996).

[40] Government of Ghana, National Road Safety Commission: *Research on the conditions of service of commercial vehicle drivers and their impact on road safety* (Accra, 2009).

are generally subject to supervision from licensing and accrediting organizations. These authorities often establish a minimum number of course hours and curricula content. In most schools, the focus is on novice drivers, thus constituting the entry point for the profession. Innovative training efforts could seek to incorporate holistic approaches to trucking wellness.

107. A form of graduated licensing is required for commercial drivers in most countries. Requirements consist primarily of driver testing criteria based on driver knowledge and skills testing in a representative commercial vehicle. The criteria that should be used to verify a driver's qualifications to operate large commercial vehicles are constantly under review in different regions. [41] Licensing systems also seek to identify applicants and licensees to prevent or correct deviant driver behaviour that could lead to involvement in an accident.

108. The granting and renewal of commercial driving licences is contingent on satisfactorily passing health examinations that aim to assess the physical and mental health conditions of existing or would-be drivers and at monitoring this periodically. Health examinations are usually conducted according to requirements set by legislation or guidance provided by authorities. In addition to following up on pre-existing conditions and concerns, they assess the potential risk of conditions deriving from lack of adequate visual acuity and hearing capacity, locomotor disability, sleep disorders, cardiovascular diseases that may cause a sudden impairment of cerebral functioning, diabetes mellitus, nervous system diseases, mental disorders, alcohol abuse, use of drugs and medicinal products and serious renal insufficiency, among others.

109. Accident prevention measures also include regular vehicle inspections and maintenance of vehicles. Special attention is paid to brakes, steering, tyres, mirrors and fittings that allow the driver to see clearly, widescreen washes and wipers, warning devices, ladders, steps, pipes, and other specific safety features. Drivers should endeavour to address any problems encountered during use of the vehicle. Before every shift, some drivers inspect tyres, lights and indicators. Driver inspection tools (such as checklists) can be used on a daily and weekly basis to make sure that vehicles are in optimal condition.

Box 3.2
Free vehicle safety checks in Nigeria

Pillar 3 of the Global Plan for the Decade of Action for Road Safety 2011–2020 [1] provides a framework for ensuring safer vehicles on the roads. To ensure safer roads in Nigeria, the Federal Road Safety Corps conducts free vehicle safety checks aimed at identifying vehicle anomalies that can be conducive to a crash. The free vehicle safety check initiative was launched in 2009, to be implemented nationwide in response to the observed prevalence of mechanically unsound and rickety vehicles on Nigeria's roads. The initiative is run on a quarterly schedule, with the last Saturday and Sunday of each quarter set aside for vehicles to be checked for faults or deficiencies, both mechanical and relating to essential vehicle tools. Operatives stop vehicles and inform the drivers of their intention, requesting their cooperation. The checks are voluntary on the part of the drivers and fines are not imposed in the event that faults are detected. They serve an advisory purpose: a copy of the checklist is given to the vehicle operators for them to be aware of the defects in the vehicle that must be put right. Data from 2009 to 2013 show that 29 per cent of vehicles checked over this period were commercial vehicles (21 per cent buses, 6 per cent trucks and 2 per cent articulated vehicles). [2]

[1] WHO, 2011, http://www.who.int/roadsafety/decade_of_action/plan/plan_english.pdf?ua=1 [accessed 26 June 2015].

[2] Government of Nigeria, Federal Road Safety Corps: 2013 Annual Report (Abuja, 2014).

[41] See, for example, American Transportation Research Institute (ATRI): *A technical analysis of driver training impacts on safety* (Arlington, 2008).

3.5.2. Distraction, inattention

110. Driver distraction is a specific type of inattention that occurs when drivers divert their attention away from the driving task to focus on another activity instead. [42] It can ensue from electronic distractions, such as electronic logging devices, tachographs and mobile phones. More conventional distractions include interacting with passengers and eating. Sources of distraction can be internal to the vehicle – such as tuning a radio, or using a mobile phone, and those external to the vehicle – such as looking at billboards or watching people on the side of the road. [43] Exponential growth in the use of mobile phones and other devices connected to the internet has raised concern among policy-makers regarding increased potential risks to road safety. The use of mobile phones while driving can pose risks and should be discouraged. For example, the IRU has issued a mobile phone road safety card providing information and recommendations to its members on safe driving practices. [44]

111. According to the WHO, the effectiveness of government and private sector measures on mobile phone use while driving – and more importantly, on crashes and injuries – has yet to be adequately documented. [45] A number of countries are currently following approaches that include:

- collecting data to assess the magnitude of the problem and identify where and among whom it is most prevalent;
- adopting and enforcing legislation relating to mobile phone use;
- supporting this legislation with strong enforcement and public awareness campaigns to emphasize the risk of the behaviour and the penalties associated with transgression of the law. [46]

112. Other measures that offer potential reduction in risk include technological solutions, for example, applications that detect when the phone is in a moving car and direct incoming calls to a voice messaging service. Company policies that regulate employees' use of mobile phones while driving also play an important role in tackling driver distraction.

3.5.3. Common practices and operational concerns: Informality, roadblocks, overloading

113. Informality, industry segmentation and profitability pose challenges to training, licensing and vehicle inspection and maintenance requirements. Environmental impacts can also ensue from the lack of vehicle maintenance. Fleet renewal programmes and loans have provided solutions where low trucking wages make it impossible for independent and informal truckers to buy a new vehicle. [47] Seeking to address challenges related to

[42] See US Government National Highway Traffic Safety Administration: *Distracted driving research plan* (Washington, DC, 2010).

[43] WHO: *Mobile phone use: A growing problem of driver distraction* (Geneva, 2011).

[44] IRU: *Mobile phone road safety card* (Geneva, 2013).

[45] WHO: *Mobile phone use: A growing problem of driver distraction,* op. cit.

[46] ibid.

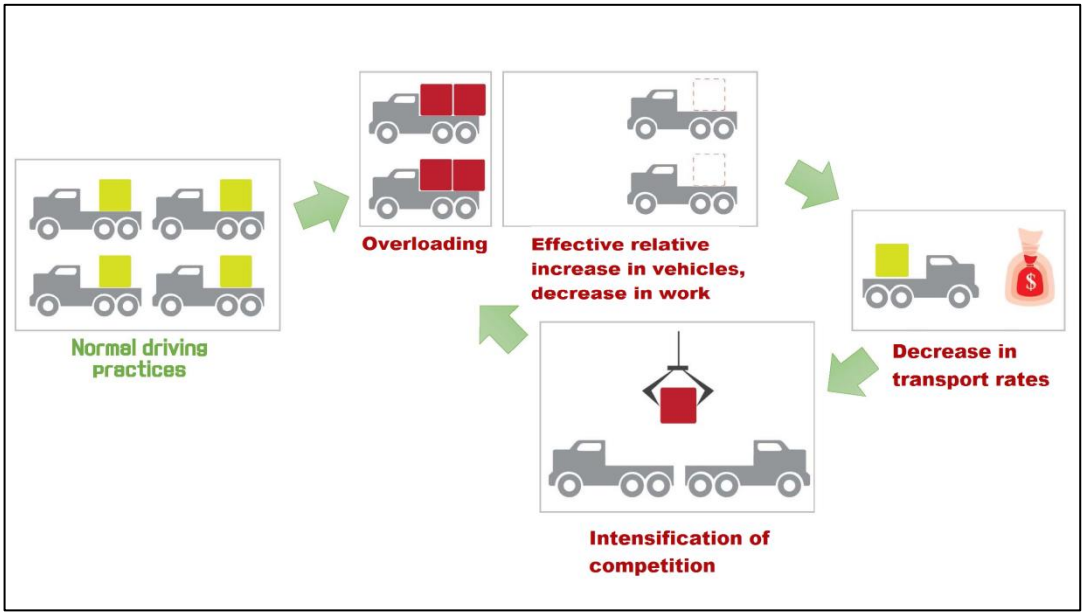
[47] P. Cabanius: *Improvements of Transit Systems in Central Africa* (New York, UNCTAD, 2003).

workers' bargaining power, in 2013 the ITF launched a new project to improve the capacity of unions to organize and represent informal economy transport workers, focusing on: the visibility of women workers in informal transport; leadership education; and dialogue and organizing skills. [48]

114. Roadblocks represent a serious challenge to road transport services causing extreme delays and low predictability of indirect vehicle operating costs. In West Africa, an initiative that has specifically tackled this issue is the Improved Road Transport Governance initiative on transit corridors. The initiative works as a freight observatory in the region and periodically develops maps pointing out different roadblocks through trade routes.

115. Overweight freight operations have been reported in most countries around the world. Overloading poses a safety risk to other road users. Countries might struggle to enforce maximum weight limits, as equipment is expensive and the industry too fragmented. Although some regulatory frameworks do protect operators against accepting overweight shipments, in practice, acute competition virtually makes the refusal of a load impossible. As shown by figure 3.2, overloading can have a negative impact not only on safe operations, but also on rates paid to drivers, and especially on profit margins for smaller operators. This practice is prevalent in many countries, as operators cannot make a profit if they do not overload. [49] Without overloading, rural and "first mile" [50] transport services struggle to remain profitable in many regions.

Figure 3.2. Cycle of overloading and overweight operations



Source: KPTU TruckSol, Presentation at international symposium for safe workplaces and a safe society (Seoul, KPTU Archives, 2014).

[48] ITF: *ITF informal transport workers project – Report of activities 2013–14* (London, 2015).

[49] See S. Zerelli and A. Cook: "Trucking to West Africa's landlocked countries: Market structure and conduct", in *West Africa Trade Hub Technical Report 32* (Accra, USAID, 2010).

[50] The "first mile" of the transport chain begins at the farm and ends at the local market or the buying point. It takes place on local paths and tracks and is not only the most difficult part of the transport chain, but also the most expensive one. See IBRD: *Freight transport for development toolkit: Rural freight* (Washington DC, 2009).

3.6. Transport of and exposure to hazardous materials

116. Commercial vehicle drivers might find themselves exposed to smoke, fumes and vapours. They might be exposed to exhaust fumes while at terminals, idling, queuing, or loading and unloading. Exposure to other harmful chemicals can also result when loading and unloading containers, when preparing the vehicle for duty, from chemicals for on-board toilets on buses or for cleaning refuse disposal vehicles, and from chemicals used in refuse disposal and volatile organic chemicals. [51] Drivers may also be exposed to carcinogenic substances from diesel exhaust particulate matter and to carcinogenic chemicals loaded on their vehicles, for example during the loading process of tanks or when refuelling. [52] Other particulate exposure might include ambient dust and dust from loads and goods, and from refuse. [53] Unforeseen incidents during the transport of goods and fumigated containers may lead to highly toxic exposures and to fire and explosion.

117. Freight drivers transporting dangerous goods and hazardous materials are particularly vulnerable to additional risks and have additional responsibilities. [54] These workers generally undertake additional training, in response to more stringent licensing regulations.

118. Asbestos is present in insulation materials, bus and truck brakes and waste. [55] Drivers attending to their vehicles and delivery and cargo workers can be particularly vulnerable to asbestos-related diseases.

[51] EU-OSHA: *OSH in figures: Occupational safety and health in the transport sector – An overview*, op. cit.

[52] ibid.

[53] ibid.

[54] F. Trujillo Pons: *La prevención de riesgos laborales en transporte por carretera de mercancías peligrosas* [The prevention of occupational risks in the transport of dangerous goods by road] (Barcelona, Atelier Libros, 2013).

[55] EU-OSHA: *OSH in figures: Occupational safety and health in the transport sector – An overview*, op. cit.

4. Work-related disorders

119. In addition to the higher or heightened OSH risks and disorders generally present for road transport workers, decent work challenges might also include fewer opportunities to benefit from social safety nets. Depending on their contractual arrangements, coverage related to health care, pensions and sickness, occupational injury, family, maternity and invalidity benefits might not be available to road transport workers. This will depend on the patterns of social protection applied by each country.

120. Informality, non-standard forms of employment and self-employment can have an adverse impact on the protection of road transport workers against risks to their life. In addition, worker misclassification and the use of subcontracting practices increase worker vulnerability by depriving them of access to social protection mechanisms.

4.1. Kidney disorders, urinary tract infections, dehydration

121. For those who drive for a living, working conditions pose sector-specific challenges which could have a negative impact on their health. Among these challenges are those relating to bathroom use and the availability of facilities. Long-haul bus and truck drivers encounter challenges in this respect, as highway congestion, unsafe parking facilities and long waiting lines at border crossing points are not uncommon.

122. Short-haul and public transport drivers in congested metropolitan areas encounter situations where they cannot relieve themselves when necessary. Public transport drivers continue in route when running late, leaving them little chance to use the bathroom. Even when on schedule, they may find themselves on a repeated route circuit that affords insufficient access opportunities. This might lead to drivers relieving themselves in the street or other inadequate places without any privacy. [1] Lack of facilities and breaks has been linked with increased susceptibility to urinary tract infections, kidney stones, episodes of gastrointestinal distress and dehydration, caused by voluntarily restricted fluid intake. [2] Drivers might also avoid taking necessary medication (such as blood pressure medication), if it increases the urge to use bathroom facilities. The replacement of soiled driver seats in buses and trucks has an economic impact for companies and agencies. [3] Too few facilities and too few breaks have also caused an increase in the purchase and usage of adult diapers. [4]

123. A 2003 survey conducted on public transport services employees in San Francisco reveals that 60 per cent of female operators have had a urinary tract infection compared to 11 per

[1] J. Osman, "Transport en commun: le calvaire haïtien" [Public transport: the Haitian ordeal], *Atélier des médias*, 2012, http://atelier.rfi.fr/ [accessed on 29 Apr. 2015].

[2] C. Stangler: "US bus drivers still coping with bathroom access issues", in *International Business Times* (New York), 1 Mar. 2015.

[3] ibid.

[4] L. Kaufman: "Too few bathroom breaks drove bus drivers to adult diapers", in *Crosscut* (Seattle), 19 Nov. 2014.

cent of their male peers. [5] In addition, 82 per cent of male operators admitted that certain situations forced them to use "other" means to relieve themselves, when restroom access was unavailable compared to 65 per cent of female operators. [6] A 2010 general study concluded that cognitive function associated with an extreme urge to void could provoke deteriorating cognitive conditions that could be associated with increased accident risks. [7] A survey conducted in 2014 [8] found that 65 per cent of operators feel that the need to void has a negative impact on their ability to drive. In addition, over 80 per cent of operators replied that the lack of bathroom facilities causes stress very frequently, frequently or somewhat frequently.

4.2. Fatigue and working hours

124. According to a 2005 ILO working paper, there is no universally accepted definition of fatigue. [9] Unlike alcohol or drug-related impairment, fatigue has no known underlying mechanism or marker. It is manifested in multiple ways, including physiology, cognition and performance, subjective experience (drowsiness), and general health and wellness. Driver fatigue is not the same as physical fatigue from exertion. In fact, physical exertion is more likely to increase alertness than to decrease it. Drowsiness (sleepiness) is a dominant feature of fatigue. [10, 11]

125. Commercial drivers, especially long-haul drivers, face numerous challenges in terms of getting sufficient sleep and rest. Coach drivers can face additional challenges, including lack of sleeper berths, lack of privacy for rest, and frequently needing to drive while others are sleeping. Factors that lead to driver fatigue include: [12]

- limited sleep during principal sleep periods;
- extended work-hours (plus long commutes for many drivers);
- changing, rotating or split-sleep work schedules;

[5] See American Restroom Association: *Restroom availability issues: Transit and transportation drivers*, at http://americanrestroom.org/ [accessed 29 Apr. 2015]. Survey conducted by Yvonne Williams, Bay Area Rapid Transit Operator, on November 2003.

[6] ibid.

[7] M.S. Lewis, et al.: "The effect of acute increase in urge to void on cognitive function in healthy adults", in *Neurourology and urodynamics*, 2011, Vol. 30, No. 1, pp. 183–187.

[8] E. Kessler and M. Gonzales: *Bus operators and the right to access restrooms* (Washington, DC, Association of Occupational and Environmental Clinics, 2014).

[9] J.K. Beaulieu: *The issues of fatigue and working time in the road transport sector* (Geneva, ILO, 2005).

[10] See R. Knipling, ed.: *Safety for the long haul; large truck crash risk, causation and prevention* (Arlington, American Trucking Associations, 2009).

[11] See North American Fatigue Management Program: *Implementation manual and modules*, 2013, www.nafmp.com [accessed 29 Apr. 2015].

[12] Transport Research Board: "The domain of truck and bus safety research", in *Transportation Research Circular* (Washington, DC), 2007, No. E-C117.

- unpredictable schedules with short-notice changes;
- schedules conflicting with natural sleep or circadian rhythms;
- unfamiliar or uncomfortable sleep environments;
- difficulty finding safe and quiet parking places in which to rest;
- stress from tight delivery schedules and uncontrollable delays;
- pay by the kilometre, which may be an incentive to overwork;
- little physical exercise;
- poor diet;
- environmental stressors (such as heat, cold or lack of ventilation).

126. Two general categories of fatigue causes are internal physiological factors and task-related factors. [13] Internal physiological factors can be further classified as individual differences in susceptibility and temporal factors. A taxonomy of factors affecting fatigue and alertness include:

- individual differences in fatigue susceptibility, which may be related to sleep disorders, other medical conditions or physiological variability;
- temporal physiological factors affecting all people daily:
  - circadian rhythms (time of day);
  - amount of recent sleep, including primary sleep periods and naps;
  - sleep inertia, in other words grogginess experienced upon awakening;
  - time awake since last principal sleep;
- task and environmental factors.

127. Surveys conducted on drivers often indicate a high incidence of fatigue. For example, a Finnish report [14] found that 40 per cent of Finnish long-haul drivers and 21 per cent of short-haul drivers have problems staying alert on 20 per cent of their drives. These and similar survey responses attest to the existence of the problem, but do not lend themselves to quantitative assessment in relation to other safety problems, or to the prediction of crash outcomes. [15]

[13] P. Thiffault: *Addressing Human Factors in the Motor Carrier Industry in Canada* (Ottawa, Canadian Council of Motor Transport Administrators, 2011).

[14] H. Häkkänen and H. Summala: "Driver sleepiness-related problems, health status, and prolonged driving among professional heavy-vehicle drivers", in *Transportation Human Factors* (Helsinki) 2000, Vol. 2, No. 2, pp. 151–171.

[15] R.O. Phillips: *An assessment of studies of human fatigue in land and sea transport*: Fatigue in Transport Report II (Oslo, Institute of Transport Economics, 2014).

128. Driver fatigue may be detected and measured both by performance measures and by physiological measures. Driver performance can be measured by lane tracking, for example, by measuring standard deviation from lateral lane position. Other performance measures include steering patterns, speed maintenance and vehicle following. Driver performance may also be measured in response to driving events. Examples include decision choices and reaction times for avoidance manoeuvres in response to crash threats.

129. Many factors affect fatigue crash percentages. Fatigue plays a bigger causal role, both relatively and absolutely, in large, sparsely populated countries such as Australia. Of 461 serious large truck crashes investigated in Australia during 2011, fatigue was identified as the principal cause for 12 per cent, making it second only to excessive speed (at 25 per cent) as a crash cause. [16]

130. Most fatigue-related crashes occur when drivers are alone, a common situation for truck drivers. As they become sleepy, drivers gradually relinquish control of the vehicle. Driver asleep-at-the-wheel incidents can be related to time of day. For example, the Large Truck Crash Causation Study in the United States [17] found that the most typical fatigue-related crashes occur on straight, rural highways during the early morning hours between 2 and 7 a.m. Sixty-two per cent of truck driver asleep-at-the-wheel crashes occurred in the two-hour period between 4 and 6 a.m. Only 20 per cent occurred in the 14 hours between 6 a.m. and 10 p.m. Fatigue crashes are often severe and involve rollovers, impacts with fixed objects, or impacts with oncoming vehicles.

131. The European Truck Accident Causation study [18] investigated 624 serious accidents and found fatigue to be the main overall cause in 6 per cent of the cases. When fatigue played a role in the accident, 68 per cent of the cases involved a truck and another vehicle; 29 per cent involved a single truck; and 3 per cent involved a pedestrian. More than one third of these accidents were fatal, attesting to the high severity of many fatigue-related crashes. Within the five crash categories studied, [19] fatigue was found to be the cause of almost 18.6 per cent of all crashes in the "single truck accident" category (7.4 per cent of all 624 serious crashes) and almost 8.8 per cent of all crashes in the "accident during an overtaking manoeuvre" category (11.3 per cent of all 624 serious crashes).

132. Fatigue crash risk and overall crash risk should be differentiated. For example, fatigue risk is greatest in the early morning, with a slight bump in mid-afternoon between 4 and 6 p.m. [20] Overall crash risk is greatest during the day when traffic density is the greatest. Efforts to restrict truck driving at night may be beneficial in terms of driver fatigue but could probably be detrimental in terms of overall safety, as truck traffic would shift to the

[16] O.P. Driscoll: *2013 major accident investigation report* (Brisbane, National Transport Insurance, 2013).

[17] See Federal Motor Carrier Safety Administration: *The Large Truck Crash Causation Study*, databases and summaries available at http://ai.fmcsa.dot.gov/ltccs/default.asp [accessed 17 July 2015].

[18] IRU: *A scientific study: "ETAC" European Truck Accident Causation* (Geneva, 2007).

[19] The five categories studied were: accident at intersection; accident in queue; accident due to a lane departure; accident during an overtaking manoeuvre; and single truck accidents (where only one vehicle – a truck – is involved).

[20] Knipling, op. cit.

daytime. The European Transport Safety Council has also reported truck crash frequencies several times higher during the daytime than at night. [21]

4.3. Stress

133. Occupational stress is prevalent among long-haul truckers. They are away from home, family, friends and other support networks for several days or weeks at a time. For example, a survey conducted by the US Owner-Operator Independent Drivers Association found that the majority of respondents were away from home more than 100 nights a year, with 41 per cent spending over at least 200 nights away from home. [22] Drivers face many occupational stressors including constant time pressures, social isolation, disrespectful treatment from others, driving hazards such as weather changes, heavy traffic and poor road conditions, and violence or fear of violence. [23] Stress related to just-in-time management and to working in the premises of others leads to high work pressures. Such stressors could be a factor in the prevalence of risky behaviours, including drug use and engaging in commercial sex. [24]

Box 4.1
Tackling isolation: Bringing library services to truckers

The work of a long-distance truck driver is lonely and demanding. Based on a Swedish initiative, in 2006 the Norwegian Archive, Library and Museum Authority collaborated with the Norwegian Transport Workers' Union in setting up a library system specifically for truck drivers. The project encourages transport workers to read and listen to literature, which means that library services must be brought to where the drivers are – on the roads. In order to achieve this, libraries for transport workers were established at some of the main roadside inns, restaurants and motels used by long-distance truck drivers when taking their compulsory breaks and overnight stops.

Source: M. Kaasa: "Norway: The transport workers' library. A service for truck drivers on the roads of Norway", in *Scandinavian Library Quarterly* (2009, Vol. 42, No. 2).

134. Urban bus drivers find themselves in a high strain occupation, in which high demand situations arise from the need for continuous vigilance, monitoring and multitasking in complex traffic situations in which mistakes can have serious consequences. Bus drivers are required to maintain a positive service-orientation, while at the same time keeping to the timetable and driving safely. These demands present a three-way role conflict to bus drivers. [25] Increased congestion and electronic schedules, leaving even less room for error

[21] European Transport Safety Council: *Tackling fatigue: EU social rules and heavy goods vehicle drivers,* Preventing Road Accidents and Injuries for the Safety of Employees (PRAISE), Report 7 (Brussels, 2011).

[22] Owner-Operator Independent Drivers Association Foundation: *Owner-operator and professional employee driver facts,* http://www.ooida.com/ [accessed 29 Apr. 2015].

[23] M. Shattel et al.: "Occupational stressors and the mental health of truckers", in *Issues in Mental Health Nursing*, 2010, Vol. 31, No. 9, pp. 561–568.

[24] ibid.

[25] R.O. Phillips and T. Bjørnskau: *Health, safety and bus drivers* (Oslo, Institute of Transport Economics, 2013).

in route timetables, have led to an increase in stress levels. [26] In addition, bus drivers face anxiety due to fear of assault. [27]

135. A 1996 ILO report on bus driver stress showed that absenteeism among bus drivers for reasons of sickness is significantly higher than in other comparable professional groups. [28] Bus drivers who have to leave their jobs for medical reasons do so on average at a younger age than most comparable groups of employees. For example, work stressors are more abundant among those drivers working shifts. Split shifts have been reported to be a particularly challenging type of shift for bus drivers. Drivers working split shifts reported undesirable levels of work stressors, sleep pressure and poor health outcomes, as documented in a recent Norwegian study. [29] Bus drivers also face work schedule and home schedule conflicts.

4.4. Sleep deprivation and apnoea

136. Truck and bus drivers may be required to work at night. Physiological effects of sleep restriction include increased blood pressure, increased heart disease, gastrointestinal problems, metabolic changes (potentially leading to diabetes), increased stress hormones, reduced immune response, increased sick days, increased calorie consumption, and weight gain. [30] Psychological changes following sleep loss include irritability, disruption of relationships, worsened psychiatric conditions and decreased quality of life. [31] Lack of sleep is considered to be one of the primary causes of fatigue. [32]

137. An apnoea is a stoppage of breathing lasting ten seconds or more. In obstructive sleep apnoea (OSA), breathing stops repeatedly during sleep due to closures of the upper airway. Apnoea rates of less than five per hour during sleep are considered normal, but higher rates characterize OSA. OSA severity is based on closure rate determined in an overnight sleep study. Apnoea rates as high as 100 per hour can occur in severe OSA. OSA can result in medical disqualification for commercial drivers. An estimated 28 per cent of US commercial drivers have mild to severe OSA. [33] A Finnish survey of 1,097 truck drivers found that one fifth suffered from OSA. [34] A case-control study in Western Australia compared 100 long-haul heavy vehicle drivers who were involved in police-reported

[26] ibid.

[27] ibid.

[28] M.A.J. Kompier: *Bus drivers: Occupational stress and stress prevention* (Geneva, ILO, 1996).

[29] See R.O. Phillips and T. Bjørnskau, op. cit.

[30] D.B. Boivin: *Sleep and you; Sleep better, live better* (Toronto, Dundurn, 2014).

[31] North American Fatigue Management Program, op. cit.

[32] Beaulieu, op. cit.

[33] A.I. Pack et al.: A *study of the prevalence of sleep apnea among commercial truck drivers* (Washington, DC, Federal Motor Carrier Safety Administration, 2002).

[34] European Transport Safety Council: *Preventing road accidents and injuries for the safety of employees – Project handbook,* Brussels.

crashes to non-involved drivers recruited from area truck stops. [35] Driver interviews included a diagnostic OSA questionnaire. Heavy vehicle drivers with OSA profiles were more than three times more likely to be involved in a crash. Drivers who had not received any fatigue education were also highly over-involved in crashes.

4.5. Sedentary lifestyle and obesity

138. Taxi drivers, truck drivers, bus drivers and delivery drivers all have something in common besides sitting in moving vehicles all day. They are fulfilling a dangerous occupation and are susceptible to a significant number of injuries and illnesses. Driving for many hours at a stretch, loading and unloading cargo, and making many deliveries all take a toll on drivers' health. Studies have found that drivers are at increased risk of numerous preventable diseases, including heart attacks, musculoskeletal disorders, hypertension, ulcers and cancers of the lung, prostate and bladder, as compared to people in other professions. [36]

139. Poor worker health results in lower productivity and increased absenteeism. Among drivers, it can also have an impact on safety in various ways. It might reduce driver performance, making drivers more vulnerable to chronic or medical conditions and shortening their career. When experienced commercial drivers retire in their 50s and early 60s because of health conditions, they are often replaced by younger, less experienced, higher-risk drivers.

140. Medical costs related to poor driver health could represent a challenge for independent drivers and companies. Health and fitness initiatives and training could provide a useful tool to tackle these issues. For example, the US National Institute for Occupational Safety and Health conducted a national survey of long-haul truck driver health and injuries at 32 US truck stops. [37] Researchers derived prevalence estimates for health conditions, injuries and work/sleep patterns among truck drivers, and compared them to the US national working population. The statistics show that:

- 51 per cent of truck drivers smoke (versus 19 per cent of the US population);
- 69 per cent are obese (with a BMI equal to or more than 30) (versus 31 per cent);
- 17 per cent are morbidly obese (BMI >40) (versus 7 per cent);
- 14 per cent have self-reported diabetes (versus 7 per cent);
- 88 per cent have one major cardiovascular risk factor (hypertension, smoking or obesity) (versus 54 per cent);
- 9 per cent have all three risk factors (versus 2 per cent);
- 38 per cent are not covered by health care plan or insurance (versus 17 per cent).

[35] L. Meuleners et al.: "Obstructive sleep apnea, health-related factors and long distance heavy vehicle crashes in Western Australia: A case control study", in *Journal of Clinical Sleep Medicine*, 2015, Vol. 11, No. 4.

[36] W.K. Sieber et al.: "Obesity and other risk factors: The national survey of US long-haul truck driver health and injury", in *American journal of industrial medicine*, 2014, Vol. 57, No. 6, pp. 615–626.

[37] ibid.

Box 4.2
In-cabin fitness training

One major truck manufacturer is trying to help drivers get fit and stay fit while on the road, offering optional gym accessories for truck drivers who want to exercise. Designed for use in truck cabins, the gym set includes a robust plywood board with two metal eyelets. Rubber training straps are attached to these eyelets with a spring clip. The straps provide resistance for full-body strength and conditioning workouts. The board also acts as a standing surface. Four videos, each aimed at a different level of fitness, are available to users. The videos are available on DVD and mobile app.

4.6. Substance use and abuse

141. Drugs and alcohol contain components that may reduce a driver's vigilance on the road. Legislation normally forbids alcohol and illicit drug intake prior to or while driving motor vehicles. In addition, drug and alcohol testing rules and regulations are in place in certain countries for employees who drive commercial trucks and buses that require a commercial driver's licence. The working conditions of commercial drivers can involve wait times at border crossings or for return cargo, in addition to night shifts and little resting time. Some of these conditions can stimulate a greater intake of psychoactive substances at work. [38] An international database review found that drivers who are younger or paid less are more likely to be alcohol and illicit drug users. [39] A Norwegian roadside survey sampled 882 truck drivers anonymously in 2012 and found drug and alcohol in the samples of 2 per cent of commercial drivers. [40]

[38] E. Girotto et al.: "Psychoactive substance use by truck drivers: A systematic review", in *Occupational and environmental medicine*, 2014, Vol. 71, No. 1, pp. 71–76.

[39] ibid.

[40] H. Gjerde et al.: "Analysis of alcohol and drugs in oral fluid from truck drivers in Norway", in *Traffic injury prevention*, 2012, Vol. 13, No. 1, pp. 43–48.

5. The ILO, policy coherence and responses

142. OSH measures seek to ensure that all workers enjoy safe and healthy working conditions and to preserve human resources. The ILO aims to create worldwide awareness of the dimensions and consequences of work-related accidents, injuries and diseases, to place the health and safety of all workers on the international agenda and to stimulate and support practical action at all levels. The ILO has adopted more than 40 Conventions and Recommendations specifically dealing with OSH, as well as over 40 codes of practice, many of which include guidance on furthering social dialogue in matters of OSH.

143. In some cases, high levels of segmentation and fragmentation in the industry have translated into diminished worker bargaining power. Protection measures and benefits granted under collective bargaining, sectoral, master or framework agreements have now become an exception for road transport workers in certain countries.

144. HIV and sexually transmitted infection (STI) prevalence is higher among transport workers than the general population in a number of countries, particularly so along major transport corridors. Road transport workers, especially long-distance drivers, are at particular risk of infection because of the nature and conditions of their work. In addition, truck drivers might be affected by unsafe practices in the packing of cargo transport units (CTUs) that might increase crash proneness for drivers.

5.1. ILO instruments promoting occupational safety and health through a preventive safety and health culture

145. More than 40 ILO standards directly or indirectly deal with OSH issues. These include: the Occupational Safety and Health Convention, 1981 (No. 155), and Recommendation, 1981 (No. 164); the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187), and Recommendation, 2006 (No. 197); and the Occupational Health Services Convention, 1985 (No. 161), and Recommendation, 1985 (No. 171). Convention No. 155 and Recommendation No. 164 set forth the basic principles and methodology required for improvements in OSH management. They apply to all branches of economic activity, including road transport, and stipulate the formulation, implementation and periodic review of national OSH policies aimed at the prevention of occupational accidents. Together, these two instruments also foresee the definition of national institutional responsibilities and the duties and rights of employers and workers and their representatives.

146. The ILO Guidelines on occupational safety and health management systems (ILO–OSH 2001) have provided a reference for ILO members in crafting OSH programmes. They call for a holistic and integrated approach when dealing with OSH issues. The guidelines link workers' health at the workplace and outside of work. In addition, a global OSH strategy was adopted by the International Labour Conference at its 91st Session (2003). This strategy pinpoints the need for tripartite national commitment and national action in fostering a preventive approach and a safety culture. Integrated action should better connect ILO standards with tripartite means of action. The 2010–16 plan of action to achieve widespread ratification and effective implementation of the occupational safety and health instruments (Convention No. 155, its 2002 Protocol and Convention No. 187) was adopted by the ILO's Governing Body at its 307th Session (2010). The plan is jointly implemented by the International Labour Standards Department and the Labour Administration, Labour Inspection and Occupational Safety and Health Branch (formerly the Programme on Safety and Health at Work and the Environment). Also in 2010, the

International Labour Conference adopted a revised List of Occupational Diseases, which was annexed to the List of Occupational Diseases Recommendation, 2002 (No. 194).

147. Convention No. 187 establishes the basis on which to implement an OSH management system based on tripartism. The main pillars of the Convention are a national OSH policy, a national OSH system and a national OSH programme elaborated, reviewed and applied in consultation with employers' and workers' organizations. This OSH collaboration should not only exist at the national level, but also at the level of the enterprise: Article 4 of Convention No. 187 establishes that a national system for occupational safety and health should include, among other components, arrangements to promote, at the level of the undertaking, cooperation between management, workers and their representatives as an essential element of workplace-related prevention measures.

148. The ILO Conventions promoting protection against specific risks include the Benzene Convention, 1971 (No. 136), the Working Environment (Air Pollution, Noise and Vibration) Convention, 1977 (No. 148), the Asbestos Convention, 1986 (No. 162), the Occupational Cancer Convention, 1974 (No. 139), and the Chemicals Convention, 1990 (No. 170). Between 2006 and 2011, the ILO Committee of Experts on the Application of Conventions and Recommendations (CEACR) [1] issued seven observations and two direct requests relating to road transport drivers.

149. Specific to the road transport sector, the Hours of Work and Rest Periods (Road Transport) Convention, 1979 (No. 153), and Recommendation, 1979 (No. 161), currently establish a standard for the sector. As of the time of writing of this report, nine countries have ratified the Convention: Ecuador (1988), Iraq (1985), Mexico (1982), Spain (1985), Switzerland (1981), Turkey (2005), Ukraine (2008), Uruguay (1989) and Bolivarian Republic of Venezuela (1983).

150. The CEACR has pointed out that, in a number of States parties, national laws and regulations were not fully in compliance with the provisions of the Convention on issues such as its scope, maximum hours of work or mandatory breaks. Compliance issues also arise from the fact that the provisions of the applicable EU directive and the European Agreement Concerning the Work of Crews of Vehicles Engaged in International Road Transport differ from the corresponding provisions of Convention No. 153. The CEACR's direct requests to member States are published by the ILO.

151. At its 262nd Session (March–April 1995) the ILO's Governing Body set up the Working Party on Policy regarding the Revision of Standards (the Cartier Working Party) and entrusted it, among other things, with undertaking an examination of all international labour Conventions and Recommendations. Within its decisions, the Cartier Working Party considered that Convention No. 153 and Recommendation No. 161 should be revised. [2] In 1996, it had already identified that Convention No. 153 was one of the least ratified Conventions. [3] During the Working Party's process, member States reported obstacles to ratification. Although no member State questioned the relevance of Convention No. 153, most obstacles seemed attributable to discrepancies between the Convention and national or regional legislation (such as the European Agreement

[1] The CEACR is a body of independent legal experts which meets yearly to examine the situation of application of ILO Conventions by member States.

[2] ILO: *Working party on policy regarding the revision of standards (Cartier Working Party): Follow up decisions by the Governing Body* (Geneva, 2002).

[3] Working Party on Policy regarding the Revision of Standards: *Examination of the least-ratified and dormant Conventions*, Governing Body, 265th Session, Geneva, 1996, GB.265/LILS/WP/PRS/1.

concerning the Work of Crews of Vehicles Engaged in International Road Transport and the applicable EU regulations). Some member States pointed out that the Convention also applied to self-employed drivers, which in some cases made it incompatible with national legislation that did not provide for safety and health protection measures and benefits for the self-employed. [4]

5.2. ILO tools tackling HIV and AIDS and promoting the safe packing of cargo transport units

5.2.1. Driving for change: HIV and AIDS toolkit and other ILO initiatives

152. HIV and STIs present OSH risks. The Office has adopted a sectoral approach with regard to HIV workplace programmes. [5] In 2006, the Tripartite Meeting on Labour and Social Issues Arising from Problems of Cross-Border Mobility of International Drivers in the Road Transport Sector adopted conclusions calling, among other things, for the development of sector-specific training on HIV and AIDS for international road drivers. Collaborative efforts between the ILO, the IRU Academy and the ITF led to the development of *Driving for change: A training toolkit on HIV/AIDS for the road transport sector* in 2008. [6] The toolkit was designed to enable workers, drivers, managers and union officials to respond to the epidemic taking into account the specific conditions of their workplace. It includes modules for instructors, managers and drivers and a module for informal settings. It has been the primary reference for the ILO's training in the road transport sector.

Box 5.1
ILO-SIDA Transport Project

The ILO-SIDA Transport Project is a collaborative effort between the ILO's HIV/AIDS and the World of Work Branch and the Swedish International Development Agency (SIDA) addressing sector-specific HIV and AIDS issues in countries of the Southern African Development Community (SADC). The project covers the period 2011–15 and is targeted at Malawi, Mozambique, South Africa, United Republic of Tanzania, Zambia and Zimbabwe.

In 2010, a pioneering approach to HIV and AIDS in the transport sector was adopted under the ILO-SIDA Transport Project, entitled the Corridor Economic Empowerment Project. This was based on the recognition that HIV awareness is not sufficient to prevent HIV and the project therefore seeks to complement, rather than replace, existing efforts along transport corridors. The project is founded on the economic empowerment approach and the rationale that poverty along transport corridors and other densely populated areas heightens vulnerability to HIV and AIDS. It addresses the needs and vulnerabilities of men and women who do not have access to HIV-related services and coping mechanisms, in particular social protection schemes and sustained incomes. In each of the participating countries, the project has introduced an integrated package that combines the provision of HIV and AIDS services, the development of entrepreneurial skills and the establishment of an innovative microfinance system which is managed by the beneficiaries in collaboration with a locally identified financial institution. A 2014 ILO-SIDA publication reviews case studies and presents data on the work carried out thus far. *

[4] ILO: *Follow-up on consultations concerning the needs for revision and obstacles to the ratification of 13 Conventions*, Working Party on Policy Regarding the Revision of Standards, Governing Body, 270th Session, Geneva, 1997, GB.270/LILS/WP-PRS-1/2.

[5] See ILO: *HIV/AIDS and the world of work*, Report V(1), International Labour Conference, 99th Session, Geneva, 2010.

[6] ILO: *Workshop for the training of instructors on the use of the "Driving for change: Training toolkit on HIV and AIDS for the road transport sector"* (Geneva, 2008).

The economic empowerment approach has been adopted and ratified by a number of national policy-makers, including those within the transport ministries. Thus, the approach has been adopted in the HIV and AIDS Policy and Strategy followed in Malawi's national transport sector and in the operational plans of the South African transport sector. In Mozambique, Zambia and Zimbabwe the Ministry of Transport and the Ministry of Labour have developed training programmes for their workers, including those living with HIV. For example, some of the peer educators on the Corridor Economic Empowerment Project are providing HIV-related support to employees of the National Employment Council for the Transport Operating Industry at the Chirundu and Beitbridge border crossings in Zimbabwe. The 2014 outcome survey documents positive improvements reported by beneficiaries who took part in the ILO-SIDA project.

* ILO: *Corridor economic empowerment project case studies* (Pretoria, ILO, 2014).

153. The ILO has continued to organize workshops using the toolkit, aimed at building the capacity of participants to deliver sector-specific training. For example, consultations on the use of the toolkit and the planning of HIV and tuberculosis responses in the road transport sector were held on 24 and 25 February 2015 in Johannesburg, South Africa. The aim of the workshop was to review HIV and AIDS developments in the transport sector within SADC countries. Participants attended from six countries involved in the ILO's Corridor Economic Empowerment Project in the subregion, namely Malawi, Mozambique, South Africa, United Republic of Tanzania, Zambia and Zimbabwe. Participation was tripartite, consisting of governments, employers' associations and workers' organizations from each of the six countries. The workshop provided an opportunity for participants to develop and present country plans with key priorities to scale up the HIV response in the transport sector.

154. Participants at the meeting shared practical experience on what has worked with the toolkit and how it could be improved to increase effectiveness in the subregional context. There was general agreement that, although the toolkit materials and methodology are useful and comprehensive for the purpose of implementing HIV and AIDS training within the road transport sector, there is room for improvement in a number of areas. For example, instructors should supplement the materials on a case-by-case basis with updated information, including on available HIV, STI and tuberculosis services and the location of those services, and on success stories and best practices. It was also agreed that the toolkit should be adapted to provide a more contextual and balanced representation of the road transport sector. Participants highlighted that the development of an additional module on how to make use of strategic information through the monitoring and evaluation of HIV and AIDS workplace programmes could enhance efficient and effective workplace responses at the regional and country levels. This module could also include guidance on how to identify and manage HIV-related stigma and discrimination within the workplace and reinforce a "wellness approach" towards addressing biomedical and socio-structural factors influencing the spread of HIV.

155. Workshop participants decided that countries would work with partners including national AIDS councils and ministries of health and labour to explore the possibilities of generating sector-specific disaggregated data on HIV and AIDS and on other factors driving the epidemic. Such data could help enhance effective HIV responses within the sector.

Box 5.2
Latin American Programme of the OPEC Fund for International Development

A programme jointly funded by the ILO and the Organization of the Petroleum Exporting Countries (OPEC) Fund for International Development (OFID) has produced groundbreaking research elucidating the relationship between HIV and AIDS and road transport workers in Latin America. The programme addresses discrimination against people living with HIV, including the issues of homophobia and transphobia – prejudices against transsexual or transgender people. To date, four publications have been produced: two reports and analyses of surveys on the working conditions and sexual health of truck drivers, one on Paraguay and the other on Bolivia and Chile; a manual for truck drivers on confronting HIV and how to eradicate homophobia in the workplace; and a guide on how to talk about HIV and AIDS in the transport sector.

In response to the programme, the Government of Paraguay has issued a formal ministerial decree and the Government of Chile informal guidelines on HIV and AIDS in the transport sector. While these government responses are merely suggestions for the industry, rather than enforceable resolutions, they are indicative of progress on HIV and AIDS-related attitudes in the region. The pioneering programme has been so successful that the initiative is currently being replicated in the mining sector.

5.2.2. IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units

156. Incidents in the transport sector are frequently attributed to poor practice in the packing of CTUs. This is a concern for employers, as well as for transport workers and the general public, who may be exposed to the physical hazard of poorly secured or overweight containers.

157. In 1997, the International Maritime Organization (IMO), the ILO and the UNECE first published the Guidelines for Packing of Cargo Transport Units, applicable to the entire intermodal transport chain and all modes of surface and water transport. In March 2009 and November 2010, the Governing Body of the ILO agreed to convene a Global Dialogue Forum on Safety in the Supply Chain in Relation to Packing of Containers. The Forum was held in Geneva on 21 and 22 February 2011. A major point of consensus from the Forum was the need to update the Guidelines to provide a widely accessible and common set of standards on the packing of CTUs. As a result of the Forum, the IMO, ILO and UNECE established a Group of Experts, tasked with updating the Guidelines to reflect the latest information, best practices and requirements with regard to packing CTUs. The Group met four times between 2011 and 2013 to carry out the revision process.

158. The outcome was the IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units (CTU Code), published in 2014. The CTU Code has been designed to help protect the lives and safety of workers and the public as a whole. The Code contains advice for both the workers responsible for the packing and securing of cargo, and the trainers who instruct workers to carry out such tasks. It also contains theoretical details for packing and securing cargo, as well as practical measures to ensure safe practice. The Code also provides information and advice to parties involved along the supply chain, broadening the scope of the 1997 Guidelines. The CTU Code is not a legally binding instrument, nor is it intended to replace existing national legislation on packing and securing cargo, in particular national regulations which apply to a single mode of transport. Instead, it offers practical recommendations, providing guidance to the transport industry on how to improve industry practices and ensure worker and public safety.

159. The CTU Code is intended to assist the industry, employers' and workers' organizations and governments in training their staff on the safe packing of cargo in containers. The CTU Code could also be used as a reference base for national regulations and could constitute a model for internationally harmonized legislation in this field.

160. Specific groups of stakeholders and workers can impact or be impacted by poor CTU packing practices, including, manufacturers, truck drivers, dockers, and warehouse and consolidator workers. Dissemination efforts of the CTU Code could take into consideration these different groups to adopt a targeted approach. These can include translation to other languages, regional workshops, focused campaigns, the development of material in the form of posters, pocket cards, checklists, or training of trainer efforts. Toolkit guidance could be also developed. For example, materials allowing truck drivers to conduct a risk assessment could directly help in the prevention of accidents related to poor CTU packing.

5.3. Legislation, inspection, tripartism and social dialogue

5.3.1. Governments and the role of legislation, inspection and policy coherence

161. The relationship between national policy, working time, organization of work and safety and health is described in Articles 4 and 5 of Convention No. 155 and Paragraphs 4 and 10 of Recommendation No. 164. When drafting new policies, governments should pay special attention to policy coherence and the links existing between safety and health, on the one hand, and hours of work and rest breaks on the other. Thus, as set out in Article 5(b) of Convention No. 155, a national policy on OSH and the working environment should take into account the relationships between the material elements of work and the persons who carry out or supervise the work, and adaptation of machinery, equipment, working time, organization of work and work processes to the physical and mental capacities of the workers. Additional technical and practical guidance on the application of this Article of the Convention is provided under Paragraph 4 of Recommendation No. 164, which foresees that the competent authorities should issue or approve regulations, codes of practice or other suitable provisions on OSH and the working environment, account being taken of the links existing between safety and health, on the one hand, and hours of work and rest breaks, on the other. Paragraph 10 of the Recommendation provides that employers' obligations at the level of the undertaking might ensure that work organization, particularly with respect to hours of work and rest breaks, does not adversely affect OSH. Working time constitutes an OSH preventative element that has to be taken into consideration both by the competent authorities and by employers.

162. Road networks used by the general public are the workplace of commercial drivers. Thus, certain governments have found it necessary to regulate conditions of road use on an individual or regional basis. Special legislative action for the sector has included regulating working conditions and OSH matters. Binding measures have encompassed maximum driving hours, vehicle inspection, logbook usage and medical examinations for commercial drivers. While some countries have chosen to apply general OSH legislation to the road transport sector, others have chosen to enact special OSH legislation applicable to drivers and crews. For example, medical and hygiene-related studies and measures have led to the introduction of legislation influencing vehicle and cabin design, ergonomics, and noise and vibration levels.

163. The fragmented nature of the industry poses a challenge for legislation compliance and enforcement. The vast numbers of commercial vehicles travelling every day renders it impossible to design any enforcement or control system that would remove all unsafe drivers from the road. Nonetheless, according to an OECD report, [7] compliance can be

[7] OECD: *Moving freight with better trucks: Improving safety, productivity and sustainability* (Paris, 2011).

greatly improved through legislation that assigns responsibility for respecting the regulations to actors across the supply chain. Granting greater enforcement powers to compliance agencies to accompany this policy measure remains a challenge, including with regard to funding and tools. Legal regimes of shared responsibility can be effective in reducing conflicts of interest in the observation of regulatory and working conditions requirements.

164. Certain governments have taken firm steps towards the implementation of supply chain actor liability legislation to regulate the failure to implement requirements related to duty of care when providing or requesting road transport services. For example, in the EU, Regulation (EC) 561/2006 relating to driving and rest times sets forth in its Article 10(1) clear obligations relating to road safety:

> A transport undertaking shall not give drivers it employs or who are put at its disposal any payment, even in the form of a bonus or wage supplement, related to distances travelled and/or the amount of goods carried if that payment is of such a kind as to endanger road safety and/or encourages infringement of this Regulation.

Article 10(4) covers other parts of the supply chain, including consignors, freight forwarders, tour operators, principal contractors, subcontractors and driver employment agencies. The scope of liability included in this provision is aimed at raising safety levels by extending the scope of liability to supply chain parties. Australia has recently enacted chain of responsibility legislation defining supply chain actor liability and regulating freight rates for certain types of transport services. The Government of the Netherlands is currently attempting to introduce chain of responsibility regulation for the road transport sector. [8]

Box 5.3
Chain of responsibility in Australia

Since the 1970s, the Transport Workers Union of Australia has conducted campaigns to raise awareness of occupational safety and public safety hazards resulting from intense competition, subcontracting, and the decline in freight and pay rates in the road transport industry. The union's vigorous efforts to advocate the adoption of legislation led in 2008 to the passing of the Road Safety Remuneration Act, including provisions implementing the "chain of responsibility" policy concept. This concept, which has been applied in Australian transport regulation since 1996, is designed to ensure that all who have direct or indirect control over a transport operation bear responsibility for conduct which affects compliance and should be made accountable for failure to discharge that responsibility.

The current framework places legal obligations on parties across the transport and supply chain. These regulations make any stakeholder in the transport chain liable in the event of a crash or accident. The establishment of unrealistic delivery windows, driving times or the payment of rates below the stipulated standard are factors that might place additional stress on the driver and create circumstances in which the driver might be more prone to cause an accident. Chain of responsibility regulation is currently implemented by the Road Safety Remuneration Tribunal. The tribunal has authority to issue binding orders or resolutions dictating practices in certain sectors. The tribunal is also responsible for overseeing what are known as "safe driving plans". Its first order was issued at the end of 2013 and concerned transport services provided to supermarket chains and long-distance operations of more than 200 kilometres. In 2015, the tribunal will be conducting inquiries into the cash-in-transit, waste management and port drayage services. A formal government review was initiated at the end of 2013 but as of April 2015 no statement or report had yet been issued.

Sources: OECD-ITF: *Moving freight with better trucks: Improving safety, productivity and sustainability* (OECD Publishing, 2011); and ILO: "Road Freight Transport in Australia and the Road Safety Remuneration Regulation", in *New developments in labor economics: Safe rates and chain of responsibility*, Panel discussion at the 94th Annual Meeting of the Transportation Research Board, Washington, DC, 11–15 January 2015.

[8] *NRC Handelsblad* (Amsterdam): "Wet aanpak schijnconstructies zorgt voor onrust in de transportsector" [Law on combating disguised employment relations creates unrest in the transport sector], 5 June 2015.

165. Labour inspection authorities should ensure compliance with road transport awards and collective bargaining and framework agreements. Labour inspectors might assist by providing advice and guidance during formal inspections or on an ongoing basis, depending on each country's regulations governing inspectorates. Aside from lack of resources, compliance and enforcement challenges might be further exacerbated by the levels of industry fragmentation and segmentation. The Labour Inspection (Mining and Transport) Recommendation, 1947 (No. 82), sets forth provisions for inspection in transport undertakings. It provides for the application to the transport sector of provisions included in the Labour Inspection Convention, 1947 (No. 81).

Box 5.4
Labour inspection in India

India's Motor Transport Workers Act (1961) requires employers owning motor transport undertakings to register their businesses with their local state government authorities. Transport companies are also required to provide reasonable facilities for labour inspection staff to ensure proper implementation of the Act. Besides being registered, all Indian transport undertakings are required to submit to the authorities a range of documents, including their driver logbooks. Labour authorities are in charge of supervising 886,170 undertakings and, in 2008, 43,965 transport undertakings were inspected. According to a 2008 Department of Labour report, some 74 per cent of transport undertakings (655,766) failed to submit the required documentation and returns. In 230,404 undertakings (26 per cent):

- 10 per cent of drivers worked less than eight hours, 78 per cent worked eight hours, and 12 per cent worked more than eight hours;
- 13 per cent took a break of less than 30 minutes, 60 per cent took a break of between 30 minutes and one hour, and 27 per cent took a break of more than one hour.

Source: Labour Bureau, Ministry of Labour and Employment, India: *Report on the working of the motor transport workers act, 1961 for the year 2008* (Chandigarh, Government of India, 2008).

5.3.2. Tripartite cooperation and social dialogue

166. The ILO's mandate to pursue social justice encompasses a constitutional obligation to promote full employment and the raising of standards of living. [9] Social dialogue plays a critical role in achieving the ILO's objective of advancing opportunities for women and men to obtain decent and productive work in conditions of freedom, equality, security and human dignity.

167. Social dialogue includes all types of negotiation, consultation and exchange of information between, or among, representatives of governments, employers and workers on issues of common interest. Evidence and practice reveal that social dialogue and tripartite cooperation lead to the improvement of working conditions. For example, the ILO, the ITF and the IRU have partnered in the past to tackle challenges in the sector. At the EU level, sectoral social dialogue in the road transport sector addresses working conditions, competitive pressure issues, social standards, OSH and attraction concerns.

168. OSH provisions can be discussed in social dialogue forums and be included in collective agreements. Framework and collective bargaining agreements can often lead to stricter controls over commercial driver working and rest periods. Preventive and mitigation measures to other occupational hazards can also be included in these agreements.

[9] See ILO: *The future of work centenary initiative*, Report of the Director-General (Report I), International Labour Conference, 104th Session, Geneva, 2015.

5.3.3. Other responses

169. OSH cooperation may translate into the creation of safety and health committees or work councils, either under legislation or joint agreements. Committees and councils often constitute instruments that can promote social dialogue and the improvement of working conditions.

170. Increasingly ambitious goals set for improved road safety performance have been addressed by the improvement of organizational management capacity and leadership initiatives by employers and multinational enterprises. Corporate social responsibility standards are voluntary arrangements that companies are putting in place. [10] Safety leadership, safety culture programmes and corporate social responsibility could be applied not only to a company's own fleet, but also to logistics and transport services subcontractors. For-hire carriers and subcontractors can also implement a company's road safety and franchise goals.

171. The International Social Security Association (ISSA) is the principal international institution bringing together social security agencies and organizations. The first general assembly of the International Section of the ISSA on Prevention in Transportation took place on 24 August 2014. The Section seeks to improve working conditions for employees and to reduce the number and severity of accidents. The Section will also promote the international exchange of best practice and knowledge of suitable prevention measures between enterprises and social security organizations. Main priorities identified for 2015 include violence (attacks and aggression) and cargo securing. Other important topics in the overall work programme include commuting and road traffic accidents and the transport of dangerous goods.

172. The International Organization for Standardization's standard 39001 specifies requirements for a road traffic safety management system to enable an organization that interacts with the road traffic system to reduce death and serious injuries related to road traffic crashes which it can influence. This standard includes provision to better plan driving times and manage driver fatigue.

173. The fragmented nature of the road transport industry coupled with frequent subcontracting practices pose specific challenges to the effective implementation of safety leadership programmes. Efforts could include specific monitoring systems at the enterprise or public transport provider level to ensure safe working conditions for drivers and positive social performance within several subcontracting links or external service providers. Corporate social responsibility indicators could also encompass measuring the working conditions of external service providers and subcontractors.

[10] ibid.

Appendix I

Modal split of inland freight and passenger transport

The following table presents a compilation of modal split percentages accounting for road transport freight movements and passenger transport operations. In the case of freight, only rail, inland waterway and road transport modes were taken into account to calculate percentages (transport by pipeline was not). In the case of passenger transport, modal split calculations include travel by car, bus or coach, and rail.

Data year	Country	Freight movements by road transport (%)	Passenger movements (%)
	Africa		
2004	Cameroon	n/a	46.0 [a]
2000	Kenya	83.0	n/a
2010/2014	South Africa	87.0	7.6 [b]
	Americas		
2012	Argentina	97.0	n/a
2006	Brazil	61.0	n/a
2010	Canada	74.4	2.1
2002	Colombia	81.0	n/a
2013	Mexico	81.5	n/a
2011	United States	54.3	1.3
	Asia		
2012	China	79.0	n/a
2011	India	64.5	n/a
2009/2011	Japan	54.2	6.3
2012	Republic of Korea	94.8	n/a
2007	Thailand	91.0	36.0 [c]
	Commonwealth of Independent States		
2005	Azerbaijan	*42.0*	n/a
2012/2005	Belarus	*12.0*	*43.7*
2005	Kazakhstan	*22.0*	*84.0*
2007	Russian Federation	*7.0*	n/a
2010	Ukraine	*5.0*	*48.7*
	Europe		
2012	Austria	54.6	10.0
2012	Belgium	58.3	12.4
2012	Bulgaria	74.7	16.9
2012	Croatia	73.6	10.7
2012	Czech Republic	78.2	16.8
2012	Denmark	88.0	9.7
2012	EU-28	75.1	9.2
2012	Finland	73.0	9.8

Data year	Country	Freight movements by road transport (%)	Passenger movements (%)
2012	France	80.6	5.4
2012	Germany	64.6	5.7
2012	Greece	98.7	17.7
2012	Italy	85.9	15.0
2012	Netherlands	56.8	3.0
2012	Norway	85.3	5.6
2012	Spain	95.2	13.7
2012	Sweden	60.3	6.7
2012	Switzerland	53.9	5.1
2012	Turkey	*94.7*	36.6
2012	United Kingdom	87.8	5.8

a = Data available only for Yaoundé and Douala.

b = Data available only for work trips.

c = Data available for Bangkok only.

n/a = not available

Percentages in italics indicate source estimates.

Source: ILO, based on data from various sources, including: IBRD; Asian Development Bank; UNECE; Eurostat; Africa Transport Policy Programme; Danish Institute for International Studies; Council for Scientific and Industrial Research and Financial and Fiscal Commission (South Africa); Ministry of Science, Technology and Productive Innovation (Argentina); Transport Canada; Ministry of Communications and Transport (Mexico); US Bureau of Transportation Statistics/Research and Innovative Technology Administration; National Bureau of Statistics (China); Emerging Markets Insight – Internet Securities Inc. (India); Ministry of Land, Infrastructure, Transport and Tourism (Japan); and Korean Statistical Information Service.

Appendix II

Fleet size and ratio

Truck and van

The top 30 countries in terms of truck and van fleet size are listed in table II(1) below. The first column shows not only their ranking in terms of overall fleet size, but also their fleet size as a percentage of the overall world fleet. The last two columns of the table quantify available fleet numbers per 100,000 inhabitants.

Table II(1). Top 30 countries by truck and van fleet in use

Ranking per overall fleet size and percentage of world fleet		Country	Year	Total vehicles	Vehicles available per 100,000 inhabitants	Ranking by vehicle availability by 100,000 inhabitants
1	(26.7%)	United States	2010	51 983 024	16 648	3
2	(8.9%)	Japan	2010	17 386 648	13 652	4
3	(8.2%)	China	2010	15 975 537	1 175	45
4	(4.7%)	Mexico	2010	9 182 991	7 790	14
5	(3.3%)	France	2010	6 359 000	10 057	10
6	(3.2%)	Canada	2009	6 317 658	18 718	1
7	(3.1%)	India	2009	6 040 918	508	47
8	(2.9%)	Thailand	2010	5 721 556	8 617	12
9	(2.7%)	Russian Federation	2009	5 323 000	3 705	33
10	(2.6%)	Spain	2010	5 103 980	11 052	7
11	(2.4%)	Indonesia	2010	4 687 789	1 948	43
12	(2.3%)	Italy	2010	4 556 648	7 531	15
13	(2.3%)	Saudi Arabia	2005	4 446 973	18 011	2
14	(2.3%)	Germany	2010	4 432 476	5 339	23
15	(1.9%)	United Kingdom	2010	3 678 000	5 926	19
16	(1.6%)	Poland	2010	3 174 755	8 311	13
17	(1.6%)	Turkey	2010	3 125 397	4 333	30
18	(1.6%)	Australia	2010	3 022 730	13 492	5
19	(1.2%)	South Africa	2010	2 325 824	4 520	28
20	(1.0%)	Philippines	2010	1 991 287	2 131	42
21	(0.7%)	Greece	2010	1 381 621	12 436	6
22	(0.7%)	Iraq	2006	1 345 361	4 794	26
23	(0.5%)	Venezuela (Bol. Rep. of)	2007	1 051 443	3 802	32
24	(0.5%)	Netherlands	2010	1 003 965	6 042	18
25	(0.5%)	Taiwan, China	2009	986 767	n/a	n/a
26	(0.5%)	Ukraine	2010	983 751	2 136	41
27	(0.5%)	Malaysia	2010	966 177	3 417	34
28	(0.5%)	Chile	2010	906 657	5 286	24

Ranking per overall fleet size and percentage of world fleet		Country	Year	Total vehicles	Vehicles available per 100,000 inhabitants	Ranking by vehicle availability by 100,000 inhabitants
29	(0.5%)	Egypt	2009	895 014	1 166	46
30	(0.4%)	Peru	2010	790 518	2 701	38

Sources:

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Note: IRF statistics did not include disaggregation to the truck and van fleet level for the following countries: Angola, Argentina, Armenia, Aruba, Bahamas, Belize, Brazil, Bulgaria, Central African Republic, Democratic Republic of the Congo, Equatorial Guinea, Guyana, Gambia, Islamic Republic of Iran, Republic of Korea, Kyrgyzstan, Liechtenstein, Montenegro, Morocco, Mozambique, Nigeria, San Marino, Saint Lucia, Trinidad and Tobago, Viet Nam and Yemen.

Country population data from: United Nations Department of Economic and Social Affairs: *World Population Prospects: The 2012 Revision*, http://esa.un.org/wpp/Excel-Data/population.htm [accessed 21 July 2015].

Bus and coach

Table II(2) shows passenger road transport composition by bus and coach fleet in use per country. The top 30 countries in terms of fleet size are listed in the table. The first column shows not only their ranking but also their fleet size as a percentage of the overall world fleet.

Table II(2). Top 30 countries by bus and coach fleet in use

Ranking per overall fleet size and percentage of world fleet		Country	Year	Total vehicles	Vehicles available per 100,000 inhabitants	Ranking by vehicle availability by 100,000 inhabitants
1	(16.4%)	China	2010	2 625 162	193	38
2	(14.1%)	Indonesia	2010	2 250 109	935	8
3	(9.3%)	India	2009	1 485 605	125	46
4	(6.6%)	Republic of Korea	2010	1 049 725	2 166	2
5	(5.4%)	United States	2010	857 001	274	30
6	(4.2%)	Brazil	2009	673 084	348	25
7	(3.7%)	Turkey	2010	595 483	825	10
8	(3.3%)	Thailand	2010	524 089	789	11
9	(2.2%)	Mexico	2010	359 323	305	27
10	(2.1%)	South Africa	2010	333 324	648	15
11	(1.8%)	Madagascar	2009	280 835	1 370	5
12	(1.4%)	Japan	2010	229 804	180	40
13	(1.3%)	Colombia	2009	203 938	445	20
14	(1.2%)	Cuba	2008	197 740	1 750	3
15	(1.2%)	Cameroon	2007	190 341	997	7
16	(1.1%)	Ukraine	2010	171 465	372	24
17	(1.1%)	United Kingdom	2010	171 000	276	29
18	(0.9%)	Ghana	2009	145 144	613	16
19	(0.8%)	Pakistan	2010	123 070	71	48
20	(0.7%)	Jamaica	2010	115 221	4 203	1
21	(0.7%)	Saudi Arabia	2005	113 073	458	19

Ranking per overall fleet size and percentage of world fleet		Country	Year	Total vehicles	Vehicles available per 100,000 inhabitants	Ranking by vehicle availability by 100,000 inhabitants
22	(0.7%)	Iraq	2006	112 114	399	23
23	(0.6%)	Egypt	2009	100 006	130	45
24	(0.6%)	Italy	2010	98 666	163	41
25	(0.6%)	Poland	2010	97 044	254	32
26	(0.6%)	Guatemala	2010	94 697	660	14
27	(0.6%)	Kazakhstan	2010	93 956	590	17
28	(0.6%)	Libya	2007	91 327	1 579	4
29	(0.6%)	Kenya	2010	89 708	219	35
30	(0.5%)	France	2010	86 000	136	43

Sources:

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Country population data from: United Nations Department of Economic and Social Affairs: *World Population Prospects: The 2012 Revision*, http://esa.un.org/wpp/Excel-Data/population.htm [accessed 21 July 2015].

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