WORLD BANK GROUP AND IRU

Road Transport Services Reform

Guiding Principles for Practitioners and Policy Makers

NEW EDITION, 2025

IRU

WORLD BANK GROUP

With the contribution of: SSATP Africa Transport Policy Program

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List of Acronyms

ACF	Advanced Clean Fleet
ACT	Advanced Clean Truck
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road
ADAS	Advanced Driver-Assistance Systems
AEO	Authorized Economic Operator
AETR	European Agreement concerning the Work of Crews of Vehicles engaged in International Road Transport
AfCFTA	African Continental Free Trade Area
AGR	European Agreement on Main International Traffic Arteries
ATP	Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment
BBIN	Bangladesh, Bhutan, India, Nepal
BEV	Battery Electric Vehicle
Capex	Capital Expenditure
CAR	Central African Republic
CARB	California Air Resources Board
CCS	Combined Charging System
CEF	Carbon Emission Factor
CMR	Convention on the Contract for the International Carriage of Goods by Road
CNG	Compressed Natural Gas
CO_2	Carbon Dioxide
COD	Cash on Delivery
CoR	Chain of Responsibility
CPC	Certificate of Professional Competence
CRTA	China Road Transport Association
CTMS	Corridor Trip Monitoring System
CTOs	Corridor Transport Observatories
CTC	Common Transit Convention
CVR	Convention on the contract for the international carriage of passengers and luggage by road
DAC	Direct Air Capture
DCTV	Vehicle Technical Inspection Directorate
DL	Driving License
DTRF	Road and Rail Transport Directorate
EAC	East African Community
e-CMR	electronic Consignment Note
ECMT	European Conference of Ministers of Transport
ECOSOC	Economic and Social Council of the United Nations
EEA	European Economic Area
EIF	Enhanced Integrated Framework Programme
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
EU	European Union
Eurostat	Statistical Office of the European Union
FAME	Fatty Acid Methyl Ester
FCEV	Fuel Cell Electric Vehicle
FCFA	Franc de la Communauté Financière Africaine (African Financial Community Franc)
FMCSA	Federal Motor Carrier Safety Administration
FMCSR	Federal Motor Carrier Safety Regulations
FP2TR	Faitière Patronale Togolaise des Transporteurs Routiers (Togolese Employers' Federation of Road Transporters)
GCC	Gulf Cooperation Council
GHG	Greenhouse Gas Emissions
GIE	Groupement d'Intérêt Economique (Economic Interest Group)
GPS	Global Positioning System
$GtCO_2e$	Gigatonnes of Carbon Dioxide equivalent
GTRs	Global Technical Regulations
GVM	Gross Vehicle Mass
GVW	Gross Vehicle Weight
HVNL	Heavy Vehicle National Law
HVO	Hydrotreated Vegetable Oil
IATA	International Air Transport Association
ICC	Interstate Commerce Commission
IEF	Integrated Enhanced Framework Programme
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change

IRA	Inflation Reduction Act
IRU	International Road Transport Union
IT	Information Technology
ITF	International Transport Forum
KG	Kilogram
km	Kilometer
KPI	Key Performance Indicator
L2	Level 2 authorization document required by international logistics operators
LCA	Life Cycle Analysis
LCFS	Low Carbon Fuel Standard
LEVs	Low Emission Vehicles
LFP	Lithium Iron Phosphate
LLDCs	Landlocked Developing Countries
LMS	Logistics Monitoring System
LNG	Liquefied Natural Gas
LOA	Letter of Authorization
LPG	Liquefied Petroleum Gas
MCBRTA	Multilateral Cross Border Road Transport Agreement
MCQ	Multiple Choice Question
MCS	Megawatt Charging System
MOU	Memorandum of Understanding
MVIMS	Motor Vehicle Information Management System
MVA	Motor Vehicles Agreement
NEV	New Energy Vehicle
NGO	Non-Governmental Organization
NTC	National Transport Commission
OECD	Organisation for Economic Co-operation and Development
OHADA	Organisation pour l'Harmonisation du Droit des Affaires en Afrique (Organization for the Harmonization of Business Law in Africa)
Opex	Operational Expenditure
PCC	Predictive Cruise Control
PCU	Project Coordination Unit, given the context
PPP	Public-Private Partnerships
PSCC	Point Source Carbon Capture
PTI	Periodical Technical Inspections
R.E.4	Revised Consolidated Resolution on the Facilitation of International Road Transport
RECs	Regional Economic Communities
RMB	Renminbi (Chinese currency)
SACU	Southern Africa Customs Union
SAE	Society of Automotive Engineers
SCR	Selective Catalytic Reduction
SERT	Special European Registration of Trucks and Trailers
SSATP	Africa Transport Policy Program
SUMPs	Sustainable Urban Mobility Plans
T	Tonne
TCO	Total Cost of Ownership
TEN-T	Trans-European Transport Network
TFA	Trade Facilitation Agreement
TFTA	Tripartite Free Trade Area
TIO	Authorization certificate issued by the Ministry of Transport and Infrastructure of Türkiye
TIR	Customs Convention on the International Transport of Goods under Cover of TIR Carnets
t.km	tonne-kilometer
TLSCP	Togo Trade and Logistics Services Competitiveness Project
TRIPS	Tripartite Transport Registers and Information Platform System
TTW	Tank to Wheel
UEMOA	Union Économique et Monétaire Ouest Africaine (West African Economic and Monetary Union)
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe
USA	United States of America
USDOT	United States Department of Transportation
V2X	Vehicle-to-Everything
VAT	Value Added Tax
VLMA	Vehicle Load Management Agreement
WCO	World Customs Organization
WIM	Weigh-In-Motion
WTO	World Trade Organization
WTW	Well to Wheel
WWII	World War II
ZEVs	Zero Emission Vehicles

Glossary/Definitions

ACCESS TO PROFESSION

All the rules and conditions to be met (by the company, its director and/or transport manager) in order to be recognized as a road haulier of goods and/or passengers for hire and reward, or as a transport intermediary.

ACCESS TO THE MARKET

All the rules that allow a professional who fulfills the conditions of access to the profession to exercise it, i.e. have access to the domestic and/or international road transport market, or to the intermediation market.

COMMERCIAL VEHICLE RENTAL

The activity consisting, for a fee known as rent, of making available to a tenant a commercial vehicle with or without a driver, which the tenant uses for public transport activities or for its own account for goods or passengers.

FREIGHT BROKER

A company (legal person, not natural person) that puts a freight holder and a carrier in contact to facilitate or bring about the conclusion of a transport contract between them. The mandate of the freight broker may be the freight holder or the carrier. The co-contractor of the principal is called the contracting third party.

FREIGHT FORWARDER/TRANSPORT COMMISSIONER

A company (legal person, not natural person) that undertakes on demand of its client, for a fee called a commission, to freely organize, the transport of goods from one place to another according to the mode and means of transport of its choice.

INTERNATIONAL TRANSPORT

Any road transport of passengers or goods carried out between one or more specific points in the territories of at least two different states by road vehicles or containers loaded onto such vehicles and on defined road axes/itineraries/corridors.

INTERURBAN TRANSPORT

Public or own-account transport of goods or passengers, on one or more routes between two or more cities/towns, not sharing the same urban area.

LEARNER PROFESSIONAL DRIVER

The person placed under the apprenticeship regime and whose function consists of carrying out certain material operations on behalf of the driver (maintenance, chocking, securing, etc.). In principle, the learner learns alongside the driver without, however, driving her/him.

MOTOR VEHICLE

Any road vehicle equipped with a motor that propels it and allows it to move and travel on the road under its own power, regardless of the number of wheels or axles.

OVERSIZED/ABNORMAL TRANSPORT

The transport of goods carried out using special transport vehicles or exceptional convoys, not complying with the technical standards of weight and dimensions or axle load applicable under the applicable regulations, and subject to special authorization.

OWN-ACCOUNT TRANSPORT OF GOODS OR PASSENGERS

The activity consisting of transporting occasionally and incidentally to the main activity and for the needs of the company, its personnel, or goods belonging to the company, with a vehicle operated exclusively by the latter and driven by an employee or agent of the company. The expression “private transport” is equivalent to “own-account transport”.

PASSENGERS’ ROAD TRANSPORT STATIONS (GARES ROUTIÈRES)

A developed, sectorized and secure activity zone, which allows road carriers (public and private) and their clients to organize transport. For passengers, they ensure the parking of their vehicles by line, provide facilities to welcome passengers and make them wait, and facilitate their boarding and disembarkation and that of their luggage.

PRINCIPAL

Any natural or legal person acting as a sender, consignee, charterer, Forwarder, transport intermediary consolidator, agent or other, who entrusts a road carrier with the execution of goods or passenger transport.

PROFESSIONAL DRIVER

Any person who practices, as a profession, the driving of a commercial land motor vehicle used for the public or private (own-account) transport of goods or passengers.

PUBLIC/AGAINST REWARD TRANSPORT OF GOODS OR PASSENGERS

The activity consisting of transporting, as a profession and for remuneration, goods belonging to others or passengers, from a point of departure to a point of destination, using land motor vehicles.

REGISTER OF ROAD TRANSPORT PROFESSIONALS

The register kept by the competent directorate of the ministry in charge of road transport. It lists by section all operators who meet the criteria and conditions of access to the professions of public transporter of goods and/or passengers, renter of commercial vehicles with or without driver, transport commissioner/forwarder, and freight broker. It also lists the criteria for exercising the activity of own-account transporter of goods or people.

TAXI

The activity of public transport of passengers, consisting of transporting them for remuneration on board a light vehicle (with a maximum of seven seats, including the driver, in most regulations), assigned for this purpose and duly authorized to do so.

TAXI BOOKING PLATFORMS

Any professional who connects taxi drivers or companies with passengers to make trips. They are pure intermediaries and should be considered “brokers” under a simple mandate. They are not responsible for the passenger’s good arrival.

TRANSPORT TITLES

The administrative authorization issued by the competent directorate of the ministry in charge of road transport, which authorizes the operation of a land motor vehicle designated for the activity to which it is assigned.

TRAVEL AGENT

A company that organizes all types of trips (family vacations, work trips, etc.) and touristic services by offering part of the service or a global package.

URBAN TRANSPORT

Public or own-account transport of goods or passengers, carried out within the limits of the same urban area or agglomeration.

I. Objective of the guide

A. The rationale for a new edition

In 2016, the World Bank and IRU published *Road Freight Transport Services Reform: Guiding Principles for Practitioners and Policy Makers*, which provides a set of basic instruments and models for effectively reforming or modernizing road freight transport, with a focus on lower- to middle-income countries

The road transport sector continues to be an essential element of modern logistics chains. It connects people to jobs and social amenities, and links production, distribution, and consumption of goods. This is primarily due to its flexibility and capability to provide door-to-door services. It can connect people and all supply chain actors at the local, national, regional, and global levels. Road transport is the dominant mode of transport in many regions of the world and plays an especially important role in emerging and developing countries that lack alternative inland transport means such as railways or inland waterways. Even when multimodal options are available, road transport is often essential for first mile or last-mile connectivity. In this context, road transport is often the only available mode for landlocked developing countries (LLDCs) to access regional and global markets.

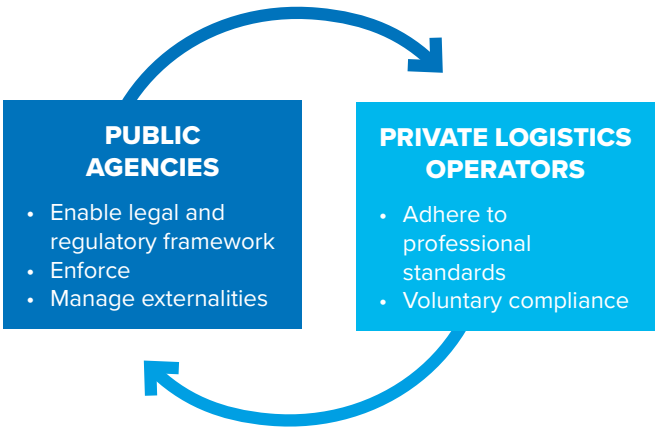
In most of the developing world, fluidity of cargo and people is almost entirely dependent on road transport. Consumer expectations and production requirements increasingly require that transport operators provide the best services that are the safest and most affordable. However, in many lower- to middle-income countries, logistics performance remains low and insufficient to effectively contribute to economic and social development. Therefore, any improvement of road transport services could have immediate significant impacts on all other economic sectors and trade development. Furthermore, the social contribution of road transport would also be strengthened in terms of employment, living conditions, and social welfare. In turn, these developments would create new markets and generate new trade flows.

An efficient transport sector has its benefits, but it has also very negative externalities that are increasingly important to manage. The transport sector is the largest source of direct emissions of greenhouse gas emissions (GHG), and the sector cannot afford to avoid this in a world that witnesses increasing damages from extreme weather. Transport demand is linked to economic growth and, in order to reduce GHG emissions in absolute terms, improving the efficiency of the vehicles, switching to zero-emission vehicles (ZEVs), making an optimal use of different modes of transport, or reforming urban transport systems are all avenues to explore in a wider context of reforms for the transport sector considered in this Guide.

An efficient transport sector demands for:

- Public entities to create an enabling environment for businesses, which includes regulating the road transport market in a comprehensive and supportive way. Regulations are often essential that cover driver licensing and behavior, professional competence of key personnel, operators' access to the profession and to the market, vehicles standards, entry into fleet and periodic technical inspection, and operating conditions. The challenge for governments is to create a framework that allows the transport industry to thrive while ensuring that societal needs are met in a sustainable manner.
- Transport operators should continuously adapt and comply with regulations. This adaptation is an important ingredient as governments implement policies and strategies for the development of their countries or regions. Furthermore, with globalization, transport and particularly road transport are key drivers for mobility and trade and indirectly for growth, poverty reduction, and prosperity.

Figure 1. Policy formulation and implementation cycle



The original guiding principles published in 2016 provided a set of basic principles and instruments to effectively reform or modernize road freight transport. These instruments and models drew from concrete experience in various countries and regions with highlights of the strengths and weaknesses of feasible options. Reforms undertaken since, particularly those which applied the guiding principles, provided further lessons that are included in this revised edition.

Like the previous edition, the guiding principles are sets of tools and examples and not a step-by-step road map for reforms. Clearly, there are no "off-the-shelf" solutions applicable in every country and region of the world homogeneously. Countries and regions are different: unique histories, traditions, culture, socio-economic structures, and interests impact the nature and viability of any reforms.

This diversity of situations is the reason this Guide opens with a chapter presenting a framework for the diagnostic of the transport sector that identifies common inefficiencies, their causes and effects, and instruments for the collection of reliable and useful data as a first step for the identification of priority reform areas. Among all the major reforms in transport, reforming road transport services can be the least costly for the public purse, because in a vast majority of countries the sector is private. However, it is always important to acknowledge that reforms can have significant social spillovers. Reforms cannot simply be imposed and automatically implemented and enforced, especially in countries where consultation mechanisms and right of appeal are in place, or where enforcement capacity or willingness are weak. The chapter on the diagnostic stresses that the engagement of the private stakeholders is essential in that phase, and for the reforms to be successful, there needs to be a consensus on both the assessment of the situation and the reform program.

After the diagnostic framework the core elements of road transport services are presented, including main challenges, existing standards, recommendations, and examples. For more details, several examples and annexes are provided that cover specific frameworks or tools described in the different sections.

Since its publication, these principles have been applied in several African countries, mostly in West Africa:

- The Trade Facilitation West Africa program[1] conducted a gap assessment of the transport legislation for four countries: Benin, Mali, Niger, and Senegal.
- A similar gap assessment was conducted for Burkina Faso under a joint program between the European Investment Fund and the United Nations Conference on Trade and Development (UNCTAD).
- The implementing regulations for the transport law of Côte d'Ivoire (LOTI) were developed according to the guiding principles.
- The new transport law enacted in Guinea, and under consideration in Djibouti, are also incorporating the principles.
- The World Bank funded program for the competitiveness of the logistics services in Togo[2] is one of the most comprehensive uses of the guiding principles.

The previous edition of the guiding principles focused on road freight transport reforms, and did not cover road passenger transport services. There are, however, large overlaps in the legal and regulatory framework governing the access to the industry in the two subsectors, and this update acknowledges the commonalities by including principles covering both, either commonly or through parallel sections and chapters. However, the parallelism no longer strictly applies for the access to market.

Each example highlighted in this document should be considered from a specific national and/or regional perspective and adapted, where appropriate, to prevailing circumstances. While accepting reasonable national or regional characteristics, the degree of economic and social integration of countries at the regional or global levels should be carefully considered, as it may call for harmonized, internationally agreed solutions.

Transport is predominantly a service sector which is an input into economic activity or a means to access locations and services. Hence, demand and supply for these services cannot be decoupled from the general social and economic context. In fact, transport can only be fully

1 Funded by the European Union, the Netherlands, and USAID, and co-implemented by World Bank and GiZ, it comprised three components: 1) regional integration instruments, 2) trade facilitation along the main hinterland corridors, and 3) small-scale trade facilitation.

2 For more information on this program, refer to Annex 1.

regulated as part of that general context. However, it is not always recognized at the national or regional levels as an important economic sector, nor as an industry as such. Therefore, one objective of this document is to provide guidance in achieving such recognition through effective and appropriate reforms coordinated and in cooperation with stakeholders.

In general, areas of reform can be readily apparent, though understanding how to do reforms and achieve desired results can be difficult. The timing of reforms must also be carefully considered. Political leaders and other decision-makers are usually only keen when the benefits of reforms exceed costs, and notably if reform:

- comes in combination with other reforms (e.g., fiscal consolidation, poverty reduction, trade facilitation, major infrastructure programs;
- includes compensation for those who will lose as a consequence of changes (and especially so if politics can take credit for that);
- is imposed by the rules of a "club" to which the country wants to become a full member (for example, the EU or the World Trade Organization (WTO)), or by the circumstances (climate change, economic, or financial crisis);
- is well timed in an electoral cycle – either when the decision-makers have a lot of political capital to expend or to gain; and
- benefits a group with political power, and costs are distributed across groups with no veto power (road transport sector is an area with multiple vested interests, due to the short time frame for return on investment).

In setting targets for reforms, governments typically set two objectives that can be pursued separately or concurrently, namely: 1) achieving relative improvement compared to the existing situation; or 2) benchmarking their own performance against that of a better performer in the region or subregion, or against "ideal cases" as defined by best practices.

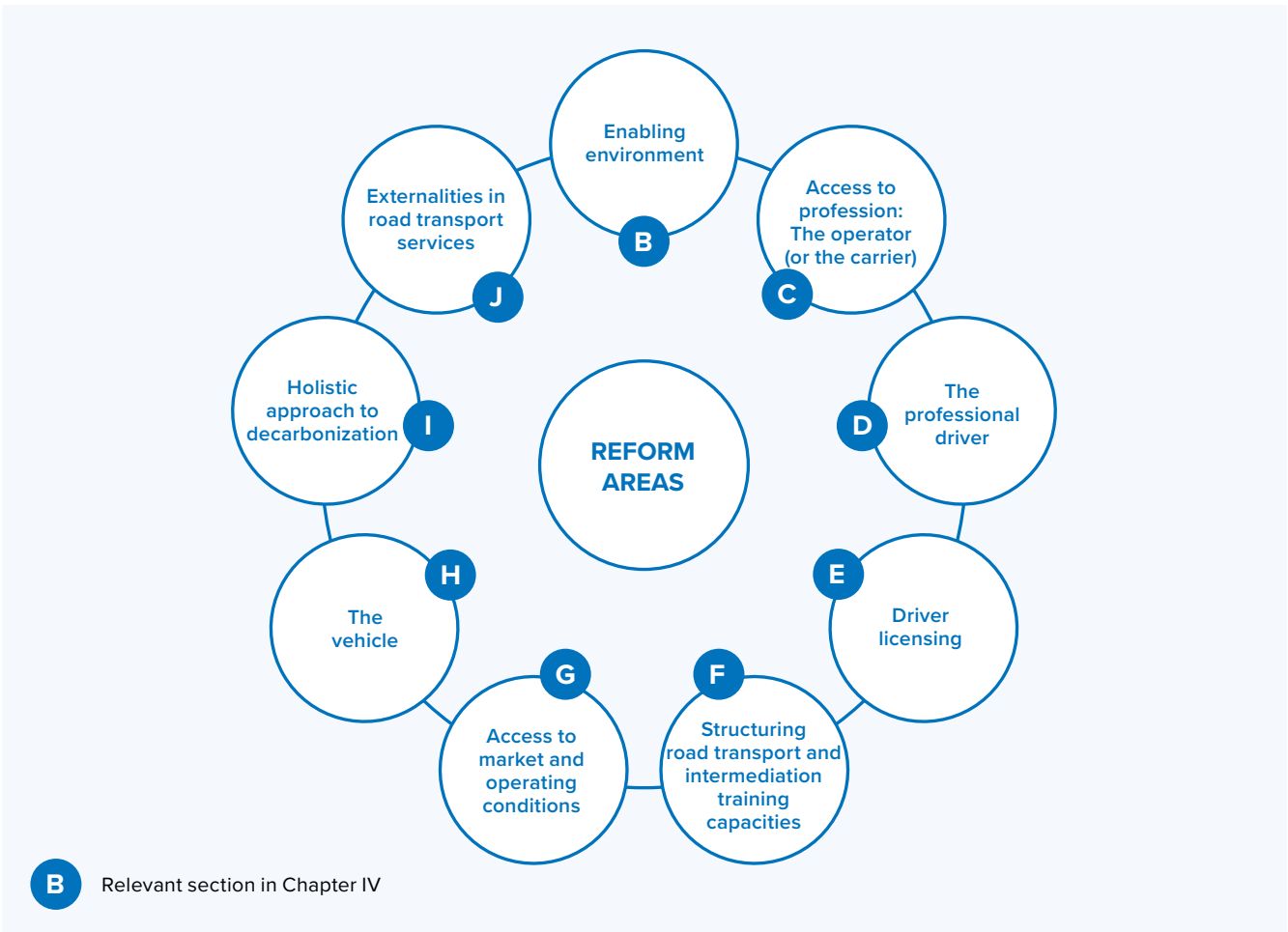
B. Roadmaps for reforms: the multiple readings of the guidelines

In the discussions on potential road transport reforms between the World Bank and countries, road freight transport was sometimes far from the priority. Rather, passenger transport fleet renewal programs, notably for urban transport, ranked high on the list for the transport sector, complemented by vehicle inspection and scrapping schemes, the modernization of transport documents (DL notably), road safety, and motorization management (including electric vehicles (EV)).

This edition of the Guide has been expanded to include, where relevant, these additional topics. Therefore, policy makers and practitioners with a specific interest in a particular topic may not need to read the full Guide. The selected road maps recommending reading specific sections are provided below only to point to the relevant sections.

While countries interested in road freight transport reform will find relevant guidance in all the chapters and sections of the Guide, it is possible to narrow the focus to a subset of chapters and sections. Here are three examples of such subsets:

- **passenger transport;**
- **upgrading the quality of the vehicle fleet;**
- **reforming the drivers' license system.**



1. PASSENGER TRANSPORT

Urban mobility reforms often focus on structuring the market itself, at the metropolitan area level. These programs often involve the development of bus rapid transit (BRT) or light metro services, while restructuring the informal urban transport services.

Several resources already exist on that topic, such as a worldwide overview of the World Bank's approach[3], in the Africa Transport Policy Programme (SSATP) knowledge products,[4] which focus on Africa.

If access to market indeed depends on a specific metropolitan environment, access to the industry, on the contrary, needs to be handled through national policies and reforms. Most sections of the Guide are applicable, and the parts relevant for passenger transport are indicated in the corresponding sections:

- III. Diagnostic of the transport sector.
- IV.B. Enabling environment, for a holistic view of the different components of a reform program.
- IV.C. Access to the profession, and notably the discussion on formalization.
- IV.D. The professional driver.
- IV.H. The vehicle, notably the section on fleet renewal, generally more successful for passenger transport compared to freight.
- IV.I. Holistic approach to decarbonization.
- IV.J. Externalities.

2. UPGRADING THE QUALITY OF THE VEHICLE FLEET

For a country primarily interested in upgrading the quality of its freight or passenger fleet, the recommended path to reform is:

- set standards for the importation of vehicles to control the quality of the entry into fleet.
- upgrade the vehicle inspection system to ensure vehicles under operation maintain quality standards.
- for substandard vehicles, it is important to put in place the facilities to dispose of them in environmentally friendly conditions.

On that foundation, some additional objectives can be added:

- If the operating environment is not a binding constraint, fleet renewal incentives can be developed to accelerate the transition of the vehicle fleet to higher standards.
- It is recommended to orientate the transformation of the vehicle fleet on a lower carbon path.

The recommended chapters are the following:

- III. Diagnostic of the road transport sector.
  There may be inherent factors in the transport sector that prevent carriers from operating higher standards vehicles. If they are not addressed, the effectiveness of the measures to upgrade the quality may fail.
- IV. B. Enabling environment, for a holistic view of the different components of a reform program.
- IV.J. Externalities, notably the section on the environmental cost.
- IV.H. The Vehicle.
  The section on trade and obsolescence contains guidance on policy measures for the entry into fleet, fleet renewal and vehicle scrapping scheme, while the section on technical standards contains guidance on technical inspections.
- IV. I. Holistic approach to decarbonization.

It is important to note that the guidance can apply also to vehicles for individual transport, and not only the transport sector

3. DRIVING LICENSE

Reforming the DL system is also an area that can apply beyond the transport sector and can therefore interest some countries.

The recommended chapters and sections containing the relevant guidance are:

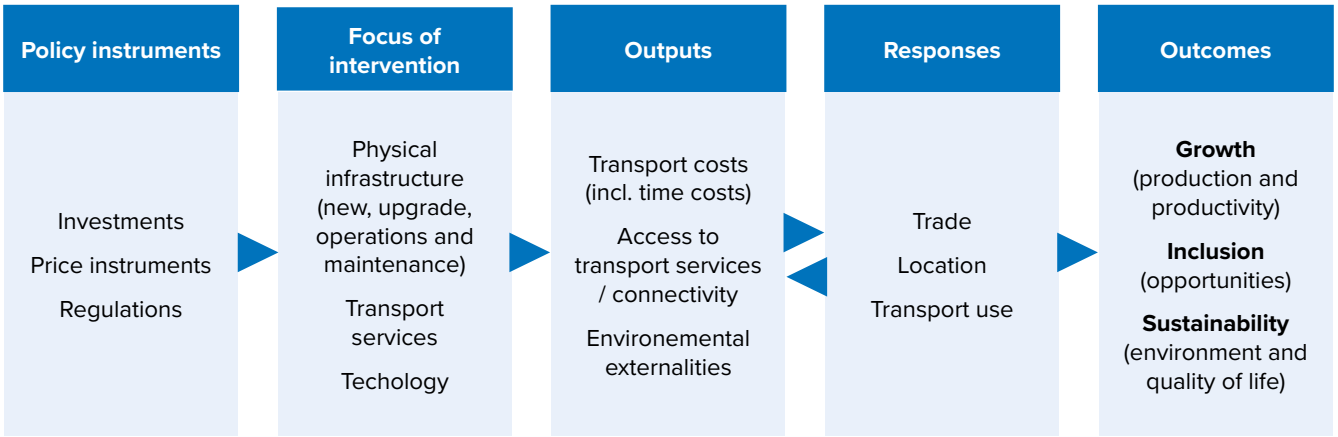
- IV. B. Enabling environment, for a holistic view of the different components of a reform program.
- IV.E. Driving license, which is the substantive section on this topic.
- IV.J. Externalities, notably the section on road safety.

3 World Bank (2024), Promoting Livable Cities by Investing in Urban Mobility.
4 SSATP, "Changing the Pace of Urban Mobility in Africa".

II. Road transport sector and economic development and integration

Figure 2 gives an overview of the existing policy instruments in the transport sector, and the related outputs and potential outcomes of using one or several of the instruments. While these guiding principles cover most of the highlighted elements, they do not discuss physical infrastructure. Technology aspects are discussed in the context of transport decarbonization. Other aspects are extensively covered in other literature and guidance material.

Figure 2. Policy instruments in the transport sector



Source: Berg, Deichmann, Liu, and Selod (2015), Transport Policies and Development, World Bank Policy Research Working Paper No. 7366.

A. Evolution of road transport

The road transport sector is in the middle of a radical transformation as it responds to the global climate emergency and the urgent need to reduce greenhouse gas emissions. It is estimated that the transport sector as a whole contributes 20 percent of such emissions.[5] At the same time, the sector is also harnessing technologies and the possibilities that they offer in terms of service provision, including just-in-time responses to demand. Adapting to these and other changes requires shifts across the board, in terms of vehicle technologies, infrastructure and operating practices by service providers and new policies and regulations. However, current changes are part of an evolution that transport business has experienced since the twentieth century as the road transport sector continuously adapts to shifts in the nature of demand.

Origin

In the first half of the twentieth century, before World War II (WWII), international trade was very limited and dominated by maritime exchanges, while domestic trade was essentially local and required little movement. Thus, the road transport sector mainly developed in the form of individual undertakings to serve local markets while the railway network, in particular in North America and Europe, started to develop and expand to serve long-distance international routes as far as goods transport was concerned. After WWII, the need for reconstruction created a new demand for the international exchange of goods, which in nearly all regions of the world, but especially in Europe, depended on road transport. Road transport had to adapt to the evolution in market exchanges and the need for local movement and long-distance transportation. The flexibility of the road transport sector, its ability to ensure door-to-door transport and its cost-effectiveness allowed the sector to gain a significant share of the transport market compared to other modes. Indeed, road transport is a part of most supply chains, at the very least always providing first- and last-mile connectivity. The evolution was particularly noticeable in countries with an important tradition in maritime trade, where freight forwarding activities first emerged and transport companies developed as a core element of value-adding logistics services. Today, road transport services are an integral part of modern value chains involved in assembling and production, as well as the distribution phases undertaken by logistics providers.

Whereas the twentieth century was an era of global value chains, the second decade of the twenty-first century is experiencing recurring shocks to the global trading system. The COVID-19 pandemic, trade tensions, and recent conflicts in some parts of the world are causing a reorganization of trading relationships and patterns and therefore, that have the potential to significantly impact the demand for all transport, but especially that of road transport. First, tariffs and trade restrictions can reduce overall trade volumes between countries, directly decreasing the need to move goods across borders via road between specific trading partners. Second, the tensions disrupt global supply chains, potentially leading to delays, bottlenecks, and increased costs, potentially reducing demand for road transport in certain sectors. Furthermore, trade tensions are forcing companies to re-evaluate their supply chains, potentially shifting trade patterns. This may decrease the demand for road transport on certain routes while increasing it on others. Conversely, tensions can incentivize shippers to reshore production or nearshore to nearby countries, increasing the demand for domestic or regional road transport. Finally, as firms seek to diversify their supply chains and reduce reliance on distant suppliers, regional trade may increase, leading to a higher demand for road transport within specific regions. Therefore, road transport has to be agile and, by its nature, is faster than other modes in responding to shifts in its demand.

However, changes in demand have consequences on the structure of the road transport sector: the undertakings offering regional and global services are increasingly concentrating their activities on other aspects of the logistics and spending less and less on purely transport activities. The road transport sector is characterized by distinct market segmentation, with large players and freight integrators often contracting with clients and subcontracting the physical movement of goods to smaller transport companies. As a result, they often contract with their clients global logistics services, including transport, and then subcontract the carriage (physical movement of goods) to road transport companies. In many markets, the road transport sector is consistent with the 80/20 rule: 20 percent of road transport companies employ more than ten people each and realize 80 percent of the turnover; and 80 percent of companies employ less than ten people each and realize only 20 percent of the turnover of the sector.

5 Lawrence, and Bullock (2022), The Role of Rail in Decarbonizing Transport in Developing Countries. Mobility and Transport Connectivity Series, World Bank.

B. Own-account transport

In parallel to the above general evolution, in the 1950s big industries in developed economies, especially those in the chemical, oil, and construction business, faced with the atomization of the road transport sector, developed in-house transport capabilities that were integrated within their companies. In contrast to reliance on commercial transport (also designated as "public," "for hire" or "for reward"), own-account transport implies that the shippers of goods own their fleets of vehicles and employ their own crews dedicated to transport of their goods.

Own-account transportation became very popular in developed economies up to the early 1970s and led to a decrease in the market share of the commercial road transport sector because through this operating mechanism industrialists were ensured the complete control over their transport activities from the economic, social, and safety and security perspective. While this was not the most efficient way of moving goods (raw materials or finished products) – because vehicles were often only loaded one way, and vehicles and drivers incurred costs for the company even when there was no freight to carry – industrialists still preferred own-account transportation due to the control it provided them. However, with deregulation in many countries,[6] the transport industry responded with the development of professional services by the specialized transport operators, reducing the importance of, and need to resort to, own-account transport. Third party–provided services tended to offer more cost efficiency and were reliable.

In recent times, however, a reverse evolution has taken place, especially in emerging economies and in developing countries. Faced with a poorly organized and unreliable commercial road transport sector, some firms often establish their own internal transport services to ensure control over their logistics chains. In some countries such as Bangladesh[7] and Côte d'Ivoire, own-account transport activity may be larger than the commercial ones in terms of employment, number of companies, and tonnage transported. The shippers in Bangladesh and other middle-income countries are mainly emerging manufacturers of industrial products – such as garments, cement, and construction – but also importers of raw products. Their production cycles increasingly depend on the timely supply of basic products, and they therefore look to fully control the transport component of their logistics chains by developing in-house transport capacity. This practice is not only common to low-income countries but is found also in some upper income economies. For example, in 2023, own-account operators in Greece, who primarily use their vehicles to transport their own goods, account for over 59 percent of tonnes loaded.

Another reason why own-account transport may become predominant is that in some countries this activity is less strictly regulated than commercial transport. In countries with weak enforcement capacity this may encourage transport operators to register as own-account carriers while still performing commercial activities. Such practices can be counterproductive, mainly because they can significantly distort competition, with negative effects on service quality and safety. Consequently, it can be reasonably expected that, through appropriate modernization and reform of the road transport sector, with the improvement of professionalism and efficiency, this type of own-account transportation will decrease in favor of commercial transport.

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6 See Stojanović (2017). "Road Freight Transport Outsourcing Trend in Europe – What Do We Really Know About It?", Transportation Research Procedia, 25: 772–793.

7 Lebrand, Herrera Dappe, Weisskopf, and Kunaka (2020), Moving Forward: Connectivity and Logistics to Sustain Bangladesh's Success, World Bank.

C. Road transport role in economic development and integration

Road transport is a key contributor to economic development and integration. Its flexibility and capabilities make it indispensable to development strategies and integration processes. In all regions, it is a main enabler of integration through well-connected infrastructure and extensive service integration. This trend is increasingly being recognized and incorporated into development strategies worldwide. For example, in the European Union, road transport is a main enabler of integration both through well-connected infrastructure and by extensive integration of services. In other regions, governments, development agencies, and international financial institutions are increasingly taking into consideration in their financing and support programs, the adjustment, or modernization of the road transport services sector, without which the objectives of economic development and integration may not be fully attained.

This is a change from the past when a vast majority of government policies and programs mainly focused on the development of transport infrastructure. However, there has been a marked shift towards modernizing transport services. Governments and international financial institutions now recognize that efficient, safe, clean, and sustainable road transport requires attention to the industry's legal and commercial environment, not just infrastructure. While infrastructure building and development is crucial, modernizing the road transport services is critical to ensure the efficient use of the infrastructure, thereby maximizing the value to the investments.

A major reason why road transport has come to the fore of policy discussions is its contribution to greenhouse gas emissions. The transport sector is estimated to contribute about 20 percent of global emissions. As such, it is not surprising that transport, and especially road transport is included in countries' nationally determined contributions under the Paris Agreement. In fact, the Organisation of Economic Co-operation and Development's (OECD) nationally determined contributions (NDC) tracker shows that almost all (98 percent) of countries mention transport and a third of them have carbon dioxide emission-reduction targets.[8]

Part of implementing measures to reduce GHG emissions is the necessity of a shift away from road transport. Road transport accounts for approximately 23 percent of global transport-related GHG emissions. To reduce emissions, it is crucial to enhance energy efficiencies and take advantage of modal cooperation to ease a shift toward cleaner energies. Such approaches would not only reduce emissions but also promote healthier and more equitable communities. Transformative changes in road transport policies and infrastructure are therefore essential to achieve long-term climate goals and ensure a resilient and sustainable future.

Road transport also has an important social dimension through the opportunities it offers for entrepreneurship and job creation. The sector continues to play a crucial role in upward mobility, especially in developing countries and emerging economies, where becoming a carrier or road transport operator is a common step towards entrepreneurship – for example, allowing professional drivers to become entrepreneurs and create their own business, developing it as a small or medium-size company. This upward mobility effect is still very appropriate in developing countries and emerging economies were becoming a carrier or a road transport operator is a step to entrepreneurship.

In general, road transport can create a significant number of jobs. At a minimum, direct employment consists of professional drivers and managers/owners of small companies. For more robust entities, it also consists of administrative and commercial staff, as well as technicians and maintenance workers. A recent study in East Africa found that there were 1.2 jobs for each truck on the road. In addition to direct employment, the sector generates a significant number of indirect jobs and employment. These include various transport-related activities, such as infrastructure building, maintenance, fuel stations, secured parking, cold chain storage, warehouses, and repair/maintenance services.

8 ITF, "How Serious are Countries about Decarbonising Transport?".

The indirect employment includes various transport-related activities such as infrastructure building and maintenance in areas dedicated to road transport services (fuel stations, secured parking, cold chain storage, warehouses, and repair/maintenance activities), rescue and emergency services, forwarding and brokerage, vehicle manufacturers, and specialized insurance businesses.

While reliable data are often not available to determine exactly the "weight" of the sector in an economy, ILO data suggest that employment in road transport can reach 5 percent of total employment (Table 1).

Adequate infrastructure ensures the physical connectivity between regions and countries, but road transport services play the key role in effectively connecting people and businesses, and in unlocking economic potential. It is therefore essential that all development policies and strategies include actions to provide cost-effective transport access in order to enhance social and administrative cohesion at country and regional levels.

III. Diagnostic of the road transport sector

Chapter summary
The first step in any reform effort is to correctly identify the issues that need to be addressed, by untangling symptoms from roots causes. In this regard, information is key. However, data is often scarce, particularly in lower-income economies, and appropriate diagnostic tools are needed to generate reliable data, which will then be transformed into information with the assistance of the transport stakeholders. Once issues have been identified, it is critical to engage all stakeholders and collectively prioritize them and define an action plan for the reform.

This chapter first identifies the main stakeholders that need to be involved in the diagnosis, for both the public regulatory and enforcement agencies and the private logistics and trade actors. Then, the chapter outlines common issues that affect the efficiency and sustainability of the road transport sector in lower- and middle-income countries, and their underlying causes. Finally, it presents the recommended process and instruments to assess the scale of a specific issue identified, as well as describe some mechanisms developed at the international, regional, and national levels to assist governments in improving the monitoring and governance of the road transport sector.

The key messages from this chapter are that engaging the stakeholders early, associating them in the diagnostic and the reform program to address the problems, is a critical factor of success.

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A. Stakeholder mapping

Any modernization or reform process requires identification of the key stakeholders, their mission, and role, and how they are structured and related to each other, in order to establish how they will be impacted, and which influence they may have on the process. This brief inventory of stakeholders is not exhaustive; it includes the categories that are generally playing directly or indirectly the most significant roles in road transport services and would therefore be affected by reform measures. At the same time, these categories would most likely be the main contributors to the success of the reform, if they were properly empowered.

1. MAIN PUBLIC SECTOR STAKEHOLDERS

The main public sector stakeholders in road transport services are the regulatory and enforcing authorities and services providers. Road transport sector falls under the scope of activity of a transport line ministry, often combined with public works under a broader ministry of infrastructure. Under the supervision of the line minister, a general directorate is typically mandated to administer the inland transport sector which itself disposes of a general directorate for the road transport sector.

The activities carried out by the line ministry cannot be conducted in isolation, and require appropriate inter-ministerial coordination and cooperation, in particular with:

- the ministry in charge of legal and regulatory aspects;
- the ministry in charge of financial, taxation and customs issues;
- the ministry in charge of economic and trade affairs;
- the ministry in charge of bilateral and international affairs;
- the ministry in charge of control and enforcement;
- the ministry in charge of technical aspects and certification and control purposes;
- the ministry in charge of education and higher education for training (initial and vocational) and recognition of diplomas;
- the ministry in charge of social aspects (social rules, retirement, social security, public health);
- the ministry in charge of public works for infrastructure if independent from transport;
- the ministry in charge of energy; and
- the ministry in charge of development programs and policies.

In some countries, there is a separation between the regulatory functions and the implementation and enforcement functions, with the establishment of specialized public agencies (ANaTT in Benin, for example). In addi-

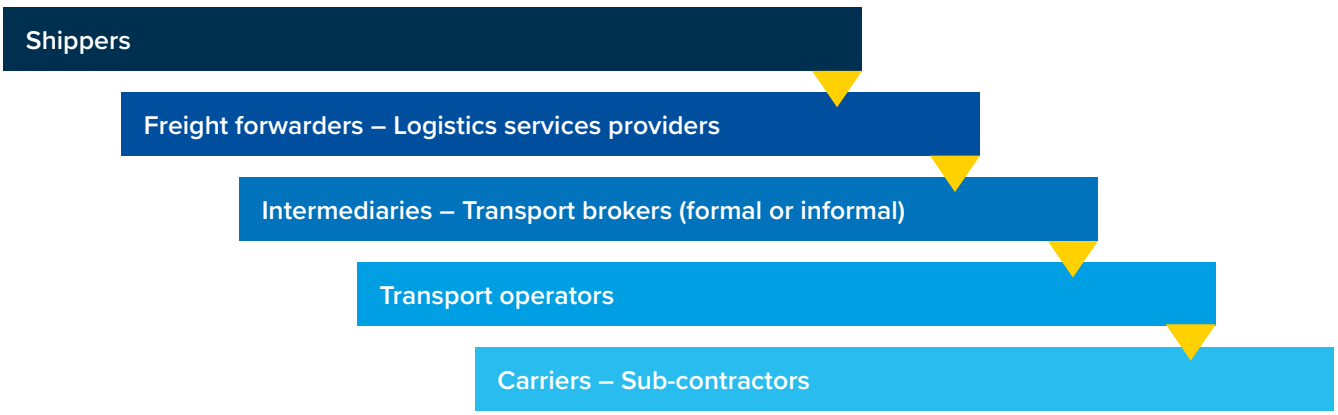
tion, specific public services are sometimes subcontracted to private entities (vehicle inspection, administering issuance of administrative titles).

2. ROAD FREIGHT TRANSPORT STAKEHOLDERS

As described in the introduction, the evolution of the logistics services is such that logistics services providers, in a wide sense, are part of a complex chain of actors, who should be included. It is therefore useful to identify the main stakeholders of road transport services and to highlight their primary functions within the sector.

- **Carriers and transport operators:** the road transport industry is not monolithic: highly professional operators coexist and compete on unequal grounds with informal operators that are often characterized by poor operations, low compliance with regulations, and aging and dilapidated vehicles. There is equally a large diversity on the scope of transport and logistics services offered, from large traders and industries that have integrated their own logistics to informal operators providing only transport services, often as subcontractors of a main carrier.
- **Intermediaries – Transport brokers:** Freight brokerage has emerged in some regions of the world, where a broker's role is to match supply and demand, i.e., find road transport operators to carry the goods for a client (sender/shipper). Often, the profession is informal (for example, they are known as coxers in West Africa) and their role is not recorded on the transport documents. They may also fulfill other tasks, for example filling in transport and customs documents on behalf of the carrier at inland border crossings. This function is increasingly superseded by online freight exchanges.
- **Freight forwarders – Logistics services providers:** their primary role is organizing transport, processing documentation and customs procedures, coordinating intermodal trips, groupage, etc. This is also a diverse group, ranging from international logistics companies, sometimes tied to shipping lines, to local small and medium-sized enterprises (SMEs).
- **Shippers: Senders/shippers/consignors and receivers/consignees** are key clients and commercial partners for the road transport and logistics operators. However, this client/provider relationship between a road transport operator and its contractual partner is often asymmetric, with the market power clearly on the side of the transport demand.
- **Semi-governmental institutions:** in addition to economic actors, various institutions are involved in the transport sector, issuing transport documents or playing a more active role in matching transport capacity and demand. Examples include Chambers of Commerce handling registration of carriers, shippers' councils and freight bureaus issuing consignment notes. Depending on the administrative environment, these institutions can be either public agencies under the Ministry of Transport, or private-sector led.
- **Transport sector associations:** the predisposition to form associative structures is cultural and may depend on the political regime (if such associations are permitted) or the economic model of the country (socialist, capitalist). Furthermore, in countries where road transport operators are grouped into several professional

Figure 3. Stakeholders for the road freight sector



associations, they often compete to the detriment of the collective interest of operators, who should be represented in the dialogue and the decision-making process. On the bright side, recent years have seen the emergence of umbrella bodies federating multiple associations, better suited to defend and promote the professional interest of the sector in relation to public administration, government, and transport users and other economic sectors. Some of the federal associations can be at a regional level. An example of such a structure is the Federation of Eastern and Southern Africa Road Transport Associations (FESARTA),[9] which is a grouping of associations of several countries in Eastern and Southern Africa.

- **Professional Drivers associations:** truck drivers have also formed to negotiate with their employers on labor conditions, wages, etc., and to defend their members against harassment by law enforcement agents.
- **Other transport mode operators:** in some situations, actions by players in other modes of transport may also influence the quality of road transport services. It is the case for maritime companies, especially for containerized cargo, which, in the framework of a direct transport contract (direct bill of lading), may also be in charge of the organization of the transport from the place of loading until the final place of destination, which would include the pre- and post-maritime transport legs. In such cases, the maritime companies become the clients of the road transport operator realizing that leg.

3. PASSENGER TRANSPORT STAKEHOLDERS

The diversity of operator types that exist in the freight subsector, where large industrial or trading groups can operate a large fleet of modern vehicles on own-account, as opposed to informal operators, is equally prevalent in the passenger transport sector, where the para-transit operators coexist with modern BRTs. This situation is prevailing in some developing countries or countries in transition.

Furthermore, in terms of passenger transport, a clear distinction must be made between urban transport and interurban and international transport. In urban transport, operators are 1) structured companies, (often public or semi-public) that operate urban transport networks; 2) smaller organizations that are assigned urban or suburban lines and operate smaller vehicles (minibuses); 3) taxis; or even 4) tricycles or motorcycle taxis. In addition to the transporters and drivers involved in this type of transport, there are usually touts on board the vehicles who are responsible for collecting the ticket price and for directing or attracting potential customers at more or less formal pick-up locations.

In **interurban and international transport**, operators are much more formal and structured and operate either from their own departure stations (private stations) or from public stations, which have a specific role.

The road transport stakeholders involved in interurban and international passenger's road transport are generally:

- **Transport operators:** it is often a formal actor who takes charge of passengers to transport them with their luggage from one point to another according to a regularity and displayed prices.
- **Transport intermediaries and travel agents:** Their role is to market transport tickets and sometimes packages that include transport, accommodation, excursions, etc. In many countries, travel agencies are governed by their own regulations, specific to those of the freight forwarder in the transport of goods. But in many others, they operate with no real status or precise system of responsibility.
- **Road stations managers (gares routières):** The role of public bus stations is to welcome operators and provide them with logistical services (parking, workshops, ticketing, etc.), and to welcome passengers by offering waiting areas, toilets, catering, etc. When passenger transport is organized from public bus stations, the bus station itself and its representatives (station manager, line managers) become transport actors whose intervention is remunerated by a commission on the tickets sold, or by a retrocession by the carriers.
- **Transport sector associations:** as per goods transport.
- **Professional drivers' associations:** as per goods transport.
- **Consumer associations:** Consumer associations, where they exist, are important actors representing civil society and users of interurban and international transport, and are often involved in subsectoral discussions to assert consumer interests in the organization and delivery of passenger transport services.

9 FESARTA (2019), Business Brochure.

B. What are the typical challenges of the road transport industry?

In many lower- and middle-income economies, road transport is a paradoxical sector, which combines high transport prices with insufficient revenue for the carriers; a very atomized sector which should be competitive and at the same often considered as controlled by cartels or intermediaries; and imprecise and limited regulatory framework but still a low level of compliance which opens the door for predatory practices from enforcement agencies. This accumulation of contrasts translates into high prices for a service that is often unreliable and unpredictable, with negative consequences for the traders and industries for which transport is a vital input.

Dysfunctions in the road transport sector can take various forms and, depending on the specific circumstances in a given country or region, the causality links between causes, symptoms, and impact can flow differ. Typically, for the road freight industry, the set of red flags could be represented as in Figure 4.

The red flags that could trigger the need for reforms are either linked to economic factors (high costs for transport preventing economic development) or to environmental and societal factors (emissions and notably GHG, safety, prevalent corruption).

1. HIGH PRICES BUT INSUFFICIENT REVENUE FOR THE CARRIERS

International comparisons for a full truckload per kilometer show that transport prices in emerging and developing economies are higher than in the developed world. However, most transport operators are not profitable due to low utilization of the assets.

In this example drawn from West Africa, round trip direct voyage costs versus revenue shows that the gross trip margin, which is expected to cover overheads (support and management staff, offices, taxes, and license fees) and the amortizing of the vehicle is minimal. This situation is not atypical, as fuel represents a high percentage of vehicle operating costs. What is not typical, is that in many lower- and middle-income countries, the turnaround time of the trucks is abnormally high, both the loaded time, and the wait until the next load.

Provided operators manage a large fleet of vehicles, part of them being therefore fully amortized, and achieve enough roundtrips per year per vehicle, this ratio could be manageable.

Figure 4. Causes, symptoms and impacts of dysfunctions in the transport sector

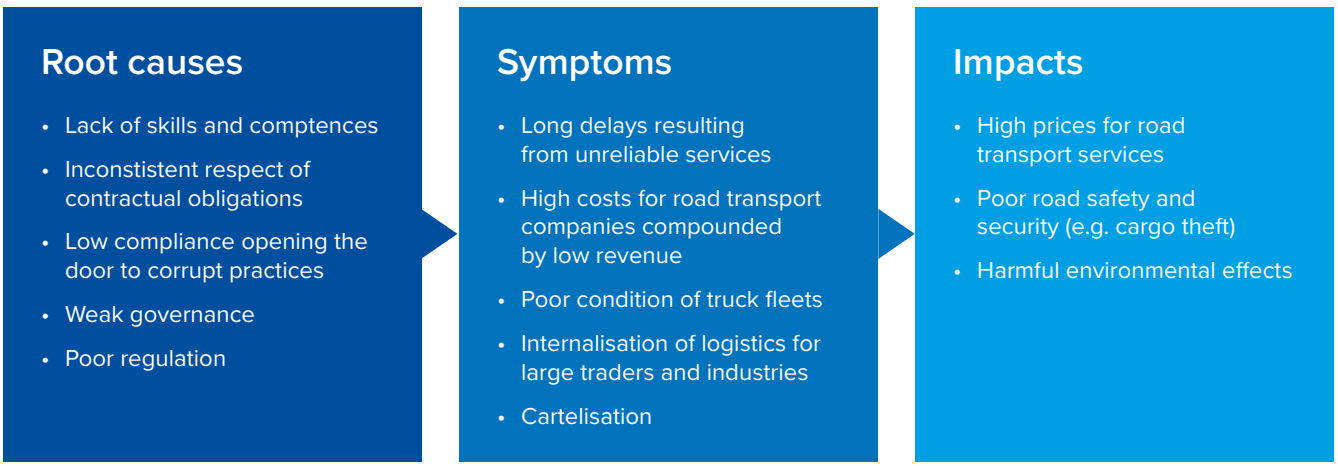


Table 1. Truck operation per round trip Abidjan-Ouagadougou-Abidjan (2019)

COMPONENT	DETAIL	AMOUNT (USD)
Revenue / trip		**2'700**
• Fuel	1'300 litres for –f round trip at 600 FCFA (US$1)/liter	1'300
• Tires	Tires to be changed every 30'000 km	380
• Trip expenses	Based on allowance of USD 8/day on 40 days round trip	320
• Lubricants and filtres	Oil and filter changed every four round trips, plus labor	100
Total VOC		**2'100**
Gross operating margin	Unlikely to cover fixed costs and generate some profit	**600**

Source: World Bank's project preparation team (2019)

However, available information for West Africa points to the contrary: the majority of operators own at most two vehicles, and the number of round trips per year is even lower than the most pessimistic estimates, with a median of four to six trips per year.

2. OBSOLESCENCE OF FLEETS

In many emerging and developing countries, commercial vehicle fleets are often obsolete or not properly maintained. They are unreliable and generate relatively high amounts of pollution and are unsafe. In some instances, the legislation does not provide for mandatory regular technical inspection; and often, the rules on weights and dimensions are not enforced. This results in inefficient operation (because of frequent breakdowns), high costs for both maintenance and fuel consumption, a risk for the safety on the roads, increased pollution, and a limitation of the access to the market (e.g., the shipper would not allow its just-in-time cargo to be loaded on an unreliable truck, notably petroleum distribution companies).

There is, however, a minority of commercial vehicles that are new and in good condition, usually operated by larger formal operators or traders and industries that have internalized their own logistics. The prevalence of own-account transport in West Africa is such that commercial operators are often relegated to the least profitable segments of the market, worsening an already precarious situation.

The condition of the trucks is indeed a consequence of the lack of profitability of smaller and informal operators than cannot invest into new vehicles and are forced to acquire or import vehicles that are already well beyond their regular operating lifespan.

3. INDUSTRY ATOMIZATION AND POOR REPRESENTATION

One of the common characteristics of the road transport sector throughout the developing world in particular, with few exceptions, is its atomization. The high number of small and medium-size operators brings to the sector a flexibility that is increasingly needed in globalized economies. Atomization reinforces individual entrepreneurship which contributes to social upward mobility. However, these small economic entities often encounter difficulties to capitalize themselves, to act as independent economic actors, and to develop profitable and sustainable commercial approaches. These factors could weaken the entire industry and jeopardize its ability to provide increasingly sophisticated services. The dispersion of the profession also provides an opening for informal practices, thereby weakening even more the sustainability of the sector.

As noted earlier, one consequence of the atomization of the road transport sector is the absence of a solid professional representation in most emerging economies. Individual or very small transport operators have managed to create a multitude of small associations, syndicates, or trade unions with local coverage and membership disconnected from public–private dialogue. However, in some countries these small local syndicates/trade unions intervene in market operations, for example by penetrating the freight distribution and imposing freight allocation mechanisms such as tour de rôle (queuing system), in which freight is allocated preferentially to the members of the respective syndicate or trade union. Such involvement can distort the market and have a negative effect on the commercial activities that should be performed by the operators on a level playing field.

4. INFORMALITY DUE TO INADEQUATE, MISSING, OR NOT ENFORCED REGULATIONS

In many parts of the world and in particular in emerging and developing economies, the expansion of the road transport sector was not constrained by qualitative criteria for entry on the legal form for the operators, the level of skills required, or the characteristics of the assets. In the absence of transitional and accompanying measures, the bulk of the growth of the road transport sector has often been dominated by small-scale informal operators. With unclear regulations, compliance is often low or left at the discretion of law enforcement, opening the door for predatory practices and bribery.

5. SKILLS SHORTAGE

Professional capacity is one of the key factors for efficiency, safety, and security of transport operations at all levels. A good driver is the result of a combination of personal skills and training. There are still countries where the professional DL for road transport (freight and passengers) is obtained without any specific training in complementary professional skills required beyond driving. But a good driver is not enough for a transport operation to be efficient, it requires also skilled management and planning. In many countries in the developing world, there is no specific training for transport managers or accredited institutions to provide such training. The low level of skills in the industry is compounded with an aging population and limited renewal – a relatively recent problem in many countries causing a shortage of truck drivers as the profession is not seen as attractive as it used to be (wages too low compared to the number of conditions to comply with, as well as lack of rules for resting time, insurance cover of drivers, or simply recognition).

6. UNBALANCED GENDER REPRESENTATION

The sector is exploring strategies to attract a more diverse pool of qualified drivers. Recognizing the untapped potential of women in the workforce, a concerted effort has emerged to encourage greater female participation in the transport industry.

Despite these efforts, gender disparities remain striking. Globally, less than 13 percent of transport workers were women in 2021, according to the International Labour Organization (ILO). In the European Union, women comprised 22 percent of transport workers in 2017, yet only 14 percent worked in ground transport – far behind sectors like maritime (20 percent) and aviation (40 percent). The figures are even more concerning for truck drivers, where women represent just 6 percent or less in most regions, as reported in IRU's latest driver shortage study. Similarly, the passenger transport sector fares little better, with women making up only 16 percent of Europe's bus and coach drivers.

The lack of gender diversity is exacerbated by several barriers. According to the ILO, a combination of societal norms, family obligations, limited access to education, employment discrimination, and inadequate training opportunities limits women's interest in transport jobs. Stereotypical perceptions of women's roles in the workforce further deter them from considering careers in this traditionally male-dominated industry.

Retention presents another challenge. Harsh working conditions, insufficient training, and limited professional development opportunities make it difficult for women to build long-term careers in transport. These issues are compounded by a lack of work–life balance, which often pushes women to leave the sector.

7. ROAD SAFETY

According to the World Health Organization (WHO), around 1.19 million people die every year because of road traffic crashes – disproportionately more in lower- and middle-income countries, despite lower motorization levels.[10] Road safety data for crashes involving trucks or passenger transport buses is not systematically collected or published. The United States is publishing statistics for crashes involving large trucks and buses,[11] and the latest year available is 2021. Over the period 1975-2021, the large trucks and buses fleet fluctuated between 3.6 percent and 5.2 percent of the total vehicle fleet, but between 10.3 percent and 13.5 percent of the crashes, and

10 WHO (2013), "Road Traffic Injuries".
11 FMCSA, "Large Trucks and Bus Crash Facts".

between 10.8 percent and 14.1 percent of the fatalities. The statistics do not disaggregate distance traveled per type of vehicle, and it is logical to expect commercial vehicles to travel more than individual vehicles, which could partly explain the difference. Information on the causes is also not easily available, and human behavior is the most common factor. For countries where the vehicle fleet is dilapidated, vehicle failure could probably represent a higher factor, but crashes reports are often insufficiently detailed.[12] It remains, however, that road safety is a serious concern for the road transport industry. Safe driving training for the drivers, and proper maintenance of the vehicle are two key areas where the industry can improve road safety for all road users.

12 Edwards, and Hemans (2017), Client Project Report CPR4177: Relationship Between Vehicle Defects Checked in Roadworthiness Inspections and Those Identified in Collision Analyses, TRL.

C. Identifying priorities for reform

There is most likely no country in the world without potential for improving the performance of the road transport services. However, identifying what needs to be adjusted and how is a difficult process because opinions differ on causes, symptoms and impacts, and stakeholders have varying degrees of vested interests either in the status quo or in pushing the reforms in specific directions.

There must be a logical process to diagnose the main issues, build a consensus on this diagnostic, prioritize what needs to be achieved and design effective interventions (Figure 5).

In order to successfully address one or several of the typical challenges faced by the transport sector developed above, policy makers must determine their scale and urgency, their underlying causes, and the role of the different actors involved. Gathering solid and reliable data is crucial. In some cases, the level of detail of the national road transport data collected might be sufficient to set priorities and design effective policy interventions and monitor changes. However, in many cases (and especially in absence of reliable national or regional transport data collection mechanisms) it is useful or even critical to collect primary data.

1. STEP 1: IDENTIFICATION OF THE FOCUS AREAS

Ideally, policy and decision-makers regularly interact with transport operators or their associations, receive feedback from customs and police departments and representatives of the chamber of commerce, or receive complaints from shippers and the population at large (e.g., about high transport prices, congestion, pollution, etc.). However, the resulting assessment of the situation can easily be biased by several factors:

- Some groups are better organized than others to reach o ut to policy makers to forward their sectoral interests.
- Often, problems are of an anecdotal nature, i.e. refer to a specific instance, and are not systemic, which can lead to overestimating the prevalence of some issued and overlook completely other which are more fundamental (a typical example is the issue of roadblocks on African corridors, which has far less impact than other problems).

To avoid bias, a more systematic approach is recommended, gathering feedback and issues on a comprehensive checklist of areas to investigate (Figure 6).

Figure 5. Steps to understand and address the key issues in the transport sector

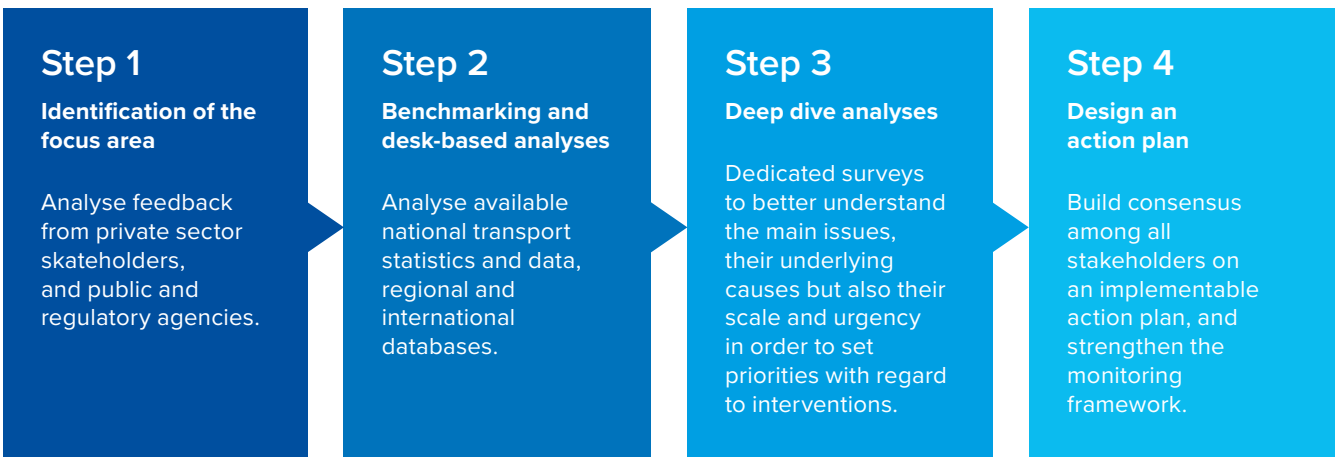
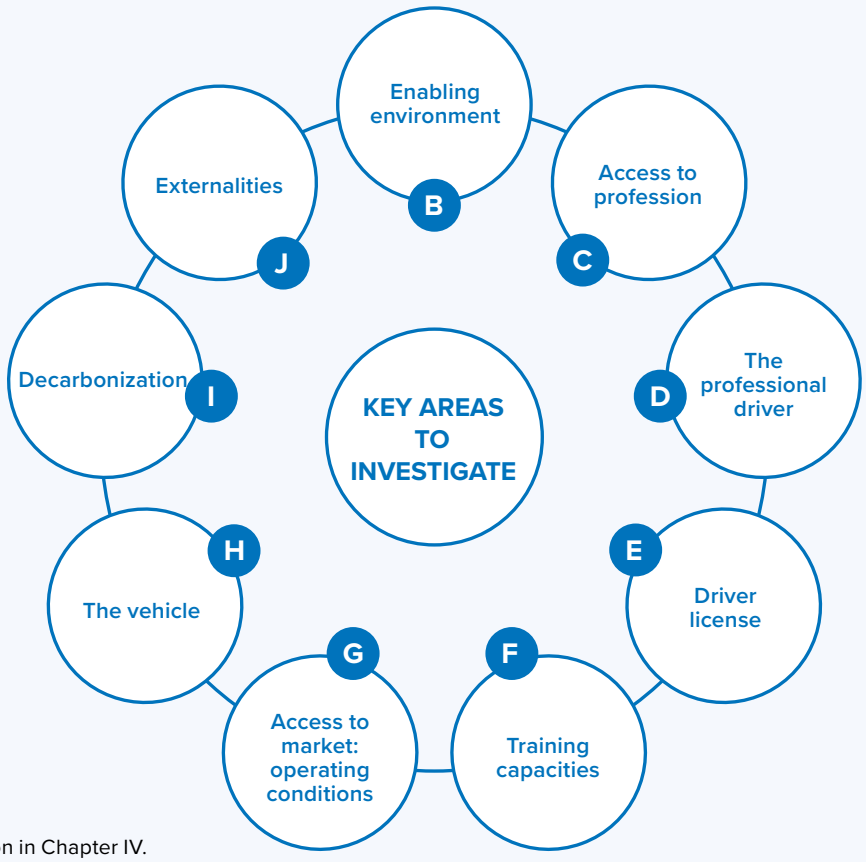


Figure 6. Checklist of focus areas for the diagnostic



B Relevant section in Chapter IV.

2. STEP 2: DESK-BASED ANALYSIS AND BENCHMARK

To carry out an appropriate sectoral diagnostic, various tools are available at the national, regional, and international levels. For an assessment of the road transport sector, a thorough analysis of the available data sources (and their timeliness and quality) on each of these levels should be carried out. It is recommended in the first place to look for national and international road transport statistics and data.

Governments may be faced with a variety of situations as far as diagnostic tools, statistics, and data collection are concerned. In many developing countries the lack of reliable and up-to-date data and statistics has been identified as a clear obstacle to development because it impedes decision-makers from properly evaluating the situation and assessing the needs. This could render any reform or modernization either inappropriate or insufficient to address the real needs and effectively contribute to progress as data is needed to assess progress towards goals. Indeed, some countries may be in any of the following situations:

- Lack appropriate systems for data collection. Systems may exist but present issues with harmonized methodologies, scope, relevance, or accuracy.
- There is a National Statistical Office but it does not systematically gather data on the transport sector.
- The statistics agency has not adopted a consolidated approach to economic and sectoral statistics and data collection throughout the various ministries.

The preliminary analysis of existing national and international datasets can give indications on the core issues, their causes, and scale. The governments may deem this information sufficient to conduct the necessary analysis and undertake certain remedial interventions, but it is recommended to collect additional data in order to better understand the scale and urgency of the existing issues and prioritize interventions. The collection of additional data would help set an accurate baseline to measure progress towards specific objectives.

International datasets are useful to contextualize the situation of a given country and benchmark against peers and best performers. Almost all the countries in the world are covered in international studies or reports. In general, these global or regional reports evaluate the performance of each country or group of countries, and they provide either a full set of information and data, or a ranking of countries' performance in the area of interest. Consulting those data may contribute to a better understanding of where the country stands in terms of its performance.

A few examples of relevant reports or databases that can be accessed by governments envisaging a reform of road transport services are the World Bank's Logistics Performance Index[13] and the WHO's Global status report on road safety[14].

Inventory of common information sources on the transport sector

Even in low data environment, multiple sources can be used to extract information on the performances of the transport sector:

- **Transport capacity.** The vehicle registration database is an excellent starting point to assess the characteristics of the vehicle fleet. Beyond the vehicle type (bus, tractor, truck, trailer, etc.) and capacity (gross combination weight (GCW) or number of seats), most databases include a flag if the vehicle is used for private (which includes own-account) or commercial use. A combination of the age at first registration and the year of manufacture provides an indication of the acquisition patterns of the operators, while the identity of the owner can provide insight on its activity sector.
- **Vehicle safety.** Road crashes reporting systems and vehicle inspection provide some level of information on vehicle safety.
- **Structure of the operators.** Informality does not mean operators are not subject to several administrative procedures. Ministries of transport, or a delegated agency or operator, issue transport licenses for the operator, and often transport authorizations for each truck or bus operated.
- **Freight traffic volumes.** Traffic and transport activity is often less frequently available, and in some cases, only a partial view of the transport market is observed. Often, activity needs to be triangulated through indirect means. A direct source is when a consignment note is issued, for example, by a freight bureau or a shippers' council. Sometimes, the coverage is comprehensive, such as in Côte d'Ivoire where any transport, domestic or international, is subject to the issuance of a consignment note. Sometimes, it provides only a partial view of the transport market, when the consignment note is linked to transit transport, as it is the case for the bordereau de suivi du trafic routier (BSTR) issued by the Burkina Faso Shippers Council. Indirect sources comprise tolls and weighbridges. Some weighbridges capture contextual information, beyond axle load and GCW, such as origin, destination, nature of the goods, etc. However, there is a tendency to replace weighbridge with weigh-in-motion (WIM), for example, in Eastern and Southern Africa, and that contextual information can no longer be captured for the trucks that are not stopped.
- **Regulatory framework:** Some of the valuable indices on regulatory environment for road transport services are the OECD and World Bank Services Trade Restrictiveness Indices (STRIs). The two indices offer data on regulatory barriers to services trade, including transport, by quantifying restrictions from 0 (open) to 1 (closed) based on extensive regulatory databases; these indices facilitate policy analysis, benchmarking, and reform identification, revealing persistent global trade barriers, particularly in transport, and highlighting the potential for significant economic gains through liberalization. Passenger volumes. Urban transport volumes are difficult to assess as ticketing is often informal. However, on intercity and international routes, bus stations and bus operators can provide volume information when manifests are imposed by regulations.

13 World Bank (2023), "Logistics Performance Index (LPI)".
14 WHO, "Road Traffic Injuries".

- **Transport prices.** Transport prices are usually common knowledge, either published tariffs for passenger transport, or indicative rates for freight, maintained by transport associations and federations.
- **Energy consumption.** Transportation requires energy, often measured as fuel quantity, to move passengers and cargos on roads. This statistic is already measured by fuel and energy providers to track their performance. Government agencies generally collect such information.

Establishing data collection mechanisms for the transport sector

The inventory of the existing data and its collection mechanisms is an opportunity to establish a more permanent data collection system for the road transport sector. This could require adopting appropriate legislation to strengthen the underlying documents (licenses, consignment notes) containing the desired data, and tasking an agency with collecting and analyzing that data.

On a national level, computerizing the administrative documentation should be the initial step, moving from paper registries to a combination of titles and databases. For vehicle fleet, implementing a motor vehicle information management system (MVIMS) following vehicles through their life cycle (entry into fleet, periodic inspection, end of life) will improve the knowledge of the vehicle fleet and condition. Similarly, computerizing the issuance of transport documents (DL, vehicle registration, transport licenses, truck licenses, passenger bus licenses) will enhance the understanding of the transport operator structure. Finally, computerizing consignment notes will provide information on sector activity.

On a regional level, several systems have been established in Eastern and Southern Africa, monitoring transport and logistics efficiency along key corridors. In 2024, the SSATP published a comparative analysis of three monitoring instruments: the corridor transport observatories (CTOs), the corridor trip monitoring system (CTMS), and the logistics monitoring system (LMS).[15] These systems are based on the use of big data:

- The CTMS analyzes GPS data from around 100,000 trucks throughout Eastern and Southern Africa, providing information on trip times, speeds, and border-crossing time.
- The CTOs are relying heavily on customs data at declaration level to analyze trade flows and measure total delivery time.

The CTOs are particularly interesting, as they combine a large range of instruments and techniques to measure logistics performance across several dimensions (notably time, costs, reliability). CTOs, notably the one established on the Northern Corridor,[16] serving the East Africa countries through the port of Mombasa, combine customs, road agencies, terminal operators, railway, GPS operational data with more traditional surveys, to produce analysis and reports that are the basis for stakeholder engagement on what needs to be done to improve corridor efficiency.

3. STEP 3. DEEP-DIVE ANALYSIS

When the information obtained from existing sources is not sufficiently granular to understand the challenges faced by the sector, targeted surveys on a specific issue might be the best option, and they provide the opportunity to engage stakeholders on the intended reform program. The nature of the survey depends on the country, the type of issue to be addressed, and available resources. In some countries, the absence or lack of appropriate legislation, data collection mechanisms and institutions organized at state levels could make the survey the only option to obtain enough data on an issue.

Some points to consider when designing a survey are the following:

- **The target of the survey and the sample size.** Is the intent to survey all existing carriers, or to focus on the specific type of operator (informal operators versus medium- to large-scale versus own-account) or segment of the market (commodity based, or domestic versus international for freight and urban versus intercity for passengers)?
- **The drafting of the questionnaire.** The best solution is to associate operators and their professional organizations in the drafting of the questionnaire to ensure it addresses the right issues and it is understandable by the operators. Besides length, format, language (clear definition of objectives, language adjusted to type of contributor) and technology used play an important role (online versus paper version).

15 SSATP (2024), Toward a Data-Driven Understanding of Trade and Transport Corridors.
16 Northern Corridor Transport Observatory, "Homepage".

- **The administration mechanism.** The target and the sample size have an enormous impact on the resources, but also the selection of the administration mechanism. Typical options include using professional associations to reach out to the operators, recruiting a specialized consulting firm, rely on online questionnaires, or use a national statistical office. Some options are not mutually exclusive and can be combined.
- **The validation of the results.** In order to ensure the ownership of, and buy into the reform process by the operators and stakeholders, it is important from the beginning to organize validation seminars where all participants can witness not only the results but also help in monitoring implementation.

4. STEP 4. DESIGN OF AN ACTION PLAN

Reforms can only be successful if the stakeholders understand the need for reforms and there is a consensus on the scope and objectives. Gathering information about the transport sector is important for the diagnostic and decide what to do, but involving stakeholders in that diagnostic and jointly defining the solutions is critical. Engaging all stakeholders from the beginning is therefore critical on two levels:

- Information gathered in steps 2 and three provides only facts and information, but not intelligence on the sector. For example, on the discussion on transport prices, from the perspective of the customer, the price may seem high, whereas from the perspective of the carrier, it does not cover its costs. Interactions with stakeholders are required to give meaning to the data.
- Stakeholders need to own the results of the diagnostic if they are expected to take part in the reform process. The diagnostic cannot be an external exercise, and the definition of the reform program needs to be done collectively.

A reform road map

As an illustration of the process, an analysis of freight transport challenges on the West and Central Africa corridors identified three key reforms areas, in addition to infrastructure improvements needs. The root issue was the poor productivity of the vehicles. Two key reform areas addressed that situation, removing key constraints on the movement of loaded trucks through trade and transport facilitation, and reducing idle time between two loads through improved access to freight. Productivity gains would then enable trucking operators to comply with higher standards set be revised regulations for the access to the industry (Figure 7).

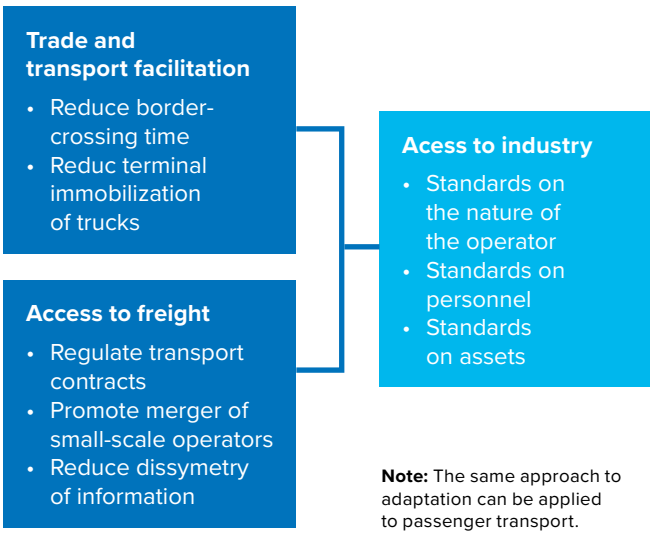
Specific activities can then be defined to reach each of the identified intermediate objectives.

Institutionalizing stakeholder engagement

Stakeholder engagement is critical for the preparation and implementation of the reform, but it should not stop there and needs to be institutionalized and maintained beyond the time frame for the reform.

The previous edition of the present guidelines proposed the example of the French “Comité National Routier” (CNR – National Roads Council),[17] an institution with a comprehensive mandate on road transport analysis and guidance. The CNR was established by decree to comprise all major transport stakeholders. Another lighter version, with a consultative status, could be modeled on the Port Council.

Figure 7. Key reform areas in West and Central Africa for freight transport



Note: The same approach to adaptation can be applied to passenger transport.

17 Comité National Routier, "Nos Données".

IV. Key areas of reform

A. Setting a framework for the reform

Section summary
Reform means making changes to improve institutions or practices. In road transport, reforms often face resistance from stakeholders, especially in countries with informal or small-scale operators. Despite understanding the need for change, operators, and clients may prefer the status quo due to uncertainty and lack of transparency.

Drivers of the reform rely on an inclusive approach that include institutional stakeholders and the private sector. In countries with weak or disorganized road transport and intermediation sectors, professional representation is often fragmented. Successful reforms in Eastern and Southern Europe involved merging multiple syndicates into a single federation to act as a credible interlocutor with the government. This approach has also been effective in other geographies such as Central Asia and Western Africa.

Ownership by professionals is crucial for the success of sectoral reforms. This involves:

- participating in the diagnostic phase to identify key issues.
- elaborating strategic objectives.
- defining and implementing measures.
- ensuring a facilitated implementation and confidence in achieving objectives.

In these guidelines we consider eight key interdependent components for reforming road freight and passenger transport services:

1. **Enabling environment:** Creating a supportive regulatory and institutional framework.
2. **Access to profession:** Establishing clear criteria for operators.
3. **The professional driver:** Enhancing driver qualifications and working conditions.
4. **Driver licensing:** Modernize the DL system.
5. **Training capacities:** Structuring training for transport and logistics.
6. **Access to market and operating conditions:** Regulating market entry and operations.
7. **The vehicle:** Ensuring vehicle standards and maintenance.
8. **Holistic approach to decarbonization:** Addressing environmental impacts.
9. **Externalities:** Managing societal and environmental externalities.

1. KEY REFORM COMPONENTS

By definition, the term “reform” means making changes in order to improve something (e.g., a social, political, or economic institution or practice). However, change is often perceived as a threat to certain stakeholders’ interests as they are likely to lose from the reforms. This is particularly true in road transport, especially in countries where most actors are informal, individuals, or small undertakings who are often uncertain about the reforms. In general, even if in theory the transport operators are fully aware of the need for change, in practice, reform often generates hostile feelings and reluctance, especially if the processes are not well explained or lack transparency. Furthermore, road transport clients, in particular in goods transport are also often reluctant to reforming the sector as status quo may sometimes be preferred to formalization.

To enhance the probability of a reform’s success, governments deciding to carry a reform should make a detailed plan of action, with an assessment of risks, benefits, worthiness, costs, and time frame. Due consideration must be given to the modalities for making the reform accepted by (the vast majority of) those concerned to ensure ownership and sustainability of the change. One way to conceive the reform plan is by making a qualitative assessment of the actions, as suggested in Table 2.

2. PATH TO REFORM

a. Drivers of the reform

The conduct of a sectoral reform of road freight and passenger transport is based on an inclusive involvement of all relevant parties, each playing its defined role, namely:

- The state, represented by the ministry in charge of road transport: It is the decisive driver of the reform, which must take the initiative for the reform with a strategic vision of the objectives to be achieved. It must also have

Table 2. Qualitative assessment framework for reform areas

	Driving license and training	Vehicule inspections	Unfair competition	...	...
Description of main planned actions	(1) (2) (3)				
Political risk	Moderate				
Costs Public **Private**	Low Moderate				
Return on investment	High				
Involved authorities					
Interests of stakeholders (risks, support, incentives...)	Potentially supportive Neutral Opposed				
Time frame	Short-term				

the necessary support for the proper conduct of the reform, both in terms of human and financial resources, and in terms of the political will to implement it in a coordinated, progressive and resolute manner.

- **The representative organizations of road transport operators:** Professional organizations representing the road transport of goods and passengers are a key player in the sectoral reform process. They must actively contribute to the feedback of information from the base for the identification of the strengths and weaknesses of the sector (real or perceived), but also for the formulation of the objectives of the reform and its content, with an educational approach towards their members throughout the entire reform process.
- **The representative organizations of professional drivers:** As part of the reform will be of direct concern for professional drivers involved in professional and own-account transport of goods and passengers, including taxi and moto-taxi, the participation to the reform process will be key to ensure its viability in the long term.
- **The representative organizations of users of road freight and passenger transport services:** Users of road freight and passenger transport services, the carrier's customers, are also key partners in the reform process, both in terms of formulating the diagnosis and designing the reform framework, because they are, by their status, a key player in implementing many elements of the reform process. This could also be extended, on certain topics, to civil society representatives as a whole, in particular when the reform addresses important issues for the entire society, such as road safety, environment, and sustainability.
- **The representative organizations of economic operators operating road freight and/or passenger transport vehicles for own account:** A sectoral reform of road transport of goods and/or passengers' sector cannot be conceived without taking into account and involving the stakeholders of own-account transport. Indeed, their representative organizations have an important role to play in conducting the reform process and then in its implementation and application, in particular for supporting these stakeholders with a view to their gradual compliance with the new rules.
- **The representatives of training centers and driving schools:** Professional competence will be a key component of the sector reform. Therefore, the participation in the reform process of organizations involved in training activities in transport, logistics, and the DL system is more than needed whenever possible.

In conclusion, these six categories of actors are key to the conduct of a sectoral reform of road transport. If the state is decisive in the reform, private actors are just as central because, without them, nothing is possible. However, the inclusive approach proposed and described below depends entirely on an affirmed and determined political will to take initiatives, in terms of design, adoption, and implementation.

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b. Main challenges

The enabling environment is the foundation of any reform. Hence, creating an institutional and business-enabling environment should be a priority from the very beginning of the reform process, in order to ensure all the conditions for the development of a reliable road transport industry.

Reforms have to be designed based on adequate, realistic and inclusive diagnosis that not only highlights the sector's strength and weaknesses, but also identifies the concerted solutions to be included in the reform path itself being part of the global development strategy,

One of the main challenges to overcome in designing a sectoral reform of road transport of goods and passengers lies in its complexity which combines both a transversality and at the same time the need for a global, planned and coordinated approach. Indeed, such a reform requires inter-ministerial cooperation involving several ministerial departments, a programmatic approach that is part of the overall development policy in order to enable the mobilization of the necessary funds over the long term, an association of all stakeholders, and a political will that goes beyond that of the technical ministerial department in charge.

Finally, a structural reform of road transport services for goods and people implies a coordinated approach which addresses all the components of the reform in a structured, coordinated and planned manner so that the interdependence of the different elements is controlled to allow effective implementation which will enable the achievement of the defined objectives.

c. Creating reform acceptance

In countries where the road transport sector is weak, not well organized or atomized, the representation of the profession reflects these characteristics, to such an extent that the sector is not considered as an industry being a credible interlocutor for the government in discussing the reform principles and its substance.

A successful approach was adopted at the beginning of the nineties by countries in Eastern and Southern Europe, where one of the first targets of the reform process was to address the organization of the profession by supporting the multitude of syndicates and associations to group into a single association/federation of the road transport sector.

The first objective was to obtain from the majority of the dispersed members of the profession a consensus on the way the profession should be heard by the government and the line Ministry of Transport in particular. This way a single federation or association can become the counterpart of the government for all road transport policy

BOX 1.

Togo's approach to reforming road transport and intermediation sector

Indeed, in Togo, under the "Competitivity Project" financed by the World Bank and implemented by IRU[18] the inclusive approach that was initiated, allowed all the sectoral syndicates to be brought together. A participatory approach led to associate the sector's stakeholders in the development of the sectoral diagnosis, in the formalization of the profession's vision on the main axes of the sectoral reform needed, and then to co-construct its content with the Togolese authorities. During this process the various unions realized that keeping dispersed and divided would not help promoting and modernizing the sector. So, they decided to come together as an umbrella organization (FP2TR) and to lead, in partnership with the Togolese Government, the gradual design, development, and implementation of the sectoral reform.

18 Projet d'appui à la compétitivité des services logistiques pour le commerce, (projet compétitivité), assistance technique auprès du ministère des Infrastructures et des transports pour la formalisation et la professionnalisation du sous-secteur des transports routiers au Togo (2019–2022).

issues and in particular in the reform path. The reform acceptance will be stimulated within the profession through the support given by the government to federating the professional representation and will be considered by the professionals as a sign of recognition of their role as key contributors to the economic and social development. This step needs determination and convincing skills from the government but is key to allow the profession to accept the principles of the reform through a public–private partnership dynamic.

This was recently accomplished in various Western African countries such as Mali, Burkina Faso, and Côte d'Ivoire, Togo, and Guinea where the establishment of a credible professional representation of the road transport sector has proven to be useful and effective in the reform process.

d. Creating reform ownership

In order to obtain the best outcome from a sectoral reform such as the one for road transport, ownership by the profession will be a key success factor to ensure it delivers the expected and foreseen benefits.

Creating ownership of the reform is the second step following acceptance of it by the profession. This can happen by involving the profession in:

- the diagnostic phase in the collection of data and information and the identification of key issues/blockages to be resolved;
- the elaboration of the strategic objectives to be pursued by the reform;
- the definition of measures to be adopted and implemented; and
- the implementation of the reform.

This approach has proven to be efficient in preventing hostile reactions and to the contrary in supporting the reform, its objectives, and actions undertaken by the profession itself, thus ensuring a facilitated implementation and a certain level of confidence in achieving the set objectives.

The main areas of reform of road freight and passengers transport services can be grouped into nine components that are interdependent and need to be tackled in a coordinated manner:

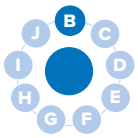
- enabling environment;
- access to profession: the operator;
- the professional driver;
- driver licensing;
- structuring road transport and intermediation training capacities;
- access to market and operating conditions;
- the vehicle;
- a holistic approach to decarbonization; and
- externalities.

The remainder of the Guide builds on Figure 6 and discusses each of these issues and their main characteristics, illustrated by appropriate examples from different parts of the world, and identifies the options or paths to reform, to improve the sector.

Conducting a sectoral reform such as that of road transport has various dimensions, indeed such a reform is by definition:

- multifaceted, because it implies a global approach affecting many components. We cannot reform the profession without addressing the issues of professional drivers, training capacities, working conditions and profitability, nor vehicles and societal and environmental issues.
- dependent on other elements/domains of reforms conducted or to be conducted in other institutional, economic or social areas but whose implementation will condition the effectiveness of the sectoral reform. Indeed, we cannot formalize the sector without having the mechanisms for creating a business, nor data management tools, and therefore the legal framework that goes with it (in particular in terms of security and data protection).

Figure 8. Road transport reform systemic approach



B. Enabling environment

Section summary

The United Nations has developed international legal instruments to facilitate the movement of goods and passengers and harmonize norms and standards. These instruments, such as the Convention on the Contract for the International Carriage of Goods by Road (CMR) for Goods Transport and the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), aim to create open markets and reduce barriers to international transport. The United Nations Economic Commission for Europe (UNECE) has developed 58 multilateral instruments, including conventions on road traffic, vehicle standards, and border-crossing facilitation.

Regional integration has led to harmonized laws and standards. The European Union's "acquis communautaire" sets comprehensive rules for road transport, including driving times, vehicle dimensions, and tolls. In Africa, regional economic communities (RECs) like the East African Community (EAC) and the Southern Africa Customs Union (SACU) have developed legal instruments to harmonize transport rules. The African Continental Free Trade Area (AfCFTA) aims to create a single market for goods and services, including transport. In Asia, the Association of Southeast Asian Nations (ASEAN) also aims to contribute to harmonizing road transport rules and standards.

At the national level, governance of road transport services (goods and passengers) typically falls under the Ministry of Transport, which issues regulations and oversees their implementation. Effective governance requires cooperation between various ministries, such as trade, industry, finance, and interior. National laws should focus on access to professions, market rules, technical standards, and enforcement mechanisms.

A key weakness in emerging and developing countries is the low level of education and professional qualification in the transport sector. Training capacity must be developed to support the reform (goods and passengers), including training for directors, managers, and professional drivers. Gender inclusivity is crucial, with programs designed to attract and retain women in the industry.

The road transport sector often lacks access to credit and financing due to its perceived unreliability. Implementing incentive financing mechanisms and facilitated access to credit can encourage operators to formalize and comply with reform components. Involving insurers in the reform process can lead to better risk understanding and more effective insurance coverage.

Enforcement of road transport regulations is essential for successful reform. This requires clear legislation, empowered and trained enforcement officers, and political support. Proper enforcement ensures compliance, supports safety and prevents unfair competition.

Reforming the road transport sector should be part of a global vision and policy aimed at sustainable economic and social development. Key drivers of reform include the highest level of executive power, interministerial coordination, professional organizations, and economic circles. Challenges include designing realistic reforms, ensuring private-sector acceptance, and securing financial resources.

Reforming road transport (goods and passengers) requires strong cooperation between public and private sectors. The reform should be anchored in a national development plan and detailed in a national sectoral policy and strategy. This includes defining the road transport system, setting goals and objectives, and establishing transitional measures. Effective coordination and collaboration between ministries and stakeholders are crucial.

1. INTERNATIONAL LEGAL FRAMEWORK

The United Nations played an important role in developing international legal instruments in various areas, including transport. Faced with the development of international trade and transport the need to facilitate the movement of goods increased dramatically; the UN answer has been to provide treaties, rules, and regulations acceptable to all its members, irrespective of their level of development or geographical location. When properly enforced, these legal instruments led to harmonization of norms and standards, which resulted in more open markets: the higher the level of harmonization, the shorter the list of practical reasons for market-access denial.

International multilateral instruments are key in facilitating trade and transport as they harmonize rules, documents, and procedures thus contributing to achieve more efficient international transport systems. Nonetheless, in most countries, the domestic transport market is much more important than the international market, which is often only an extension of the national market. It means that in order to be successful at the international level, the sector should first be organized effectively and functioning efficiently at the national level.

The international transport legal framework had been developed since WWII in three main phases:

- between 1950 and 1970s with the objective to harmonize rules and practices within the transport sector with a view to facilitate trade;
- between 1970s and 2001 with the objective to adjust the existing framework to containerization and modern practices in transport operations; and
- after 2001 to take into account the security issues within the supply chain.

When the international framework was put in place at the end of WWII, road transport was not an industry yet, regional integration was just an idea in some visionary minds, and international trade was mainly carried by sea. The post-war reconstruction, the economic growth, and the increase in trade led to a fast development of road transport services and to protectionist measures to preserve domestic markets for national carriers. International legal instruments were negotiated to set minimum standards, norms, and procedures that would ensure a framework for facilitated movement of goods between the countries and regions which implemented those rules.

The instruments were based on some key principles to ensure efficiency: harmonization, non-discrimination, reciprocity, and mutual recognition. These principles were essential to facilitate international transport to facilitate trade. However, the corner stone remains the mutual recognition principle without which all others would remain inoperative. Indeed, the mutual recognition not only apply to documents but also to operators' status, vehicles, goods, and passengers transported, thus contributing to eliminate or drastically reduce border controls.

In many countries legislation and regulation governing road transport were lacking or obsolete, hence the international provisions were also adopted as national norms. It is particularly the case for the DL system, where the Vienna Conventions have influenced and even conditioned national legislations. It is also the case for the contracts for goods transport, through the adoption at the national level of the CMR Convention,[19] as well as for the transport of dangerous goods where the ADR Agreement[20] is used as a reference for many national legislations in this domain.

In the meantime, regional integration has universally progressed. Regional instruments have been developed, including in the field of road transport, to provide countries at the regional level with common basic rules and objectives to organize their subregional trade with customized instruments to create a harmonized scheme. This creates the conditions for equitable competition, which is essential to ensure regional integration. Today's problems are not the same but the need for good legislation and proper enforcement still exists. The international instruments may be a source of inspiration to influence the drafting of national rules and regulations. Ideally, they should be acceded to, but implementing them without being a contracting party could also be a good approach, provided this produces the desired effects.

a. United Nations Economic Commission for Europe

After WWII, the newly created United Nations was tasked to work on transport facilitation issues to accompany the rebuilding needs, in particular in Europe. It mandated the UNECE, its regional arm, to develop international legal instruments establishing global norms and standards with worldwide application, in order to contribute to the development of international transport to support and facilitate international trade development. It is in this context that 58 multilateral instruments have been developed, under the auspices of UNECE, 14 of which are of particular relevance to road transport.

19 The CMR Convention was signed in 1956 and has been ratified by 58 states.
20 The Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) was formally established on September 30, 1957, and it governs the transnational transport of hazardous materials.

Many countries have transposed these international norms and standards into their internal legislation and this has significantly contributed to regional integration as the conditions became the same, or at least harmonized in many domains (for example, vehicles reception and inspection, DL system, operations at border crossings, and even mandatory driving and rest periods in some regions, etc.).

Countries from all the regions of the world became contracting parties to these instruments, and many countries implemented them without becoming a contracting party. The most relevant instruments are listed hereafter and can be downloaded at http://www.unece.org/trans/conventn/legalinst.html.

While adopted long ago, these international instruments are regularly updated by competent UN bodies in order to follow the evolutive requirements of trade and transport (the dates indicated hereafter correspond to the initial adoption date; the date of further amendments can be found on the above-mentioned UNECE website).

- **Road safety** (goods and passenger road transport)
  - Convention on Road Traffic, on November 8, 1968
  - Convention on Road Signs and Signals, on November 8, 1968

These two Conventions are supplemented by two sets of good practices, the Consolidated Resolutions on Road Traffic and on Road Signs and Signals, respectively.

- **Vehicles** (goods and passenger road transport)
  - Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment, and Parts which can be fitted and/or be used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, on March 20, 1958
  - Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles and the Reciprocal Recognition of Such Inspections, on November 13, 1997
  - Agreement concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment, and Parts which can be fitted and/or be used on Wheeled Vehicles, on June 25, 1998
- **Private law/contract** (goods and passenger road transport)
  - Convention on the Contract for the International Carriage of Goods by Road (CMR), on May 19, 1956
  - Protocol to the Convention on the Contract for the International Carriage of Goods by Road (CMR), on July 5, 1978
  - Additional Protocol to the CMR concerning the electronic consignment note (e-CMR)
  - Convention on the contract for the international carriage of passengers and luggage by road (CVR) done at Geneva on March 1, 1973
- **Border-crossing facilitation** (goods transport)
  - Customs Convention on the Temporary Importation of Commercial Road Vehicles, on May 18, 1956
  - Customs Convention on Containers, on December 2, 1972, administered by the b) World Customs Organization (WCO)
  - Customs Convention on the International Transport of Goods under Cover of TIR Carnets (TIR Convention), on November 14, 1975
  - International Convention on the Harmonization of Frontier Controls of Goods, on October 21, 1982

It should be noted that many provisions of this convention have been introduced in the WTO Trade Facilitation Agreement (TFA) adopted on November 27, 2014 and entered into force on February 22, 2017. Thus, many of the provisions of this Convention through the WTO TFA have gained a global coverage.

- **Dangerous goods:** Agreement concerning the ADR, on September 30, 1957 and its regular biannual updates

In addition to these global instruments, the UNECE also developed and administers other agreements with a geographical scope limited to Europe and immediate neighboring countries. This does not prevent them from being used as model reference to inspire national or regional legislations/regulations.

- **Driving and rest times for professional drivers** (goods and passenger road transport): European Agreement concerning the Work of Crews of Vehicles engaged in International Road Transport (AETR), on July 1, 1970.

BOX 2.

TIR Convention

The Customs Convention on the International Transport of Goods under Cover of TIR Carnets (TIR Convention) has been a key facilitation instrument in countries where it was operationalized. The Convention sets up the international customs transit procedure that permits the seamless international transport of goods by road and intermodal transport, if at least one leg is conducted by road, through as many countries as necessary, without undergoing physical controls or the need to make a financial deposit at each border. Facilitation provided to TIR transport represents an incentive for the road transport industry to evolve, because the Convention includes qualitative requirements for operators and professional associations that enter the system. The procedure includes the use of secure vehicles or containers that have to be pre-approved by national authorities according to TIR standards. The Convention furthermore provides a cross-border guarantee system to cover duties and taxes for each transport operation. The UNECE provides the Secretariat for the administration of the TIR Convention. IRU is mandated to organize the international TIR guarantee system and to distribute TIR Carnets throughout the entire TIR guarantee chain. Each vehicle must carry the TIR carnet, which is the official guarantee document as well as a transit declaration for all customs authorities along the transport journey. The customs authorities at intermediate borders acknowledge the validity of the TIR carnet and would generally not undertake any additional checks unless deemed necessary.

Access to the TIR system is rigorously controlled and TIR operations are highly efficient, thanks to TIR information and technology (IT) tools that support the TIR system and guarantee its enhanced security. The TIR system served as a basis for the EU's Common and Community Transit regimes, and served as inspiration for several subregional transit systems, none of the latter attaining full effectiveness.

In 2021 the TIR Convention was complemented by a new annex, which serves as a legal basis for eTIR, i.e. fully paperless TIR.

It should be noted that a decision has been taken to extend the geographical scope to four new south Mediterranean countries.

- **Perishable foodstuffs:** Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP), on September 1, 1970

The publication "Towards a Harmonized Legal Regime on Transport Facilitation in the ESCAP Region", by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), describes a summary of the main benefits of these transport facilitation instruments.

While these international conventions aim to facilitate international road transport of goods and passengers, it appeared necessary to set guidelines and recommendations to harmonize national legislations focusing on access to profession, and access to market rules to create a favorable legal environment creating equal competition conditions. Thus, the UN Consolidated Resolution on facilitation of international transport was adopted in Geneva and published on April 30, 2004. This resolution could serve as reference to countries, or regional institutions willing to develop regulations aimed at harmonizing rules to better organize the road transport sector.

b. World Customs Organization (WCO)

In the fields of customs international legislation, the WCO has developed and administers several types of instruments from international binding conventions to international standards.

As far as international conventions are concerned, among the several WCO instruments, some are particularly relevant to accompany and facilitate international road transport operations, such as:

- International Convention on the Harmonized Commodity Description and Coding System entered into force on January 1, 1988
- Customs Convention on the ATA carnet for the temporary admission of goods (ATA Convention) entered into force on July 30, 1963
- International Convention on the simplification and harmonization of customs procedures (Revised Kyoto Convention) entered into force on February 3, 2006

- Convention on Temporary Admission (Istanbul Convention), entered into force on November 27, 1993

In the fields of security of international trade WCO developed a series of framework and implementation guidelines relevant to the road transport sector, such as:

- The SAFE Framework of Standards to Secure and Facilitate Global Trade (2012 edition)
- Authorized Economic Operator Implementation Guidance

These are just a few legal instruments aiming to regulate road transport operations and procedures at the international level in a harmonized way. This would result in fewer barriers caused by differences, and would consequently contribute to lowering logistics and transport costs, and improving the overall quality of the road transport services.

c. International Labour Organization (ILO)

In the fields of social and labor international legislation, the ILO has developed and administers several types of instruments, including binding conventions and recommendations, and regulatory tools (guidelines, codes of practice, manuals).

In terms of working and driving times and rest periods, the Hours of Work and Rest Periods (Road Transport) Convention, 1979 (No. 153), and the Hours of Work and Rest Periods (Road Transport) Recommendation, 1979 (No. 161), establish a specific reference standard for the road transport sector. In addition, the Labour Inspection (Mining and Transport) Recommendation, 1947 (No. 82), recommends for governments establish appropriate systems of labor inspection to ensure the enforcement of legal provisions relating to conditions of work and the protection of workers while engaged in their work.

Figure 9. Topics included in the ILO road transport guidelines

Also, the ILO adopted in 2019 the Guidelines on the Promotion of Decent Work and Road Safety in the Transport Sector. These guidelines provide a foundational basis for workers, employers, governments, and road transport chain parties to conduct a social review and diagnosis of the sector, and up the quality of employment and the sustainability of transport enterprises.

2. REGIONAL LEGAL FRAMEWORK

Increasingly transport markets are integrated at the regional level. As a result, laws have to be harmonized at subregional and international levels. Historically and because of its flexibility, road transport is one of the areas the most regulated at the international level. The laws, norms, and standards adopted in international/global forums have been a source of inspiration or replicated at the subregional level and have been further transposed in national legislation in the member countries of those international or subregional organizations.

Acceding to international legal instruments and/or adopting rules that are harmonized within the region is important but it does not produce any positive effect if they are not properly enforced. Two examples may be relevant in this respect: the European Union and the RECs in Africa. However, efforts are also developing at the continental level in Africa through the progressive implementation of the AfCFTA.

The EU is a highly integrated region. The term "*acquis communautaire*" is commonly used to refer to the entire body of EU law: treaties, decisions, regulations, directives, principles of law and interpretations of the European Court of Justice, all international transport agreements to which the EU is a Party, as well as the relevant declarations and resolutions of the Council of Ministers. The directives are mandatory only in their substance and goals, leaving the choice of the implementation form with the countries; Regulations on their side were initially directly applicable (in the form in which they were adopted) in each of the 27 Member States of the EU. However, this is no more the case as regulations introduced a certain level of flexibility to Member States when transposing regulations which created new discrepancies between the EU rules applying in the 27 Member States.

Unlike other subregional entities, the EU Commission has the power to penalize its Member States for infringements to the acquis, including for poor enforcement.

The development and continuous adaptation of EU legislation aims at setting up a legal framework for enabling and facilitating the effectiveness and efficiency of the single market. Candidate countries for accession to the EU are obliged to align their national laws, rules, and procedures to the entire body of the EU before they become EU Member States.

In parallel, countries not interested in EU membership but still interested in closer, particularly economic ties with the EU, can accede to other instruments, such as the European Economic Area (EEA) or the Common Transit Convention (CTC).

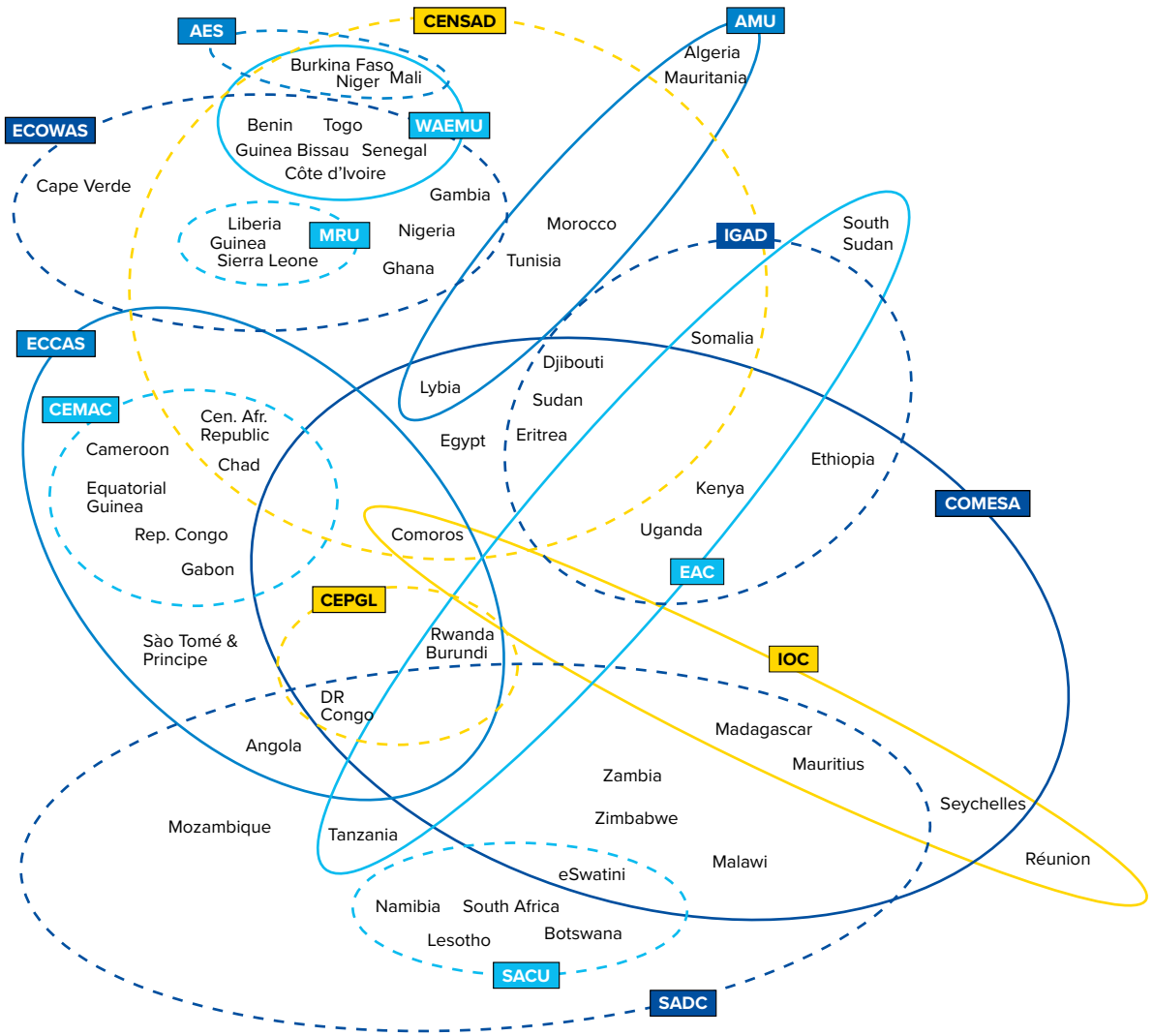
The road transport "*acquis communautaire*" is very comprehensive. It establishes common qualitative rules on access to the profession and to the market, and sets standards for several related aspects in the technical, social, road safety, infrastructure, and environmental domains. Among them are working time, driving time and rest periods (including enforcement and the use of the recording device – the tachograph) for professional road transport drivers, and minimum annual vehicle taxes, as well as common rules for tolls and user charges for heavy goods vehicles. Moreover, it harmonizes the maximum weights and dimensions of road vehicles. The EU Commission also promotes more and safer parking areas along the trans-European road network.

In Africa, RECs consider transport as one of the most important growth enablers. Hence, they have developed legal instruments to harmonize rules and practices among their respective Member States. Their legal instruments contain provisions related to the vehicle's technical norms and standards, driver's training, or contractual liability. But progress toward establishing subregional common transport markets is variable. Customs unions, such as the EAC and the SACU, have been more successful in engendering integrated transport markets based on multilateral agreements while other RECs still largely work with bilateral agreements between their member countries. Besides political economy reasons one of the obstacles to a better regional integration has been the weak implementation and enforcement of the multilateral instruments at the national level. There are also tensions due to membership of many countries of different groupings, whose regulatory initiatives are not always well aligned (see Figure 8). The Common Market for Eastern and Southern Africa (COMESA), EAC and the Southern African Development Community (SADC) recognize this challenge and are implementing a tripartite free trade area

(TFTA) that prioritizes road transport facilitation across the three RECs. This will boost regional trade by harmonizing regulations, including vehicle load management and cross-border procedures, supported by agreements like the Vehicle Load Management Agreement (VLMA) and the Multilateral Cross-Border Road Transport Agreement (MCBRTA), and model laws. The tripartite initiative also focuses on joint infrastructure development, trade facilitation through initiatives like the tripartite transport registers and information platform system (TRIPS), and streamlining cross-border transportation, all aiming to create a seamless and efficient regional transport environment.

However, efforts are undertaken to boost continental integration through the progressive implementation of the agreement establishing the AfCFTA approved by the African Union General Assembly on March 21, 2018, and entered into force on March 30, 2019, together with its three protocols, among which the Protocol on trade in goods and the one on trade in services. The agreement aims at creating a single market for goods and services to deepen the economic integration of the African continent and at creating a liberalized market for goods and services through successive rounds of negotiations. The Protocol on trade in services, applicable to transport and

Figure 10. Subregional organizations in Africa



Source: Woodrow Wilson International Center for Scholars, 2008, African Regional and Sub-Regional Organizations. Assessing Their Contributions to Economic Integration and Conflict Management. Updated by IRU, 2025.

intermediation services, seeks to progressively liberalize services trade across the African continent, based on equity, balance, and mutual benefit, by eliminating barriers to trade in services (goods and passenger), while ensuring consistency and complementarity between liberalization and the various annexes in specific services sectors. To achieve these goals, the protocol capitalizes on mutual recognition in particular as far as standards or criteria for the authorization, licensing or certification of services suppliers are concerned. It should also be noted that the protocol defines the conditions for a progressive liberalization of services through successive round of negotiations, allowing states to develop regulatory frameworks for each of the sectors as necessary, taking account of the best practices and acquis from the RECs as well as the negotiated agreement on sectors for regulatory cooperation. Finally, the protocol also addresses the critical issue of liberalizing market access of services and provides that in sectors where market-access commitments are undertaken, the measures which a state party shall not maintain limitations on the total number of service operations or on the total quantity of service output expressed in terms of designated numerical units in the form of quotas. It is worth mentioning that the objective of progressive and negotiated liberalization of services will have a direct impact on the African road transport market, which in many African RECs is still based on inter-states quota mechanisms organized through bilateral road transport agreements. The progressive liberalization of road transport and intermediation services will impact these mechanisms, leading to the need to rethink the road transport market on a new basis.

Overlapping memberships of different RECs complicate several aspects of road transport for example they result in differences in axle load limits, road user charges, visa requirements for drivers, etc.

South Asia is also pursuing a regional approach to integration of transport services. The effort is conceptualized in the Bangladesh, Bhutan, India, Nepal (BBIN) Motor Vehicles Agreement (MVA) which is a pivotal regional initiative aimed at streamlining cross-border movement of vehicles, fostering trade, and enhancing connectivity within South Asia. The primary objective of the MVA is to reduce transit times and costs by simplifying vehicle entry and exit procedures across member countries. Key provisions include the issuance of electronic permits, harmonization of vehicle documentation and inspections, and a system for tracking vehicles across borders. This agreement holds immense potential to boost economic activity and strengthen regional integration.

However, the MVA's full implementation faces challenges. These include infrastructure limitations, differing national regulations, and environmental concerns. Despite these hurdles, the MVA represents a significant step towards greater regional cooperation, promising to improve trade efficiency and people-to-people contact. Its successful realization would mark a transformative shift in South Asian transportation and economic collaboration.

3. NATIONAL LEGAL AND REGULATORY FRAMEWORK

Governance is key to ensure a successful modernization or reform in any economic area, including road transport of goods and passengers, as well as intermediation. In addition to political will and commitment, any such change process requires the establishment of a business – enabling environment built on well-functioning institutions, comprehensive yet applicable laws and regulations, good practices, and proper enforcement.

Usually, the governance of the road transport services sector is a competence of the line Ministry of Transport, which issues regulations and implements them, directly or through specialized agencies. However, the scope of competence of the line ministry may vary from "heavy," more traditional, to "light," modern structures.

In some countries (e.g., Burundi), the Ministry of Transport is responsible for all transport modes and their respective infrastructure: land (road, rail, and inland waterways), air and maritime sectors. In such cases, the road transport sector is only one component of the ministerial portfolio and can be organized as a directorate. In other countries, the transport competences are assigned by mode; for example, in India civil aviation, road transport, railways and shipping each has its own ministry. In the Russian Federation, there is one Ministry of Transport, which exerts its authority through Federal Agencies in charge of individual modes of transport. It may also be that the transport sector is part of a multi-sectoral ministry, such as the Ministry of living environment and transport in Benin, while in Togo, air, road, and inland water ways are under the competence of the Ministry of inland and air transport, while maritime transport falls under the competence of the Ministry of maritime economy. In the European Commission, all modes of transport involved in cross-border movements are grouped under the competence of a dedicated commissioner. For railway, maritime, air transport and infrastructure specialized European Agencies exist which support the European Commission in its work.

The form of organization and the place of the transport sector within a government often reveals the political and economic importance given to the sector. Nevertheless, there are cases where the place of the ministry is not very significant, although transport as an economic sector remains very important, notably in countries where regulations and institutions are in place and functioning properly, and where the private sector is well-structured, organized and efficient. For example, in Sweden, the Ministry of Enterprises and Innovation is responsible for the business sector, housing and transport, ICT, regional growth and rural policy. Transport includes railways, roads, shipping and aviation, as well as transport and infrastructure research. The number of transport ministerial staff is small and the authority for each mode of transport is exerted through specialized agencies.

The variation in organizational structures applies to the transport infrastructure sector. In some countries the responsibility of planning, building, maintaining and administering the road infrastructure lies with the ministry in charge of transport, as is the case in France (for the national network and highways). In other cases, responsibility is with another ministry such as the Ministry of Economic Infrastructure in Côte d'Ivoire or the Ministry of Works in Tanzania. Local authorities in many countries are involved in the administration of secondary/local networks. In Niger recently, Ministry of Transport and Ministry of Equipment have been grouped in one single ministry, but all what relates to road maintenance, rehabilitation and related fundings are delegated to specific independent agencies (Road fund (FER), Delegated project management agency (AMODER), and independent road maintenance audit cell (CACER)).

Policies' coherence and consistency are paramount for sustainable development; at the national level, they are the result of cooperation between various ministries. Multi-sectoral cooperation is particularly important for road transport services because of the sector's dependency and impact on various other economic and social sectors: trade facilitation, high number of direct or indirect jobs created, safety on the roads, and security (human trafficking, transport of hazardous cargo), etc. The ministry in charge of the road transport sector (passengers and goods) interacts, at least, with the ministries in charge of:

- trade (e.g., on issues related to trade policy and facilitation).
- industry (e.g., on issues related to vehicle's technical norms and standards).
- finance, including customs (e.g., on issues related to temporary importation of vehicles, transit guarantee systems).
- foreign affairs (e.g., on issues related to visa regimes, international agreements, and conventions, mutual recognition of documents).
- regional integration and planning (e.g., on issues related to connectivity).
- interior (e.g., on issues related to special transports, control, and enforcement).
- labor and social affairs (e.g., on issues related to social legislation, working times, retirement, healthcare, etc.).
- public health (in relation with road safety issues).
- education and vocational and technical training and apprenticeship (e.g., on issues related to curricula, issuance of professional diplomas and accreditation of training institutions).
- infrastructure and public works (e.g., on issues related to coherent development of transport networks).
- small and medium-size enterprises (e.g., on issues of interest to road transport operators, which are in the vast majority SMEs).
- tourism (for tour operators, touristic and occasional transport).

However, irrespective of the organization at the ministerial (political) level, the administration/agency in charge of road transport is key to ensure the governance of the sector. Traditional administrative structures are heavily centralized, with a Directorate General (DG) for road transport established as part of the ministry; the structure of such a DG would typically include directorates/units responsible for:

- goods/passenger transport against reward and on own account (e.g., access to profession and access to market and corresponding registering, authorizing and licensing).
- international affairs and coordination (e.g., participating in the negotiation of bilateral, subregional, international treaties and agreements on road transport).
- legal and regulatory affairs (e.g., drafting rules and regulations related to the sector).
- technical issues (e.g., vehicles standards and inspection, special transport, dangerous goods).

- projects and infrastructure aspects (when infrastructure falls under that ministry).
- social affairs (e.g., driving and rest times of professional drivers when this competence does not fall under the Ministry of employment and social affairs).
- accreditation of training programs and training institutes in relation to access to professions criteria and regulation (often in coordination with the ministry in charge of vocational training and superior education).
- inspection and enforcement (e.g., checking compliance with the criteria for access to the profession).
- road safety for policy issues and in many countries, a specific Road Safety Agency is tasked to implement the national road safety strategy and policy. Road safety could also be an interministerial competence.

In regions that are highly integrated and where the legislation is adopted at the regional level, the trend is to limit the attributions of the ministries to elaborate national policies and strategies. The implementation and enforcement of the legislation/regulation at the national level is delegated to specialized agencies. This does not necessarily translate in overall lighter structures but decentralizes to a certain extent the processes and ensures a reasonable degree of impartiality in implementation and enforcement (including penalizing infringements). In many countries, some of the functions or tasks attributed to road transport agencies are performed by private or semi-private entities acting by delegation or under a concession contract of service. It is very often the case for routine or periodical technical inspection of vehicles.

National laws and regulations (goods and passengers road transport)

National laws and regulations are paramount for the effective organization and efficient functioning of road transport and intermediation sector. They are part of the business-enabling environment and should be comprehensive yet clear and simple, in order to make their implementation and enforcement optimal. The national laws and regulations applicable to road transport should mainly focus on:

- designing the institutional setting that is adequate for the national specificities and adjusting it periodically in order to correspond to the developments while being compliant to the international, regional, or bilateral commitment of the country;
- defining the responsibilities and competences of the institutions in charge of road transport, in a way that would avoid overlapping, confusion, misinterpretation, and abuse of dominant power; and
- detailing the rules specific to the sector in line with the requirements of the reform, and without conflicting with the international obligations of the country or with other legislation applicable to economic activities.

These rules should cover at least:

- access to professions, including intermediation professions (registration and professional competence of managers).
- access to the market (transport authorizations).
- economics and competition (operating conditions and pricing).
- technical issues (vehicles norms and standards, technological embarked or mobile equipment, inspections, transport of dangerous goods and perishable foodstuffs, etc.).
- DL systems for professional drivers engaged in public and own-account transport of goods and passengers.
- professional competence of professional drivers (training institutions and personnel, initial, and periodic training, etc.).
- social and safety provisions (maximum driving time and minimum mandatory rest periods, etc.).
- private law aspects (transport and intermediation contracts, liability rules, mandatory insurance, etc.).
- inspections, control, and enforcement of the rules with precise attribution of competence to each concerned authority and their agents both on roads, and a posteriori in company premises.
- sanctions of administrative and disciplinary nature for the stakeholders infringing the rules (transport operators, shippers/receivers, forwarders, intermediaries).

4. TRAINING CAPACITY (GOODS AND PASSENGER ROAD TRANSPORT)

One of the identified weaknesses of the road freight and passenger transport sector in emerging and developing countries is the low level of education and professional qualification of transport and logistics operators in the broad sense, including road carriers, their customers, transport intermediaries, and professional drivers.

Therefore, having an appropriate training capacity is both an element of the reform and a key factor in its implementation, a system without which any reform of modernization, formalization and professionalization of the sector would be in vain.

This is why it is necessary to design and operationalize the training system for the various actors, at the same time as the reform itself, in order to have, when the reform is adopted and comes into force, the necessary training, and examination capacity, in this sense, the qualification system is both an element of substance of the reform, but also an element that conditions its implementation and success.

The training capacity required to conduct the reform is complex and multifaceted, as it aims both to train newcomers in the different professions, but also to lead efforts to upgrade the various actors in practice at the time when the reform comes into force. In addition, the training capacity must be aimed at both the directors and managers of transport and intermediation companies, and at professional drivers involved in the public or private transport of goods and/or passengers.

This therefore means that training capacity must be the subject of specific attention at several levels, and that to be contributory to the reform and enable its implementation. As such, disposing of an appropriate sectoral training/examination capacity is critical and should cover:

- training capacity for directors and managers (for newcomers and already in operation);
- training of professional drivers (professional qualification); and
- adequate heavy vehicles DL system.

This therefore implies having:

- training centers adapted and equipped with training resources and systems;
- training programs and examination materials and methodologies; and
- qualified and certified trainers able to deliver the required training as defined within the of the conditions of access to the different professions' frameworks.

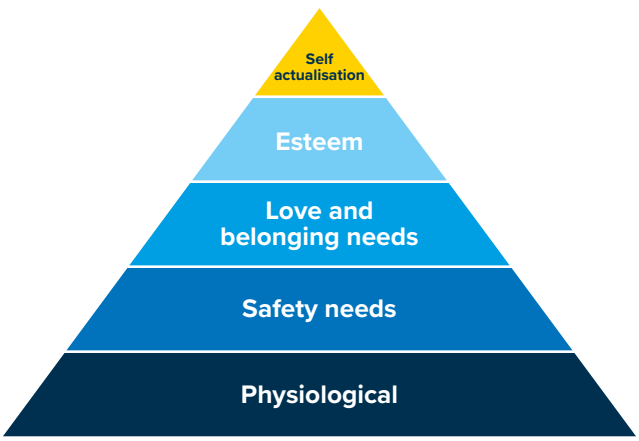
BOX 3.

Experience in Togo

This approach was supported in Togo, through the World Bank "competitiveness project", which allowed to conduct in parallel and in a coordinated manner the road transport reform and the establishment of necessary professional qualification capacity. The training center has been set and equipped to support the reform professional qualification needs for managers and professional drivers, programs have been developed, and trainers have been certified and accredited by IRU. (see Annex 1 for details on the competitiveness project).

The training capacity that needs to be developed or adapted must also consider an essential dimension relating to the **consideration of gender imperatives**, in order to make it not only attractive but inclusive for women. Indeed, the freight road transport industry faces a critical challenge in attracting and retaining talent, particularly women, who remain under-represented in the sector. Developing and adapting training capacity is essential to ensure the industry is not only attractive but truly inclusive. A key dimension in this effort involves integrating gender imperatives, enabling women to thrive by addressing both systemic barriers and specific needs.

Figure 11. Maslow's hierarchy of needs



Access to training, skill development, and a respectful working environment are among the most critical factors influencing women's entry into the industry. Maslow's hierarchy of needs provides a useful framework to understand the motivations and barriers women face in pursuing careers in road transport. Applying this model enables the identification of targeted interventions that correspond to various levels of human needs, ranging from basic physiological requirements to self-actualization. This approach supports the design of gender-responsive training programs in road transport, ensuring they effectively address the specific needs and aspirations of women.

- **Physiological needs:** At the foundation of Maslow's hierarchy, physiological needs represent essential survival requirements. In road transport, these translate to adequate compensation, safe working conditions, and reduced physical demand. Research indicates that modern commercial vehicles design, and equipment have evolved to lower physical strain, making the profession more accessible to women. Additionally, programs offering financial assistance can mitigate financial barriers, empowering young women to enter the industry without incurring up-front costs.
- **Safety needs:** A secure and respectful working environment is paramount for reducing anxiety and fostering trust. Addressing safety concerns, both physical and psychological, is vital for women entering a traditionally male-dominated sector. Promoting workplace safety, including access to protective measures and support networks, ensures women feel valued and protected.
- **Love and belonging needs:** The presence of female instructors and mentors is critical in fostering a sense of belonging and community for women in road transport education programs. These role models provide encouragement and practical support, helping women navigate challenges and build confidence. Moreover, workplaces that actively listen to employees promote a welcoming culture and make improvements based on feedback contribute significantly to women's sense of esteem and professional satisfaction.
- **Self-actualization:** At the pinnacle of Maslow's hierarchy, self-actualization involves opportunities for growth, learning, and achieving one's potential. Structured programs that provide internships, mentorships, and pathways to employment are instrumental in supporting women's career progression in road transport. These opportunities not only enhance their skills but also empower them to envision and achieve long-term professional goals.

Training programs should be designed with an explicit focus on gender equality in order to foster inclusivity and increase female representation in road transport professions. While specific components and global examples of gender-responsive training will be addressed, it is essential to first establish general principles applicable across various professions to support a gender-balanced workforce. The following foundational elements provide a framework for ensuring that training initiatives effectively promote equity and inclusiveness.

- First, promoting equality-responsive language and communication is crucial at every level, ensuring that both language and visuals reflect diversity, avoid stereotypes, and actively promote inclusivity.
- Second, incorporating female instructors and leaders in training programs can serve as powerful role models, inspiring confidence and fostering a more diverse workforce.
- Equally important, though often overlooked, is the need to allocate financial resources for gender-based assessments and necessary adjustments in training programs to enhance equity.
- Last but not least, offering scholarships or grants designed to address the specific barriers faced by women can further help create a more inclusive and supportive environment.

While many training elements are universal, specific programs can address gender-specific challenges and opportunities to meet the diverse needs of trainees. Psychological safety is a cornerstone in training programs designed to address women's needs in the road transport industry. In a male-dominated sector, fostering psychological safety is critical for creating an environment where women feel secure, valued, and confident to participate and excel. It is not just a supportive feature but a foundational requirement for designing training programs that effectively attract and retain women in road transport.

Some real examples of tailored training components addressing gender-specific challenges in road transport can be:

- confidence building: Programs like “She Drives” in India focus on overcoming driving anxieties in high-stress environments.
- physical comfort and ergonomics: Volvo collaborates with driving schools to provide ergonomic training tailored to women, including adjusting seats, pedals, and steering for smaller body frames.
- vehicle maintenance knowledge: Initiatives such as the Ladies Car Care Clinics in the United States teach hands-on skills like changing tires and jump-starting vehicles.

5. ACCESS TO FINANCING AND INSURANCE MECHANISMS

Beyond the favorable enabling environment through an adapted legal and regulatory framework, and appropriate training capacity, it is also important to benefit from a sectoral financing framework as well as an adequate insurance system that is adapted to the road transport sector for goods and passengers.

Indeed, in developing and emerging countries, it is often observed that due to its weakness, the road transport sector is perceived as a non-reliable sector and activity, with a lack of investment capacity due to its lack of profitability. This deprives the sector form access to credit and financing in normal conditions, not only to finance ongoing activities, but also to finance productive investment, in particular in fleet renewal. Unless this situation is redressed, any reform would be condemned to fail. However, when incentive financing mechanisms and facilitated access to credit are implemented, it becomes a powerful tool to encourage operators to formalize and comply with the reform components.

Similarly, the insurance aspect is often neglected and leads to non-adapted insurance coverage, expensive insurance premiums, and weak indemnity capacity from insurers. Additionally, the lack of understanding of real insurance needs, leads to disperse approaches and insurance products, and sometimes regulations that are not adapted to the needs.

To the contrary, when insurers are involved in the reform process, their understanding of the sector’s specificities and real needs leads to better risk understanding, better coverage and better effective protection for the carriers, their clients, and road users at large, as well as better insurance pricing (by avoiding double or triple insurance coverage, as it is often the case in many regions).

6. EFFICIENT ENFORCEMENT

In many countries, enforcement of pure road transport regulation (goods and passenger road transport) is a competence of the national administration/agency in charge of road transport and its regional arms/ branches. As such, the administration/agency in charge of road transport is mandated to ensure control and enforcement of the rules related to the access to profession and market (registration, authorizations, permits, etc.). They may apply administrative sanctions (suspension, revocation, etc.) in case of infringement and may engage also penal proceedings in case of serious infringement, in particular when security, safety, or social obligations are not respected.

Some other areas such as road safety and traffic rules, vehicle inspection, driving and rest periods of professional drivers may be subject to a shared enforcement competence between the administration/agency in charge of road transport, and other authorities or bodies (agency in charge of technical inspection of vehicles, labor agencies, weighing authorities, road safety agency, police, gendarmerie, etc.). However, in most countries, while control may be a road transport agency or ministry competence, establishing infringement, and imposing penalty remains the competence of the police and gendarmerie.

In any case, the enforcement of the legislation applicable to road transport is essential for the successful implementation of the modernization or reform of the sector. At the same time, it is a challenge because it depends on various factors: culture, level of social and economic development, clarity, and applicability of legislation and regulations, definition of roles and responsibilities, institutional capacities, and political will at the highest level.

Efficient enforcement relies on comprehensive yet simple and transparent legislation and properly empowered, skilled and well-trained enforcing officers or civil servants, supported at political and executive levels. The success of road transport services reform depends to a high degree on the quality of enforcement: if the noncompliant transport actors (public road carrier, own-account operator, transport intermediate, shipper, consignee, etc.) can continue to operate in the same conditions as the one who made efforts to comply with the rules, the latter will be demotivated and will see no sense in modernizing its operations as this will result in unfair competition, and al-

ter the market conditions. Ensuring proper enforcement of the law is a complex endeavor, requiring political willingness, commitment, and consistency, as well as financial resources adequate to the objective.

7. PATH TO REFORM

The road transport sector is complex in its economic and social structure. Experience has demonstrated that existing structures of the sector are difficult to change. In emerging and developing countries with a nascent road transport industry, this difficulty may reside in the industry's fear that change will damage an existing, already fragile equilibrium.

Indeed, road transport is still one of the rare economic sectors that not only allows social advancement from driver to small business owner, thus being a driver for economic and social development, but also allows on-the-job training in the driving profession for young people who often come from modest backgrounds and leave the education sector at a very young age, and thus provides them with a medium and long-term employment perspective while ensuring, in many countries, the guarantee of being able to provide for the needs of an entire family.

This social dimension must not hide the need to structure this key sector for economic and social development and to reform it in depth, while taking it into account, as it often must condition the content, scope, and speed of the reform process so that it is socially acceptable (prospects for the future and sustainable employment stability) and economically and environmentally sustainable (profitability, investment, decarbonization).

However, it should not be hidden either that the process of sectoral reform also often calls into question the achievements of certain actors who are perfectly satisfied with a weak, dispersed and informal road transport sector that guarantees them low prices and maximum profits. In these conditions, the status quo becomes for certain actors a means of preserving their achievements and not calling into question their economic model.

All these elements, sometimes complementary and sometimes contradictory, must therefore be taken into account in a coordinated manner in the conduct of a reform of the road transport and intermediation sector to create a favorable enabling environment.

a. Drivers of reform

Conducting a sectoral reform of road transport and intermediation must be part of a global vision and policy. The sector should not be reformed for the sake of reforming it, but to place it in a position to better contribute to achieving the overall objectives of sustainable economic and social development of a country or region.

Therefore, ideally, the drivers of reform should first be actors of the perspective of placing it within the framework of the overall development objectives of the country, thus, the sectoral reform becomes simultaneously an actor and an instrument at the service of overall economic development objectives.

This is why the creation of an enabling environment involves:

- **The highest level of executive power** (Office of Prime Minister/President), signifying political impetus at the highest level with an office representative to drive sector reform requiring close inter-ministerial joint work.
- **Interministerial coordination and cooperation**, as the creation of the enabling environment will need the mobilization of various ministerial departments and agencies (transport, justice, home affairs, economy, employment, and finance, education, etc.).
- **Road transport and intermediation professional organizations (goods and passengers)**, they should be co-leader of the process to inspire the global reach of the reform, to contribute actively to all enabling environment components, to relay it to their members to ensure acceptance and professions' commitments.
- **Professional drivers' professional organizations**, to cover and be associated to the conception of the reform elements of direct interest to them.
- **The economic circles at large**, all professional organizations representing trade, industry, transport users (including passengers), as well as banking and insurance business.
- **Professional organizations representing training centers and institutes** active in transport, intermediation, and logistics fields.
- **Professional organizations representing driving schools**, particularly involved in driver training for professional drivers.

b. Main challenges

The enabling environment is the foundation of any reform. Hence, creating an institutional and business-enabling environment should be a priority from the very beginning of the reform process, in order to ensure all the conditions for the development of a reliable road transport industry (goods and passenger road transport).

Reforms must be designed based on adequate, realistic and inclusive diagnosis that not only highlights the sector's strength and weaknesses, but also identifies the concerted solutions to be included in the reform path itself being part of the global development strategy, as it has been the case in many countries in Africa, such as Togo, Guinea, Niger, Benin.

When designing the reform, it is essential to define its scope, and to consider and give adequate weight to the essential elements that can easily turn into risks:

- overarching goal of the reform and the "ideal model" to be achieved, to avoid designing an over-ambitious reform that conditions may not allow to achieve.
- situation of the sector against the real needs of improvement and its capacity to implement them.
- private-sector acceptance and ownership of the change/reform process, to avoid strong resistance from the stakeholders, including the trade community at large.
- capabilities of the public sector to drive the reform process through a participative and inclusive process at all stages, form diagnosis, vision formulation, reform elaboration and then monitor its implementation.
- via a combination of incentives for stakeholders to adjust their organization and practices to the new rules, and enforcement measures to ensure monitoring of compliance by all concerned (capacity building, institutional adaptation to the new context).
- availability of financial resources to carry on the reform.
- political will and commitment to accompany/impose the change, to avoid having great measures on paper but weak enforcement in practice.

Assessing the risks is paramount for any endeavor to make changes in the road transport and intermediation sector. Indeed, while results of the reform could be very attractive, the risks of failure are also significant and may not only jeopardize the reform but also compromise on short or medium terms any further change initiatives. The best path to reform would be based on a global coordinated approach at the national level that addresses the key elements mentioned and organize the reform by coordinating actions to improve all these components. As illustrated above, it would be useless to prepare legislation on access to the profession based on a qualitative approach and the professional competence of actors, if simultaneously, the training capacity is not in place when the legislation/regulation enters into force. Similarly, if a fleet modernization program is to be successful, it will require first that adequate operating conditions are already established, i.e. restauration of profitability to allow productive investment, and proper fuel required for today's commercial vehicles, to encourage carriers to invest in more sustainable equipment.

c. Recommendations

The road transport (goods and passenger) is characterized by a complex intertwining of various forces: political, economic and social. Reforming road transport should be a collective commitment of the decision-makers. Decision-makers are not only representing public authorities, but also the private sector's needs. This involves therefore strong cooperation between:

- public decision-makers: executive and legislative, government, and parliament as well as territorial communities which have gained importance in organizing transport at local level through decentralization processes, in particular as far as urban passenger transport is concerned, including the establishment and functioning of urban transport stations; and
- private-sector decision-makers and leaders, mainly representatives of road transport professional organizations.

It is therefore a question of anchoring the sectoral reform in this global vision and including it in the priority axes of a national development plan (NDP) or strategy to facilitate the building up of a favorable enabling environment. By doing so, the conduct and implementation plan of the sectoral reform will be valued and included in the NDP financing evaluation and process, thus providing pluriannual visibility and favoring monitoring and regular evaluation process of the reform progress. While the reform should be reflected in the NDP, it should also be detailed in a na-

tional sectoral policy and strategy that would, in line with the NDP objectives, detail and scale the various sectoral strategic objectives perused, the actions to be deployed and an action plan with a reasonable time line and target dates for key achievements. The national sectoral strategy (NSS) should be the basis to anchor the establishment or the enhancement of the enabling environment.

The inclusion or association of the process of reform and modernization of the road transport sector of goods and people and of intermediation in the overall framework of the NDP, and the adoption of a sectoral strategy not only brings visibility at the national level on the objectives pursued, but through the formalization and budgeting that is made of it, allows the state to better formulate its financing needs, via the IFIs which are better able to coordinate and target their support programs for the design and implementation of the sectoral reform.

Thus, the design of the framework and content of the road transport and intermediation sector reform, the development of the NDP and of the NSS must take place in an iterative manner, with one feeding and inspiring the others in a coordinated manner. The national sectoral policy and strategy would therefore go far beyond the infrastructure component but would describe how the strategic reform objectives would be implemented to reach the assigned expected results. The sector would then be given high visibility at the institutional level. The strategic description of the road transport reform should include at least:

- a definition of the road transport system in all its components, including intermediation;
- goals and objectives of the reform;
- scope of development in road transport and reform content;
- transitional measures and period granted to actors in operation to comply with the reform content and objectives;
- role of central and local regulatory agencies and of professional organizations involved;
- synergies, cooperation, and coordination requirements between regulatory, implementing, and enforcement agencies and professional organizations involved;
- reporting standards and requirements; and
- results framework, monitoring, and evaluation.

The institutional component of such a reform should be addressed in the inception stages of the process, as soon as the vision, the objectives, and key components are subject to a consensus between public authorities and private-sector stakeholders directly concerned. It implies that the establishment or strengthening, as appropriately, of the administration/agency in charge of the sector is duly empowered, with defined competences (also for its deconcentrated regional/local entities), properly staffed and equipped, and adequately financed through appropriate budget allocations. In any case, the success of the reform depends on its conception method, design, and implementation, and on how it is enforced. Therefore, the institutions responsible for enforcement must be strengthened, empowered and supported but also associated with the reform formulation process.

Competence can also be shared among various administrations, but irrespective of the form of organization, efficient transport sector through a reform and modernization process depends on effective coordination and collaboration. Hence, the roles and responsibilities of the various ministries and entities with competencies in one transport area or another must be defined to avoid misinterpretations, overlapping, and all the potential abuses of dominant power. Mechanisms for ministerial cooperation and coordination have to be designed, organized and supported at the highest level, in a form that is the most appropriate for the national context and that would ensure effectiveness and efficiency of the coordination. Such mechanisms must include representatives of all stakeholders intervening, concerned or affected by the reforms, from both the public and the private sector.

UNESCAP published a set of good practices and guidelines on this matter in order to assist countries in establishing or strengthening coordination mechanisms that would lead to greater coordination between government agencies and between government agencies and the private sector. Although the study covers specifically the Asia-Pacific region, the examples are relevant for developing economies in any region of the world.

The reform could also result from a subregional initiative as it was the case between Benin, Burkina Faso, Niger, and Togo, under the “Project on transit, transport and trade facilitation in western Africa for a better participation in value chains”[21] financed by the WTO’s Integrated Enhanced Framework (IEF) and implemented by

21 Projet sur la facilitation du transit, du transport et des échanges en Afrique de l’Ouest pour une meilleure participation aux chaines de valeur.

UNCTAD, which led the Ministers of Trade and those in charge of Transport of the four countries to sign a quadrilateral declaration for the convergence of the legal framework for transport, intermediation, transit, and trade in Benin, Burkina Faso, Niger, and Togo signed in Niamey on May 25, 2023,[22] aimed at aligning their transport legislations based on an agreed regulatory convergence framework. The road map to implement the declaration foresees that the National Facilitation Committees put in place at the national level according to the WTO ATF would ensure coordination by involving all stakeholders.

Whatever the institutional framework for conducting the reform process, it is important to re-emphasize the paramount need to conduct it through a participatory and inclusive approach involving at all stages all the public and private actors/stakeholders already mentioned. Such a global approach allows to address all key reform elements in a coordinated manner, to ensure that all core components of the reform are in place when it enters into force. This underlines once again the capital role of professional associations of transport operators and transport intermediaries at all stages of the reform.

Therefore, creating or enhancing a favorable enabling environment that would allow the sustainable development of the road transport sector for goods and passengers and of the intermediation subsector, leads to address a wide range of issues to cover key elements, such as:

- **Access to professions rules** (goods and passenger road transport)
  - setting up definitions of professions involved (road carrier – goods and passengers, renters of commercial vehicles, transport intermediaries – transport commissioner, and freight brokers – passengers transport organizers).
  - defining criteria for access to profession (formalization, financial capacity of operators, professional competence of directors and managers and their good professional repute).
  - special attention should be paid to gender attractiveness.
  - clear definition of the own-account transport activity for goods and passengers.
  - enforcement, control, and sanctions (suspension and revocation).

BOX 4.

Access to professions and gender

Efforts to attract and retain women in the trucking industry must address both structural barriers and motivational factors specific to gender. A critical recommendation is providing free licenses through education and training initiatives, which can act as a powerful incentive for young women to consider truck driving as a viable and rewarding profession.

Research underscored the importance of targeted financial support mechanisms in influencing career choices. While salary and fair compensation are universally recognized motivators for employees, the study revealed that young women exploring career options in the trucking industry often prioritize overcoming entry barriers over direct salary considerations. Specifically, the provision of free licenses was identified as a decisive factor in motivating women to pursue the necessary education and training for truck driving. This finding highlights that, while women may not explicitly cite salary as their primary motivator, financial accessibility to initial qualifications plays a significant role in shaping career decisions. Removing or reducing the up-front cost of obtaining a truck DL could effectively encourage greater gender diversity in the sector.

- **Professional drivers** (goods and passenger road transport)
  - definition and social status, special attention should be paid to gender attractiveness.
  - DL system for categories used for transport of goods and passengers (conditions for obtaining the DL, conditions for driving schools and instructors, examiners, exams, etc.).
  - certification of professional competence, including in connection with specific categories of transport (passengers, dangerous goods, etc.).
  - driving and resting times of professional drivers involved in transport of goods and passengers (against reward and own-account).
- **Training capacity** (goods and passenger road transport): Develop or create appropriate training capacity that is adapted to the reform content and dimensioned as per the number of actors to be trained (initial, periodical and refreshing)

22 Quadrilateral declaration for the convergence of the legal framework for transport, intermediation, transit and trade in Benin, Burkina Faso, Niger, and Togo, signed in Niamey on May 25, 2023.

- **Access to market rules** (goods and passenger road transport, or all categories of transport by road (authorizations or permits))
  - for against-reward and own-account transport of goods at local, national, and international level, for general cargo, dangerous goods, goods under controlled temperature, oversized goods/exceptional transport, any other specific category of goods to be transported by road according to needs.
  - for against-reward and own-account transport of passengers at urban (local authorities), intercity, regional and international level (national level authorities), for regular, occasional and touristic purposes.
- **Operating conditions** (goods and interurban and international passenger road transport)
  - legal framework to govern contracts of transport by road for goods (different types) and passengers (urban and intercity/international), intermediation contracts (transport commission and freight brokerage, passenger transport intermediate), and renting of commercial vehicles with or without a driver. It should address and define role and responsibility as well as liability conditions applicable to stakeholders involved in such contracts, including recourse procedures, indemnity conditions in case of damage or loss (goods) and injuries or death (passengers).
  - road transport and intermediation pricing conditions.
  - insurance conditions for transport risks (liability, goods, and passengers transported, economic risks, etc.).
  - financing and taxes on road transport actors and operations.
  - security and safety in operations.
  - use of infrastructure: traffic regulation, prohibition, restrictions, third-party insurance.
- **Vehicle technical standards** per type of vehicle and when needed by category of transport (goods and passenger road transport)
  - conditions for registration, reception, and periodic inspection, safety, security, axle weight (for different configurations), overall.
  - vehicle and load weight, overall vehicle, and load dimensions (length, width, and height), exceptions (oversized transports).
  - environmental performance, energy sources, including decarbonization elements.
  - special standards (vehicles for dangerous goods, perishable foodstuffs, controlled temperature, live animals).
- **Control and enforcement at all levels and steps** (goods and passenger road transport)
  - administrative procedures involved.
  - control and enforcement, including the definition of a coordinated road transport and intermediation control policy.
  - administrative, civil and criminal sanctions.
  - appeal, record keeping, reporting and database.

Of course, embarking on such a complex, multifactor reform, a review of the international, regional, and bilateral instruments related to road transport is helpful in:

- identifying those instruments that can serve as a source of inspiration for national legislation;
- making an inventory of the obligations of the country originating in the instruments to which it is a contracting party to ensure that national legislation/regulation does not contradict international commitments.

However, while a global reach is the target, and all the above-mentioned elements should be addressed and covered in a sectoral reform, it may be difficult for all (public and private sectors) to cope with the conditions introduced by the reform. Therefore, it is essential that the entry into force of the various elements of the reform package are foreseeing reasonable and realistic transitional period and possibly accompanying measures to ensure a maximum compliance on a well-thought-out step-by-step reform implementation approach. This is particularly relevant for emerging or developing countries willing to engage in a sectoral reform, in particular when their own road transport and intermediation sector is poor. This should also be part of the designing phases of technical assistance programs as it will not only help to get the support but also the confidence of all stakeholders in the overall reform process.

C. Access to profession: The operator (or the carrier)

Section summary
The road transport sector (goods and passengers) is predominantly composed of small enterprises, often operated by individuals or small undertakings. In many developing countries, the sector remains largely informal, which distorts competition and affects the quality and reliability of transport services. Historically, regulations have evolved from quantitative restrictions to qualitative criteria for accessing the profession and market.

Key concepts:

- **Access to profession:** Refers to the rules and conditions required for a company, its director, and/or transport manager, to be recognized as a road haulier or transport intermediary.
- **Access to market:** Involves the rules that allow a professional to operate in the domestic or international transport market.

Historically, regulations initially focused on coordinating road and rail transport, with quantitative restrictions and mandatory pricing. Over time, qualitative criteria such as financial capacity, professional competence, and good repute became the basis for accessing the profession.

Currently three main market-access schemes can be witnessed:

1. **Unrestricted access:** No regulations on access to the profession or market, leading to instability and low service quality.
2. **Quantitative restrictions:** Limited number of authorized carriers, often with minimal qualitative requirements.
3. **Qualitative criteria:** Access to the profession based on professional competence, financial standing, and good repute, with free access to the market.

Formalization involves registering transport operators as commercial entities, while professionalization requires meeting criteria for professional competence and good repute. This approach aims to improve the sector's reliability, sustainability, and profitability.

Professional competence is demonstrated through training and examination testifying experience, or recognized diplomas. Training programs should cover commercial and financial administration, technical standards, road safety, and legal aspects.

Reforming the sector requires careful consideration of the existing structure, training capacity, and transitional measures. Governments should adopt clear, implementable legislation, improve institutional capacity, and ensure inclusivity for existing operators. Accompanying measures such as financing and incentives can facilitate acceptance and implementation of the reform.

Efforts should be made to attract and retain women in the transport sector, addressing barriers such as stereotypes, safety concerns, and lack of representation. Initiatives like mentorship programs and inclusive vehicle design can promote gender equity.

Transport intermediaries, such as freight forwarders and brokers, play a crucial role in logistics chains. Clear definitions and access to profession rules would contribute to organize these professions and ensure their contribution to the sector's development.

1. GENERAL CONSIDERATIONS

The road transport sector is made up of a variety of business models used by the operators to perform their jobs. Almost everywhere, the road transport operators are small enterprises, undertakings, or companies acting often as individual or natural persons, known as the "one man/one truck" or "driver-owner" model. In many developing countries there are few operators acting under commercial legal status (natural or legal persons) both for transport of goods and passengers. In general, governments realized the importance of road sector as a revenue generator and took measures to regulate at least the registration of transport operators, in order to mainly make sure that sectoral fees are paid to obtain registration documents, vehicle matriculation, DLs. However, there are still countries or subregions such as in Western Africa where the informal sector remains predominant. This distorts competition with formal operators, low, and bad quality and unreliability of the road transport ser-

vices resulting in law tariffs and lack of recognition of the sector as a true economic vital sector. Informality is a market-disturbing factor, which severely affects the economic viability of the formal sector, which in turn affects the entire trade competitiveness and overall economic and social development.

The road transport sector remains, **for goods and passengers**, very specific across history and in most regions of the world. Its organization has changed over time, reflecting the increasing importance given to the economic and social role played by the road transport sector. The regulation of access to professions and access to market has evolved from complete lack of regulation (translated in total freedom) to quantitative restrictions to operate (quotas), and later to qualitative criteria for access to the profession of road transport operators and transport intermediaries, and for obtaining the right to actually carry goods and transport passengers (access to market).

In some parts of the world (e.g., North America) it is common to use the word "deregulation" to describe the situation where there are no quantitative restrictions in terms of number of transport operators allowed to carry goods and/or passengers; this does not mean that the sector is not regulated in terms of safety, security, or quality of service. However, in many regions or subregions of the world, deregulation is assimilated to freedom of entrepreneurship, which implies, free establishment and freedom of access to market.

2. DIFFERENTIATE AND DEFINE ACCESS TO PROFESSION AND ACCESS TO MARKET

In order to reform the road transport sector **(goods and passengers)**, it is essential to start by differentiating key concepts that are often confused and which then, when translated into regulations, lead to inadequacies or ambiguities in the legal and regulatory framework of the sector and thus disturbs its functioning.

Indeed, and even if it seems obvious, it is essential to distinguish between accessing a profession and exercising it, that is to say, accessing the market. By comparison, a lawyer can practice legal matters, but if she/he wants to be a lawyer registered with the bar, then she/he must become one in order to then exercise this profession.

The same must apply to the road transport and intermediation professions, before being able to exercise (access to the market), one must first access the profession.

- **Access to profession** means all the rules and conditions to be met (by the company, its director and/or transport manager) in order to be recognized as a road haulier of goods and/or passengers for hire and reward, or as a transport intermediary.
- **Access to the market** means all the rules that allow a professional who fulfills the conditions of access to the profession to exercise it, i.e. have access to the domestic and/or international road transport market, or to the intermediation market.

In general, access to profession results from an administrative decision, confirming that the potential professional meets the conditions and requirements established by law/regulation, and is materialized by a certificate of registration to the corresponding professional register.

Access to market is materialized by an administrative procedure that confirms that this professional can operate a particular vehicle for a particular type of transport. In some cases, market access is direct and not subject to authorization, in this case access to the profession gives direct access to the market (intermediation), while in other cases, market access is subject to specific authorization, as is often the case in road transport of goods or passengers (local, national, international). However, in some countries, the road transport market is segmented and access to certain road transport market segments is not subject to specific authorizations (for example, domestic transport), in this case access to the profession gives direct access to this market segment.

a. Historical background and organization models

Regulations of access to the profession and market have progressively evolved over recent history, notably during the last 50 years or so.

The first regulations in road transport came in the last century between the two World Wars to organize the coexistence between road transport which was developing without a precise legal framework, and rail transport which needed a precise framework to develop, in particular to regulate the competition between the two modes of transport. In Europe this was known as transport coordination policies. These regulations were simply based on a quantitative distribution of freight first, then passengers, between road transport and rail transport and were often accompanied by mandatory pricing based on tonnage and distances, so each mode of transport had its quota

of "protected" or reserved transport, in other words the market was regulated, but not the access to the profession. This system was also based on a limited number of actors which were licensed to operate, the licenses had a patrimonial value, based on the freight allocation attributed, and the only possibility to enter the sector was to buy such a license to somebody who wanted to leave the business. In some countries, like in France, the licensing system applied to differentiate local transport (short zone) from long-distance transport (large zone), a license was attributed to a company in relation to the number of vehicles in exploitation in each category and corresponded in fact to the tonnage of transport allowed.

In former communist countries, the road transport sector, as well as all economic activities, was centrally managed and organized by the state. The common model was that one big state-owned road transport company met the road transport needs of the productive sectors and of the population.

After WWII, the reconstruction needs in Europe led to enormous needs for trade and therefore transport, and the coordination policy continued to evolve on the same basis as before, yet without managing to promote the development of rail transport. However, it quickly became apparent that the organization of the market based on quantitative distribution alone was not viable or conducive to promoting the development of the different modes of transport, nor to promoting the modernization and development of each mode. This quantitative restriction approach was therefore gradually abandoned in favor of an approach favoring quality over quantity.

Thus, in Europe, the creation of the European Economic Community led to the design and gradual implementation of a common transport policy, no longer based on quantitative restrictions or sharing of the freight or passenger market, but on the introduction of qualitative criteria serving as a basis for the organization of the road transport sector. It has taken several decades to realize this model. It should be noted that the full implementation of qualitative criteria only materialized with the opening of the Single Market on January 1, 1993. Even today, some temporary quantitative restrictions are still maintained, such as for cabotage. This is how the concept of conditions of access to the profession appeared and was based mainly on the financial capacity of road transport companies and professional qualification and good repute of managers (and later on also drivers). This qualitative approach gradually developed over the course of the economic integration process and the criteria of quantitative market restrictions definitively disappeared in most EU Members States the 1990s.

However, quantitative restrictions still apply to international road transport in most countries and regions, in the form of traditional systems of permits/authorizations quotas for market access. It is still the case in Africa, where in the different regions and economic communities, inter-states road transport of goods and, to some extent, of passengers is still quota-based, in particular to reserve to landlocked countries a two-third share of the tonnage transported form ports. On the Euro-Asian continent, dual systems still exist, either based on bilateral quota systems negotiated between two countries, and multilateral quota systems. For decades, the European Conference of Ministers of Transport (ECMT)'s International Transport Forum (ITF) has created and organized a multilateral quota system, reserving access to multilateral authorizations to transport companies meeting some qualitative criteria as per the ECMT Quality Charter, thus reserving access to international multilateral market to companies meeting the basic conditions and criteria for access to profession.

At the global level, nowadays, in principle, four prominent models have been used for the organization of access to the profession and to the market at the national or regional levels.

b. Unrestricted access model

The early (and rather theoretical model for the current circumstances) meant an absence of any regulations on access to the profession/occupation and the market. This 'excessively liberal' approach lets the transport sector and market forces totally prevail, the number of new entrants into the occupation is not regulated, either quantitatively or qualitatively, and access to any segment of the market is totally free. Qualitative rules on conditions of road freight and passengers transport operations are non-existent, very weak, or when they exist are simply not implemented. This model prevailed in Western Europe from the 1900 to the mid-1930s and offered a high degree of flexibility for the sector and for transport users. However, history shows that the sector was unstable, with significant fluctuation of the numbers in the occupation, frequently accompanied by bankruptcies. The sector, while very competitive in pricing, did not really offer quality services, and in many cases did not provide profitability for road carriers as pricing did not cover real cost. In addition, in those times, concerns with social standards and road safety were almost inexistent.

In this model, the sector, and market were regulated exclusively by supply and demand and was characterized by a fight for survival of undertakings, frequent bankruptcies, and unfair commercial practices on both the demand and supply sides. Ultimately, the 'free-for-all' model tends to be self-destructive.

c. Quantitative restrictions with limited qualitative requirements model

The model of quantitative restrictions based on transport offer limitation, de facto restricts access to the profession while this aspect is not conditioned to any other qualitative

BOX 5.

Self-regulation in South Africa

In the past, access to road freight markets across the main districts in South Africa was restricted on geographical grounds. For the last few decades, as from the early 1990s, access to the occupation of road transport operators and to freight markets has been inadequately regulated; many of the existing regulations are ignored in daily operations, because enforcement as a whole is rather low. In this unregulated environment no further deregulation was needed. Currently, large companies are well run and competition is fierce. In general, margins are very tight with dire consequences, and not just for the small operators. Regarding access to the occupation, there are no specific regulations over and above those governing the establishment of a company in any other economic sector. There is no quantitative restriction on either the number of companies that can operate in the country, or the size of their vehicle fleet, or the number of drivers and other staff employed. There are no obligations concerning company premises; many operators who have a truck or a tractor and trailer combination keep them at home.

There are several opportunities to study road transport operations (university or college) but there are no mandatory conditions for becoming a transport manager and implicitly no special requirements regarding the transport manager's qualifications, training, and examination conditions.

The situation is similar regarding the requirement for managers and companies to enjoy good reputation. There is no such requirement except for the exclusion of candidates with a criminal record.

There is no obligation to prove a solid financial standing of the company either. An aspiring transport entrepreneur will have to demonstrate that she/he warrants support from the banks in order to buy a truck, but other than those checks, she/he is not required to lodge any sort of collateral with any regulator.

Concisely, anyone can establish a road freight transport company, regardless of their education, training, employment background, good repute and/or financial status. There are no restrictions on access to markets: no authorizations or trip permits, or quotas, or prescribed routes, etc.

As to the domestic environment, around 2005 the industry recognized that poor compliance with transport regulations creates an unfair competitive environment. It was therefore felt that a self-regulation scheme is required to create standard rules for the industry, and that these rules should become the 'business norm' – supporting the principles of good corporate governance. Therefore, a self-regulation scheme, the Road Transport Management System (RTMS) was introduced in 2006. The RTMS is an industry-led self-regulation scheme that encourages consignees, consignors, and transport operators engaged in the road logistics value chain to implement a vehicle management system that preserves road infrastructure, improves road safety and increases the productivity of the logistics value chain. This scheme also supports the Department of Transport's National Freight Logistics Strategy. The RTMS's mission is to provide a national management system (standards, auditors, manuals) and implementation support (information portals, recognition, technology transfer) for heavy vehicle road transport to consignees, consignors, and transport operators. This type of initiative may contribute to establishing a level playing field by removing incompliant operators, thus increasing professionalism and fair business practices in the road freight transport industry.

Source: Nordengen and Naidoo (2016) [23]

23 Nordengen , P. and Naidoo , O. (2016). Evaluation of the Road Transport Management System: A Self-Regulation Initiative in Heavy Vehicle Transport in South Africa. In Towards Innovative Freight and Logistics (eds C. Blanquart, U. Clausen and B. Jacob). https://doi.org/10.1002/9781119307785.ch2

criteria. It results that the number of authorized carriers, as well as the size of their fleet are quantitatively limited. A great number of conditions, mainly of an administrative nature, are to be met by applicants. In such schemes, new entrants are allowed only to compensate for the elimination of the transport capacity attributed to actors leaving the market (bankruptcy, retirement, etc.). However, in this model, the consideration of certain qualitative aspects of admission may also be integrated, though only to a limited extent. This is a highly restrictive model whereby all access conditions are under strict control. Road transport operators are highly subdued and replaced by central decision-making with a high degree of potential error. This access model is common in economies dominated by state ownership of businesses, in most cases yielding low efficiency and high costs of operation accompanied by monopolistic pricing causing harm to consumers and ultimately society. A recent example of such a model is that of Greece before joining the EU (see Box 6).

BOX 6.

Quantitative controls in Greece

The privilege to carry goods belonged historically to the state, which passed this on to truckers by selling them a limited number of licenses every year. The license gave the right to carry goods internally and internationally. In 1970 the Government decided that the 33,000 licenses on the market were enough to perform the country's commercial transport of goods and stopped issuing additional licenses. The commercial road transport became a "closed profession." Consequently, the selling price of the licenses rose continuously, and reached as much as 250,000 euros per truck in 2010. A license was seen as a long-term investment and a secure source of income. At the same time, this system protected the profession from stiff competition that new entrants would present, which translated into lack of incentives to innovate. The transport of goods "for own account" was not subject to the same rules. Consequently, there are more than 1.4 million vehicles (smaller or bigger trucks) that are supposed to carry only their own business products or raw materials. This leads to low capacity-utilization. It also means that there are low economies of scale and unregulated use of vehicles.

d. Unrestricted access to the profession but quantitative restrictions to access the market

In Western Europe, the road transport activity that emerged between WWI and WWII was initially not regulated. Before 1930s, anyone could set up a road transport business (either by natural persons or commercial companies), buy and operate a truck or a bus. However, with the development of rail transport and the emerging competition between road and rail transport modes, transport coordination became a necessity. Some countries therefore started to adopt policies and regulations aimed at coordinating the offer of transport. They did not regulate access to the profession, which remained free, but quantitatively limited the long-distance transport offer through the issuance of transport licenses. These licenses were issued by the line Ministry of Transport, which evaluated the total tonnage to be transported by road on long-distance transport and determined the number of licenses needed. The main objective was to protect the rail transport from free, threatening competition with the road transport sector. The road transport companies were issued a limited number of licenses corresponding to their transport capacity versus the overall transport capacity. The number of licenses issued for a given company was limited and additional licenses were issued only if justified by the needs of the company (new clients, new transport patterns, etc.). Transport coordination policies also consisted in fixing tariffs that were adopted by regulation or administrative decision and stating that road transport operators had to apply strictly for long-distance transport.

The transport coordination policies did not bring the expected results in terms of protection of rail transport. Furthermore, the road transport sector, despite its competitive advantage, was not sustainable as it was still dominated by a multitude of small companies, weakly capitalized and very vulnerable in terms of sustainability, and ultimately did not provide a service to the quality level expected. Moreover, the very principle of mandatory pricing does not require the manager to have control over her/his operating costs and sales prices, which in fact exposed companies to real economic vulnerability in the face of fluctuations in activity, to the point that when the abandonment of mandatory tariffs was imposed, without transitional measures, many road transport managers at the time were forced into bankruptcy because of insufficient management capacity. This consequence has also been observed for about 20 years in developing countries which, under pressure from financial institutions, have abandoned price controls without the players being properly prepared for it.

e. Qualitative criteria for access to profession and free access to market

With the development of the European Economic Community (European Union since November 1, 1993) and the step-by-step adoption of the Common Transport Policy effective from 1985 onwards, a new approach to the road transport sector organization emerged. It consisted mainly in first, differentiating access to the profession from access to market, and second, making the access to profession conditional on complying with certain qualitative criteria, while the quantitative limitation to operate was gradually dismantled.

This model is based on a qualitative approach for access to the profession for both road transport of goods and of passengers. It initially started by requiring that legal representative or manager of the road transport activity demonstrates sufficient competence to run its business sustainably through the justification of a certificate of professional competence (CPC). The CPC initially in the EU could be obtained through three paths:

- follow a training which curricula was established by regulation and provided via accredited institutes, pass an exam and then obtain the CPC;
- justify sufficient experience in running a road transport business, for example 10 years; or
- be holder of a diploma (focusing on transport) that was recognized by regulation as allowing the issuance of the CPC by equivalence.

The criteria of professional competence have been complemented by two criteria, one imposed on the legal representative or manager of the company to demonstrate good repute, and one imposed on the company itself to demonstrate good financial standing defined by regulation. The most recent criteria added to these three is the requirement for the transport operators to have a stable establishment with premises and available vehicles in one of the EU Member States in order to be allowed to operate in the EU as a whole.

The criteria for access to the profession are part of the acquis communautaire to be met by new EU candidate countries, but the interest in their implementation has gone far beyond EU borders. Indeed, the UN Consolidated Resolution on the Facilitation of International Road Transport (R.E.4) (Box 9) adopted in 2004 under the auspices of the UN Economic and Social Council, has a global reach and aims at generalizing the access to profession and access to market rules inspired by EU approach, to favor harmonization of road transport of goods and passengers' national regulations in order to facilitate international road transport.

The access to profession rules are increasingly influencing the regulations adopted in the Caucasus, Central Asia, and the Middle East. Some countries in Africa have also included the model in their legislation, in forms that are incorporating the core elements of the UN resolution. It is the case in Côte d'Ivoire with the adoption in December 2014 of its inland transport orientation law that customizes to its needs key UN resolution principles. It is also the case of the road transport and intermediation regulatory convergence materialized by the signature of the Ministers of Trade and those of transport of Benin, Burkina Faso, Niger, and Togo in Niamey on 25 may 2023 of the quadrilateral declaration aimed at ensuring the convergence of their road transport and intermediation regulations, to better contribute to subregional integration, thanks to harmonized regulation thus creating harmonized competition conditions favoring development of road transport sector (see Box 7).

f. Formalization: legal status

Individuals acting as natural persons dominate transport service provision (goods and passenger road transport) in many developing countries where access to the profession is not regulated and where in principle anybody meeting very basic conditions (such as owing a vehicle) can act as a road carrier of goods and passengers. However, this status often covers two realities that should not be confused. Indeed, the exercise of a commercial activity in individual form (natural person), supposes in principle a registration in the equivalent of the trade register, it is therefore a formal activity. On the other hand, in many developing countries, many people exercise a commercial activity in individual form without being registered in the trade register, in this case the activity is informal, this is the case in the road transport and transport intermediation sector. This situation, however, must be analyzed in more detail from a reform perspective. Indeed, in the case of a formal activity in the individual form (natural person), a tax advantage is often associated with this status through flat-rate taxation at an almost symbolic level. This creates a sort of distortion of competition compared to those who exercise in the social form (legal person). However, in various regions of the world, the road transport sector is populated by the "informal sector" which

BOX 7.

European Union – Criteria for access to the profession of road transport operator

Professional competence of the transport manager
This important criterion is met through the following conditions:

- possession of knowledge corresponding to the level of training provided by regulation;
- compulsory written examination which may be supplemented by an oral examination; and
- exemption being possible for applicants with at least five years' practical experience, provided such applicants pass a test, as well as for holders of advanced diplomas.

Good repute of the transport manager
The good repute is established by proving:

- the absence of conviction for serious criminal offenses, including offenses of commercial nature, not to be declared unfit to pursue the occupation;
- the absence of conviction for other offenses, like pay and employment conditions in the profession, rules of road transport, and in particular drivers' driving and rest periods, weights, and dimensions of commercial; and vehicles, road, and vehicle safety, the protection of the environment.

Sound financial standing of the road transport operator
This condition is to be satisfied by the company by demonstrating:

- sufficient resources shall be available to ensure proper launching and proper administration of the undertaking for assessment purposes, review of annual accounts, funds available, assets, costs, premises, plants, equipment;
- the undertaking must have available capital and reserves of at least €9,000 when only one vehicle is used and at least €5,000 for each additional vehicle

The criteria form the basis for licensing road transport operators and must be met permanently. In case one or more conditions are not met, the company must notify the authority and will benefit from a transitional period to regularize its situation (6 months). Failing to inform, or at the end of the period if the conditions are not satisfied, access to the profession may be suspended until conditions are met again.

The criteria shall be implemented in all EU Member States and may be stricter on a national level. However, they should be applied in a non-discriminatory manner. If they are fulfilled, the operator is entitled to receive a community license. Such a license gives, without any capacity restrictions, full access to the market. This entails all freight transport between two EU Member States, transit through an EU Member State and transport within an EU Member State, regardless the EU Member State where the vehicle is registered. Own-account transport may be exempted from a license.

Repeated or severe infringement to the transport governing rules may lead to a suspension or withdrawal of the access to the profession. In case of withdrawal a rehabilitation process is foreseen.

Source: Based on EU Regulation No. 1071/2009/EC.

emerged after a sudden deregulation process without sufficient accompanying measures aimed at upgrading the professionalization and the capitalization of the sector. The informal sector in Western Africa, for example, is formed by individuals operating based on the "one truck–one driver" model; they are acting informally, not even under any natural person status. They obtain their freight also via informal freight distribution channels, while in passenger transport they are part of local groups acting in margin of legality. They generally do not maintain accounting records and operate with outdated vehicles. The viability of such operators is doubtful; however, they are a disturbing factor in the market as they operate outside any economic viable model. Freight intermediaries and shippers, while complaining of the situation benefit from the low prices practiced with a tendency to impose such tariffs levels also to the formal operators, thus generating a kind of snowball negative effect.

It should be noted, that both practices (natural persons and informal) are considered as allowing easy access to a job and or an economic activity which, while unstable, provides a living for extended families. On the other hand, it often contributes to a sector where professional capacity is low, and the activity is performed at a subsistence level, without capitalization and with little concern for the level of quality, reliability, sustainability, and predictability of the service. In the case of a purely informal activity, the distortion of status and conditions of competition in relation to formal actors appears as a key risk factor in a reform context.

BOX 8.

Consolidated Resolution on the Facilitation of International Road Transport (R.E.4) (goods and passenger road transport)

RE4 was adopted in 2004 with the main message to UNECE Member States to liberalize the international road transport market and harmonize the provisions of their international or bilateral transport agreements.

In particular, the resolution defines the "profession of international road transport operator" as the activity of any enterprise carrying out international transport of goods on the account of others with a vehicle or a collection of coupled vehicles. With this definition, the resolution also provides for some minimum conditions and requirements to be met by an international road transport operator. In particular, it stipulates that in order to engage in the activity, transport undertakings must "first be licensed" by their national competent authority based on the satisfaction of three basic criteria:

- Good repute, which is considered to be met by that person managing the activity has not been convicted of criminal offense (including commercial crimes), is not unfit for the occupation and has not been convicted of serious breaches of labor, and transport law.
- Adequate financial standing, which is met when evidence are demonstrated that the undertaking has available sufficient resources to ensure that the company is properly set up and managed. The resolution does not define amounts or ceiling of the financial means that must be available.
- Professional competence, which is met by the person managing the activity when she/he demonstrates that she/he has sufficient knowledge to "engage properly and viably in the occupation" in particular in the fields of commercial and business administration, technical standards, and operations, road safety, access to market, elements of company law, social, and labor law, and civil and fiscal law.

By that, the resolution aims at harmonizing the rules applied to international transport markets, which should be accessible not on the basis of quotas but of qualitative criteria to be met by the operators willing to act on this market.

Source: Based on UNECE.

BOX 9.

Quadrilateral declaration for the convergence of the legal framework for transport, intermediation, transit, and trade in Benin, Burkina Faso, Niger, and Togo signed in Niamey on May 25, 2023 (goods and passenger road transport)

Ministers of Trade and Ministers of Transport of the four countries aware that any objective of facilitating trade, transit, and transport between Benin, Burkina Faso, Niger, and Togo cannot be truly achieved without real regulatory convergence that allows trade and transport players in the four countries to operate within a harmonized framework giving rise to the implementation of fair competition conditions, endorsed the conclusions and recommendations formulated in the report on the "Road transport regulatory convergence framework and its sub-regional implementation strategy"[24] developed within the framework of the subregional project on the facilitation of transit, transport and trade implemented by UNCTAD with funding from the IEF, disseminated in October 2022 and validated in a workshop in the four signatory countries of this declaration.

The Declaration and its attached road map for implementation confirms the engagement to adjust national laws and regulations of road transport and transport intermediation services of the four countries mentioned above to achieve a harmonized and consistent framework in the following areas:

- the definition of the types of activity and professions of road transport and intermediation (including own-account transport activities);
- the conditions of access to the different professions (including those of professional drivers);
- the rules of incompatibility between regulated professions;
- the establishment in each country of a register of professionals in the sector and rules of suspension or removal;
- access to the market; and
- the conditions of exercise on renovated contractual bases.

Source: Based on the Declaration.

24 UNCTAD (2023), Cadre de Convergence Réglementaire du Transport Routier et sa Stratégie d'Application Sous-Régionale en Afrique de l'Ouest. (French).

In developed or highly regulated countries, formality has become the rule, transport operators are acting as registered natural persons or structured commercial undertakings (legal persons). However, traditionally in this very individualistic sector on all continents, many road carriers may prefer to operate under a natural person status for cultural reasons. Yet, it is also observed that this mainly concerns very small size operators, who as soon as development and expansion come, move their activity under a commercial legal person status, for credibility reasons towards clients, authorities, as well as to better obtain access to credit and financing. It should be reminded that in formal environments, where access to the profession is regulated, acting as a natural person limits the commercial possibilities of the transport operators and their capacity to act independently on the market, letting them no other choice than being subcontractors of bigger structured companies depriving them from any real expansion possibility.

It should be mentioned that acting under legal persons status, allows to isolate the personal assets and properties from the professional assets, which is not the case when one acts under a natural person status, where professional and personal assets are confused in one basket, thus fully and completely exposed, in particular in case of financial difficulties.

i. Commercial legal entities

While it is necessary to distinguish, as mentioned above, the informality that characterizes the sector in many developing or emerging countries, from exploitation in the form of natural persons, the fact remains that observation of the sector at the global level shows that the vast majority of turnover is achieved by few structured companies, while a small share of turnover is achieved by a vast majority of actors either formalized in the form of natural persons or simply informal both in goods and passenger transport, particularly in urban, or para-transit passenger transport.

This situation is indicative of one of the greatest weaknesses in the freight and passenger transport sector on all continents, namely a very low level of capitalization of companies, which undermines their longevity and their ability to finance themselves in the long term due to the failure to demonstrate financial institutions and banks guarantees of confidence, even in the medium term. Furthermore, beyond pure informality, the coexistence of natural persons and commercial companies creates a situation of distortion of competition on the sole issues of tax and taxation as has already been noted, as well as a difficulty in financing an area which is nevertheless key for the sector, that of professional training which relies almost exclusively in many countries on commercial companies.

To remedy this situation and to create a favorable basis for fair competition and contribute to an increase in the capitalization of companies in the sector, formalization as a commercial company for road hauliers of goods and passengers, commercial vehicle rental companies with or without drivers, freight forwarders/Transport commissioners and freight brokers, seems to be a major element in structuring the system on clear, transparent and fair bases.

Several forms of commercial companies are known throughout the world, in particular limited companies. While most of these types of undertakings rely on at least two or more shareholders, which in the transport sector may constitute a blocking factor due to traditional individualism, many legal systems have adopted a specific unipersonal limited liability company type. It requires only one shareholder, but while being unique, it will be the founder of a limited liability company and will not act as a natural person, but as the legal representative of a commercial company. This is in particular the case in the Organization for the Harmonization of Business Law in Africa (OHADA) Members States legal framework where the SARL-U (société à responsabilité limitée unipersonnelle) is the simplest but efficient status, in particular to initiate a process of formalization of such a sector as road transport and intermediation. Such a strategy has been adopted and is gradually implemented in many OHADA countries such as Côte d'Ivoire, Guinea, Niger, Togo). This move is facilitated by the adoption and implementation of Single Window Systems for undertaking creation in most countries, simplifying and drastically reducing costs to create a formal company.

Moreover, formalization as a commercial company with several shareholders allows small bosses to group their activities by creating a single commercial company and becoming not only its shareholders, but also its managers. Incorporation as a commercial company appears to be the best instrument for regrouping small actors in light of the reform process to be undertaken.

ii. Cooperative and groupings

Literature often tends to confuse the concepts of formalization and legal form and the means of exploitation, which leads to great confusion, not only in people's minds, but also, and what is even more serious, in the sectoral reform orientations that proliferate here and there.

Indeed, formalization refers to the concept of commercial company/undertaking, or even natural person, while the concepts of cooperatives, grouping or regrouping actually refer not to a formalization of the actors, but to a formalization of a mode of exploitation in common, which is very different, and especially in the perspective of a reform of road transport (goods and passenger), where the key problem is the informality of its actors. This cannot be resolved by grouping them in an exploitation structure but by formalizing them individually, to then allow them to formalize modes of exploitation in common, but after having been formalized themselves.

This will appear clearly through the definitions of each type of the most common groupings:

- **Cooperative**
  - **Definition and principles:** The cooperative is a type of legal person with a civil or commercial object which is created with the aim of eliminating capitalist profit, either by pooling means of production or by buying or selling goods outside commercial circuits. In this type of legal person, no profits are distributed, members are named "cooperators" they are employees of the cooperative and receive a salary, and bonus if any in case of cooperative profit.

    The cooperators subscribe to shares by making contributions either in nature (a vehicle) or in cash. In general, the voting rights are not based on the share, but each cooperator has one vote at the General Assembly of Cooperators. The cooperative is administered by a management committee or by a board of directors, composed of members (employees) elected by the General Assembly. The financial results of the cooperative are and remain those of the cooperative.
  - **Application of these principles to road transport:** the cooperators are not any more managers; they remain employees of the cooperative. Only the manager of the cooperative is considered as the manager of the cooperative, the vehicles that are brought to the cooperative become the property of the cooperative, and not that of the individual that brought it in nature to the cooperative. The revenue taken from the business is entirely attributed to the cooperative. In principle, each cooperator is severally liable for all actions of the cooperative. This was a critical factor in Greece for example, where road carriers' cooperatives were established to try to regroup small road carriers. However, as some of the cooperators undertook critical activities on behalf of the Cooperative, leading to important deficit, the condition of several liability has led some cooperators to have to pay for others, so that most of the cooperatives were dismantled, as no one wanted to be liable for the others.

    In practice, this means that within a cooperative, each cooperator brings in nature a part of the cooperative assets. The vehicles for example, all cooperators, except the Director, are not subject to any obligation in terms of training and professional competence in relation to access to profession rules, nor in terms of good repute. In fact, in road transport the cooperative approach may only concern "owners – drivers" type of operators who would group through the cooperative, in that case, except the one appointed as director, all others would remain simple drivers and employees of the cooperative, while also cooperators.

    This demonstrates that the 'cooperative' is a form of exploitation of an activity that have no structuring effect as each individual cooperator will become an employee not concerned by key obligations in relation to professional competence and good repute. It does not contribute to the expected formalization beneficial effects.
- **Grouping**
  - **Definition and principles:** They are many types of groupings, the most popular being the economic interest group (groupement d'intérêt économique – GIE). It aims at facilitating the economic development of companies by pooling together resources, whether material or human to achieve a common objective.

    Members of the group, generally commercial companies, also retain their own activities and remain in legal existence and activity individually, but, between them, pool an activity that will ultimately benefit each group member.

    In general, a group has no capital, but may have one, it is formed for a given objective and a limited duration. The group is established by a contract between its members, it forms the status of the

group, it is considered as a legal person, and as such can contract and have properties. All members form the General Assembly which appoints an administrator. The group is obliged to redistribute the entire profit to its members, the sharing is done according to the contractual provisions and the decisions of the General Assembly.

- **Application of these principles to road transport:** as each member continues outside the group to undertake her/his own business, it appears that this tool is not designed to formalize any type of business or economic activity. By definition, the group's objective is not to generate business for its members, but to allow them, in addition to their own activity that remains, to undertake together the conduct of a project or a business. Additionally, as in most cases, a group has no capital, it does not contribute to recapitalize the sector.

  However, if the grouping has no contribution to any sector formalization effort, as its members remain in activity on their own, and it is form for a limited time for a given objective, it may be a useful tool to be used in specific situations, for example, to rationalize operating conditions by mutualizing between members companies some activities or functions, such as, commercialization of services, maintenance of vehicles, operation of passenger transport lines.

This form of grouping does not contribute either to the required sector formalization but may be used to optimize operating conditions among its members.

NOTE: It should be noted, however, that the constitution of groups between already structured and powerful commercial companies can lead, in certain situations, to a cartelization of the market, or even to abuses of dominant positions, by guaranteeing its members a sort of advantage preventing potential competitors from accessing market shares. This may be the case, for example, of groups made to conquer a market for container post-maritime routing, through which the members of the group could, due to their strength, harden the market and prevent other players from accessing it. This technique must therefore be the subject of particular attention so that its initially laudable objective does not lead to locking of certain market segments.

- **Joint ventures**
  - **Definition and principles:** a joint venture refers to any form of cooperation between commercial companies. A joint venture is in fact a collaboration contract between two or more companies with the aim of pooling a strategy (sharing costs and risks) or implementing a specific, defined and limited activity in time. The joint venture contract defines the scope and respective involvement of the partners, as well as the costs and benefits sharing conditions, it also designates a representative (often designated as the Joint Venture Agent) empowered to act on behalf of the partners. A joint venture is not considered as a legal person, its engagements are those of each partner. In a joint venture, each partner is responsible for its part of contractual obligations and bills the client directly for its share.
  - **Application of these principles to road transport:** it appears that a joint venture is not contributing to formalization of the sector but represents a means of operation that mays allow several road transport companies to join efforts, built a common offer to obtain a given market or contract. It is very often used for organizing road transport operations within a global equipment project, such as building infrastructures (pipeline for example). In such a situation, road carriers are forming a joint venture to undertake the transport component of such a project. It may also be leveraged to organize passengers transport in the context of a big exhibition, or cultural or sporting event.

    This demonstrates also that this type of contract does not contribute to formalization but facilitates market access and improved operating conditions through cooperative efforts.

It appears clearly, that the various types of groupings relate rather to improved operating conditions than to formalize the sector. If it is self-evident for groups and joint ventures, it is also the case for cooperatives, as each cooperator will stay in its status of "driver" and will continue to act without being able to benefit from the "social lift effect" the sector usually offers. To a great extent, the cooperative model, when implemented at the initial stage of a sectoral reform process based on access to profession rules and professionalization, is counterproductive, as it will divert small owners of vehicles to formalize themselves and to benefit from enhancement of professional competence offered, even it could be said that they will be deprived form their own asset (the truck or bus or taxi) that becomes the property of the cooperative.

g. Sociology of the sector

In terms of the sociology of the sector (goods and passenger), it should be noted that the road transport sector is often dispersed and highly atomized, but also that of intermediary professions (freight forwarders, freight brokers) and that it is very informal in many developing or emerging countries.

Therefore, entering into a process of sectoral reform requires considering a multitude of factors which will influence not only the identification of needs, but also the capacities of the sector and its actors to adapt relatively rapidly to the new conditions which will result from the reform.

Among these elements, some are of particular importance:

- **Unfavorable age pyramid:** In many countries, owners of commercial vehicles intended for the transport of goods and passengers and who are considered as transporters, often started very young as drivers, then acquired a vehicle and operated on the market with more or less success. But most of them are now old and reluctant to abandon their activity for many reasons: the need to maintain a source of income in the absence of a sustainable pension system, the low rate of profitability or even its non-existence, and the lack of young buyers with the necessary means to start a business.
- **Low level of education and analphabets:** This aging professional population is also characterized in many countries by a low level of education, since families with insufficient income and unable to finance studies place their young boys with a driver (especially in the transport of goods) in order to learn the trade, and perhaps later move from driver to transporter. These young people, often placed around 14 or 15 years old, left the education system very young and are therefore often illiterate.
- **Language barrier:** This elderly and poorly educated population is also often seen as language-savvy and are often dependent on local languages with limited geographical reach even at the national level.
- **Low capacity to adapt and reluctance to change:** These different characteristics place many active professionals in a situation that is not very conducive to adaptation, because often conditioned by their practices and habits, they are not necessarily favorable to adaptations and not very receptive to new learning in areas unknown to them, due to their intuitive practices. This is valid for both goods and passenger transport operators, and to a certain extent to transport intermediaries, in particular those informal.
- **Gender unbalanced situation:** While it is increasingly common to see women occupying administrative positions in transport and intermediation companies, it is rarer to see them in managerial positions in a sector that is still very masculine.

  The road transport sector exemplifies a male-dominated environment where gender disparities persist, particularly in leadership and representation. In 2018, females represented less than 20 percent of the global transport workforce, with an even starker imbalance in specific areas such as freight transport. For example, in seafaring, women account for a mere 1.2 percent of the global workforce. This imbalance is rooted in long-standing stereotypes, structural biases, and cultural norms that view road transport as a “man’s job.” These perceptions discourage women from entering the field, let alone advancing into leadership roles.

  - **Barriers to women in leadership:** Women in road transport face multiple barriers, including stereotyping and gender biases, which significantly hinder their career progression. Stereotypes function as ideological tools that reinforce existing power structures, marginalizing women and other minority groups. These biases not only prevent women from accessing leadership positions but also contribute to the perception that they lack the “masculine” traits traditionally associated with such roles.

BOX 10.

IRU’s Women Driving Change report

IRU’s Women Driving Change report underscores these challenges, highlighting the lack of female representation in leadership as a critical obstacle. Participants in the study emphasized that the absence of women at the top perpetuates a cycle where young women lack role models and mentorship opportunities, further discouraging their entry or advancement in the sector.

  - **The importance of networking and mentorship:** Networking and mentorship programs have proven essential in breaking down these barriers. The American Trucking Associations’ Women in Motion

program, for example, has been instrumental in connecting women across the industry and establishing strong support networks. Such initiatives enable women to share experiences, gain access to leadership insights, and foster a sense of belonging, which is critical in a male-dominated industry.

Leadership development programs also play a pivotal role by equipping women with the skills and confidence needed to navigate challenging environments. As women ascend into leadership, they face additional complexities, such as balancing professional and domestic responsibilities, which can derail their career progression. Transformational learning through structured programs helps women build resilience and overcome these challenges.

- **Socio-economic and cultural implications:** The gender imbalance in road transport reflects broader societal inequities. Women often carry a disproportionate share of domestic responsibilities, limiting their capacity to pursue demanding careers. Additionally, the lack of flexible working hours and inadequate safety measures within the transport sector disproportionately affect women, deterring their participation. Safety concerns are particularly pressing; women face higher risks of harassment and violence, both on the job and while using transport services.

- **Own-account transport of goods prevails in some regions:** Unlike what is observed in most developed economies, own-account freight transport tends to develop in certain regions, such as West Africa where on certain corridors, it can represent up to 80 percent of the tonnage transported from ports to hinterland countries. However, these operators, who are industrialists or traders, have a sociology very different from the transporters, they often benefit from a legal vacuum for this activity (which is not a profession) and often constitute an elite that opposes professional road carriers.

- **Unbalanced composition of the sector:**
  - **Formal road transport operators** are usually structured around three basic functions: commercial, administrative and financial, and operations (commercial transport of goods and passengers, transport planning, maintenance, etc.).
  - **In most of the small structures**, the manager is often the owner of the vehicle and activity (natural person) or the main shareholder (unipersonal legal person), and may assume various functions, including sometimes acting in addition as driver, in particular in individual companies. In medium-size companies (five to ten vehicles), the manager often herself/himself assumes the commercial and general management functions, in particular finance, while operating agents are taking care of the organizing of the activities and managing the drivers, while administrative and accounting functions are in the hands of specialized staff.
  - **Over a certain size, more than 20 vehicles, the internal organization, and management structure** may vary according to the type of activity (full load, specialized transport, long/short distance, local distribution, international, etc.) and the geographical location.
  - **For road transport operators' mono-site based**, the usual structure prevails; however, for companies disposing of several locations/establishment certain functions may be decentralized such as fleet management, drivers, and commercial activities, in particular for local markets. In such business models, general management, social aspects (salaries, social care, etc.), legal, accounting, and finance as well as overall commercial aspects remain at the headquarters or main establishment.
  - **For more sophisticated road transport operators** offering not only transport services but also transport organization, forwarding, and logistic services, each activity may be organized as a profit center.
  - **For transport intermediaries, in particular freight brokers** for their part, have a sociology quite close to that of the former road carriers, namely, old, without real education, without structures, most often acting informally. They have often developed thanks to the deregulation process of the sector benefiting of a complete legal vacuum, attracted by the absence of need for investment to launch the business; a telephone and an address book often representing the only material elements of entry into this market. These actors are not very receptive to a reform that would lead to their formalization in order to better integrate them into the value chains.

- **Low financing capacity and limited access to credit and finance:** the unfavorable sociology of the sector makes it vulnerable in terms of access to means and methods of financing. This situation creates an unfavorable opinion of financial and banking institutions, which, due to its sociology, consider the sector unre-

liable, with unpredictable levels of activity and above all unprofitable and therefore too risky as it does not propose or provide any sustainable and viable guarantee.

3. PATH TO REFORM

In most countries where a sectoral change or reform is needed or envisaged, special attention should be paid to the structure of the road transport companies, which in turn influences the business models that will be used from the legal and from the operational point of view. Even if it is difficult to measure or correctly assess, this aspect is particularly important in countries or regions where the informal sector has become increasingly important in terms of actors and market share.

Therefore, formalization and professionalization should be the two pillars that will ensure modernization of the road transport of goods and passengers and of intermediation.

- **Formalization:** The general orientation of the reform may target the formalization of the sector (goods and passenger road transport) to make it reliable, sustainable and profitable to the economy thus inducing also the professionalization of all actors involved, including own-account and intermediation actors. Such an approach would imply structuring the profession in such a way that one consequence is the formalization of the informal sector. Indeed, contrary to what is often mentioned, the reform objective is not to eradicate the informal sector, but to formalize it as much as possible through appropriate inclusive reform building. Indeed, while formalization is key, the reform should not generate a feeling of exclusion of the informal sector but a feeling of being able to be an actor of progress aiming at ensuring stable and sustainable activity. Indeed, the number of people involved in the informal sector may represent in itself a risk of social disturbance and troubles that may jeopardize not only the reform but also the social peace, with consequences on the economy if they are not considered properly and integrated in a positive manner in the reform process.

  The conception of the reform and its connected communication will therefore play a crucial role as it may facilitate the process of acceptance of the reform by the stakeholders. The benefits of addressing this crucial issue in a positive tone may materialize in an easier acceptance of the reform and improved chances for success.

  Governments may wish to include in the reform process and content some accompanying measures, e.g., incentives or support mechanisms to encourage the carriers to formalize and operate as legal persons rather than individuals or natural persons. Incentives could be put in place to encourage the operators to embark towards this path. The promotion of the formalization for informal and natural persons should be accompanied by incentive measures such as for example, enjoying if formalized, the benefits of facilitated updating trainings or modern and attractive fleet renewal program.

- **Professionalization:** If formalization is key, it should be undertaken simultaneously with the professionalization of the sector (goods and passenger road transport), one element without the other would lead nowhere. Indeed, many isolated efforts have been deployed through capacity-building programs for road transport actors, but the expected results are not achieved, as they were not part of a global approach to road transport modernization.

  Establishing or changing the conditions for access to the profession through professional competence criteria is a very sensitive issue. However, this is essential for creating a professional and efficient road transport industry. The sociology of the sector mentioned above must be considered to a large extent to enable the construction of a professionalization framework which is accessible and attractive to the greatest number if we want the reform to bear fruit and prosper. Since the objective is inclusive, the professionalization framework must consider mechanisms that are adapted and adaptable to different situations on various continents, while still being based on international standards that have proven their worth and which are also implemented appropriately in many developing or emerging countries.

  It must accommodate both the upgrading needs of the actors in practice while creating a more complete framework for new arrivals in the professions of road transport of people and goods and intermediation, the challenge is there, a simple duplication of one framework or another is not appropriate. However, an adapted implementation of international standards is advisable.

- **Gender inclusiveness:** Creating a more inclusive and equitable transport sector (goods and passenger road transport) requires concerted efforts across multiple fronts:
  - **Visibility and representation:** Promoting women in leadership roles, as exemplified by Mahindra Group's commitment to diversity, helps challenge stereotypes and inspire the next generation of female leaders.
  - **Policy and regulation:** Implementing policies that ensure equal access to education, training, and flexible working arrangements is crucial. Enhanced safety protocols and addressing biases in recruitment and workplace culture are also vital.
  - **Support systems:** Establishing robust mentorship and networking programs fosters community and provides women with the tools they need to succeed.
  - **Inclusive innovation:** Women are under-represented not only as managers or professional drivers but also in the design and engineering of vehicles, leading to significant gaps in safety and comfort. Current crash-test dummies, predominantly modeled on the average male body, fail to account for anatomical differences, leaving women at a higher risk of injury in similar crash conditions. Additionally, vehicle in-cabin ergonomics rarely cater to the specific needs of women, particularly in transit settings where social conditions can heighten feelings of insecurity. Studies reveal that women are 10 percent more likely than men to feel unsafe while using public transit.

BOX 11.

In vehicle design

A crucial step toward addressing these disparities is to involve more women in the vehicle design and manufacturing process. Companies like Ola Electric Mobility have taken innovative strides by launching the world's largest all-women factory, focused on producing electric scooters and employing up to 10,000 women. Similarly, Ford has increased the recruitment and training of female engineers, ensuring that diverse perspectives are incorporated into vehicle design. These initiatives not only contribute to safer and more inclusive transportation but also promote gender equity within the industry.

a. Drivers of reform

Aware that the sectoral reform is multidimensional, the drivers of the reform must design each element of the reform in relation to the others. Thus, they must reflect the rules of access to the professions of road transport (goods and passenger road transport) and intermediation in the legal framework (enabling environment), but also be aware of their links with other components of the reform (access to the market and operating conditions, driver, vehicle, externalities, and decarbonization).

Therefore, the inclusive design of the rules of access to the professions must:

- be part of a global development policy supported and desired at the highest level of the state
- involve a design that associates all the public actors potentially involved:
  - the Ministry of Transport must be the leader but in consultation with its implementing agencies and branches,
  - the Ministry of the Interior (control and implementation),
  - the Ministry of Higher Education (Accreditation of training centers for professional competence criteria),
  - the Ministry of Justice (texts to be adopted and sanctions foreseen),
  - the Ministry of Trade (trade policy and objectives),
  - the Ministry of Economy and budget (connected administrative fees and taxes, as well as budgeting the reform needs),
- Involve key private-sector stakeholders:
  - professional organizations representing the transport of goods and passengers,
  - professional organizations representing intermediation professions,
  - professional organizations representing users of transport and intermediation services,
  - professional organizations representing the actors of own-account transport,
  - professional organizations representing the private higher education institutes and centers.

The objective and framework of the reform must be designed by the ministry in charge of road transport as part of the overall development policy, but the details and content of the reform must result from a consensus of all stakeholders to ensure that the reform is accepted, because it is co-constructed, and implemented effectively. Indeed, the reform or change in this field is socially very sensitive and should ideally be envisaged through an inclusive coordination and consultation process that involves professional associations, to ensure that the industry adheres to the future rules.

b. Main challenges

Many countries are considering reviewing their road transport access to road transport and intermediation professions rules (goods and passengers road transport). This is a crucial component of road transport sector reform and needs to be approached carefully based on clear data and a sound diagnostic analysis. The main specific aspects to be identified before designing the reform are:

- What is the profession willing or ready to accept?
- What is the government ready or willing and able to finance, implement and enforce?
- Are training institutes and authorities able to cope with the new rules, and if not, how long would they need to be in a position to implement them?
- Are foreseen transitional and accompanying measures sufficient to ensure inclusivity for those in operation when the reform enters into force?
- How those impacted by the reform and not able to meet the new requirements, even with transitional measures and delays, could benefit from professional retraining or reclassification programs
- What is the situation in the neighboring countries and main trade/transport partner countries in order to avoid creating unequal competition rules?

Usually new rules apply immediately to new entrants, but for existing operators, particular attention will have to be paid to defining transitional periods and measures towards facilitating full compliance.

As far as the transitional period is concerned, authorities are advised to adopt a realistic and pragmatic approach. A too short transition period will not allow the full reform implementation failing to dispose of all its tools (in particular the training capacity, and digital solutions to manage the new access to profession service such as the transport register), and will not permit the integration of the vast majority of existing companies. A too long transition period will lessen the benefits of the reform.

As for any change or reform, the risk of failure is high if the above-mentioned issues have not been properly considered and addressed. The risk of not assessing properly the extent and consequences of the reform may lead to the exclusion from the market of a number of actors that cannot be replaced on the spot. This would aggravate the situation and create room for the development of an informal market that will affect the sector in the long run.

The legal and regulatory framework to be designed must be detailed and clear; to avoid misunderstandings and give room for interpretation. To that end, it is advisable rather to adopt brand new legislation and implement regulations that cancel explicitly previous texts, than to amend existing texts – for which parts are canceled or modified, while others are new – as the legislation eventually becomes unreadable, and therefore not implementable.

It should also be complete to avoid creating room for legal vacuum that would be an open door to bypass the reform. Reforming the road transport sector without including the renting of commercial vehicles in the scope of the reform would allow those not willing to cope with new requirements to pretend making business in renting instead of transport, as is the case in Côte d'Ivoire for example.

c. Recommendations for rules on access to the profession, including professionalizing the sector (goods and passengers)

There is no "off-the-shelf" solution applicable in every country and region of the world homogeneously. However, based on some key international standards and experiences of countries around the globe, some recommendations may be drawn up to guide governments in their reform process.

Of all the international examples, the EU rules represent the most comprehensive scheme on the subject but is difficult and not advisable to replicate as such, as it took 50 years for EU Member States to reach the current level of sophistication that was gradually instilled.

However, the UN Consolidated Resolution R.E.4 provides a good source of inspiration for countries wanting to reform their transport sector and in particular access to the profession rules. Indeed, the resolution gives directions

and recommendations that can easily be customized to local needs and capabilities to guide the design and conduct of the reform and even design it in an evolutionary way over time in order to strengthen it as intermediate objectives are achieved.

In many developing countries, the sector lacks capitalization, profitability, proper financial and commercial management and its informality leads to low professionalism due to low education and lack of capacity, both human, and resource wise, to develop. The great informality leads small individual road carriers, both in passengers and goods transport, to operate in margin of normal business rules, attempting to "round the corners" through various practices (tax evasion, buying the fuel from doubtful sources, illegal employment of drivers, etc.) the whole leading to sector instability, unpredictability, low quality of service, and unsustainability.

This can be redressed and addressed in a number of ways by:

- adopting a legal/regulatory framework that is clear and implementable;
- increasing the institutional capacity of authorities to monitor the sector and enforce the law (by rewarding/incentivizing/holding them accountable);
- improving the professional competence of all operators involved in goods and passengers' road transport (road carriers; transport intermediaries, transport users);
- ensuring increased and progressive financial standing and proper capitalization of road carriers and transport intermediaries.

1. LEGISLATIVE AND REGULATORY APPROACH

The rules (laws, regulations) to be adopted should define the scope (applicability) of the criteria to be adopted to organize access to the professions. To achieve the goal assigned to road transport sectoral reform, the legislation and its implementing regulation should be based on eight key components:

a. Definition of professions and activities concerned (goods and passengers)

So that the rules of access to the different professions or activities (and then those of access to the market) are clear and understandable by all, it is essential that each profession is the subject of a precise definition:

- public/for hire or reward road carrier of goods and/or passengers;
- renter or leaser of commercial vehicles with or without driver (intended for the public or private transport of goods or people) freight forwarder/transport commissioner (goods);
- freight broker;
- passenger transport intermediary.

The definition of professions must be supplemented by definitions of the activities that may be induced, namely:

- own-account/private transport of goods and people;
- urban, interurban, international transport of goods or people;
- regular and occasional transport of people;
- tourist transport of people.

For the transport of goods, definitions of special transport may also be given to facilitate the implementation of the legislation:

- transport of dangerous goods;
- transport of waste;
- transport of live animals;
- exceptional or oversized transport;
- transport under controlled temperature.

It is desirable that the definitions that will be adopted be harmonized based on the rules that appear in:

- the consolidated resolution of the UN of 2004;
- the major international transport conventions;
- existing legislation compatible with the previous one; or
- subregional texts or references, such as the convergence framework adopted between Benin, Burkina Faso, Niger, and Togo.

b. Definition of the legislation and regulation scope (exclusions) (goods and passengers)

It is essential that the scope of application of the rules of access to the various professions and activities be defined, namely the defined professions and activities.

It is equally important that the excluded areas be specified, namely:

- transport organized by the state with its vehicles for its own needs or for military or public security or health requirements;
- emergency services, e.g. medical transport (ambulances);
- funeral transport;
- transport under international postal conventions;
- transport below a certain weight or number of passengers (while not recommended).

c. Professions' incompatibility rules (goods and passengers)

To avoid cartelization of freight, and abuse of dominant positions, it is advisable that the legislation foresees some incompatibility rules between some of the professions and activities, in particular:

- public (against reward) carrier and private (own-account) carrier of goods and/or passengers;
- public (against reward) carrier and private (own-account) of goods and renter of commercial vehicles with or without drivers;
- public (against reward) carrier and private (own-account) carrier and freight forwarders and freight broker;
- renter of commercial vehicles and freight forwarders and freight broker.

Many countries have adopted such incompatibility rules such as Côte d'Ivoire, Togo, Niger, and Guinea.

d. Definitions for access to professions and activities criteria and conditions (goods and passengers)

Once definitions and scope are clear, it is necessary to define the conditions and criteria that should be met to access the regulated professions and that should be maintained permanently throughout the entire company life and activity.

Taking into account the specificities of the road transport and intermediation sector, it is usual to apply specific criteria and conditions in terms of:

- **Formalization and stable establishment**
  - The legislation should establish that anyone who has access to exercise one of the regulated professions must be incorporated as a commercial company, even a single-person company, and prohibit access to any natural person. However, this condition should not apply for own-account transport activity that may be undertaken by natural persons, as this would create too much restriction not useful to regulate the sector.
  - The legislation should also establish that the company must be effectively and permanently established on the national territory covered by the said legislation and could include conditions relating to available premises, vehicles operated, and parking spaces.
- **Sound financial capacity/standing of the company**

  This does not apply to own-account transport.

  As far as the sound financial standing criterion is concerned, the rules should define the financial standing baseline realistically, but possibly foresee to increase it over time to gradually improve the sector's financial reliability. It is indeed crucial to determine this reference point in accordance with local conditions and possibilities, so as to ensure that most undertakings and companies may comply with the criteria in a reasonable time.

  The sound financial standing condition could be defined through different methods:

  - as it is the case in the EU, based on an amount per vehicle, that should in total correspond to the capital of the company, or funds available in bank accounts, or confirmed by a bank guarantee. Distinctions are also made between vehicle categories. However, such an approach seems unrealistic in most developing countries; or
  - as it is the case in many African countries through some basic obligations such as bank domiciliation, minimum accounting records, registration of employees at the social security organization, justification of fiscal and social contributions' conformity.

  The legislation and its implementing regulation should define:

  - the ways the financial standing is proven (audited accounts, Bank statements, documents to be provided, etc.);
  - the procedures in case of change of condition affecting the condition's compliance;
  - the procedure for cases when the condition is not met anymore and transitional period granted to allow the company to be compliant again;

- define the sanctions to be applied in case of non-compliance with the criterion after the end of the transitional period mentioned above;

- **Professional competence of the company's director/manager**

  This does not apply to own-account transport.

  As far as the professional competence criteria concerned, the rules should define:

  - the obligation for a company governed by the legislation/regulation to demonstrate that its legal representative or at least its delegated manager meets the professional competence condition materialized by a CPC as defined by the legislation/regulation.

    It is recommended that the person who must comply with this criterion is the same as the one who shall be requested to prove compliance with honor/good reputation criterion.

    In any case, the rules should foresee that the person concerned by the legislation should be the one ensuring effective and permanent management of the road transport activity within the company.

  - the ways for the legal representative or manager of the profession concerned to obtain and justify the professional competence condition, this includes conditions on minimum age, education level, nationality.

    It is recommended that three possibilities be offered to justify the professional competence criteria to ensure, in particular at the initial stage, that actors in operation when the reform enters into force have sufficient possibilities to comply with the new rule. This aims to avoid the training capacity being unable to train all concerned fully:

    - follow a training course which is established by regulation and provided via accredited institutes, pass an exam and then obtain the CPC;
    - justify sufficient experience in running a road transport business, for example 10 years;
    - be holder of a diploma (focusing on transport) that is recognized by regulations allowing the issuance of the CPC by equivalence.

  For the recognition of experience and of diploma, it is recommended to foresee short update training (1 week) to ensure key concepts are mastered by applicants.

  - the procedure for cases when the criterion is not met anymore and transitional period granted to allow the company to be compliant again.
  - the sanctions to be applied in case of noncompliance with the criterion after the end of the transitional period mentioned above.
  - each profession's competency frameworks (road carrier of goods and passengers, renter of commercial vehicles, freight forwarder, freight broker, passenger transport intermediary).
  - the training programs for legal representatives/managers of road transport companies, renters of commercial vehicle, transport intermediaries (transport commissioners/freight forwarders, freight brokers) to ensure the required level of professional competence. The UN Revised Consolidated Resolution on the Facilitation of International Road Transport (R.E.4) highlights the key areas of basic knowledge a director or manager of a road transport company should master (see Box 11). Annex 4 and Annex 5 present an indicative list of subjects, compliant with the UN consolidated resolution, to be included in the curricula for manager training and the specific example of subjects included in the IRU Academy CPC Manager Programme, as well as an example of the Certificates.
  - the conditions required from the training institutes and from the trainers to be certified by the Ministry of Transport to deliver defined training programs (legal condition, equipment, teachers' skills and competences).
  - the accreditation process for the training schools and institutes allowed to deliver these programs and the way the conditions are verified and implemented.
  - the examination conditions (calendar, type of exam, etc.) and authority in charge.
  - the certificate to be issued (its content, format, digitalized form, security features, etc.).
  - jointly with the ministry in charge of superior education, the list of diplomas allowing to obtain the CPC without being obliged to follow the complete training.

  It is advisable, that attractiveness for vulnerable people and women of the road transport and intermediation sector is included into the various curricula, to not only alert directors and managers in operation, or to come,

on the need to adopt at company level appropriate rules, culture, and behavior, to make the sector attractive for women and vulnerable persons.

Refer to Section IV. E. for more details on the needs for preparing required training capacity.

- **Professional honor/good repute of company's director/manager**

  It is recommended that this condition also applies to own-account transport activity.

  The rules should foresee that the person concerned by the legislation (legal representative and manager) should be the one ensuring effective and permanent management of the activity concerned within the company (road transport, renting, intermediation).

  The rules should define:

  - the elements that would be accepted as proof of honorability/good repute. For example, the applicant may be requested to prove that she/he has not been:
    - convicted of serious criminal offenses, including offenses of commercial nature;
    - declared unfit to pursue the occupation; or
    - convicted of serious offenses related to the transport legislation, like drivers' driving and rest periods (if any yet), weights and dimensions of commercial vehicles, road, and vehicle safety, the protection of the environment.
  - the procedure for cases when the criterion is not met anymore and transitional period granted to allow the company to be compliant again.
  - the sanctions to be applied in case of noncompliance with the criterion after the end of the transitional period mentioned above.

e. Materialization of access to professions and road transport (goods and passengers) and intermediation register

The rules should foresee that when access to profession or activity (own-account transport) criteria are met, access to the profession would be granted by administrative decision and would be materialized through a registration of operators (company, undertaking) in a dedicated Road Transport Professions Register maintained by the Ministry of Transport or any other authority locally designated for that purpose.

BOX 12.

UN Revised Consolidated Resolution on the Facilitation of International Road Transport (R.E.4)

"Professional competence" should consist of possessing sufficient knowledge to engage properly and viably in the occupation of international road transport operator, including, as a minimum, knowledge of the following subjects:

- commercial and financial business administration;
- technical standards and operations;
- road safety;
- access to markets;
- elements of company law;
- elements of social and labor law;
- elements of civil law;
- elements of fiscal law.

BOX 13.

Access to profession and TIR admission criteria

In countries where access to profession is not regulated at the national level through qualitative conditions, when they are contracting parties and implementing the TIR Convention, the admission criteria to the TIR system, applicable to road carriers and influenced by those of the UN consolidated resolution, become a source of inspiration to formulate regulation. Furthermore, transport companies' clients, appreciating the fact that the TIR system guarantees their cargo security en route and improves transport efficiency, put TIR in their contracts as a transportation condition for their international operations. This drives the demand for TIR companies in the market, as it contributes enhancing professionalization.

Similar approach could be applied in the absence of access to profession rules when an authorized economic operator scheme is implemented and accessible to road carriers.

Several possibilities are offered to formalize this process for obtaining the decision confirming access to the profession and its materialization:

- The administration in charge proposes to the minister a regulatory act listing the companies, per category that obtained access thus confirming they meet the requirements. This process is therefore purely administrative and internal.

- A consultative commission is established by regulation and composed of administrations in connection with transport and intermediation, including enforcement authorities, and professional organizations. In that configuration the consultative commission meets regularly and provides advice whether to grant or refuse access to a company applicant, it motivates its advice. In that configuration, the minister may decide or not to follow the advice given.

This commission could also be tasked to review and propose administrative sanctions in case of infringement to the access to profession rules.

The rules could also foresee that the minister delegates the decision-making process to one director of its administration. In both procedural possibilities, the decision to grant or refusing access to the profession is of administrative nature and, therefore, should be subject to administrative and judicial appeal procedures as set in the national legislation of the country concerned.

The certificate of registration should be identified with a unique reference number that should appear on all commercial documents of the company concerned. This unique reference number should be the link to other types of registers, such as, transport authorizations, CPC repository.

The certificate of registration's content and form would be defined by regulation, it is common practice that the certificate, for road transport and renting, is duplicated by certified copies that must be present on board each vehicle of the company.

The register would at least be divided in different sections (one per regulated profession/activity): against-reward road transport of goods and passengers, own-account road transport of goods and passengers, renters of commercial vehicles with or without drivers, goods transport intermediaries (freight forwarders and freight brokers), passengers transport intermediaries

The register should contain for each operator:

- identification of the company and its secondary establishments (branches) with its trade register number or reference;
- name and details of the company legal representative;
- registration certificate unique reference number;
- name and details of the person(s) justifying the professional competence and the honorability/ good repute criteria (legal representative and manager);
- base and financial standing elements as mentioned in the law/regulation;
- type of activity declared (general cargo, tank transport, regional, passenger transport, urban, intercity, international.);
- historical background of the registration (date of registration, suspension, revocation, and related causes).

The register should be ideally dematerialized respecting the laws in relation to data protection, in particular for personal and sensitive data. It should be built to be inter-operative with other public authorities' data systems.

NOTE: For own-account activity, only the condition of establishment of the company and the goods repute of the legal representative are required to obtain the certificate of registration under the appropriate section.

f. Revocation and suspension rules (administrative sanctions) (goods and passengers)

Given that the recommended legislation aims to define criteria for access to these professions and to make them regulated professions, there cannot be eternal access to these professions. The legislation, regulation must therefore provide for situations that may give rise to suspension or revocation of the certificate of registration in the register.

Therefore, the rules should foresee:

- cases and/or situations that may lead to suspension of the registration certificate and their consequences:
  - Usually, it may concern repeated offenses to access to profession rules, as well as noncompliance after a transitional period granted in some cases when one or more of the required conditions are temporarily not met (e.g. the holder of the CPC leaves the company, a delay is granted to find another manager, but at the end of the transitional period, no CPC holder is identified).
  - However, the company holder of the certificate of registration can also request the suspension for given reasons.
  - The rules should set the maximum duration of suspension during which the company loses its Access

to profession certificates, and thus is not allowed to operate anymore.

- If a suspension is decided, automatically all related transport authorizations (if foreseen by the rules) are de facto suspended for the same period.

- cases and/or situations that may lead to revocation of the registration certificate and their consequences:
  - Usually, it may concern repeated severe offenses to access to profession rules, or to road transport regulations affecting safety and security, such as repeated offenses of regulations on vehicles, traffic rules resulting in accidents, social regulation.
  - However, the company holder of the certificate of registration can also request the revocation of its certificate, for example in case of stopping activity.
  - If a revocation of the certificate is decided, automatically all related transport authorizations (if foreseen by the rules) are de facto revoked.
  - When the revocation is decided as a sanction the rules should foresee a period during which the holder of the CPC cannot anyhow appear as a legal representative or a manager for a company active in the road transport and intermediation sector.

As for the decision to grant access to the profession and issue the certificate of registration, suspension, or revocation decisions may be purely undertaken at the administrative level, or through the proposed consultative commission already mentioned.

g. Penal sanctions (goods and passengers)

While administrative sanctions are essentially aimed at ensuring optimal behavior of actors who have obtained access to professions, the most serious offenses must also be punished criminally, in particular to punish as an offense the illegal practice of one of the professions, but also offenses that may have social or security consequences.

Examples include:

- practicing one of the professions without a registration certificate, or with a suspended or revoked certificate.
- obtaining a registration certificate based on false information or false documents, or falsified documents.

h. Date of implementation, transitional period, and measures (goods and passengers)

This is about having a pragmatic approach to the entry into force of the reform on access to profession rules, so that it is sustainable. Indeed, it is counterproductive to plan ex abrupto, a date of entry into force when the implementing texts of the law or decree cannot be taken in the short term, and the practical means of implementation will not be, or only partially available. Indeed, a legal or regulatory text that enters into force and cannot be applied is a stillborn text.

The choice of the date of entry into force and of transitional period and measures is of a strategic nature, and to reach a realistic decision, should take into consideration different variables:

- number of actors in operation that will need to adapt and comply with the new rules, in particular as far as professional competence criteria are concerned.
- training sessions duration for such actors, even is only obliged to undertake update trainings.
- training capacity in place, which means training programs and material, examination, certified trainers that are able to deliver the programs.
- training requirements for newcomers into one of these regulated professions should also be in place.
- means available at authority level to create or adapt the register to record access to professions data.

These elements should be analyzed in order to define realistic entry into force of access to profession rules:

- **For the new entrants:** usually effective immediately, if training capabilities and registration mechanism are in place, or at the date it is anticipated that they would be in place.
- **For the actors in operation:** the situation is more complex and could be handled through the obligation to obtain a registration certificate in the short term, to allow formalization into commercial companies. It could be six months but the registration would be conditional for a period to be defined due to the professional competence condition to be operational. To do so, it would be necessary to:
  - define conditions applicable to those justifying a minimum of professional experience (for example 10 years) and provide a transitional registration with

the condition that the director or managers follows a refreshing/update training session within a deadline defined based on training capacity (see above).

- list the diplomas that could give automatic access to the CPC for directors or managers and accept to provide a certificate of registration conditional to following a short refreshing training within a given period.
- impose, for those enable to benefit from the above solutions, short-term registration, but define a longer transitional period to allow them to follow the full training program.

Such an approach, although little used, is nevertheless a guarantee of a well-thought and reasonable implementation of a reform as structural as that of the road transport and intermediation sector. It would very much favor acceptance by stakeholders who would not feel cornered, and it would contribute to be as much inclusive as possible.

Once the transition periods are defined, some accompanying measures should be also implemented to facilitate further acceptance and implementation of the reform. Examples of accompanying measures could be:

- financing of initial qualification phases for CPC for directors and managers via either international financial institutions (IFIs)' programs.
- specific contribution incentives such as adult lifelong education funds, when they exist.
- privileged access to fleet renewal programs for those complying with the new requirements.

Finally, it may happen in some countries that some actors in operation would not be in a position to cope with the new requirements, in particular as far as professional competence criteria is concerned. For those concerned, once they are identified and quantified, they must be paid specific attention through:

- early retirement possibility for the oldest, if social systems are operational.
- proposal for adapted professional reclassification through appropriate training.
- proposals for professional reconversion in another sector.

NOTE: While the principles and recommendations outlined above are addressed to decision-makers at the national level to guide them in the preparation and conduct of a sectoral reform, these same principles, and recommendations are also addressed to continental, regional, and subregional organizations that would like to establish common regulations for their geographical area in order to create, at their respective level, a harmonized framework of legislation/regulation of the sector for the benefit of their Member States.

2. VOLUNTARY STANDARDS (GOODS AND PASSENGERS)

An alternative approach to the legislative/regulatory approach would be to focus on encouraging transport operators and transport intermediaries to set their own professional standards. Even without the support of regulatory measures, there are powerful incentives for operators to achieve these professional standards, because it would help them to:

- market their services more effectively to customers who want high-quality services; and
- increase their access to credit by improving their creditworthiness.

Raising professional standards is an effort that may take many years; to achieve this, transport operators and transport intermediaries will have to adopt a long-term strategy and a feasible yet ambitious implementation plan.

In countries where the road transport and intermediation industry are well organized and has a strong professional representation (through professional associations/federations), the sector may be willing to adopt professional standards. These could underpin the professionalization efforts and could be implemented in parallel with the legislative/ regulatory approach, in particular when the training capacities needed to obtain the required qualification to operate is either not existing or insufficient. Indeed, this step could be an intermediary path towards entry into enforcing the rules on access to the profession.

Professional standards could be inspired by elements detailed in the previous section.

Once professional standards have been established and adhered to by the transport and intermediation industry, it is much easier to incorporate them into operator licensing conditions. The following steps are required to implement this approach:

- The road transport sector and government should consult, debate and agree on the need for improved professionalism and determine the skills gap. A first step would be to organize regional workshops where the government would present their policy initiative, objectives, and action plan to achieve them, and where operators and their representative associations would give feedback, alternatives, and proposals with the aim to reach a consensus.
- The professional association could take the lead and responsibility for defining the professional standards and for providing sector-specific training that should cover basic knowledge of all aspects of running a transport or intermediation company such as the one recommended above.
- The professional association may seek support from similar organizations in other (more advanced or experienced) countries to gain information and advice on defining standards and setting up training and examination schemes.
- The government may take responsibility for any basic educational matters that are involved in increasing professional standards (e.g., literacy).
- The public at large and in particular transport customers should be made aware of the professional goals of the road transport sector, and should encourage those operators to seek or achieve higher professional standards (e.g., preferential contracts).
- In countries with a significant proportion of informality, it is unlikely that a high number of informal operators would consider obtaining accreditation. For this category, short-term courses in practical management skills would be meaningful; these could be delivered through professional associations.
- The government and the road transport sector through its professional association should maintain regular dialogue, possibly through roundtable meetings or in the frame of the National Facilitation Committee, to discuss transport issues and policy developments.
- When entering into international transport agreements (bilateral or regional), consideration should be given to adopting common standards for training, regulation, competence, data collection, and enforcement to ensure a certain level of harmonization of the competition conditions.

NOTE: One important issue should be considered when envisaging the introduction of voluntary standards. In a market where the consignor and consignee generally have no responsibility (and risk) whatsoever, they will too often choose the cheapest service, hence allowing companies with general low standards to get the bulk of the orders and placing well-managed companies at risk of bankruptcy. One country, Australia, introduced a shared responsibility model where the responsibility of transport is split along the transport chain (Box 10) and defined by law.

d. Organizing the road transport intermediation industry

At the risk of shocking or upsetting preconceived ideas, there are few regulations governing the professions of transport intermediation. This can be explained in several ways, one being linked to the terminology itself which, depending on whether one uses French or English, the notion of transport intermediary does not have an equivalent literal transcription.

The term “forwarder” and its equivalent in French “transitaire” are not exactly corresponding, furthermore, the term “freight forwarder” could be translated into French as “transport commissioner” (commissionaire de transport). However, the obligations and conditions of liability of the “freight forwarder” in Anglo-Saxon law is that of a simple agent liable only in the event of proven fault, while in Latin law environment, it refers to a presumed liability as applicable to commission agents. This makes a big difference in terms of commercial risk, as well as overall obligation in terms of general law enforcement.

Beyond this linguistic and legal framework, whether “freight forwarder” is a well-defined profession or a generic term remains to be clarified.

According to the International Federation of Freight Forwarders Associations (FIATA), “Freight forwarding and logistic services” are services of any kind relating to the carriage (performed by single mode or multimodal transport means), consolidation, storage, handling, packing or distribution of goods, as well as ancillary and advisory services in connection therewith, including but not limited to customs and fiscal matters, declaring the goods for official purposes, procuring insurance of the goods and collecting or procuring payment or documents relating to the goods.

While this definition may be correct from an operational point of view, it refers to specific activities undertaken within specific legal frameworks corresponding to dif-

ferent professions. Indeed, if this definition is analyzed carefully, it appears that:

- "carriage" refers to transport and therefore to "carrier" (of different modes): in the different modes of transport, the carrier is considered as a specific profession considered in most modes of transport as a regulated profession (access to profession rules).
- "consolidation", refers to groupings of freight, which in itself is an activity, not a profession, and depending on the way the activity is undertaken, it could fall within the road carrier profession, or the transport commissioner profession (commissionaire de transport).
- "storage, handling" refer to services governed by specific rules and corresponding to specific professions, sometime even regulated by law for specific purposes and subject to specific authorization/licensing mechanisms.
- "distribution" refers again to carriage and transport (see above).
- "customs fiscal services, declaration" refer to customs brokerage activities undertaken by customs broker (or commissioners) governed by customs law and subject to specific access to profession rules and liability conditions.
- "procuring insurance for the goods" refers to a classical mandate given by the client as it is the case also for carriers.
- "collecting or procuring payment or documents relating to the goods" is a common activity undertaken by carriers of all modes of transport and corresponds form a legal point of view to undertaking a specific mandate.

Additionally, forwarders are also often creating the transport documents on behalf of their clients. In general, forwarders are emitting a door-to-door transport document, called a bill of lading, to their client. The FIATA model of a bill of lading is widely used throughout the world, in particular for door-to-door transport involving a maritime leg. However, this only concerns the relationship between the "forwarder" and its client, the transport document to be established to cover the exact transport under the mode of transport contract is defined by the related legislation applicable to that mode of transport.

Therefore, with the generic term "forwarder", in practice, it is observed that the actions it deploys are in fact of different operational and legal nature, and some correspond to activities deployed within the framework of regulated professions, carrier, customs broker in particular. Moreover, if an operator qualifies itself as "forwarder", it is not certain that it offers all the services listed in the definition.

In most regions of the world, this profession is not regulated. In regions and countries where the forwarding activity is regulated, the conditions to access the profession are usually very simple and consist of a registration to a dedicated register generally held by the Ministry of Transport, as it is the case for example in France for freight forwarders (commissionnaires de transport). In some countries like in France a registered transport company is allowed to perform freight forwarding services (transport commission) by subcontracting a part of its transport to another transport operator if this activity counts for less than 15 percent of the turnover. If it goes above 15 percent of the turnover, then the transport company should in addition also register as a forwarding company.

However, the registration applicable to freight forwarders (transport commissioner) does not lift the obligation to comply with the access to professions rules applicable for customs brokerage, or renting of vehicles, or road transport when applicable if the company, in addition to freight forwarding, provides one or more of these services.

Self-regulation of the profession has been developed by FIATA to certify the level of professional competence of forwarders. However, it is not a mandatory requirement to access the profession even if some clients may impose on their forwarders to be holders of such certificates.

Why is there a need for organizing access to transport intermediation profession rules? In modern logistics chains, forwarders have become the main clients for road transport operators; they intervene between a shipper asking them to organize a door-to-door transportation and the carriers they select for carrying the road transport component of that operation. In many developing countries where efforts have been put on the road transport sector without considering the intermediation professions which benefits form a total legal vacuum. In some regions of the world, freight brokerage has also emerged. The broker's role is simply to find road transport operators to carry the goods for a client (sender/shipper). In some regions, these brokers have emerged further to the liberalization of local transport markets and are acting on the "informal market," as is the case in Western and Central Africa. These brokers usually do not appear in the transport documents; they are remunerated by a commission that takes on the transport cost paid by the sender/shipper and have no liability defined, they are not part of the

transport contract that is concluded between the road carrier and the freight owner.

This results in a completely out of order and disorganized sector, thus disturbing and even destroying all the efforts made at the level of the road carriers alone. Therefore, on the one hand, the "forwarder" is an important player in the organization and functioning of logistics and value chains, and on the other hand, due to its role, some regulations are needed to better qualify it and organize access to certain of the professions it exercises.

How to organize access to some road transport intermediation professions? Contrary to road transport operator there is no internationally agreed legal definition of "forwarder". It is usually understood that a "forwarder" is a generic term which in fact, company by company, does not necessarily reflect the services offered that could be organizing transports, undertaking storage, customs declarations, packing, etc., all these activities being governed by different legal instruments with diverse liability regimes. Initiating a regulation of access to the professions of road transport intermediation, to be effective, must not be generic but specific to each activity which is then exercised in a company in an isolated way or simultaneously. To do so, it is advisable to move step by step, as follows:

- **Provide definitions of the various professions of goods transport intermediaries** (freight broker, transport commissioner, other auxiliary professions)

  As indicated, transport intermediation corresponds to different professions involving different liability conditions and type of contracts, and for which a clear definition should be provided, in order to then implement and control the rules of access to these professions.

  Thus, it is recommended to define the different professions of goods transport intermediation as follows:

  - **Freight forwarder/transport commissioner:** a company (legal person, not natural person) that undertakes on demand of its client, for a fee called a commission, to freely organize, the transport of goods from one place to another according to the mode and means of transport of its choice.

    NOTE: Depending on the legal environment in which it operates, her/his legal contractual status may vary. In the Latin law environment, the freight forwarder (commissionaire de transport) negotiates and concludes transport contracts on her/his own name and is liable for the good arrival of the goods (presumed liability regime). In the Anglo-Saxon legal environment, she/he acts under a simple mandate, on behalf of his client, she/he is not part of the transport contract and is not responsible for the correct arrival of the goods, she/he is only liable of her/his faults/mistakes.

  - **Freight broker:** a company (legal person, not natural person) that puts a freight holder and a carrier in contact with a view to facilitating or bringing about the conclusion of a transport contract between them. The mandate of the freight broker may be the freight holder or the carrier and the co-contractor of the principal is called the contracting third contracting party.

    NOTE 1: The freight broker is never a contracting party to the transport contract, she/he is never responsible for the good arrival of the goods, she/he is only liable for her/his own fault in selecting/proposing to her/his mandate the potential third contracting party.

    NOTE 2: When "freight exchange platforms" are operating, they should be considered by law as freight brokers and be subject to access to profession rules applicable.[25]

- Provide **definitions for passenger transport intermediaries** (travel agent, booking platforms, bus station – gare routière, etc.)

  Unfortunately, little attention is given to passenger transport intermediaries, even though they play a significant role in this subsector functioning. At least, there are three key areas where regulation on access to profession rules may be needed:

  - **Travel agent**: a company that takes care of organizing all types of trips (family vacations, work trips, etc.) and touristic services by offering part of the service or a global package.

    NOTE: In some regions, travel agents are also organizing touristic transport by bus and coaches (ensuring bookings), and even they often operate the vehicles themselves. It is therefore important at the national legal level to avoid confusion. It is advisable to create an appropriate legal framework

25 As it is the case in Niger as per Art. 5 of Decree 2019-270 dated May 24, 2019, on access to profession rules and regulation.

complementing the legal status applicable to travel agents, to ensure that if they operate touristic tours by bus, they act under a specific transport regime (occasional transport), and should be considered as road carriers, thus submitted to road transport access to profession rules.

When they act as intermediaries between the passenger and the tourist company/bus/coach company, their legal status can either be that of the broker (responsible for the successful completion of the transport) or that of the agent (simple agent).

- **Taxi booking platforms:** A booking center is considered to be any professional who connects taxi drivers or companies and passengers for the purpose of making trips, they are pure intermediates and should be considered as "brokers" under a simple mandate, they are not responsible for the good arrival of the passenger.

  NOTE: As such. it is advisable to consider them as transport intermediaries and then submitted to access to profession rules.

- **Passengers' road transport stations (gares routières)**: a passenger road transport station is a developed, sectorized and secure activity zone, which allows road carriers (public and private) and their clients to organize transport. For passengers, they ensure the parking of their vehicles by line and provide facilities to welcome and make passengers wait as well as facilitating their boarding and disembarkation and that of their luggage.

  NOTE: A passenger road transport station can either be private, belonging and organized by a bus/coach company for its own vehicles and clients, in that case, it is advisable to dispose of a legal framework to regulate the creation of such stations. Many countries are foreseeing such regulations within the legal texts focusing on urbanism, infrastructure, and territorial authorities as far as their involvement and responsibilities in infrastructure creation and management is concerned.

  When they are of public nature, it is advisable to take appropriate legal texts to organize not only their creation, but also to define their liability conditions vis-à-vis the transport companies and their clients. In that case, it could be a sustainable option to insert some obligations, in terms of status, professional requirements, and good repute for managers.

- **Provide access to professions rules based on similar but adapted criteria as applicable to road transport** (goods and passengers)

  If a government wants to embark on a reform of road transport of goods and passengers, it cannot leave aside the key professions of transport intermediation, because on all continents, intermediaries play a growing role in providing extended services to logistics and value chains. It is therefore strongly recommended, based on the definition proposals outlined above, to define legislation that organizes access to these professions. These rules to be adopted are similar to those provided for public carriers and commercial vehicle rental companies, namely:

  - **formalization and establishment** under the same conditions as described for road carriers.
  - **financial capacity of companies**, but here not based on vehicles of course, but for example on business volume.
  - **honorability of the director and manager** according to principles like those of carriers, including for taking into account safety and security elements.
  - **professional competence of directors or managers**, identical with regard to the ways and methods of justifying the condition (training and examination, professional experience and upgrading, proof of a higher education diploma recognized as allowing the obtaining of the CPC and upgrading training).

    However, the only specification here will be the professions reference documents, training program and training support materials covering intermediation for goods and passengers transport, and a specific CPC should be created for transport intermediaries, as it has been developed in Togo, and will; be developed in Niger and hopefully Benin.

    NOTE: As far as passenger transport public stations (gares routières) are concerned, the same criteria could be chosen. However, as far as the legal form of the structure to be created, could take the form of a public/private sectors non–profit-making undertaking.

Specific sections to the road transport and intermediation professions should be organized and a certificate of registration should also be provided, as well as rules for suspension or revocation of the certificate, and penal sanctions should also be prepared.

D. The professional driver

Section summary

The professional driver is a pivotal figure in road transport services (goods and passengers), acting as the ambassador for their company to clients, road users, control authorities, and competitors. They may be employed by road transport companies, economic operators undertaking own-account transport, or commercial vehicle rental companies.

Professional drivers have multifaceted responsibilities, including ensuring their physical and mental readiness, vehicle roadworthiness, mission preparation, adherence to road safety regulations, and handling commercial and contractual operations. They must manage loading and unloading, secure the vehicle and cargo, and provide excellent service to clients and passengers.

Professional drivers require more than just a DL; they need comprehensive training to acquire a CPC. This includes knowledge of road transport laws, environmental regulations, vehicle standards, transport contracts, and specific regulations for special transport activities like dangerous goods and perishable foodstuffs. Training should cover both initial and periodic sessions to ensure ongoing competence.

Historically, professional drivers gained experience through military service, which provided excellent training for future employment. Over time, governments recognized the need for structured training to meet the demands of the evolving transport market. The EU, for example, has implemented stringent qualification standards for professional drivers, including initial and periodic training requirements.

Drivers involved in transporting dangerous goods must undergo specialized training as per the ADR Agreement, which sets out comprehensive requirements for driver training and certification. Similarly, drivers transporting perishable goods need training to maintain the cold chain and ensure food safety. Exceptional transport operations also require specific training to handle oversized or abnormal loads.

Social regulations for professional drivers include rules on driving and rest times to prevent fatigue and ensure road safety. These regulations aim to provide adequate social protection, guarantee fair competition, and improve road safety.

Reforming the sector to include professional drivers requires addressing several challenges, such as changing mentalities, dealing with illiteracy, and improving attractiveness for women. Governments should adopt clear, implementable legislation, improve institutional capacity, and ensure inclusivity for existing drivers. Accompanying measures like financing and incentives can facilitate acceptance and implementation of the reform.

Efforts should be made to attract and retain women in the transport sector, addressing barriers such as work–life balance, safety concerns, and lack of representation. Initiatives like dedicated facilities, flexible schedules, and gender-sensitive infrastructure can promote gender equity.

The reform should include comprehensive training programs, accreditation of training institutes, and clear regulations for special competences. Transition periods and accompanying measures are essential to ensure smooth implementation and acceptance by stakeholders.

1. GENERAL CONSIDERATIONS

The professional driver is a central figure of road transport services (goods and passengers), being the ambassador of her/his company for the clients, the road users, the control authorities, and the competitors. she/he may be employed by:

- a road transport company proposing transport services of goods and/or passengers;
- an economic operator undertaking own-account goods or passengers transport operations; or
- a renter of commercial vehicles (goods and passengers) with drivers.

For a long time, holding a DL corresponding to the category of vehicle to be driven was sufficient to become a professional driver. This remains the case in many countries and regions. Additionally, despite harmonization efforts based on the UN Vienna Convention in particular, the system for learning to drive and obtaining a DL is not

yet optimal in many countries. It is particularly suboptimal in developing or emerging countries, and especially regarding driving heavy vehicles or vehicles intended for the transport of goods and people. Finally, in many countries, many road transport drivers still learn to drive and become drivers as apprentices at a very young age, mentored by an experienced driver (in particular in goods transport). While this "on-the-job" learning has social benefits, it does not ensure ability to drive road transport vehicles. Coupled with the often-observed failure of the DL system, the entire profession of road transport driver, and the entire sector, suffer the consequences in terms of safety, efficiency, and overall sustainability of the whole commercial transport system.

Furthermore, it is unanimously recognized today that the qualification requirements of a professional driver are not, by far, limited to driving; they require much more competencies in a variety of fields from which the quality, safety, and security of the service delivered will depend. These competencies are acquired through training on the job, at company premises or/and in specialized institutions, but not during DL training. This is why, in addition to being the holder of the DL of the required categories, many countries, and even regional legislations, have adopted rules which require aspiring professional drivers to follow dedicated and specialized training to obtain a CPC. The competencies are refreshed through regular periodic training. Competencies for specific activities such as the transport of dangerous goods or perishable foodstuffs are subject to specialized training (initial/vocational or continuous/during job) targeting the drivers operating such activities.

While it is not contested that there would be no transport services without drivers, the driver is a key asset for a road transport operator (public or private) but also for transport services users and economic activity in general. Driver's capabilities to act safely, economically, timely and to the satisfaction of the clients will considerably influence the image of the road transport operator but also of the sector itself. As such, she/he should comply with, possibly at time conflicting, interests:

- respect the law and regulation in particular as far as road safety and social regulation is concerned throughout her/his entire mission.
- serve her/his company.
- drive safely.
- drive economically and environmentally friendly.
- serve the clients.
- take care of the load and of the passengers.
- deliver goods on time and in good state and quantity.
- reach her/his destination on time and assist passengers to disembark.
- accommodate unforeseen events or difficulties.
- safeguard the passengers, the load, and the vehicle in case of an incident or accident.

The professional driver, engaged in against-rewards transport operations (public transport), or own-account transport (private transport), or renting of commercial vehicles with drivers, must have multiple capabilities, which are a combination of personal capabilities, qualification, and knowledge, and of course, practice. This applies for both, driving a vehicle, and acting as a professional driver. Therefore, the qualification of the driver (driving and professional competence) is essential and should be considered and prioritized when designing the reform of the sector, as it is an essential pillar for the overall sector performance.

A professional goods or passengers transport driver is a member of the operational staff employed by the operator, either a road transport company, or an economic actor undertaking own-account transport activities. In addition to purely transporting goods or passengers, these economic actors may also be involved in wider activities that, for goods transport, are generally categorized with the term "physical distribution": managing tasks on behalf of production companies, such as storing finished products, assembly/customization of products, delivery/ distribution and factoring, and for passenger transport, in touristic activities for example.

2. ROLE, RESPONSIBILITIES, AND MAIN TASKS

Professional drivers participate at various levels of the transport services and are therefore taking many responsibilities, either for public and private road transport operations of goods and passengers. These responsibilities are described below in general terms, and for passenger transport, they mainly refer to intercity and international operations (city transport are, as far as commercial aspects and handling of boarding and disembarking operations less demanding as those described below).

The general responsibilities of a professional diver (goods and passenger transport) are multidimensional, and could be summarized as follows for:

- **Driver (public and own-account transport)**
  - Ensure she/he is in a good physical and mental state to perform her/his mission.
  - Respect company rules, including dress codes (uniform).
  - Have her/his DL valid and adapted to the category of the vehicle.
  - Have her/his CPC and valid periodical training certificate.
  - Has sufficient driving time credit to undertake her/his mission, and is compliant with rest time regulation (day, week, month).
  - Has sufficient cash or payment means with her/him to cover her/his mission's obligations and her/his personal subsistence.
- **Vehicle** (public and own-account transport)
  - Ensure the roadworthiness of the vehicle before departure and while en route through visual inspection, including tires, lightening, etc.; (truck, truck-trailer or tractor-trailer combination, bus, coach, minibus, or taxi or even tricycle used for transport of goods and/or passengers).
  - Clean of the vehicle (cabin, cargo, or luggage compartment, exterior).
  - Have, when appropriate and depending on local laws and practices, the loading and unloading equipment on board that is appropriate for the cargo, and maintain them.
  - Undertake, in particular en route, the basic level maintenance of the vehicle.
  - Ensure the security of the vehicle at all stages, in particular in parking areas and when the vehicle stops in any place.
  - Take appropriate measures to safeguard the vehicle in case of an accident or incident.
- **Mission preparation and required documents on board** (public and own-account transport)
  - Prepare her/his itinerary to take into account client's needs, her/his company instructions, and economic and environmental constraints, while ensuring compliance with road safety and social regulations.
  - Ensure that the vehicle's compulsory documents are valid and on board, in case of control (insurance certificate, registration, periodical technical in section, etc.).
  - Ensure for national transport that required documents are on board, in particular consignment note for goods and for passengers, the passengers, and luggage manifest.
  - Ensure for international transport that all required documents are on board (international insurance certificate, international DL, bilateral or multilateral authorizations, company registration, etc.) as well as usually required documents (commercial and customs documents related to the goods, identity, and sanitary documents required form passengers).
  - Ensure that the transport documents (national or international) are ready, for goods transport, the consignment note and attached documents, for intercity and international passengers at minimum the passengers and luggage manifest.
- **Road safety and driving** (public and own-account transport)
  - Respect the traffic rules in all circumstances.
  - Respect restrictions and traffic bans.
  - Observe driving and resting times rules (prescribed by law or company's internal rules).
  - Respect weight and dimension rules as well as weight per axle limitations.
  - Inspect the vehicle and the load to ensure correct and safe loading and securing of the load before starting and at each stop.
  - Provide security briefing to passengers and inspect the cabin to ensure safe loading of passenger's personal belongings.
  - In case of incident or accident take appropriate measures to signal and secure the area to avoid additional accidents.
  - In case of incident or accident, safeguard passengers, and goods.
  - Report to her/his company any incident or accident related to road safety issues.

- **Commercial and contractual operations at departure (public and own-account transport)**
  - Be at the agreed time at the place of loading goods or boarding of passengers and register at time of arrival and departure on the transport document, or any mission booklet provided by the company.
  - Notify any delay to her/his company and client.
  - Respect the security plan at the loading and offloading places.
  - Position the vehicle safely for loading/boarding operations.
  - Verify the external aspect of the goods to be loaded and the packing to ensure that they are appropriate for transport and take appropriate reservations in writing on the transport document in case of a problem detected.
  - Check the quantity of goods loaded (number of packages or pallets) and ensure it corresponds to the mention on the transport document (consignment note) and take appropriate reservations in writing on the transport document in case of mismatch.
  - Check the external aspects of passengers checked-in luggage before loading them in the luggage compartment or gallery and take appropriate reservations on the ticket in case of anomaly.
  - Securely accompanying passengers and cargo documents during the trip.
- **Loading of goods, consignment note, and departure (public transport, and to be slightly customized for own-account transport)**
  - Respect the shipper/consignee rules as far as parking, loading, and safety are concerned.
  - Supervise the loading operations to ensure compliance with safety and security regulations (including stowing and securing the cargo), or proceed to these operations if foreseen by applicable law and the transport contract.
  - Ensure that the correct distribution of the cargo throughout the compartments allows to respect appropriate axle weight.
  - Organize and ensure contradictory signature of the consignment note, including indication of appropriate reservations in case of differences in quality or quantity of goods, bad stage of packing, delays in loading operations.
  - Record the departure time on the consignment note or any internal trip recording booklet.
- **Embarking passengers and departure for intercity and international transport (public and own-account transport)**
  - Park the bus or coach safely to secure boarding operations and luggage loading.
  - Prepare the cabin to be clean and ready for boarding.
  - Check security equipment availability and good functioning (seat belts, inside lightning, etc.).
  - Organize the boarding and check passengers' tickets (public transport) and counter check against the passengers and luggage manifest.
  - Assist if necessary persons with disabilities.
  - Signe the passengers and luggage manifest.
  - Deliver the security briefing before departure.
  - Ensure that all passengers' personal belongings on board are securely placed, and that aisles are free from any obstacle.
  - Ensure that all luggage compartment doors are closed, and that loads on gallery are properly secured and compatible with security regulation (height in particular).
- **En route (public and own-account transport)**
  - Carry out the transport assignment in accordance with the wishes and requirements of the transport company and the shipper and according to contract provisions while respecting legal security and social obligations (in particular driving and resting times).
  - Ensure secure parking of the vehicle, and choose, when available secure parking areas.
  - For any payment made en route, request, and secure corresponding receipts.
  - Comply with instructions from control authorities and provide any document that is required, record any payment made and keep the corresponding receipt signed by the recipient.
  - For goods transport, secure the vehicle, by arming the parking security devices, or ensure permanent surveillance.
  - Ensure passengers' comfort and maintain quietness and mutual respect throughout the trip, and resolve

any potential tension that may emerge among passengers.

- Only allow passengers to disembark for a break after having verified that this can be done safely, and before leaving the parking area check that all passengers are on board.
- In case of any incident or accident, secure the vehicle, load, and passengers, call emergency services and authorities, if necessary.
- Inform immediately the line manager, and eventually request instructions.
- Inform when the incident is closed and operation can resume.
- Maintain journey work reports (logbooks), tachograph mechanical, analog, or digital records, time accounting sheets and expense forms.

- **In the case of international transport, border-crossing procedures**
  - Respect the clients' instructions for border control procedures.
  - Provide, for goods transport, required documents to the designated local representative, or to authorities concerned directly if applicable (customs, health and sanitary, veterinary inspections, etc.).
  - Organize passengers' compliance in case of identity controls and luggage inspection.
  - In case of need, request from its line manager appropriate instructions.
  - In case any payment is to be made, request and keep appropriate receipts.
  - Secure documents before leaving the border post.

- **Delivery, unloading and closure of the goods transport operation** (public transport, and to be slightly customized for own-account transport)
  - Arrive at foreseen destination on expected time to deliver to the designated consignee the consignment in the same state as at loading (quality and quantity).
  - Record the time of arrival and the time of start of offloading operations, and in case of problem or refusal of delivery by the consignee request instruction to her/his line manager.
  - Supervise pre-offloading operations, uncovering, undocking and unstrapping (or proceed to these operations if foreseen by applicable law and the transport contract).
  - Receipt of any payment for goods for which cash is due on delivery (COD) in the form and currency foreseen before delivering the goods.
  - Organize the delivery of the goods as per applicable legal framework (national and/or international).
  - Ensure contradictory checks of the apparent state of the goods and packing, as well as of the quantity delivered.
  - Report on the consignment note any damage or discrepancy through motivated reservations.
  - Obtain the signature by the consignee representative on the consignment note, and provide her/him with a copy.
  - Secure the consignment note exemplary to be retained and return to the transport operator office together with any accompanying document.
  - Prepare the vehicle to leave the consignee's premises.

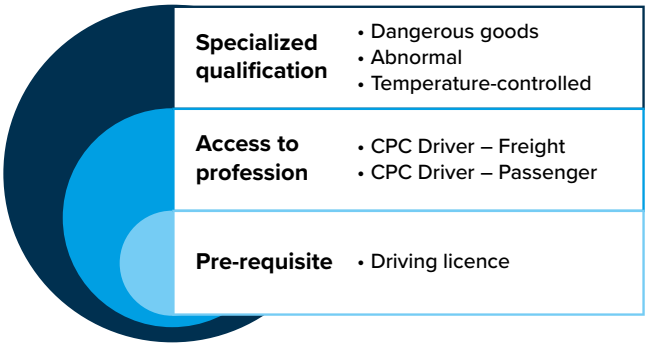
- **Disembarking passengers and delivery of checked-in luggage** (public and own-account transport)
  - Park the vehicle safely to ensure the safe disembarkation of passengers.
  - Organize disembarkation of passengers in good order, and possibly assist persons with disabilities.
  - In case of en-route stop over, ensure that only concerned passengers are disembarking, and count remaining passengers before departure.
  - Ensure that no personal belonging is left on board, and in case remit them to authorized people for later collection by concerned passenger.
  - Supervise the delivery of checked-in luggage.
  - Prepare the vehicle for further operations if applicable.

- **Closing the transport operation** (public and own-account transport): Once the vehicle is free from goods or passengers, close the operation, secure related documents, and return them to the line manager.

This list shows that to accomplish her/his tasks, the professional driver must not only know how to drive but must master and apply quantities of knowledge in many areas, often transversal whether he/she intervenes in public or own-account transport, of goods or passengers. These knowledge and know-how are not acquired within the strict framework of learning to drive, and therefore of the DL, but require a training framework complementary to it.

3. PROFESSIONAL DRIVER COMPETENCES (KNOWLEDGE AND SKILLS) – TRAINING, EXAMINATION, AND CERTIFICATION

In order to successfully perform her/his tasks and responsibilities, a professional driver involved in goods and passenger's road transport, under public or own-account transport regime, must hold a DL of the required vehicle category and be confident with certain foundation knowledge, professional skills, and special competences.



The DL system is covered in Section E.

a. Curriculum for the CPC

Beyond the foundation knowledge of operating a heavy vehicle, fulfilling the roles and responsibilities of the driver (goods and passenger road transport) require mastering both regulatory knowledge and operational skills:

- Road transport professional laws and regulations (access to profession, access to market, professional drivers' regulations, national and international when appropriate), including own-account transport.
- Environment laws and regulations applicable to road transport, and eco and defensive driving.
- Vehicle regulations for goods and passengers transport (at minimum technical standards, weight, and dimensions).
- Own-account transport operating conditions (goods and passengers).
- Road transport contracts' laws and procedures (goods and passengers).
- Transport documents (goods and passengers, national and international).
- International and national customs regulations, in particular as far as customs transit is concerned.
- Specific regulations applicable to special transport such as dangerous goods, perishable foodstuffs, oversized transport, etc.
- Administrative sanctions related to road transport professional regulations.

This basic knowledge shall allow the professional driver to understand/master:

- **Common basic knowledge for goods and passengers, public and own-account transport professional drivers** (in addition to driving safely)
  - The role and function of road transport within integrated logistics chains (goods transport), and passengers' mobility and tourism.
  - The developments within the transport sector, logistics, and value chains, and tourism and mobility.
  - The basic principles of legislation/regulations applicable to access to profession and access to market rules (national and international), and those applicable to professional drivers.
  - Road transport it tools, onboard tools and means of communication.
  - The basic organizational structure within transport companies or own-account transport operators.
  - The basic cost structure within a transport company and own-account transport operators, including fixed and variable expenses associated with goods and passengers' road transport operations.
  - The place and role of drivers within the road transport company or own-account transport operator and business economics.
  - The road network (including international transit routes), major cities, industrial/storage and transfer areas, passengers' stations, parking areas, fueling stations, etc., important for road transport.

- The personal, vehicle, and cargo and passengers' documents required for the function (against reward and own-account).
- The vehicle technical standards, in particular weight, dimensions, gauge, and axle load.
- The standard duties and obligations when performing a transport operation from the preparation of the mission until its closure, including obligations towards clients and passengers (against-reward transport) and own-account involved actors.
- The method of working with the time registration equipment in place in the context of the applicable legislation and/or company rules on working hours (driving and rest times).
- The elementary rules relating to nutrition and personal hygiene and health.
- The elementary rules relating to the provision of first aid in case of accidents.
- Sufficient mechanical expertise to perform the correct procedures and checks before, during and after the journey, and be able to repair (minor) technical defects on the road.

- **Specific basic knowledge for goods public and own-account transport professional drivers**
  - The common warning symbols and pictograms on goods packaging, including basic knowledge on dangerous goods labeling and marking.
  - The supervision or the execution (depending on national/regional regulation) of loading, unloading, stowing, securing of goods, including protecting cargo from adverse weather conditions during transportation.
  - The technical equipment used for loading, unloading, securing and transporting.
  - The correct technique to be used for lifting, carrying, pushing and pulling goods varying in size and weight.
  - The general layout of terminals, storerooms, and warehouses, if this relates to the work carried out by drivers daily.
  - The general loading and unloading procedures at terminals, storerooms, and warehouses if these relate to the work carried out by drivers (depending on national or regional regulations and contractual arrangements).
  - The measures to be taken if the transport assignment is disrupted by collisions, vehicle breakdowns, traffic congestion, damage to the cargo and other flaws, as well as in case of delivery refusal by designated consignee.
  - The relationship with shippers, consignees, transport intermediaries, and their respective obligations towards the road transport operator.

- **Specific basic knowledge for passengers' public and own-account transport professional drivers**
  - The supervision and organization of passengers' boarding operations as well as of the loading of their checked-in luggage.
  - The correct technique to be used for securing luggage in cargo compartment and on galleries.
  - The general layout of passenger's stations, and applicable safety rules to be respected inside these zones.
  - The general loading and unloading procedures at passengers' stations.
  - The measures to be taken if the transport assignment is disrupted by collisions, vehicle breakdowns, traffic congestion, damage of any kind, in particular to secure the passengers.
  - The relationship with passengers, and their respective obligations towards the road transport operator, including resolution of conflicts that may arise on board.

b. Historical background and evolution of the certificate of professional competence (goods and passenger transport)

As previously mentioned, the profession of a road driver involved in public or private transport of goods or passengers extends beyond just driving activities. To become a professional driver and ensure compliance with stringent safety and quality standards, many countries have introduced additional skill and knowledge requirements. These are typically acquired through initial and periodic training after obtaining the necessary DL.

These additional qualifications are not new. Historically, many professional drivers gained their licenses and experience during military service, both in conflict and peacetime. Military driving often involved challenging environments and the safe loading of various types of cargo, including hazardous and explosive materials. This experience provided excellent training for future employment as professional drivers.

Following WWII, most economies experienced unprecedented growth and nearly full employment. By the 1960s, many governments recognized the need to train young people and those lacking skills for sustainable employment, as well as to upskill those already employed to embrace new technology.

In many countries, this training was funded through a payroll levy on all employees or, in some cases, a small amount from fuel taxes. The funds raised were available for approved training for all employees, encouraging employers to participate. Some countries were more successful than others, both in market economies and state-controlled enterprises.

Government intervention often resulted in more controlled and higher standard training. In the transport sector, this was evident in the high level of driver training provided during the 1970s and 1980s in Eastern Europe. State-owned transport operators in Poland, Hungary, Romania, Czechoslovakia, and Bulgaria offered comprehensive in-house driver training to ensure safe and high-quality international transport services from Western Europe to Middle Eastern countries. These activities generated 'hard currency' earnings, and the in-house training helped optimize expenses.

Following political regime changes and the opening of the transport sector in these countries, the pool of well-trained professional drivers enabled significant expansion into new markets. Additionally, many drivers found employment in countries with higher incomes.

Throughout the European integration process, policies mandated the implementation of new regulations in road transport, shifting from quantitative restrictions to qualitative standards. In France, starting in 1997, legislation required professional training in addition to the necessary DL. This training lasted a minimum of four weeks, totaling 140 hours. Those who successfully completed the training received a Certificate of Professional Training (CFP – Certificat de formation professionnelle).

For continuous periodic training, the legislation mandated that all professional drivers periodically undergo five-day training sessions to update their skills on new technologies and legislation.

Established on the French driver qualification model, Directive EU 2022/2561 (formerly 2003/59/EC) became the EU driver qualification standards in 2008/09 for Bus/Coach respectively truck drivers.

While the regulatory regime for professional drivers in the EU may be difficult to duplicate in all countries, it could be a valid source of inspiration. Indeed, many countries beyond the EU have introduced similar requirements, notably the member countries of the ITF adopted in June 2015 a Quality Charter for international road haulage operations. The Quality Charter requires countries involved to establish different qualitative standards. It notably initiated qualification standards for companies, managers, and drivers and entered into force on January 1, 2016. It applies to pan-European road haulage operations under the multilateral quota system established in 1974 by the ECMT, which evolved into the ITF in 2006. Similar approach has also been introduced in Western Africa under the leadership of the West African Economic and Monetary Union (WAEMU/UEMOA) through Directive No. 15 dated September 25, 2009. This directive inspired many WAEMU Member States to develop such a professionalization mechanism for road transport drivers, such as Côte d'Ivoire, Guinea, Niger, and Togo.

In order to help public and private partners meet the challenges related to road transport professional qualification,[26] the IRU Academy has developed comprehensive qualification standards supported by digital services and methodologies to ensure relevant, harmonized, transparent qualification credentials.

The programs are delivered by Accredited Training Institutions (ATIs) in various countries where IRU has accredited partners.

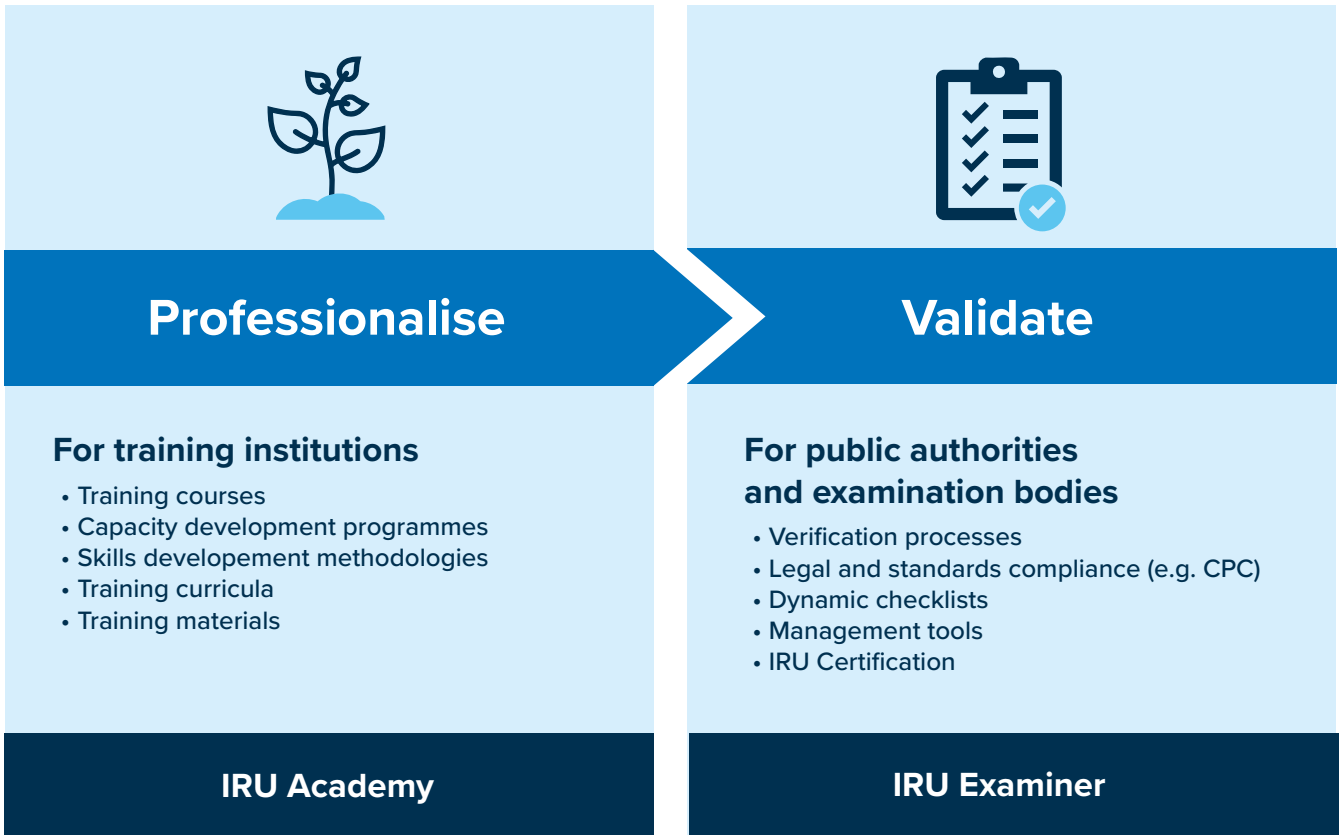
In relation to commercial drivers, the IRU Academy's CPC Driver Programme covers both initial qualification and periodic training and is available for road haulage as well as road passenger transport. By working with local and

26 IRU, "Certifications & Standards".

regional experts, great care has been taken to adapt the content to different national and regional requirements.

IRU is also supporting governments who are setting up examination capacity and standards. The IRU Examiner provides governments with examination processes, methodologies, and content to roll out that is harmonized yet subject specific examination to ensure that certificates are issued on a truly evidence-based approach that includes knowledge and skills monitoring.

Figure 12. IRU Academy and IRU Examiner



An example of Driver's Certificate of Professional Competence issued by accredited training institutions is shown in Annex 7.

BOX 14.

The Experience of the EU in certifying driver professional competence

- The main objective of Directive 2003/59/EC,[27] recast Directive (EU) 2022/2561 on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods and passengers was to prescribe the minimum qualification and the training requirements of professional drivers to enable them to meet the new demands arising from the development of the road transport market. EU Member States have to issue the driver with a CPC, certifying that the driver complies with her/his obligations of initial qualification or periodic training. The directive states that the duration of the initial qualification of professional drivers is 280 hours; the driver also has to have at least 20 hours of additional driving lessons to practice the learned concepts. There is also an accelerated initial qualification: if the driver complies with certain requirements, the duration is 140 hours with an additional 10 hours of driving lessons. The CPC can be obtained after exams. The requirements for the examination are detailed in an annex to the directive. A driver in the EU, who has a CPC, is also obliged to have a periodic training of 35 hours every five years.
- The minimum qualification and training requirements are defined by Directive (EU) 2022/2561 as follows.
- The knowledge to be taken into account by Member States when establishing the driver's initial qualification and periodic training must include at least the subjects in this list. Trainee drivers must reach the level of knowledge and practical competence necessary to drive in all safety vehicles of the relevant license category. The minimum level of knowledge is defined in an annex to the directive.
- The lesson plan will contain nine modules as presented below:

a) ADVANCED TRAINING IN RATIONAL DRIVING BASED ON SAFETY REGULATIONS		
MODULE 1. ALL LICENSES	**1.1. OBJECTIVE**	• **To know the characteristics of the transmission system in order to make the best possible use of it** Curves relating to torque, power, and specific consumption of an engine, area of optimum use of revolution counter, gearbox-ratio cover diagrams.
	1.2. OBJECTIVE:	• **To know the technical characteristics and operation of the safety controls in order to control the vehicle, minimize wear and tear and prevent malfunction** Specific features of hydraulic vacuum servo brake circuit, limits to the use of brakes and retarder, combined use of brakes and retarder, making better use of speed and gear ratios, making use of vehicle inertia, using ways of slowing down and braking on downhill stretches, action in the event of failure.
	1.3. OBJECTIVE	• **Ability to optimize fuel consumption** Optimization of fuel consumption by applying knowledge as regards points 1.1 and 1.2.
MODULE 2. LICENSES C, C+E, C1, C1+E	**1.4. OBJECTIVE**	• **Ability to load the vehicle with due regard for safety rules and proper vehicle use** Forces affecting vehicles in motion, use of gearbox ratios according to vehicle load and road profile, calculation of payload of vehicle or assembly, calculation of total volume, load distribution, consequences of overloading the axle, vehicle stability, and center of gravity, types of packaging and pallets; main categories of goods needing securing, clamping and securing techniques, use of securing straps, checking of securing devices, use of handling equipment, placing, and removal of tarpaulins.

27 Directive (EU) 2022/2561 of the European Parliament and of the Council of 14 December 2022.

MODULE 3. **LICENSES** **D, D+E, D1, D1+E**	**1.5. OBJECTIVE**	• **Ability to ensure passenger comfort and safety.** Adjusting longitudinal and sideways movements, road sharing, position on the road, smooth breaking, overhang operation, using specific infrastructures (public areas, dedicated lanes), managing conflicts between safe driving and other roles as a driver, interacting with passengers, peculiarities of certain groups of passengers (persons with disabilities, children).
	1.6. OBJECTIVE	• **Ability to load the vehicle with due regard for safety rules and proper vehicle use.** Forces affecting vehicles in motion, use of gearbox ratios according to vehicle load and road profile, calculation of payload of vehicle or assembly, load distribution, consequences of overloading the axle, vehicle stability, and center of gravity.
b) APPLICATION OF REGULATIONS		
MODULE 4. **ALL LICENSES**	**1.7. OBJECTIVE**	• **To know the social environment of road transport and the rules governing it.** Maximum working periods specific to the transport industry; principles, application, and consequences of Regulations (EEC) No. 3820/85 and (EEC) No. 3821/85; penalties for failure to use, improper use of and tampering with the tachograph; knowledge of the social environment of road transport; rights and duties of drivers as regards initial qualification and periodic training.
MODULE 5. **LICENSES** **C, C+E, C1, C1+E**	**1.8. OBJECTIVE**	• **To know the regulations governing the carriage of goods.** Transport operating licenses, obligations under standard contracts for the carriage of goods, drafting of documents which form the transport contract, international transport permits, obligations under the Convention on the Contract for the International Carriage of Goods by Road, drafting of the international consignment note, crossing borders, freight forwarders, and special documents accompanying goods.
MODULE 6. **LICENSES** **D, D+E, D1, D1+E**	**1.9. OBJECTIVE**	• **To know the regulations governing the carriage of passengers.** Carriage of specific groups of passengers, safety equipment on board buses, safety belts, vehicle load.
c) HEALTH, ROAD, AND ENVIRONMENTAL SAFETY, SERVICE, LOGISTICS		
MODULE 7. **ALL LICENSES**	**1.10. OBJECTIVE**	• **To make drivers aware of the risks of the road and of accidents at work.** Types of accidents at work in the transport sector; road accident statistics; involvement of lorries/coaches; human, material, and financial consequences.
	1.11. OBJECTIVE:	• **Ability to prevent criminality and trafficking in illegal immigrants.** General information, implications for drivers, preventive measures, checklist, legislation on transport operator liability.
	1.12. OBJECTIVE	• **Ability to prevent physical risks.** Ergonomic principles, movements, and postures that pose a risk, physical fitness, handling exercises, personal protection.
	1.13. OBJECTIVE	• **Awareness of the importance of physical and mental ability.** Principles of healthy, balanced eating; effects of alcohol, drugs, or any other substance likely to affect behavior; symptoms, causes, effects of fatigue and stress; fundamental role of the basic work/rest cycle.

MODULE 7. ALL LICENSES	**1.14. OBJECTIVE**	• **Ability to assess emergency situations.** Behavior in an emergency situation: assessment of the situation, avoiding complications of an accident, summoning assistance, assisting casualties and giving first aid, reaction in the event of fire, evacuation of occupants of a lorry/bus, ensuring the safety of all passengers, reaction in the event of aggression, basic principles for the drafting of an accident report.
	1.15. OBJECTIVE	• **Ability to adopt behavior to help enhance the image of the company.** Behavior of the driver and company image: importance for the company of the standard of service provided by the driver, the roles of the driver, people with whom the driver will be dealing, vehicle maintenance, work organization, commercial, and financial effects of a dispute.
MODULE 8. LICENSES C, C+E, C1, C1+E	**1.16. OBJECTIVE**	• **To know the economic environment of road haulage and the organization of the market.** Road transport in relation to other modes of transport (competition, shippers), different road transport activities (transport for hire or reward, own-account, auxiliary transport activities), organization of the main types of transport company and auxiliary transport activities, different transport specializations (road tanker, controlled temperature, etc.), changes in the industry (diversification of services provided, railroad, subcontracting, etc.).
MODULE 9. LICENSES D, D+E, D1, D1+E	**1.17. OBJECTIVE**	• **To know the economic environment of the carriage of passengers by road and the organization of the market.** Carriage of passengers by road in relation to other modes of passenger transport (rail, private car), different activities involving the carriage of passengers by road, crossing borders (international transport), organization of the main types of companies for the carriage of passengers by road.

Eco-efficient and defensive driving (goods and passenger transport): recent evolution

It is now common to have an introduction to eco-driving in driving learning programs for obtaining a DL. However, this training remains basic and for professional drivers must be largely supplemented as part of the professionalization system complementary to the DL.

Indeed, during the last 20 years, the preoccupation for environment protection increased, including in many developing countries and the UN Climate Actions enabled the signature of the Paris Agreement which made government's commitment to emissions reduction by 43 percent by 2030 and to reach net zero by 2050.

At the level of driver training, large companies are generally training their drivers in eco-driving, mainly because of the demonstrated effects of eco-driving on:

- financial savings in energy and fleet costs, e.g., reducing maintenance expenses (tyres, clutch, etc.);
- significantly reducing CO_2 emissions by improving fuel efficiency; and
- reducing road risks, accidents, and casualties and thus, increasing road safety.

It is recognized that well-qualified drivers can save on average up to 15 percent in energy consumption thus reduce by 15 percent CO_2 emission when the energy used is not carbon-free.

The road transport industry elaborated an ECO-Efficiency Driving Program that incorporates the latest eco-driving techniques and best practices combined with the use of driver performance monitoring. This program focuses on the development of three essential driving competencies:

- knowledge: learning to be a proactive driver;
- behavior: adopting the necessary eco-driving behavior to reach objectives; and

- skills: being able to put into practice the eco-driving theory.
- The objective measurement and analysis of driving knowledge and skills enables to generate digital dashboards, such as:
- objective evaluation of the eco-efficiency driving;
- reports on the effectiveness of the training course for trainers and trainees; and
- real-time reporting and coaching information for trainers.

Training institutes willing to obtain accreditation in eco-efficiency driving will have to undertake a capacity-building program (eco-driving train-the-trainer/pilot).

While eco-efficiency driving is key for economic and environmental road transport compliance, **defensive driving** is equally important for road safety improvement. Professional drivers must be trained to integrate road safety behaviors in their permanent practices. To ensure it becomes usual good practice, professional drivers must understand the main causes of accidents and be trained to address them effectively.

Such training leads drivers to make the right choices in critical situations regarding their vehicle, speed, and distances while also detecting signs of physical impairment such as fatigue. They need to understand the main source of distraction to avoid them.

It is important to highlight that applying defensive driving and risk prevention leads to significant economic savings (fewer accidents mean lower costs) and, more importantly, social benefits. Fewer accidents save lives and prevent severe injuries, positively impacting not only the victims but also their families.

c. Special competences and qualifications

i. Transport of dangerous goods: Historical background

Regulations covering the transport of dangerous goods appeared in some national legislation in the early nineteenth century; in 1893, international railway rules were drawn up in Europe and they became known as the Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). In 1924, the maritime industry agreed on the first Safety of Life at Sea Convention (SOLAS), which included a chapter on the transport of dangerous goods by sea. SOLAS has been revised on several occasions since, but no detailed provisions concerning dangerous goods transport were included until the first International Maritime Dangerous Goods Code (IMDG Code) appeared in 1965. Until then, it was left to national governments to regulate; the IMDG Code was made mandatory as of January 1, 2004 as part of the international law of the sea. In 1949, the main airlines realized the need for control of dangerous goods carried in commercial aircraft; subsequently, the airlines association, the International Air Transport Association (IATA), produced a set of "Restricted Articles Regulation" in 1954, which has since been regularly updated and re-issued.

Apparently, none of these separate modal rules considered what other parties were doing, and there was little recognition of international interfaces. Therefore, the rules for classification, identification, packaging, etc., were very different. In 1953, the Economic and Social Council of the United Nations (ECOSOC) established an ad hoc Advisory Committee of experts on the transport of dangerous goods. This committee produced the first set of multimodal recommendations on the transport of dangerous goods in 1956; they were adopted by ECOSOC, which then established the committee on a permanent basis in Geneva in 1959. The committee has continued to meet ever since, making a biennial report to the Council with amended and extended recommendations, which the Council endorses.

The UN Model Regulations for the transport of dangerous goods, widely known as the "Orange Book," establish a basic system for the safe transport of dangerous goods worldwide by all modes. These recommendations have been developed in the light of technical progress, the advent of new substances and materials, the exigencies of modern transport systems and, above all, the requirement to ensure the safety of people, property, and the environment. They are addressed to governments and international organizations concerned with the regulation of the transport of dangerous goods. The Model Regulations cover the classification of dangerous goods; their listing; the use, construction, testing, and approval of packaging and portable tanks; as well as consignment procedures, such as marking, labeling, placarding, and documentation. The current edition contains provisions concerning, inter alia, the transport of viscous liquids; gases; polymerizing substances; internal combustion engines or machinery powered by flammable liquids or gases; EV; lithium batteries, and ammonia dispensing systems.

The Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

The transport of dangerous goods by road was the object of the work of UNECE in Geneva as per ECOSOC's mandate, as from the mid-1950s. This work materialized into the Agreement concerning the ADR, opened for signature to all UN Member States in 1957, and entered into force in 1968. The agreement as a global coverage and is short and simple. The second article is key. It states that apart from some excessively dangerous goods, other dangerous goods may be carried internationally in road vehicles complying with several conditions that are presented as annexes. The ADR remains open for accession to all UN Member States; the accession has no financial implication (e.g., fee for membership) for countries. Once ratified, the ADR can be subject at the national level to step-by-step implementation due to its complexity, and a large number of provisions that must be taken at the national level to enable its full application.

The ADR identifies the substances that are considered dangerous goods and that can be admitted in international transport, and establishes the conditions under which they can be carried. These include classification of substances according to their specific type of danger, packing conditions, marking and labeling, placarding, documentation and special requirements for the transport of dangerous good in tanks and in cargo transport units. The ADR also contains requirements on transport equipment and transport operations, requirements for vehicle crews, equipment operation, and documentation and driver training as well as requirements concerning construction and approval of vehicles. The international classification of dangerous goods is common to all modes of transport.

The agreement has currently 54 contracting parties but its provisions are implemented much broader, including in many developing countries. Some of these are resource rich (oil, metals, etc.) and the safe and secure transport of these raw materials or of products used in their processing (e.g., cyanides, dynamite, etc.) are of utmost importance for their economies, population, and environment. These substances are just a few examples but the list of dangerous goods that are commonly carried by road is much more comprehensive. Therefore, the need to regulate their handling and carriage and make this area a part of the road transport services reform.

An agreement alone will not yield results if not properly implemented; the human factor must always be taken into consideration and addressed when considering safety and security. Professionals need to effectively put in place measures aimed at achieving greater competence and thus better safety and security in the transport of dangerous goods by road.

The ADR specifies all training requirements that have to be complied with by the main actors involved in the transport of dangerous goods by road, including the driver. All drivers engaged in the transport (against reward or own-account) of dangerous goods by road shall undertake a training course before being allowed to drive vehicles carrying dangerous goods. Their knowledge of the subject will be proven by an ADR certificate, obtained after successfully completing the course and examination. The ADR certificate allows drivers to carry dangerous goods in either packages or tanks, or in both (provided the driver undertook all relevant training and examination), and is restricted to the UN danger classes for which they have passed the exams. The certificate must be endorsed by an accredited authority.

The ADR also sets the requirements about drivers, as summarized in the key points below:

- Driver training may be offered by training centers which shall be accredited by official authorities.
- Drivers have to go through basic training for a total number of hours set by ADR. They are also required to receive specialized training based on their manner and category of transport.
- Training should be supported with applied practice (fire extinguishing and cargo securing, for example).
- The certificate is valid for five years. Within one year from certificate's expiration, refreshment training should be attended.
- The certificate should be granted only if the attendant is successful in the exam. The most important point about the exam is that the party delivering the training and the party which is in charge with examination shall be separate entities.
- Training centers should have accredited instructors capable of offering this training. They shall also be equipped with the required facilities and instruments (such as books, videos, documents, protective equipment, packaging samples, fire extinguishers, etc.).
- All training should be conducted within the scope of curriculum and training schedules to international stan-

dards and approved by the relevant authority; and Authorized bodies must supervise the training.

The specific responsibilities of the driver of a vehicle carrying dangerous goods, as defined by the ADR, are:

- **Driving**
  - Drive with due regard to statutory regulations and traffic regulations relating to the transport of ADR goods (e.g., speed limits, routing, etc.).
  - Park the vehicle according to safety regulations.
- **Maintenance**
  - Maintain the vehicle's equipment (firefighting equipment, telecommunication equipment, equipment limiting speed, etc.) in accordance with general and specific requirements concerning the transport of ADR goods.
  - Check that all equipment is on board the vehicle before departure.
  - Carry out a daily check on the state of the vehicle.
  - Ensure that the vehicle is properly cleaned.
- **Collection/Delivery**
  - Recognize the general classification and the characteristics of hazardous goods.
  - Recognize correct labeling and marking of parcels, containers, and vehicles.
  - Recognize typical dangerous goods packaging.
  - Identify the danger class to which the products belong.
  - Apply regulations concerning the compatibility of transported materials and the incompatibility of batches.
  - Ensure that the goods are transported in an appropriate type of vehicle.
  - Before commencing loading, check the adequacy between volume available and volumes to be transferred.
  - Respect the specific requirements concerning loading and stowage of goods.
  - Participate in loading and unloading operations in compliance with existing procedures.
  - Select the appropriate means of handling as required.
  - Ensure compliance with the appropriate loading instructions.
  - React appropriately to specific delivery bans (places, dates, and times).
- **Information/Communication**
  - Check that all necessary information/communication tools (mobile phone, electronic database system, etc.) are operational and on board.
  - Check that the required documents are on board. (e.g., instructions in writing).
  - Check that the transport documents are complete (identification of products, safety requirements).
  - In the absence of transport documents, or if these are not complete, obtain information from the appropriate source.
  - Place the transport documents on so that they are readily available.
- **Safety/Quality**
  - Identify the risks of the transport of hazardous goods and safety requirements detailed in written emergency instructions.
  - Show ability to follow security regulations and implement emergency procedures.
  - Identify safety equipment required for ADR transport.
  - Check the availability of individual protective equipment such as clothes and breathing equipment, and that it is adapted to the risks according to the goods transported.
  - Respect the safety requirements defined by the shipper, the consignee, or the haulier.
  - Intervene efficiently and appropriately in case of vehicle breakdown or incident involving the load (for example, help prevent contamination in case of spillage).
  - In the case of an accident, intervene to protect oneself and surroundings.

ADR is universally recognized as the main reference for the carriage of dangerous goods by road and is therefore

used by many countries not only for international transport of such goods, but acts as a "blueprint" for national laws and legislation on domestic transport. Indeed, many national laws do not contain any specific provisions and simply refer to the ADR for what concerns the transport by road of dangerous goods.

However, many countries, in particular developing and emerging, while not contracting parties to the ADR, do not dispose of national regulation on transport of dangerous goods which therefore remains in a legal vacuum. To compensate this vacuum, some multinational firms involved in producing or distributing dangerous goods and using road transport, in particular gas or fuel, are imposing on contractual bases the respect by road carriers of some key provisions of the ADR notably for marking and labeling and training of professional drivers.

ii. Temperature controlled transport

While in many developing and emerging countries, the population is growing rapidly, the need for transporting perishable goods is also experiencing spectacular growth, particularly in terms of demand for transport of goods under controlled temperatures. However, this type of transportation is often not organized nor regulated at the national level and left to self-initiative of operators. Yet, the increase in this specific demand also leads to growing concerns in terms of health and food safety. These aspects of health security should lead to organizing or even regulating some key elements of road transport of goods under controlled temperature, such as:

- technical standards for vehicles or container's refrigerating equipment;
- their regular technical checks, and standards reports to be used;
- tools to permanently monitor the temperature of the load compartment.

At the international level, this type of transport is regulated by the ATP, adopted on September 1, 1970, and entered into force on November 21, 1976, it has been permanently updated since its entry into force. It counts 52 contracting parties.

The provisions of this agreement and its annexes could be a source of inspiration for countries willing to create regulation in the area of refrigerated transport.

In addition to the technical regulation, drivers involved on such transport should also be trained with the objective of being able to permanently preserve the cold chain. The training should ensure that the driver masters at least the following basic knowledge and practices:

- Ensure the proper use of the vehicle's technical equipment.
- Ensure sufficient energy reserve for the refrigerating equipment to cover the foreseen transport, and ensure proper refueling when necessary, during the trip.
- Organize the trip itinerary appropriately, taking into account climate and meteorological conditions.
- Prepare the load compartment before loading (respect the required temperature of the load compartment adapted to the type of goods to be transported and instructions from shipper).
- Control the goods temperature before loading and taking appropriate records on transport documents.
- Supervise/undertake loading operations (depending on national legislation and /or contractual provisions), including the operations of placing goods on board the vehicle to guarantee the permanent maintenance of the required temperature of the compartment and of the goods themselves.
- Permanently control of load compartment temperature during transport and related records.
- En-route checks whenever required/needed.
- Preserve the goods in case of incident en route.
- Organize delivery (opening of doors, control of goods temperature with the consignee, record information on transport documents, etc.).
- Supervise/undertake offloading operations (depending on national legislation and /or contractual provisions).
- Handle transport documents.

In many countries, the main organizers of this type of transport are large-scale distribution players, who control these flows in the form of own-account transport, and in this context train their own drivers. When these operators use professional carriers, they often organize training for the drivers who will be involved.

As with the transport of dangerous goods, in the absence of a legal framework, the self-regulation of the players compensates for the absence of regulation.

iii. Abnormal, oversized and exceptional transport

There is no global international instrument to organize or regulate such type of transport, which by definition is abnormal and exceptional. As this type of transport derogates from the rules established both in terms of the weights and dimensions of vehicles, as well as in terms of traffic regulations, and in terms of the skills required of drivers of such vehicles, in the absence of a global international framework, states have put in place their own specific regulations. These national, and sometimes regional regulations (the Economic Community of West African States (ECOWAS), for example), mainly focus on:

- the vehicle which, by definition, does not comply with the usual technical standards in terms of dimensions, gauge, weight, number of axles, etc., but must nevertheless be able to 1) be seen and signaled (obligation to identify the vehicle, including with light signals); and 2) circulate on roads open to traffic and therefore comply with certain minimum standards; and
- the traffic rules for these vehicles with special authorization systems, routing requirements, or even escort obligations.

In the absence of a global international instrument, the EU issued in the early 2000s guidelines to constitute a new instrument complementing European legislation and standards and providing best practices to assist operators when carrying out this type of transportation across the Union. The guidelines address the following issues:

- implementation of the Special European Registration of Trucks and Trailers (SERT) document for oversized vehicles.
- mapping of a European abnormal road transports corridors network to facilitate organization and programming of such transports.
- simplified application procedure for abnormal road transport corridors usage.
- marking and lighting of vehicle and load, with models and description.
- provisions to define the various types of escorts required for abnormal road transport (escort vehicle marking, training requirements for escort vehicles' drivers with or without traffic direction responsibility and their certification conditions).

However, the guidelines do not address training requirements for drivers of abnormal road transport vehicles. As in fact the number of transport companies or own-account operators involved in such transport is very limited, each actor organizes its own driver training sessions.

It could be useful at the national and regional levels to envisage some training requirements for drivers involved in this type of exceptional transport operations.

iv. Passenger transport and vulnerable passengers

The description of the tasks and responsibilities of professional drivers involved in passenger transport highlights their specific involvement regarding vulnerable or passengers with disabilities[28] (accompaniment when boarding and disembarking, placement on board, storage of personal effects, specific attention during transport, etc.). Similarly, special attention should be given to the role of the driver regarding female passengers, in terms of preserving their tranquility on board, their safety during stops en route, etc.

The major passenger transport companies in the maritime, river, rail, or air sectors have modules and procedures applicable to these categories of passengers, some major road passenger transport companies are also beginning to develop them. However, a systematization through driver CPC programs seems desirable.

4. SOCIAL REGULATIONS

In road transport (goods and passenger transport), social regulations are often discussed solely from the perspective of regulating driving or rest times. Indeed, the focus on the regulation of driving and rest times for professional drivers, particularly in developed countries, since these countries have very broad social regulations that cover all the rights of employees, and which are subject to effective control of working hours, leave, various benefits, training rights, social security, and protection, etc. In addition, this general social regulation applies overwhelmingly to sedentary workers whose control of working time and presence at work is easily verifiable. In road transport, the situation is quite different because the road driver is not sedentary, he/she is far from her/his company and

28 IRU, UITP, and EDF (2016), Accessibility Guide: Improving Public Transport Services Through Awareness of Staff about Persons with Disabilities and Persons with Reduced Mobility.

her/his various activities are difficult to measure. Thus, in developed countries, the social question takes on a particular dimension as the working time of the professional driver is a sum of different times: driving time, but also the other working times (maintenance for example), and it is this particular set that must be taken into account and reconciled. It is therefore a question of establishing rules derogating from the general labor law applicable to sedentary workers, while allowing them to be controlled by recording the different working times, including driving time of a professional driver. This explains why, aside from the general social rules applicable to all employees', adapted rules were set to regulate professional drivers working times,

Such a specific regulation also considers specific elements, indeed, by nature of their activity, professional drivers of heavy vehicles are often away from their homes and families for a long time, with precarious living conditions (e.g., for rest and hygiene). In exerting their profession, drivers are part of the general traffic and interact with all the other road users, as well as with roadside players. Their welfare is important for them but also in view of their responsibility towards the clients, the passengers, and the other road users, which is significant and requires special attention. Many countries in various regions of the world have introduced rules limiting the number of driving hours and imposing rest periods.

In countries where such rules do not exist, it is common for drivers to be paid by trip/operation which pushes them to drive excessive hours in order to accomplish the task and get another contract. All truck accident causation studies investigating serious accidents on all continents highlighted the important role of fatigue as a predominant cause of accidents. The motivations to regulate driving and rest time of professional drivers are therefore first of social nature, but also of economic nature: to prevent fatigue and its possible consequences on road safety, to allow drivers to spend time with their families, but also to set an environment that enables fair competition through harmonized social conditions.

The United States of America introduced social legislation, the Hours of Service (HOS) Regulations, since 1938 and which underwent major changes issued in 2014. Currently, most drivers must follow HOS rules if they drive a commercial motor vehicle (CMV). In general, a CMV is a vehicle that is used as part of a business and is involved in interstate commerce and fits any of these descriptions:

- weighs 10,001 pounds or more;
- has a gross vehicle weight rating or GCW rating of 10,001 pounds or more;
- is designed or used to transport 16 or more passengers (including the driver) not for compensation;
- is designed or used to transport nine or more passengers (including the driver) for compensation; and
- is transporting hazardous materials in a quantity requiring placards.

A summary of the HOS Regulations is reproduced in Annex 8.

The European Union, since the 1960s, has also tackled the social aspects of road transport. Since then, a comprehensive framework of social rules for road transport of goods and passengers was established, with three main complementary goals:

- ensure the adequate social protection of road transport workers;
- guarantee fair competition between undertakings; and
- improve road safety by averting road fatigue.

An additional objective of those rules is that good working conditions could also contribute to attracting young people to the profession, especially in Europe, where the sector is suffering from an increasingly significant shortage of qualified professional drivers.

The main piece of EU law on the subject is Regulation (EC) No. 561/2006, which applies to the carriage of goods by vehicles with a total mass exceeding 3.5 tonnes and to the transport of passengers by vehicles which are adapted for carrying more than nine persons. The main provisions of the regulation are as follows:

Driving time is subject to a number of rules, i.e.:

- the daily driving time should not exceed nine hours. Twice a week, this may be extended to ten hours.
- the weekly driving time shall not exceed 56 hours.
- the total driving time during any two consecutive weeks shall not exceed 90 hours.
- the driver should record as other work on the tachograph any work time during which she/he is not driving, as well as any time spent driving a vehicle not falling

within the scope of this regulation and the journey time on a ferry or train when she/he has no access to a bunk or couchette.

- after driving for 4.5 hours a driver shall take an uninterrupted break of not less than 45 minutes or of 15 minutes followed by 30 minutes over the same period.
- a driver may have at most three reduced daily rest periods between any two weekly rest periods.
- in any two consecutive weeks a driver may take only one reduced weekly rest period. In this case, the reduction shall be compensated for by an equivalent period of rest taken "en bloc" before the end of the third week; where a driver chooses to do this, daily rest periods and reduced weekly rest periods may be taken in a vehicle, as long as the vehicle is stationary and has suitable sleeping facilities.
- when a driver takes a rest period while the vehicle is transported by ferry or train, that period may be interrupted not more than twice for a maximum of one hour in total. The driver should also have access to a bunk or couchette.
- the maximum weekly working time may not exceed 48 hours but may be extended, in an isolated week, to 60 hours only if over a period of four months, an average of 48 hours a week is not exceeded.

EU Member States shall lay down a system of effective, proportionate and non-discriminatory penalties to ensure compliance with the regulation in their territory. They may:

- impose financial penalties on transport undertakings which have committed infringements;
- immobilize a vehicle if the infringement is of a kind that is liable to endanger road safety;
- compel the driver to take a daily rest period; and
- withdraw, suspend or restrict an undertaking's license or a DL.

The intensification of trade between the EU Member States and other countries in the Eurasian landmass has led to the negotiation, under the auspices of UNECE, of the AETR. This agreement has been adopted in 1970 and counts 55 contracting parties. An extension of its regional scope has been adopted to extend it to four North African countries.

The AETR supports the same objectives and its provisions are aligned with the EU rules. In addition to those objectives, the AETR contributes to facilitating the movement of goods and passengers by road, between the countries which are parties to the agreement.

There are various ways of keeping track and monitoring compliance with driving times, other working times and rest periods. The most common are the analog and digital recording devices named tachographs, but logbooks are still used in many countries. In countries implementing driving time regulations, drivers have very good knowledge of the social provisions in force in the countries where they drive, as well as on using the recording devices. To assist them further, IRU Academy has developed a comprehensive training program[29] for the use of the recording devices, tailored to the practical needs of road transport companies and their drivers, and preparing them for today's increasingly demanding market and stringent regulations.

Over the last decade, many countries initiated or introduced some regulations on driving and rest times. Côte d'Ivoire, in its transport orientation law from December 2014, introduced some provisions related to working and driving times of professional drivers. However, the provisions have mainly not been implemented and the same can be observed for many other countries (Guinea, Niger, Togo).

Still, the social dimension connected to professional drivers should not, in the perspective of a sectoral reform, be limited to driving and rest times, as in fact many other social issues should be addressed in a comprehensive manner, such as:

- legal social recognition of the profession of driver, through definitions and status, also considering drivers assistant as they exist in many countries;
- adoption of a professional reference description for drivers, which could serve as the basis for developing training reference documents; and
- negotiations and adoption of a professional branch convention that sets the minimum social rules for professional drivers, while making sure that these provisions would also apply to professional drivers involved in own-account transport.

29 IRU, "Training programmes".

Some countries have begun to move towards this approach, but it is still far from being fully concluded and materialized through appropriate regulations or sector-specific agreements.

5. PATH TO REFORM

The professional driver is a key actor within the road transport sector, and a key contributor to the commercial, financial and economic results of a transport company involved in goods or passengers transport activities. The professional driver is also a key actor for own-account transport operators. Finally, professional drivers are also key actors to enable improved road safety, for themselves, the goods and passengers they take into charge, but also for other road users, and for the preservation and through appropriate use of road infrastructures.

Being a professional driver involves a combination of various skills revealing the need for an appropriate legal framework to be developed to organize the conditions under which she/he will be able to operate. Therefore, the reform of the sector must address a wide array of important issues such as an appropriate DL system, initial, vocational, on-the-job, periodic, and specialized professional training to ensure that drivers hold the necessary qualification to demonstrate professional excellence.

a. Drivers of reform

Policy makers must approach sectoral reform (goods and passenger transport) with full consideration for professional drivers' key role in improving not only transport performance but also road safety. In fact, approaching the "professional driver" as one of the key components of the sector reform, should involve, for policy makers, as well as for operators, the creation of a road safety culture at all stages from regulation to implementation and operations.

Therefore, the inclusive design of the global framework applicable to professional drivers should:

- involve a design that associates all the public actors potentially involved:
  - the Ministry of Transport must be the leader but in consultation with its implementing agencies and branches;
  - the ministry on charge of the technical supervision of the DL system (for heavy and transport vehicles) – depending on countries, it could be the Ministry of Transport or the Ministry of Interior;
  - the Ministry of the Interior (control and implementation);
  - the ministry in charge of social affairs and employment;
  - the ministry in charge of women and gender;
  - the ministry in charge of vocational training (accreditation of training centers for professional drivers CPC);
  - the Ministry of Justice (texts to be adopted and sanctions foreseen); and
  - the Ministry of Economy and Budget (connected administrative fees and taxes, as well as budgeting the reform needs);
- involve key private-sector stakeholders:
  - professional organizations representing the transport of goods and passengers;
  - professional organizations representing the actors of own-account transport;
  - professional organizations representing the driving schools and driving teachers; and
  - professional organizations representing the private vocational education institutes and centers.

The objective and framework of the legal and regulatory framework applicable to professional drivers must be designed by the ministry in charge of road transport, in close cooperation with identified public structures, as well as private-sector professional organizations concerned. Indeed, as for the other key areas of reform, the details, and content of the reform must result from a consensus of all stakeholders to ensure that the reform is accepted and sustainable as it is supported by all involved.

The road transport sector, a critical driver of economic development, remains largely inaccessible to women in many developing or emerging countries. Ultimately, driving women's participation in the road transport sector requires a comprehensive approach that integrates gender equity into policies, provides access to education and training, and addresses societal biases.

BOX 15.

Gender in Nigeria

- In Nigeria for example, Gender inequality in this sector is a persistent issue, undermining the principles of inclusivity and equal opportunity in welfare-oriented and democratic societies. Despite constitutional protections, Nigerian women continue to face systemic barriers that limit their participation and growth in the labor market. These include a disproportionate domestic workload, lower levels of educational attainment, and discriminatory wages, particularly in the informal sectors such as agriculture and domestic services where most women are employed.
- While the 1999 Constitution of Nigeria forbids discrimination on the basis of sex, its enforcement in practice is limited. Women are under-represented in transportation planning, management, and employment – a trend observed across developing nations. The sector's failure to address gender dimensions in policymaking exacerbates this disparity, leaving women unable to develop their full potential on an equal footing with men.
- A significant step towards rectifying this imbalance lies in targeted reforms aimed at equipping women with the necessary skills, resources, and opportunities to thrive in the transport sector. For example, the government of Kogi State should establish driving schools and transport schemes specifically designed to empower women. These initiatives would enable women to acquire essential driving skills and access commercial vehicles, thereby enhancing their livelihoods in both rural and urban settings. Such measures not only offer a pathway to financial independence but also contribute to the overall growth of the economy by diversifying the workforce.
- Additionally, advocacy by key stakeholders, such as the National Union of Road Transport Workers (NURTW), is crucial. The importance of mindset and skills development in achieving this goal was underscored during the Women in Transport Conference on December 2, 2024, which emphasized the need to champion an inclusive agenda for women in Nigeria's transportation industry.

b. Main challenges

The tasks and functions of professional drivers, involved in goods or passengers transport operations against reward or for their own account, have significantly expanded over the years and a DL (even through a special category for heavy vehicles) is not sufficient to certify the qualification of a professional driver anymore. This complexity resulted, in some cases (notably in the European developed countries), in a lack of interest in the profession and a consequent shortage of qualified drivers. Therefore, any reform of the road transport sector aimed at developing the sector and improving the quality of road transport services should include the "driver" in its scope, with one main strategic goal: to provide the drivers with high-level skills. This involves the implementation of a driver qualification strategy that includes at least provisions for the initial/vocational training in order to obtain the DL, and the initial and periodic/continuous training to obtain the CPC. If "training" appears to be increasingly fashionable, developing a policy in this field should consider some crucial elements that may condition the success of the reform.

i. Changing mentality

The road transport sector worldwide (goods and passenger transport) is mainly composed of individuals or small operators for against-reward transport of goods and passengers. Small operators usually consider training as a cost (cost of training itself, and vacancy of driver during training thus lack of income for the company), and not an investment that is amortized over time by better service, rational consumption, a reduction in accidents and their consequences. For drivers in activity, upgrade-training and periodic training is also felt as a severe double cost: the cost of the training itself or participation to it, and the cost of non-employment during the training, as long as a culture of road safety is not customary. At first glance this is true because:

- training is usually not free; it can even have a high cost; and
- the driver who is in a training session is not driving, so is not productive, but in most situations her/his wage remains due.

Creating a culture of road safety through training, during both the DL and professional training, must therefore contribute to creating the conditions favorable to a change in the mentalities of both employers and professional drivers.

This approach of "cost too high, therefore training not worthwhile" should move to the understanding that training is a must as it is an investment in human resources, a process to build capacity that will bring better profitability to the company beyond short-term planning. In addition to that, better trained drivers are a gain for society thanks to improved road safety, less congestion, and pollution as a positive consequence of eco-driving techniques, for example. Failing to change the mentality would jeopardize the realization of these expected benefits of the reform. Therefore, introducing new training requirements should take this aspect into account and should be accompanied by incentives and ample, focused and convincing communication. Indeed, road safety should be seen as a business opportunity for all involved, safety should become a key to creating sustainable and profitable operations and boosting business performance in a tangible way. This implies that resistance to change and lack of financial resources are overcome through the reform process and step by step through its implementation.

ii. Dealing with illiteracy

There are still countries in the world where professional drivers are often illiterate, which does not necessarily prevent them from being good professionals. Hence, in designing the reform, the definition of qualification criteria, training requirements, and programs should not result in prohibiting this category of professionals from continuing working: The training should be adjusted to incorporate elements that would help overcome this constraint, for example by defining special training material, and of course by foreseeing dedicated alphabetization sessions.

Illiteracy should not be overlooked; failing to address this important issue may create discrimination and social tensions that may deprive operators of experienced drivers. The challenge will be to motivate this special category of professionals to accept the change and develop their capabilities to read, write and count, to improve their professional competence and remain active within the sector thus contributing to the sector efficiency and sustainability.

iii. Lack of attractiveness for women

If a growing feminization of administrative staff in the road transport sector is observed, and this on almost all continents, the feminization of the driving profession is much more modest. If great efforts are made in developed countries to make the profession attractive to women, by adapting working conditions to their constraints (family life for example), in many countries or many regions, these adaptations are not sufficient. The safety and security conditions, reception, and hygiene conditions on the corridors and at border-crossing points and the very long transport times are still obstacles to the feminization of the profession.

We note in many developing countries, a number of professional women drivers increasing, particularly in urban public transport networks, including taxis.

However, making the profession attractive to women remains one of the challenges to overcome in the overall framework of the reform.

iv. Explaining the benefits

In general, change raises fear of the unknown future and of losing the existing privileges (if any, or even if meagre). Overcoming this challenge will consist in explaining in a convincing manner, and documenting to the extent possible;

- **to professional drivers' employers** that training of a professional driver is indeed an investment that companies will recover by:
  - eliminating or reducing traffic crashes;
  - reducing operation and maintenance costs (fuel, oil consumption, tires, etc.) thanks to responsible and eco-driving;
  - improving service to clients, resulting in more operations/contracts:
  - these aspects will reduce operating costs (including insurance share) thus contributing to an increased profitability; and
  - retaining and attracting drivers through appropriate remuneration and incentives based on quality and safety rather than performance.

- **to professional drivers** that building professional capacity will:
  - improve health and working conditions;
  - reduce accidents and their consequences for herself/himself and her/his family, in terms of work stoppage, injuries and even deaths;
  - improve remuneration through quality and road safety objectives incentives;
  - stabilize employment in the long term; and
  - promote social advancement by better preparing for a possible transition to create a business to become a transport company boss in turn.

v. Upgrade or prepare appropriate training capacity

It is self-evident that improving professional drivers' skills (goods and passenger transport) is dependent on the training capacity. Therefore, reforming the professional drivers legal and operational frameworks imposes a parallel and coordinated approach for:

- reforming, improving, upgrading the DL system and enhancing capacity of all involved (monitors, inspectors, driving schools) and creating appropriate capacity (adapted driving school vehicles, training materials, and programs),
- reforming, improving, upgrading the vocational training capacity to allow the delivering of CPC drivers trainings programs (initial and periodic) and specialized trainings (dangerous goods, refrigerated, oversized.)

This is often overlooked during the reform process and leads to adopt regulations while training capacity is not in place. Details are proposed in the next section.

vi. Institutional capacity and entry into force of the reform

The success of the reform is highly dependent on the public authority's ability to implement the reform from the technical point of view, as well as on its capacity to enforce the rules and, when necessary, apply sanctions in cases of noncompliance. Effective enforcement makes the difference between theory and practice, between wishful thinking and reality. Therefore, the institutional aspects relating to the DL system and the vocational training capacity that are the most relevant regarding reform related to professional drivers and which should be of concern for public authorities are:

- ensuring that staffing available at all levels (national and regional) is sufficient to cope with the implementation of the reform and its enforcement (Ministries involved, decentralized administrations, territorial authorities, and agencies).
- implementing a coherent capacity-building program, training the concerned staff to the new regulation content, its control, and enforcement component and the foreseen sanctions.
- ensuring that the regulations to be implemented are coordinated and coherent, consistent and sufficiently based on a proper legal basis, in particular for the sanctions.
- empowering the institutions concerned by defining their roles and responsibilities but also by enabling them from a technical point of view (e.g., up-to-date IT equipment and facilities) and required budget allocation.
- ensuring coordination between the various authorities involved in the implementation and enforcement of the reform, and to hold them accountable.
- ensuring reasonable but realistic date of entry into force of the reform and appropriate transition period and accompanying measures for drivers in activity to comply with the new rules.

c. Recommendations for reform components

i. Driver's social rules (new)

The social consideration of the professional road driver (goods and passenger transport) is often limited to the sole regulation of driving and rest times, but it goes well beyond that.

Creating a social environment for the professional road driver should require considering the following elements in a sectoral reform context:

- **Recognition in the legislation/regulation of the profession** (own-account and professional transport, goods, and passenger)

  This would mean adopting in the legal framework a definition of the professional driver involved in against-reward or own-account goods or passenger's road transport operations. Such a definition could be:

- Professional driver: any person who practices as a profession, the driving of a commercial vehicle used for the public or private transport of goods or passengers.
- Apprentices and assistant driver: any person who accompanies, as an apprentice or as an assistant, a commercial vehicle used for the public or private transport of goods or passengers, and, as such, carries out all tasks assigned to them by the professional driver.

Adoption of such definitions, as was the case for example in Niger and Togo, allows to frame the main responsibilities of a professional driver in a legal context.

- **Complementing the regulation and the definition of the profession**

  It would be recommended to promote at the professional branch level, the negotiation, and adoption of a "collective agreement or convention" to provide for some social standards to be adapted to the local or regional context to all employees in the branch, including professional drivers. Such a professional collective convention would address the following topics:

  - scope of the collective agreement or convention;
  - qualifications and classification of all categories of employees, including professional drivers;
  - conditions related to the professional driver activity (working conditions and rest periods, allowances, and travel expenses, etc.); or
  - career development, training, job security.

  NOTE: As a general rule, a collective agreement applies to a professional branch, in this case that of road transport of goods and passengers, understood as being the branch of professional transport against reward. To guarantee equal treatment between public carriers and own-account carriers, it is recommended that the collective agreements of other professional branches refer to the collective agreement of road transport for what concerns professional drivers acting under the own-account transport regime.

- **Driving, resting and other working times of professional drivers** (own-account and professional transport, goods, and passengers).

Professional driving has some special characteristics that may need to be reflected in adapted rules, for example in social legislation. Adopting regulations on driving resting and other working times for professional drivers applicable to both public transport and own-account transport meets three imperatives: social imperative, road safety imperative, and economic imperative to ensure fair competition rules among all actors involved.

While the AETR Agreement could serve as an example, it cannot be simply duplicated to all regions and continents. Such regulation could address the following key elements:

- scope of application;
- key definitions of actors subject to the regulation;
- key definitions of times to be considered and regulated:
  - driving time;
  - daily driving time;
  - weekly driving time;
  - duty time;
  - week;
  - break;
  - rest;
  - daily rest time;
  - weekly rest time.
- recording methods (tachograph, electronic tools, leaflet, etc.) of driving times, breaks, rest periods, and other times and their control,
- obligations and liability of the employer of a professional road driver,
- control and sanctions,
- entry into force and transition period and measures.

Adopting such regulation implies moving carefully to consider at least the following considerations:

- existing social general regulation;
- sector's readiness to accept, cope and implement with the new rules;
- capabilities available to record the different driving, resting and other working times of professional drivers, which implies either vehicle fleet equipment (tachograph) or drivers' ability to record on a leaflet their different times;

- capabilities of companies employing professional drivers to keep record of drivers' various times, to monitor them, to redress abusive practices;
- capabilities of enforcement authorities to control the regulation's implementation, which supposes some specific legal credentials (right to enter the cabin to check a tachograph) and proper training on controlling the regulation's implementation.

- **Develop attractiveness for women**

In a context of shortage of professional drivers (goods and passenger transport), the attractiveness of the profession for women must be highlighted and promoted, both in regulations and in good practices at all levels.

Thus, rules and recommendations must be formulated, and included in the regulations and/or the collective agreement, to promote the integration of women in the college of professional drivers by addressing the following issues:

- Adaptation of the schedule to the requirements of family life.

  One of the significant barriers women face in the road transport sector is the challenge of achieving a work–life balance, particularly in professions such as long-haul trucking, where extended periods away from home are a fundamental requirement. These challenges are often compounded by gender-specific expectations, particularly when it comes to family responsibilities. Many women, especially those with childcare duties, find it difficult to reconcile the demands of the job with the needs of their families.

  The professional drivers who participated in IRU's study of Women Driving Change emphasized that these work–life balance issues played a key role in their initial hesitation to pursue careers in driving. For them, the extended time spent away from home, coupled with the pressures of family care, created significant barriers to entry.

  During IRU's study as part of the Women Driving Change project, participants working in the industry shared that their experiences in the road transport industry were marked by gender-intensified obstacles. One of the recurring issues mentioned was the lack of adequate support for pregnancy and maternity leave. Several women expressed that the absence of structured support systems – such as dedicated maternity leave and flexible reintegration steps – made it challenging for them to continue their careers after having children.

  Participants in the study emphasized the critical need for support throughout pregnancy, sufficient time off for maternity leave, and clear pathways for re-entry into the workforce. These measures are vital to ensure that women have the opportunity to thrive in the industry and are not forced to choose between family and career. Creating an environment that facilitates both professional growth and family life is essential to improving female participation rates in road transport.

- Prioritization of leave to coincide with school holidays.

  Prioritizing leave for women drivers to coincide with school holidays is a powerful measure to support work–life balance, particularly for those with caregiving responsibilities. This approach acknowledges the dual roles many women play in both their professional and personal lives, addressing one of the key barriers to their retention in the transport sector.

  Aligning leave policies with school holiday schedules offers women drivers the flexibility to manage family responsibilities more effectively. During these periods, women can spend valuable time with their children, participate in childcare arrangements, and attend family events, which are often concentrated during school breaks. This prioritization highlights a company's understanding of the unique challenges women face in balancing career and family, creating a more supportive and inclusive work environment.

  To ensure fairness and operational continuity, companies can implement clear guidelines for requesting and allocating leave during school holidays. A transparent system based on seniority, rotation, or demonstrated need can ensure that access to leave is equitable and minimally disruptive. Open communication about these policies, along with advance planning, enables effective coordination between employees and management, reducing potential conflicts or understaffing.

  Technology can further enhance the process by incorporating employee scheduling tools that track school holiday patterns, streamline leave requests and identify potential overlaps. This can help manage allocations more efficiently while maintaining the necessary operational capacity.

- Adaptation of the company premises (changing rooms and reserved toilets).

  Thoughtful redesign and the careful allocation of facilities to ensure comfort, privacy, and security are essential in attracting and retaining women in the transport sector.

  One of the fundamental adaptations is the creation of dedicated changing rooms for women. These spaces should prioritize privacy and cleanliness, with secure lockers for personal items and uniforms, as well as practical features like mirrors, adequate lighting, and seating. Such amenities not only improve the day-to-day experience for women employees but also send a clear message that the company values their specific needs and is committed to fostering a welcoming environment.

  Reserved toilets exclusively for women are another key adjustment. These facilities should be separated from those for male employees, ensuring privacy and preventing overcrowding. To enhance their usability, these restrooms must be well-maintained and stocked with essential hygiene products, such as soap dispensers, hand dryers, or paper towels, and sanitary product disposal units. Regular cleaning schedules and the provision of basic amenities underscore the company's dedication to maintaining high standards of care and inclusivity.

  These adaptations should be integrated into broader policies that promote respect and inclusiveness. For example, clear signage indicating designated facilities, combined with regular communication about maintaining cleanliness and respecting boundaries, fosters a workplace culture where women employees feel supported and valued.

- Adaptation of tours and missions (avoid night work, unsecured or dangerous areas, etc.).

  Creating a safer and more inclusive work environment for women drivers requires a comprehensive approach to adapting operational practices. Prioritizing daytime operations over night work can significantly reduce risks such as reduced visibility, fatigue, and vulnerability to harassment or crime. Additionally, thoughtful route planning is essential to minimize exposure to unsecured or high-risk areas by identifying and avoiding these zones whenever possible. When avoidance is not feasible, robust support measures, including vehicle tracking and emergency response protocols, ensure swift assistance if needed.

  Flexibility in mission planning further enhances safety and well-being by accommodating individual needs, such as shorter assignments with frequent breaks at secure facilities. Integrating advanced communication systems and safety-oriented route-planning tools empower drivers to stay connected and make informed decisions during their journeys. These adaptations not only address the specific challenges faced by women drivers but also promote a more efficient, equitable, and diverse workforce.

- Safety measures and specific call numbers, etc.

  Safety remains a critical barrier deterring women from entering the trucking profession. Women drivers face heightened concerns around their personal security, particularly during long-haul journeys that necessitate overnight stays at truck stops and rest areas. Addressing these concerns is not only essential for recruitment but also for retaining women in the industry.

  A significant infrastructural gap persists, particularly in the availability of safe and secure truck parking spaces. In the EU, only 7,000 of the 300,000 available truck parking spaces – less than 3 percent – are certified as safe and secure. This shortfall is compounded by an overall deficit of 100,000 parking spaces to meet current demand. The inability to ensure secure parking for mandatory rest hours, coupled with a lack of access to adequate sanitary facilities, creates an environment that discourages women from pursuing careers in trucking.

  Research underscores the critical need to improve safety measures at truck stops and rest areas, particularly for women who undertake long-haul journeys. The IRU Women Driving Change report highlights instances where female drivers expressed discomfort sleeping at truck stops shared with male foreign drivers. This perception of increased risk aligns with findings from Hopkins and Davidson (2023), which emphasize that women may feel more vulnerable due to gender-specific safety concerns. Enhancing safety protocols and fostering a supportive environment can significantly improve women's sense of security on the road.

Beyond infrastructure, the design of vehicles plays a pivotal role in ensuring safety and comfort for women drivers. Current crash-test standards predominantly cater to the average male body, leaving women at a 10 percent higher risk of injury in similar crash conditions. Integrating gender-specific ergonomics into vehicle design is imperative to address this disparity. Companies like Ford and Ola Electric Mobility have demonstrated leadership by employing female engineers and establishing women-led manufacturing units, such as Ola's all-women factory in India, to design vehicles tailored to the needs of women.

Establishing and promoting a culture of respect and equality within the trucking industry is essential. To support women drivers, the following measures can be implemented:

- ensure all women drivers have access to a dedicated, 24/7 helpline for immediate assistance during emergencies.
- introduce mandatory gender-sensitivity training for all drivers to foster mutual respect and reduce discriminatory behavior.
- create women-only support networks and mentorship programs to provide guidance, share experiences, and build solidarity.
- establish designated women-only areas within truck stops and rest areas, equipped with enhanced security measures, well-lit environments, and sanitary facilities.

- Recommendations/regulations for designing and building secure parking areas, border-crossing points to ensure that women drivers would benefit from appropriate infrastructures and equipment.

  Creating secure parking areas and border-crossing points that support women drivers is essential to fostering a safer and more inclusive transport environment. These facilities must address both universal and gender-specific needs, ensuring women feel protected, comfortable, and valued in their profession. The foundation of secure infrastructure lies in robust safety measures:

  - lighting and visibility: facilities must be well-lit, especially during nighttime operations, to deter criminal activity and enhance visibility.
  - surveillance systems: comprehensive 24/7 CCTV monitoring systems should be installed, ensuring that all areas are covered to provide constant oversight.
  - emergency systems: strategically placed panic buttons or emergency call systems can enable drivers to quickly access help in critical situations.
  - trained security personnel: on-site staff trained in gender-sensitive practices should be present to provide reliable support and foster a sense of security.

  It is also important to provide gender-specific facilities in terms of infrastructure to meet the unique needs of women drivers. Separate and secure restrooms equipped with hygiene amenities, as well as dedicated shower areas, are vital. Facilities should go beyond basic amenities to provide a welcoming and functional environment. Women-friendly parking, comfortable seating, Wi-Fi, and charging points create a conducive space for unwinding and staying connected. The development of these infrastructures should be guided by women drivers, actively involving them during the planning and design phases to ensure their specific challenges are addressed.

  Equally important is that national and regional transport authorities include gender-sensitive infrastructure requirements in their official guidelines.

ii. Creating/modernizing professional competence training capacity

Today's world is global and characterized by an unprecedented mobility of people, goods, and workforce. Professional qualification of drivers (goods and passenger transport) is an essential opportunity for integration of transport services to global markets, provided they are internationally recognized.

Countries engaged in road transport reform should also consider developing requirements aimed at improving the professionalization of the industry through certified drivers' professional training on specific qualification. The road transport industry was proactive in elaborating training programs adapted to local conditions and needs. The IRU Academy has developed complex yet applicable curricula[30] for general driver's competence, but also for specific competences like using the recording device (driving and rest hours), transport of dangerous

30 IRU, "Training programmes".

goods, safe loading, and cargo securing, crash prevention and eco-driving. These programs are offered to road transport professionals through a global network of IRU ATIs. The IRU Academy uses a multilingual digital content management system to ensure its program materials are available via controlled access to a maximum number of authorized recipients.

iii. Curricula for initial and periodical training for professional competence

The description of the tasks and responsibilities of the professional driver involved in public or private transport operations of goods or passengers, and the minimum knowledge presented in D.1 and 2 above must serve as a basis for defining initial and periodic training programs intended for professional drivers.

Therefore, legislation/regulations to be adopted should:

- consist in publishing the professional driver profession reference document, the training reference documents, training programs, and certification reference documents which should be based on the descriptions given above (D,1 and 2).
- define training programs and foresee theoretical and practical training sessions, through an appropriate training progression.
- define the training duration for both the initial (usually around 150 to 300 h) and periodical trainings (usually around 35 to 50 h).
- define the periodicity of the periodical trainings (usually 5 to 10 years).
- define the evaluation mechanism (periodic qualification could rely only on a method of confirming the acquisition of knowledge or know-how during training sessions).
- define the model of initial training certificate and periodical training certificate, and its referencing method (unique numbering).

iv. Accreditation of training institutes, training the trainers

The legislation or regulation should foresee the conditions under which training institutes may obtain their accreditation, authorization, or certification. The criteria should cover the following elements:

- Designation of the accrediting authority (usually the Ministry of Transport in collaboration with the ministry in charge of vocational training).
- Training institute accreditation conditions for initial and/or periodic training:
  - Engagement to follow the defined programs' structures and pedagogical progression.
  - Qualification of the institute's manager.
  - Qualification of trainers.
  - Training techniques.
  - Pedagogical equipment (rooms, distance learning possibilities, training requirements/material for theory, practical and driving techniques).
- The accreditation duration (three to five years are recommended) and ongoing audits to ensure compliance at all times.
- Simplified renewal procedure.
- Accreditation suspension or revocation cases, and related procedure.
- Model of accreditation certificates.

The IRU Academy has put in place a thorough process of accreditation for training institutions, which could also be used as an additional qualitative criterion in the decision-making process towards accrediting a training institute.

NOTE: The question of the possibility of driving schools to also obtain accreditation for professional qualification training for drivers (goods and passenger transport) may arise. However, we must not create confusion and here too we must distinguish this special accreditation which must only be granted to driving schools authorized for heavy vehicle licenses and to the extent that all the conditions applicable to training centers for the CPC driver are available independently of the driving learning system. The two accreditation approval systems must remain autonomous and distinct.

v. Training and certification of special competences

Special transport (dangerous goods, perishable foodstuffs, oversized, etc.) should be regulated by national legislations/regulations which should also cover training requirements and qualification that would be needed for drivers involved in such transports. On the one hand, such requirements would provide an opportunity for voluntary

training of professional drivers; on the other hand, the provisions would provide the necessary legal framework to the national enforcement authorities to control foreign driver's qualification while transiting their country.

Similar approach to a) and b) above should apply to define the legislation/regulation, for both the special training requirements and the accreditation of training institutes.

vi. Transition periods

Introducing new, more complex requirements for the training of professional drivers (goods and passenger transport) may be a sensitive endeavor in most countries, because the change will not only apply to future professional drivers but should also encompass the existing professionals. The latter should benefit from specific measures in order not to be excluded from the profession if they do not comply with the qualification requirements. Therefore, it appears essential that reforms relating to the DL system and to professional drivers' qualification/competence duly consider the following key elements:

Quantitative evaluation of needs:

- the part of the reform related to DLs and professional drivers' qualification should only enter into force when:
  - all legal and practical conditions are in place and in particular when training programs are defined, available and published;
  - the training schools and institutes are established and capable to deliver the new programs in sufficient number; and
  - the ancillary activities (e.g., medical checks) are organized and functioning.

  This implies that the conception and preparation of the reform require thorough attention to the evaluation of the needs in terms of:
  - the number of people to be trained, for initial training, periodical training, and upgrade trainings (for drivers in activity);
  - the required human resources (trainers) to deliver the foreseen sessions;
  - the required adapted training materials:
  - the required equipment (in particular, in the DL system), the number of heavy driving school vehicles.

Estimation of time needed to ensure complete entry into force and assess the transition period to be foreseen for newcomers

This quantitative assessment should be exposed to the training programs durations to evaluate the required time necessary to apply the training requirement to professional drivers in activity (upgrade trainings if foreseen by regulation), and to new professional drivers. This will allow defining the transitional period needed to absorb the quantity of candidates through the training capacity (both DL system and professional qualification).

Estimation of financial resources required

Based on previous steps, the budgeting plan should be envisaged at public and private levels to ensure that when the rules will enter into force, all means will be available to implement them. In general, resources for training are scarce on both private and public sides, hence the necessity to consider a gradual entry into force and define the different stages.

Proposed methodology to define entry into force of new regulation, and transitional period

The following steps could represent a feasible approach:

- **For the DLs of drivers** involved in goods and passengers transport against reward or for own account:
  - All new rules will apply to all new applicants as from the date of entry into force.
  - For professional drivers already holding a license, the medical checks should be organized within one year from the entry into force and, from then on, according to the new rules.
  - For the regular/periodical refresher training, all the new drivers should take it according to the new rules, and the existing drivers should be granted a two-to-three-year period to comply with the requirements.
  - In case the reform encompasses a new format of the DL, the transition period should be established according to the capacity of the administration charged with the issuance of the document.
  - However, the period during which different forms of DLs are in use should be limited to a maximum of 4 to 5 years, depending on national specific data (e.g., population, number of drivers, etc.).

- **For the professional qualification/competence** to obtain the CPC driver:
  - All rules will apply to all new applicants as from the date of entry into force.
  - For professional drivers already employed, a good option for gradual implementation could be to consider that they comply with the requirements of initial training, as from the entry into force of the new rules (grandfather rights).
  - However, they should be requested to follow an upgrade/refresher training during a transitional period of a maximum of 3 to 4 years after the entry into force of the rules, and from then after, according to the new rules for the periodic trainings.

vii. Accompanying measures and financial implications

The investment in training is paid back by reduced fuel consumption, lower maintenance and operating costs, longer life expectancy on the vehicle, fewer fines, increased client satisfaction, fewer claims from clients and fewer accidents and their negative consequences.

Financing the professional driver's training is key to creating a positive acceptance by the transport operators, and by the professional drivers of the training requirements.

The financial component of the reform of the DL system and of the professional driver's qualification should be addressed at the very initial stage of the reform, and be conducted on a step-by-step basis, by identifying:

Investments needed

- costs involved in terms of physical investments needed to create, or update the physical training capacities (training centers, driving schools, vehicles evolution areas, etc.);
- cost of training materials and equipment, including vehicles driving schools;
- cost of training the trainers to ensure they can deliver the required trainings;
- cost of training examiners and inspectors to ensure they can assess and evaluate candidates.

The evaluation/assessment of these initial costs is necessary for budgeting investments and induced costs. Part of these costs can be covered by technical and financial support that can be proposed by donors involved in the sector.

As far as driving schools' vehicles are concerned, this may be a real challenge but solutions could be found to facilitate such acquisitions – for example, by organizing imports of equipped second-hand driving schools' vehicles. Indeed, in many developed countries, driving schools' vehicles must be renewed by law every two or three years, and are therefore dismantled to be sold as second-hand vehicles. Instead of transforming them into normal vehicles, they should be able to be reused, at least at the initial stage to initiate the reform.

Cost of training

Based on the quantitative assessment made, the needs identified, the number of potential trainees, an overall estimate cost of the new training requirements should be defined, as well as its corresponding student cost. This would help define the cost to be covered per student for each training obligation.

Once the student training cost is defined, it is a matter to investigate the various financial possibilities that could be offered to cover this cost and decide:

- what share should be supported by the candidate herself/himself,
- what share should be supported by employers,
- what share could be supported by public financing support.

As far as financial public support is concerned, many possibilities could be explored:

- Some countries have activated training funds, often through a fee collected by professional branches (in France, for example, a fund is established through a tax on transport companies (1 percent of the yearly turnover) to finance compulsory training activities). The cost of the compulsory training is borne by the fund which then pays the training cost to the accredited institutions or reimburses the transport company.
- Other countries like Morocco, have gone even further: the fund, in addition to financing the training courses, is also compensating the company for the wage of the driver and the related charges during her/his training period.
- Some countries have defined the applicable mechanism in the branch collective agreement or convention.

- Côte d'Ivoire is implementing various programs to support the integration of vulnerable young people (without resources) into the job market, via the Youth Employment Agency. The agency has established eligibility criteria and is contributing either through an apprentice contract with a company to its salary, or through a training agreement with the training center to cover the training cost (partially).

Such mechanisms are essential in convincing the transport operators that regular training of professional drivers is a key component for better profitability, a better environment impact of the sector and increased road safety. They are also instruments that may alleviate the burden on transport operators and make the reform more affordable and therefore more acceptable.

Some experiences have also been conducted by some donors, by the World Bank, to cover and finance the initial training needs for a predefined number of candidates. This was useful to initiate the training and create incentives for professional drivers in activity to undergo the new training requirements and then be accompanied to ensure compliance with the new rules. However, this approach is only valid if conditioned to the establishment by the beneficiary country of a proper and sustainable financing mechanism.

Long-term budgeting procedure

Whatever the financial mechanism implemented, which may be a combination of the different possibilities offered, considering the public share in the budget of the state or of the ministry concerned is essential to ensure the sustainability of the system in the long term, because the support of donors can only be initial and temporary.

E. Driving license

Whether the professional driver is involved in the road transport of goods or passengers, the absolute prerequisite is obtaining and holding a valid DL of the required category.

Section summary

The requirement for a DL dates back to the first motor car built by Karl Benz in 1888. Early regulations aimed at ensuring road safety led to the introduction of mandatory national driver tests in France (1899) and other major economies by 1903. Three major international conventions have shaped DL regulations: the Convention on Motor Traffic (1926), the Convention on Road Traffic (1949), and the Convention on Road Traffic (1968), known as the Vienna Convention. These conventions facilitated international road traffic and increased road safety through uniform traffic rules.

A comprehensive DL system includes several elements: training plans and programs, qualified instructors, authorized driving schools, experienced driving teachers, qualified examiners, standardized exams, and the legal nature and validity of the DL. Training programs should cover both theoretical and practical aspects, focusing on safe and eco-responsible driving. Instructors and driving teachers must be properly trained and accredited, while examiners should have the necessary qualifications to conduct fair and objective tests. The examination process includes written tests, closed circuit driving tests, and real traffic driving tests.

A DL is an administrative document authorizing the holder to drive a specific category of vehicle, including goods and passenger transport vehicles. It can be subject to suspension or withdrawal for serious offenses. Some countries have introduced a points-based system, where points are deducted for offenses, and the license may be revoked if all points are exhausted.

Designing and operating a comprehensive DL system requires sustainable financial resources. Initial investments are needed for infrastructure, training materials, and equipment. Long-term funding is essential to maintain the system and ensure its effectiveness.

Modernizing the DL system involves reviewing regulations based on international standards and adapting them to local contexts. Key elements include designating the competent authority responsible for managing the system, defining license categories and prerequisites, establishing detailed training programs, setting conditions for driving schools, defining qualifications for driving teachers and examiners, standardizing the content and methodology of exams, and implementing regular medical checks and renewal processes.

1. INTERNATIONAL CONVENTIONS AS A BASIS FOR DOMESTIC LEGISLATION

The requirement to hold a DL to drive a motor vehicle on the public highway dates to the very first motor car built by Karl Benz in 1888. The world's first mandatory national driver's test was introduced in France in 1899; by 1903 the major European economies had introduced laws relating to driving licensing, and in 1910 forms of tests were also introduced in Germany and the United States. At that time the number of vehicles was minimal and mainly involved passenger cars, but the main motivation of regulators was the same as today: the concern for road safety.

In 1907 and 1908 early motorists participated in road races from Paris to Beijing and from New York to Paris, but most vehicles had traveled relatively short distances. WWI began as a cavalry-reliant conflict and ended with using motorized transport for the movement of equipment, people, and supplies. During the war (1914–1918) large numbers of troops learned to drive different vehicles and, following the peace, they and the vehicles represented the nascent road transport industry.

The dramatic expansion of motorized road transport with consequent concerns over road safety, but also the preoccupation for harmonizing the traffic rules to facilitate international transport through the mutual recognition principle, have resulted in three major international legal instruments, each of them reflecting the conditions and possibilities of the period when they were concluded:

- Convention on Motor Traffic (Paris, April 24, 1926);
- Convention on Road Traffic (Geneva, September 19, 1949);
- Convention on Road Traffic (Vienna, November 8, 1968).

All three conventions have been successful in regulating road traffic at the international level, but they have also served as a basis for national road traffic rules across the world, including countries which have never ratified them.

- **The Convention on Motor Traffic (Paris, 1926):** Twenty countries from around the world ratified the 1926 Convention which, in addition to dealing with fiscal matters and the international recognition of the international DLs issued in the signatory countries, established a minimum driving age of 18, and categorized vehicles into three identifiable categories, which also gave the category of the DL. Apart from motorcycles, the two other categories made the distinction between light and heavy vehicles as 3,500kg gross vehicle weight (GVW), which remains the norm today in most countries. This benchmark has since influenced the design and manufacture of commercial vehicles.
- **The Convention on Road Traffic (Geneva, 1949):** The convention was needed to adapt the international rules to the development of road transport in many parts of the world; it is still in force in 101 countries. The convention was the first to cover road signs and signals as well as DLs; its provisions extended to five categories of vehicles requiring DLs. The vehicles were categorized based on their weight and/or number of seats, including vehicles used for the transport of passengers and comprising, in addition to the driver's seat, more than eight seats.
- **The Convention on Road Traffic (Vienna, 1968):** This legal instrument, commonly known as the Vienna Convention, has been ratified by 73 countries and forms the basis of many other countries' traffic codes. The objective of the convention is "to facilitate international road traffic and increase road safety through the adoption of uniform traffic rules." This proved to be an effective facilitation tool with its provisions on mutual recognition and admission in the international traffic of vehicles and drivers in possession of certificates and licenses issued in conformity with the Convention. Two annexes to the convention relate to the rules and format of domestic and international DLs (permits), respectively. They extend to seven the number of vehicle categories for which a DL is mandatory, and include subcategories as shown in Table 3.

  In some developing and emerging countries, special attention should be paid to tricycles that are proliferating to serve goods and passengers mobility particularly in cities.

  The Vienna Convention also sets obligations for the contracting parties:

  - every driver of a motor vehicle must hold a DL;
  - contracting parties undertake to ensure that DL are issued only after verification by the competent authorities that the driver possesses the required knowledge and skills; the persons authorized to check if drivers have the necessary knowledge and skills must have appropriate qualifications; the contents and procedure of both theoretical and practical exams are regulated by national legislation; and
  - domestic legislation must lay down requirements for obtaining a DL. In particular, it shall specify the minimum age for holding a license (per category), the medical conditions to be fulfilled and the conditions for passing the theoretical and practical exams.

- **The UN Consolidated Resolution on Road Traffic (R.E.1):** This Resolution is aimed at supplementing the Convention on Road Traffic, 1968, and the European Agreement of 1971 with best practices in road safety

Table 3. Categories and subcategories of vehicles that require a driving license

Category / Pictogram	Subcategory / Pictogram
A 	A1 
B 	B1 
C 	C1 
D 	D1 
BE 	
CE 	C1E 
DE 	D1E 

Source: Based on the Vienna Convention.

intervention. The objective of this resolution has been to create a reference tool which presents guidance for countries on the improvement of road safety and a framework which will allow greater harmonization of regulations on a voluntary basis at the international level. Most and above all, the resolution furnishes a catalogue of measures and practices detailing the implementation of the legal instruments, providing solutions that are feasible and affordable for countries with various levels of development. Concerning the DL, the resolution provides examples of:

- minimum requirements for professional driving instruction (driving instructors and scope of tuition);
- guidelines for methods of professional tuition; and
- additional recommendations for drivers of vehicles of categories C, D, CE, DE, and subcategories C1E and D1E (training programs).

During decades since their adoption, the legal instruments on road traffic have proven to be efficient in improving road safety performance in the countries where their provisions were properly implemented. In recognition of these positive effects, several resolutions of the United Nations General Assembly commended the UN Member States that have acceded to the international legal instruments on road safety and encouraged Member States that have not yet done so to consider becoming contracting parties and, beyond accession, applying, implementing and promoting their provisions and safety regulations.

2. DRIVING LICENSE SYSTEM COMPONENTS

The concept of a DL is often limited to the more or less complex exams that must be passed to obtain a DL of one or more categories, whereas in fact it must be approached as a complete system in which each element intervenes or interacts with one or more others, all contributing to achieve one key objective: all drivers should be able to drive safely and economically in all circumstances. Therefore, mentioning the DL as a prerequisite for access to the profession of road driver, the other being the CPC, implies focusing on examining it in all its components.

The DL system is made up of the following elements:

- Training plan and programs per category of DL (theoretical and practical)
- Instructors
- Driving schools
- Driving monitors
- Examiners
- Exams
- Legal nature of the license
- Validity of DL

Each of these elements participates in and even conditions the performance of the entire system to ensure that any holder of a DL is able to drive safely.

a. Training plan and programs per category of driving license (theoretical and practical)

The general architecture of a DL system is based on the learning system. This system can be based on a training plan, the first element of which should be a “Reference framework for safe and eco-responsible driving activities for motor vehicles”. This reference framework should define in absolute terms the activity as it must take place in order to drive safely and in an eco-responsible manner, for oneself and for others. It should be the basis to elaborate the different training programs, not only for future drivers, but also for instructors, teachers, and examiners.

This DL training plan generally should then cover both the theoretical part (traffic rules) and the practical part (driving on a closed circuit and/or then in traffic for example). The plan must also define the different prerequisites, for example, holding a category B license before being able to apply for learning to obtain the heavy vehicle categories (C, D, and E).

On this basis, the plan sets the training program per DL category, this must decline the ordering of the phases between theoretical and practical and set the prerequisite rules, for example determining from which stage of theoretical learning for first-time learners, the transition to driving on a closed circuit and/or traffic can be considered. Of course, if holding a B license is a prerequisite, the heavy license training program does not repeat theoretical and practical learning from zero but only deals with the specific aspects applicable to the category of license/vehicle concerned.

The training program determines the minimum hourly volume of the different theoretical and practical phases which must follow on logically and progressively. The plan finally determines the methods of evaluation of the different tests and their general content.

b. Instructors

As indicated above, the reference framework must serve as a basis for developing, among others, the training program for road driving instructors, with, for the licenses used in road transport, a particular emphasis on the elements specific to the teaching methods for learning to drive these vehicles.

Indeed, it is often seen that this dimension has been overlooked in the DL systems in developing and emerging countries, and the requirements for instructors are often limited either to the status of a state public works official holding a DL, or to the status of a more or less experienced driving schoolteacher. However, training driving schoolteachers is not training them to drive, but training them to teach how to learn to drive, which requires different skills. Furthermore, and due to a lack of resources, instructors often have driving skills limited to light vehicles, which is a handicap for the development of a driver training sector for goods or passenger transport vehicles.

c. Driving schools

Driving schools are a fundamental pillar in a DL system. While in most countries, rules, and conditions are established to govern the creation and management of driving schools, it is noted that, due to the lack of appropriate means of control, they are rarely implemented sustainably. Furthermore, it is also often observed that the conditions set for driving schools training for category C, D, and E licenses are not very applicable and in fact not implemented, in particular due to the effective absence of appropriate means and equipment, and notably, due to the absence of school training vehicles duly equipped for this purpose (double pedals, double controls, and double rearview mirrors in particular).

Therefore, specific attention should be paid when preparing the regulations applicable to driving schools, and particularly those authorized to deliver trainings for categories C, D and E.

d. Driving teachers

It is observed in many countries that the conditions of access to the profession of driving schoolteacher are quite limited and often restricted to the holding of a category of license for a period fixed by the regulations, without any requirement to effectively practising driving vehicles of the category concerned, and without effective educational training for teaching driving on the different categories of vehicles.

If the question can be easily resolved for categories A and B, the training of driving teachers on heavy vehicles is more challenging, because it requires on the one hand to have instructors experienced in teaching on how to teach driving on these vehicles, but it is also necessary to have the appropriate equipment, in particular properly fitted vehicles and driving simulators. In addition, for light vehicles, driving experience is relatively easy to acquire but the practice of driving heavy vehicles can only be acquired in the exercise of the profession as commercial driver.

Therefore, it is appropriate to design regulations that meet the requirements of a DL system that guarantees not only the obtaining of a DL, but the real ability to drive safely on the road. For this reason, particular attention must be paid to the conditions of entry into this profession, and in particular to the level of professional competence in order to guarantee a sufficient level of robustness of the entire system.

e. Examiners

The quality of the entire system also depends on the quality of the driving test examiners. However, in many countries, this profession, like that of instructors, is often reserved to former civil servants of the ministry in charge of public works, thus often without real experience of driving. This sometimes leads to situations where examiners are unable to conduct a driving assessment in real traffic, due to lack of qualification on the one hand, and a lack of properly fitted vehicles.

For examiners, as for other professions, qualitative and professional competence criteria should be provided. This would of course involve the definition of training programs adapted to enable the satisfaction of the determined criteria, in particular as far as conducting the practical exam sessions.

f. Examination

In many countries, the examination, and especially the obtention of the examination, is at the center of the whole qualification system, whereas it should only be one of the component, the last stage which aims to validate that the

learners have acquired the knowledge and skills to get the necessary credentials.

The basis of all DL exams is to test a person's ability to drive a motor vehicle safely and economically. It takes place in various forms worldwide and shall be the main requirement to validate DL obtention. A driving test generally consists of three parts: a written or oral test (theory test) to confirm a person's knowledge of rules and laws relevant to driving, a driving test in a closed perimeter to test a person's ability to drive and maneuver the vehicle (e.g., parking) and a driving test on the road, to assess a person's driving ability in real traffic conditions.

To make examination objective and fair, written tests should be based on a standardized question series, meaning that everyone takes the same test under the same conditions. In many places the test can be done with the assistance of computers, and typically consists of questions related to road signs and traffic laws of the respective country but may also include questions related to road safety best practices and technical questions regarding vehicle operation and maintenance. New technology allows the use of interactive material, including hazard perception tests. In many countries passing a "theory" examination is required prior to being allowed to apply for the practical examination.

There are various models for obtaining a DL for heavy vehicles. For example, European legislation requires drivers to have passed examination on smaller vehicles before being authorized to take any tests for heavier vehicle categories – typically, this progresses from category B to C to C+E, etc. In this model, age, and medical examination are important criteria. A driver of heavy vehicles must be at least 18 years old and be physically and psychologically fit for driving that category of vehicle, with the capacity attested by medical tests.

Other models (e.g., in some West African countries) allow tests to be taken on a large/heavy vehicle without any previous experience on smaller, easier to drive, vehicles. In some of these countries, there is also a possibility that once the driver obtained her/his license for a category B vehicle, she/he can obtain a valid DL for all the other categories (including heavy vehicles) through "administrative extension" without any additional exam.

In many of these countries, particularly in West and Central Africa, many youngsters are placed by their families with a seasoned professional driver to learn not only the trade, but also driving, which puts these young people, without any prior qualification, in a driving situation on public roads.

It is challenging to quantify the impact of different models on the efficiency and profitability of road transport services. However, statistics indicate that countries implementing the first model, which emphasizes thorough training and comprehensive examinations, achieve better road safety outcomes compared to others.

g. Legal nature and validity of the driving license

Although many countries consider the DL a transport document, it is not. It is an administrative title that confirms the authorization granted to a person who meets the legal conditions and requirements to drive a motor vehicle of the corresponding category on public roads. Like any administrative title, it can be suspended or withdrawn, primarily as a penalty for serious and repeated offenses.

It is common practice to legally establish national or regional commissions responsible for reviewing cases of DL suspension or withdrawal. These commissions advise the competent authority on whether to impose the proposed sanction. When such a commission exists, it provides an advisory opinion to the authority that has the power to issue, suspend, or cancel DLs.

In some countries, control authorities have the immediate power to administratively withhold a DL in the event of serious safety violations. This means the person cannot drive until an administrative or judicial decision is made. Additionally, in some countries, the penal code allows for the suspension or withdrawal of a DL as an additional penalty for certain severe offenses or crimes.

Depending on national legislations, the DL could be:

- valid without any fixed time limitation (if it is not subject to withdrawal),
- valid without time limitation, but subject to periodical medical checks,
- valid with time limitation, subject to administrative renewal, and /or subject to refreshing training.

An increasing number of countries have introduced a "points-based DL system". In this system, a driving license starts with a certain number of points, which are reduced for specific offenses according to a regulatory scale. When all points are exhausted, the license holder must retake their driving test. To avoid this, the system

allows for point recovery courses provided by approved establishments during the license's validity period, enabling the restoration of the initial points.

However, this system requires a highly complex and robust IT infrastructure. It must link license databases with offense records and support data exchange systems to keep each license holder's points up to date, which can be challenging to implement.

Note: It is important to note that there is no such thing as a professional driving license. A DL is simply an administrative document that authorizes the holder to drive a specific category of vehicle. It does not grant access to the profession of road driving, nor is it a diploma.

This misconception can hinder the proper development of a framework for the professionalization of road drivers, as it implies that holding a DL equates to being a professional driver. However, having a heavy vehicle DL alone does not make someone a professional driver.

The professionalization framework extends beyond the DL and must be addressed separately and in addition to the DL system.

BOX 16.

Benefits of professional training in the Arab region

- In the Middle East, a study published by IRU and the Arab Union of Land Transport in May 2016[31] highlighted that proper training of professional drivers, would in the region bring the following benefits:
- Reduction in accidents: 46 percent
- Reduction in person-days loss per year: 25 percent
- Decrease in revenues loss: 48 percent
- Decrease in repair costs: 17 percent
- Reduction in number of damaged deliveries: 51 percent
- Proper professional drivers training would also contribute to improving transport efficiency:
- Reduction in in-vehicle monitoring systems (IVMS) violations: 58 percent
- Reduction in fuel consumption: 14 percent
- Reduction in maintenance and repair: 20 percent
- Reduction in number of damaged deliveries: 42 percent
- Finally, the report highlights that for every US$1 spent on training, around US$17 were saved.

h. Required sustainable financial resources

Designing a comprehensive DL system requires considering all the outlined dimensions in close coordination with developing professional competence requirements. However, creating, constructing, and sustainably operating such a complex system – where each element reinforces the others to ensure safe and economical driving – requires initial financial resources and, more importantly, sustainable funding over time. This is essential for all involved parties, including the state, educational institutions, examination bodies, and control and enforcement authorities.

Designing or modernizing the DL system involves more than just legal texts and programs. It requires sustainable financial resources and trained human resources and skills. This process must consider two key aspects: immediate resources for those involved in designing the reform, and medium- and long-term resources to implement and sustain the reform.

When addressing the financial aspects, it is important not only to consider the gross cost of the reform but also to account for the benefits the system will bring once in place, such as reducing the accident rate and its socio-economic consequences.

3. PATH TO REFORMS

It is never too much repeated that a well-trained professional driver is a key asset for the company and for the society, with effects on profitability, road safety, security, or environment protection. For this to happen, the skills must be obtained in similar conditions, and their certification must take a harmonized form. For professional drivers this translates into harmonized conditions for obtaining the DLs, harmonized forms of documents, based on international practices, norms, and standards that are recognized to be efficient.

31 IRU (2016), The Impact of Professional Training on Commercial/Freight Drivers in the Arab Region.

a. Drivers of reform

The reform of the DL system goes beyond the strict framework of road freight and passenger transport and concerns society as a whole. Therefore, modernizing the DL system should closely involve the following public institutions:

1. The ministry in charge of the system itself (in its entirety, from the definition of programs, the administration of tests, the approval of driving schools and instructors, and the approval of examiners), which is not always the Ministry of Transport, but may be the Ministry of the Interior.
2. If this is the case, the Ministry of Transport is of course also required.
3. The ministry in charge of vocational training and technical education, in countries where training programs leading to a DL are implemented.
4. Control authorities (police, gendarmerie.)

From the private-sector side, the key stakeholders to involve should be:

1. Professional organizations in the driving instruction sector (driving schools, instructors, examiners)
2. User/consumer representatives
3. Professional employer organizations for road freight and passenger transport
4. Professional driver unions (goods and passengers)

b. Main challenges

The main challenges that must be addressed are several-fold. First, as with any major reform, it is important to build consensus on the scope, framework, and content of the reform. Second, an approach is needed that combines the need to migrate from a system that often boils down to simply enabling driver's license holders to learn how to drive safely, to a system that allows them to learn to drive safely. This requires that, beyond the necessary technical aspects of digitizing the teaching and driving tests, a thorough review be undertaken to review the programs and, above all, the training materials so that they are adapted to the objectives of knowing how to drive safely, but also with tools and materials adapted to the driving situations that drivers will actually encounter in their region or country.

Finally, the social dimension of the DL must also be taken into account on two levels, first, by not imposing unaffordable time and cost requirements on learners, and then by providing support to instructors, particularly in the specific area of learning to drive.

Finally, the funding aspect of the reform is a key element, particularly in terms of supporting driving instruction facilities to modernize their equipment, and for heavy vehicle category licenses, facilitating their access to suitable driving instruction vehicles.

c. Modernize the driving license system

To allow for harmonization and an increase in the level of learning to drive goods and passenger transport vehicles, the DL systems should be reviewed, based on international standards, but adapted to the local or regional context. This adaptation of the DL system and corresponding regulation, should cover the following elements:

- **Designation of the competent authority** ensuring the institutional management of the DL system, it could be the Ministry of Transport, and sometimes the Ministry of Interior. The designation should also define the competences of the appointed authority in terms of definition of the regulation, implementing it, delivering authorizations and accreditations, controlling and eventually sanctioning infringements.

- **Definition of the DLs categories** as per international instruments, and the eventual conditionalities to move from one category to the other (being holder of DL B before moving to category C, D, E).

- **Training programs and educational progression**

  In general, national traffic codes set the strategic principles of the training programs for the issuance of DLs; the detailed curricula are approved through secondary legislation, e.g., orders of ministers or administrative decisions. Comprehensive inspiration in this regard can be found in Annexes III to VI of the R.E.1.[32]

  The regulation to be prepared must define the training benchmarks by category of DL, for theory and practice, and their sequence through a pedagogical progres-

32 UNECE (2009), Consolidated Resolution on Road Traffic (R.E.1).

sion combining theory and practice, the respective minimum training durations.

It is recommended that training programs are expressed in skills to be acquired step by step.

- **Driving schools' authorizations**

  The revised regulation should cover at least the conditions and criterion to respect to create a driving school and obtain the required authorization:

  - Conditions imposed on the structure (legal person is recommended).
  - Conditions imposed on the effective manager of the activity:
    - being a holder of a valid DL of each category for which the authorization is requested, with sufficient demonstrated experience in driving corresponding vehicles.
    - being an authorized driving teacher with concrete and proven teaching experience in the category(ies) for which the authorization is requested.
  - Conditions imposed on the driving school equipment:
    - having the required workforce (accredited teachers) for teaching theory and practice for each category for which the authorization is requested.
    - having the required equipment (rooms, training techniques, training material, eventually distance learning tools with proven tracing of usage).
    - having fully-equipped vehicles (dual controls, dual pedals, dual mirrors) for each DL category for which the authorization is requested.
    - when simulators are used, defining the minimum technical specifications and type of lessons to be followed.
    - having or being able to use one or more maneuvering tracks, particularly for heavy vehicles.
  - Conditions imposed in term of management of a driving school:
    - registration of students, eventually through a public electronic platform managed by the competent authority as is the case in Côte d'Ivoire for example, registration of presence, lessons followed, results achieved by each learner for both theory and practice.
    - regular reporting.
    - strict adherence to the respective training programs and prescribed educational progression defined by regulation.
    - exclusive competence to register candidates for DL tests (theory and practice).
    - duration of the authorization, cases of suspension or revocation.

- **Driving teachers' curricula and accreditation**

  The regulation should define the following elements:

  - Conditions to be met:
    - being holder of a valid DL of each category for which the accreditation is requested, with sufficient demonstrated experience in driving corresponding vehicles,
    - having followed a train-the-trainer training program which is defined by law and delivered by accredited training centers. The training program focuses on pedagogy applicable to DL training,
    - having passed the exam sanctioning the training, the regulation defines the conditions and content of the exam,
    - not being responsible for repeated accidents,
  - General rules:
    - a competency framework should be established to identify the basic conditions, tasks, and objectives of any professional driving teacher,
    - duration of the accreditation, cases of suspension and revocation,
    - obligation of periodical refreshing training (recommended).

- **Inspector's curricula and accreditation**

  The regulation should define the following elements:

  - Conditions to be met:
    - being holder of a valid DL of each category for which the accreditation is requested, with sufficient demonstrated experience in driving corresponding vehicles;
    - being an accredited driving trainer with a minimum experience (for example 5 years); or
    - having followed a training program which is defined by law and delivered by accredited training centers. The training program focuses on pedagogy applicable to DL training and exams;

  - having passed the exam sanctioning the training, the regulation defines the conditions and content of the exam:
  - not being responsible for repeated accidents.
- General rules:
  - a competency framework should be established to identify the basic conditions, task, and objectives of any instructor.
  - duration of the accreditation, cases of suspension and revocation.
  - obligation of periodical refreshing training (recommended).

- **Driving license exams/tests (**theoretical and practical)

  The regulations must define:

  - the conditions for organizing the exams;
  - the number of sessions per year;
  - the content and methodology by category, of the theory tests (number of questions, topics to be covered, grading, minimum grade to obtain);
  - the content and methodology by category of the practical driving test (in traffic, type of skills tested, types of maneuvers to be performed, etc.);
  - the composition of the jury, and its terms of reference;
  - conditions to publish the exams/test results.

d. The form of the driving license document

The Convention on Road Traffic (Vienna, 1968) and the Consolidated Resolution on Road Traffic (R.E.1) contain the widest accepted provisions and recommendations concerning the categories and forms of the DLs (national and international). These are models that may be adopted at subregional and national levels and were recognized as such by several resolutions of the United Nations General Assembly.

e. Validity of driving licenses and medical checks

Many countries have introduced for professional drivers an obligation of regular medical checks conditioning the validity of the DL. According to R.E.1 professional driver should undergo regular medical examinations within the period specified in national legislation. This provision can be implemented either:

- through a limited validity of the DL, for example five years for professional drivers up to 60 years old, and one year after, but renewable pending medical testing (as foreseen in the Côte d'Ivoire revised traffic code from 2016); or
- through unlimited validity of the DL, conditioned by a compulsory medical check usually every five years (as is the case in France).

In any case, such an obligation should be accompanied by measures aimed at empowering medical doctors to proceed with the regular medical checks, including by ensuring proper coordination (e.g., IT connection) with the administrative authority managing the DLs and related databases.

F. Structuring road transport and intermediation training capacities

Reforming access to road transport and intermediation professions (goods and passenger transport) needs to consider, prepare, develop and implement simultaneously appropriate training capacity to cover the needs implied by "the professional competence conditions" for road transport and intermediation managers (CPC managers). The same approach should be also followed for the training system for the qualification of professional drivers (CPC drivers).

The modernization of the DL system for vehicles intended for the transport of goods and passengers implies also a focus on strengthening the driving schools and DL examiners' capacity.

Section summary

Reforming access to road transport (goods and passengers) and intermediation professions requires developing and implementing appropriate training capacities for professional competence. This includes training for road transport and intermediation managers (CPC managers) and professional drivers (CPC drivers).

In many developing countries, sectoral reforms have often focused on creating regulatory frameworks without adequately addressing the training capacities needed for implementation. This results in a gap between the legal framework and its practical application, due to insufficient training resources.

Designing the reform must include preparing the conditions and capacities needed for implementation. This requires a cooperative approach involving all stakeholders in the transport and training sectors. The training system must be appropriately sized to meet real needs, avoiding overcapacity or bottlenecks. Sustainable financing is crucial to ensure the long-term viability of the training system.

Policy makers should initiate the creation or rehabilitation of training capacities from the outset of the reform design. This involves collaboration between public and private actors, including the Ministry of Transport, vocational training institutions, and professional organizations representing transport and intermediation sectors.

The Ministry of Transport should have exclusive responsibility for the training system, with cooperation from vocational training and higher education ministries for accreditation. Evaluating the number of professionals subject to training needs and their ability to follow training is essential. This includes new entrants and existing professionals requiring refresher training. Training programs should meet professionalization requirements, considering international standards and local needs, and incorporate digital learning options where feasible.

Identifying and training teachers who can provide theoretical and practical training is crucial. This includes capacity building for existing teachers and professionals. Assessing the training centers' equipment needs based on defined training scenarios is necessary. Establishing the exam certification process for CPC managers and drivers involves calibration, organization, methods, and publication of results. The training centers should be sized appropriately based on identified needs.

Defining a financing framework to cover initial investments, maintenance, and long-term training costs is essential. Funding options from IFIs, public budgets, and vocational training schemes should be explored. Developing an accreditation process for training centers based on qualitative criteria, including professional competence, quality of teachers, and compliance with defined programs, is important. Implementing incentive mechanisms to support training costs for learners and companies, such as funding from international programs, vocational training schemes, and fiscal incentives, can facilitate acceptance and implementation of the reform.

Modernizing the DL system requires adapting training capacities for driving schoolteachers and license inspectors. This includes creating specialized training centers with appropriate facilities and equipment. Support for driving schools should focus on training teachers, financing the acquisition of training vehicles, and importing second-hand school vehicles that meet international standards.

Creating attractive training capacities for women and vulnerable individuals is essential. Training programs should address specific needs, promote belongingness

and recognition, showcase role models, and provide support to overcome professional challenges. A cohesive approach integrating policy support, organizational commitment, and community engagement ensures inclusivity and empowerment.

The reform should consider its social impact on existing professionals who may struggle to comply with new requirements. Identifying situations leading to non-compliance, evaluating profiles, and proposing support for professional retraining or reclassification is necessary. Ensuring an administration is in place to manage these issues and provide necessary funding and training is crucial.

1. STATE OF PLAY

In many developing or emerging countries, many sectoral reforms have been undertaken in recent decades, often including provisions relating to the conditions of access to road transport professions.

However, it is noted that often, major efforts are deployed to create the regulatory framework, sometimes to design training programs and content, but the real training capacity is often left aside or reduced to the construction of training centers without a real analysis of the needs necessary to operationalize these centers on the pedagogical and technical level.

The same often applies to reforms of the DL system. While significant attention is given to adjusting the highway code and organizing DL tests, there is often insufficient focus on adapting training capacities for driving transport vehicles. This includes training driving school instructors and developing suitable training systems, especially for school vehicles.

This results in a profound distortion for the countries in question between the applicable legal framework and its implementation, due to the lack of training capacity adapted and sized to actual needs.

Introducing a reform aimed at professionalizing road transport and intermediation actors, including the qualification of professional drivers and the learning of professional driving, must anticipate the sizing and adaptation of training systems needed to implement the reform.

2. PATH TO REFORM

a. Drivers of reform

Policy makers should initiate the rehabilitation or creation of training capacities both for the rules of access to professions (transport managers and intermediation), as well as for the system of DLs for transport vehicles and that of the professional capacity of road drivers, from the initiation of the design of the reform by involving the following public and private actors:

Therefore, the inclusive design of the global framework applicable to the training capacity should:

- involve a design that associates all the public actors potentially involved:
  - the Ministry of Transport must be the leader but in consultation with its implementing agencies and branches;
  - the ministry in charge of vocational training (accreditation of training centers for CPC managers and professional drivers CPC);
  - the ministry in charge of the technical supervision of the DL system (for heavy and transport vehicles) – depending on countries, it could be the Ministry of Transport or the Ministry of Interior;
  - the ministry in charge of women and gender;
  - the Ministry of Economy and Budget (connected administrative fees and taxes, as well as budgeting the reform needs);
- Involve key private-sector stakeholders:
  - professional organizations representing the transport of goods and passengers;
  - professional organizations representing the actors of own-account transport;
  - professional organizations representing the private vocational education institutes and centers;
  - professional organizations representing the driving schools and driving teachers.

The objective and framework of the training capacities should be initiated and designed by the ministry in charge of road transport, in close cooperation with identified public structures, as well as private-sector professional organizations concerned. Indeed, as for the other key ar-

eas of reform, the details, and content of the reform must result from a consensus of all stakeholders to ensure that the reform is accepted and sustainable as it is supported by all involved.

b. Main challenges

The design of the reform, including training requirements and the professional capacity of business leaders and drivers involved in goods and passenger transport and intermediation, as well as the driving training system, must simultaneously include the preparation of the conditions and capacities needed for implementation.

This requires a transversal and cooperative design mechanism for the reform, involving all stakeholders in the transport of goods and passengers and training sectors, including driving schools. However, this participatory approach, based on institutional cooperation among various ministerial departments, is often lacking in many countries. Additionally, conflicts of competence between different ministerial departments must be avoided to ensure the system's smooth operation.

The implementation or adaptation of the training system, including professional driving training, must consider the existing system's equipment and teachers and its ability to adapt to new needs. This is especially important for teachers who need to retrain and adapt their teaching practices. A thorough understanding of the current system and the teachers' ability to meet new requirements is essential.

The training system must be appropriately sized to meet real needs. Overestimating the size can lead to training overcapacity and become a budgetary burden, while underestimating can create bottlenecks, compromising the reform's implementation and making it difficult for stakeholders to meet the training conditions within the transition period.

The adaptation of the training system and the teaching staff to the new conditions presupposes that a body of trainers trained for the training of trainers is available, to allow adequate adaptation of the capacities of the teaching staff who will intervene in the new system.

Finally, countries that are embarking on a sectoral reform and their sectoral training system often focus on the investment to be made to rehabilitate or build training centers and acquire the required materials and equipment and leave aside the question of sustainable financing of the system. However, the sustainability of the system requires that a reflection be initiated from the initiation of the reform, to define the financial and budgetary modalities that will be necessary to ensure, once built, the sustainability and self-financing of the training system and its subsequent development. Yet, very often, national budgets are restricted, the intervention capacities of donors are often limited to investment and cannot compensate for national budgetary shortfalls in the long term.

Finally, the entire system is based on the approval or accreditation of training centers (for managers and professional qualification of drivers) and driving schools teaching driving (heavy DLs and public transport). It is therefore necessary to have the necessary tools not only to grant or refuse approvals/accreditations, but above all to monitor that these approvals/accreditations are complied with on an ongoing basis (audit).

Creating or modernizing a sectoral training framework that allows the provision of training leading to the obtaining of administrative qualifications giving access to the various regulated professions in the sector, generally and primarily comes up against the problem of long-term, sustainable financing, not of investments which are often provided by IFIs, but of maintaining and developing teaching capacity. This assumes that not only is the training capacity sized from the outset according to real needs, but that the training system is designed in such a way as to persist over time thanks to stable and sustainable resources, which must be identified from the design of the system.

c. Recommendations for training capacity to cover access to profession professional competence condition (goods and passenger transport)

The definition of training capacity requires a systematic and systemic approach, in the sense that it must take into account both chronologically and iteratively a certain number of key factors, in order to arrive at a political and financial decision which will give the training capacity its dimension (according to real needs) and will also make it possible to propose appropriate and realistic transition measures and deadlines for professionals in activity so that they can best comply with the new rules under reasonable conditions.

To do so, the following steps are recommended.

i. Ensure clear ministerial competences

The design and implementation of the training system for access to transport and intermediation professions (CPC managers) and for the professional qualification of road drivers (CPC drivers and periodic training) must be the exclusive responsibility of the ministry in charge of road transport.

In fact, the training system for access to professions that leads to a CPC (manager or driver) is not a diploma-granting system. Indeed, the CPC must be considered as an administrative title required to access a profession, and not as a diploma. Thus, the CPC (manager or driver) must depend only on the ministry in charge of road transport because it is the one that has the legal and regulatory powers and competences to organize and regulate the sector. This is why everything concerning the definition of training programs, their content, their durations must be the exclusive responsibility of this ministry.

On the other hand, the approval/accreditation system for training centers authorized to provide trainings for access to professions purposes must be considered in cooperation with the ministries in charge of professional training (CPC drivers) and the one in charge of higher education (CPC manager), because these ministries generally have the legal and practical means to examine, grant, suspend or withdraw the approvals/accreditation of training centers.

ii. Evaluate the potential number of professionals subject to training needs (access to profession: professional competence condition)

Anticipating needs is an absolute prerequisite for the sizing of the various training structures necessary to operationalize the access system to the various professions in road transport and intermediation, including for the driving training system and that of the professionalization of road drivers.

This purely quantitative approach should make it possible to assess, on the one hand, the potential number of new entrants into each profession, but also the number of practising actors who will have to or should follow refresher training within a transition period to be defined.

This means first evaluating the number of new entrants in the occupations:

- Quantify the number of people entering on a yearly basis the occupation of directors or managers of:
  - road transport companies for goods or passengers;
  - renters of commercial vehicles destined to public or own-account transport operators, with or without driver;
  - transport commissioners; and
  - freight brokers.
- Quantify the number of professional drivers (goods and passengers and taxis) entering the profession on a yearly basis for both public and own-account transport. (This should also include taxi drivers).

This exercise of quantifying the new actors entering the different professions each year is crucial to assessing the number of actors who will in principle be the subject of complete initial training either for the award of a Certificate of Professional Capacity (managers) or a certificate of aptitude for professional drivers.

This assessment must also cover the quantification of the actors in practice at the time of entry into force of the new conditions of access to the different professions, namely:

- Quantify the actual number of directors or managers in occupation in:
  - road transport companies for goods or passengers;
  - renters of commercial vehicles destined to public or own-account transport operators, with or without driver;
  - transport commissioners; and
  - freight brokers.
- Quantify the actual number of professional drivers (goods and passengers and taxis) acting for both public and own-account transport (this should also include taxi drivers).

This quantification should make it possible to assess the professionals who may potentially be subject to an obligation for refresher training, and for professional drivers to assess the quantitative needs for compulsory periodic training.

NOTE: This step must naturally include taking gender into account to know the number of women involved or potentially involved in the professionalization of the sector.

This quantification will naturally have an impact on the design of training centers, but also on the definition of programs, the selection of trainers and more generally by considering a better inclusion of women in these professions by developing their attractiveness

iii. Define the sociology of professionals subject to training obligation (access to profession: professional competence condition)

If numerical quantification is essential, it must be accompanied by a qualitative assessment of the populations concerned. This involves evaluating the profiles of the actors in each category mentioned in the previous paragraph, focusing on their ability to follow training. A qualitative approach to estimating skills should complement the quantitative assessment and influence the definition, content, and duration of the refresher training to be provided.

NOTE: This step must naturally include taking gender into account to identify how women involved or potentially involved in the professionalization of the sector could better be associated and attracted to the sector's occupations. This qualitative assessment should be reflected in the training programs through two angles, one about attractiveness for women, and one on how to include gender approach in the company's management.

iv. Define training programs and training techniques (for access to profession and professional competence)

Based on qualitative and quantitative approaches, the aim is to determine training programs that both meet the professionalization requirements of the different targets according to international standards, while taking into account the specific needs of each region/country and the capacities of the actors, both addressing properly the gender component.

Thus, training programs will also have to consider the teaching techniques that will be developed and implemented. These can in fact combine classic face-to-face training techniques with distance learning techniques on theoretical subjects with successive assessment of the knowledge acquired.

The choice of educational and technical training options will naturally depend on the means available and the digitalization capabilities of certain courses but will also have an impact on the sizing of the training center(s), in fact if part of the teaching is digitalized, the needs in training rooms for example are less in terms of use over time and physical occupation. But such an option implies a technical capacity and a skill in supervising distance learning.

v. Identify, select and train trainers

The definition of the different training programs must also and in parallel be accompanied by an identification and evaluation of the different teachers who will be able to provide the theoretical and practical training planned. Identification is done first in the existing training center(s), but very often, it is necessary to extend this research to professionals involved in the transport and intermediation professions whether they come from the administration (governance) or from professional organizations and companies.

This identification must also be accompanied by an analysis of the capacities of the teachers identified (professional or temporary teachers) both in terms of teaching and in terms of the content of the subjects to be taught, which will make it possible on the one hand to plan a capacity-building program, but also to already anticipate the organization of the teaching and their pre-allocation.

This identification and quantification phase will provide results that will contribute directly to the sizing analysis of the training center(s) and also to the productive capacity of the teaching staff to provide the planned training based on the number of learners to be treated.

vi. Identify the training centers equipment needs

Once the training scenarios have been defined, often with variable options depending on the number of learners, training durations, and program contents, the phase of identifying training and pedagogical equipment and material needs must take place so that they are in line with the defined physical and temporal needs pre-identified.

This phase is necessary to conduct not only to enhance the value of the funds to be mobilized, but also to physically size the training center(s) to be built or rehabilitated.

vii. Define the exam certification process leading to obtain the CPC manager or the CPC Driver

Depending on the training programs and certification standards for obtaining CPC Managers and CPC drivers, and depending on the needs to define practical and the-

oretical tests for each type of training requirement (initial, update, and periodical training for CPC drivers only), it will be necessary to determine:

- the calibration of the exams.
- the authority in charge of their organization (generally the Ministry of Transport).
- their methods (written or digital, or practical or a combination of them), the grading method by type of test (multiple choice questions, writing, practical tests, etc.).
- the scale of the tests and their coefficients.
- the role and composition of the examination boards.
- the examination locations.
- the frequency of the exams (generally twice a year).
- publication of tests.
- contestation procedures and delays.

viii. Adapt/define the physical training capacities

It is only once the quantitative and qualitative needs have been defined or assessed, the training programs defined with their teaching methodologies, and the need to the associated required college of trainers is identified that the physical capacity of the training center(s) can be considered, often through several options.

BOX 17.

IRU Examiner

In order to facilitate the examination and certification process, IRU has developed a collaborative framework for examination authorities or their implementing partners to facilitate the assessment and certification process. Through its IRU Examiner[33] platform, the system intervenes in the following areas:

- verification process;
- international standards compliance;
- examination methodologies;
- question banks per type of qualification program;
- digital management tool;
- IRU Certification.

Indeed, and contrary to what is often observed, the construction or rehabilitation of one or more training centers for the professionalization of actors should only be planned according to the needs identified so that the training capacity is appropriately sized.

ix. Ensure sustainable financing at all stages: initial, mid-, and long-term

The conduct of all the previous steps makes it possible to reach the key stage of sizing the training center(s) to be built or rehabilitated to cover the training needs for access to the different professions.

Thus, these preliminary steps have made it possible to:

- quantify the number of people to be trained (in complete initial training, in refresher training and in mandatory periodic training); and
- decide on the hourly volume of training (by type) and the needs in human resources and materials.

These numerical data, which can be proposed according to several scenarios in which certain variables could change (for example the duration of training, or the number of learners) are essential to firstly:

- define the size of the center to be built or rehabilitated and quantify the needs in terms of construction or rehabilitation, and in terms of materials and equipment;
- include in the evaluation the inclusion of women both in terms of women participation as trainers and as trainees;
- propose the investment needs to build or rehabilitate the training center(s);
- to define the overall and individual cost (per learner and by type of training) of each training category;
- propose scenarios to help or define training financing mechanisms (see below).

This key phase must make it possible to define a financing framework to cover:

- initial investments, either through support from IFIs or through public financing via the public budget (state budget, territorial authorities budget, PPPs, etc.);

33 IRU, "IRU Examiner".

- financing of current maintenance and maintenance expenses which are often hidden or ignored and which should nevertheless be systematically provided for in the public budget concerned;
- initial financing of the first training cycles (as was the case in Côte d'Ivoire, first with European funds and then within the framework of the Port-City Integration Project (PAMOSET) of the World Bank). By definition, this financing is limited in terms of the number of learners and duration;
- sustainable and long-term financing of training beyond the initial period. This sustainable financing must take into account the following elements:
  - the portion of the cost left to the learner's charge;
  - the portion of the cost that can be financed via sectoral fees (for example by allocating a portion of the fees collected from the sector via registrations in professional registers, transport permits, and others);
  - the portion of the costs that can be covered by the vocational training funding system, in particular for refresher training and mandatory periodic training (CPC driver);
  - potential sources of direct aid either to companies or to learners (see below the proposed support incentive systems).

x. Define the accreditation/homologation process for training centers

The design phase of the training system to meet the conditions of access to the professions must also define the accreditation/approval process for training centers. Indeed, the overall quality of the system must be based on an accreditation or approval mechanism for the centers that will be authorized to deliver the training courses allowing the examination to be passed to obtain the CPC managers and drivers. This implies that the accreditation approval process to be defined by regulation is based on qualitative criteria, such as:

- professional competence of the manager;
- quality of teachers (permanent or part-time);
- compliance with defined programs;
- quality of training materials and equipment (this may even include a list of minimum equipment by type of training);
- a limited duration of the approval (for example, three years at the beginning, then five years thereafter);
- a principle of audit during the validity of the approval;
- a principle of annual report of the training provided and the results obtained in terms of success in examinations.

In addition to the national approval process aimed at providing homologation for training centers providing training for access to different professions, attention may also be paid to obtaining international recognition[34] for the training center(s) thus created or rehabilitated.

xi. Develop incentives for trainees and companies

In most developing or emerging countries, training funding is a major issue, particularly in road transport and intermediation.

Indeed, in this sector:

- business leaders consider the training of their staff as a cost and not as an investment that pays for itself over time;
- young people entering the professions, particularly professional drivers, often do not have the means and resources to finance their training;
- staff subject to mandatory periodic training are also faced with a difficulty in financing training, which often adds to a loss of salary during the training period.

This is why, in parallel with defining the scope of the reform, designing the required training framework and financially assessing the cost, not only of the required investments but also of the cost of the different training courses per learner, it is necessary to define a sustainable financing assistance framework for the whole which is realistic and equitable.

For learners, incentive mechanisms can be defined through the following tools:

- obtain funding for initial training or upgrades via IFIs' support programs, which would allow training costs to be covered, or accommodation and living expenses if necessary if the training is far from the learners' residences.

34 IRU, "How to Become an ATI".

- obtain contributions to cover training costs via vocational training schemes, in particular those intended for young or vulnerable populations that promote the integration of young people into professional life via apprenticeships (Example in Côte d'Ivoire through the Agency for employment of young vulnerable persons).
- insert in the applicable social collective agreement's provisions for employer coverage of tuition fees at least in part and organize salary payments during compulsory periodic training periods (CPC drivers compulsory periodic training).

For companies and employers, incentives could be envisaged through various sources, such as:

- fiscal or social incentives through tax reductions.
- contribution via the vocational training funding mechanisms.

d. Recommendations for preparing the driving license system training capacity (all driving license categories)

i. Create or enhance dedicated training capacity for driving schools' trainers and driving license inspectors

The overhaul or modernization of the DL system for learning to drive heavy vehicles or vehicles intended for the public or private transport of goods and passengers, in addition to the regulatory measures listed in Section V. E. 3., requires an adjustment of the training system for people involved in the driving instruction system.

Thus, it is appropriate to modernize and adapt the training framework for driving school teachers, which implies the modernization or creation of specialized training centers with the necessary equipment both in terms of:

- theoretical training premises; and
- practice training facilities, and in particular development paths adapted to the different categories of vehicles, and especially heavy vehicles.

This also implies training or upgrading the body of specialized trainers, who beyond mastering driving and driving instruction techniques, must be able to provide trainer training, in which the teaching of general and adapted pedagogy will play a major role. In many developing or emerging countries, it is common to see that driving lessons are taught on a closed circuit and not in real traffic situations. This means that in this configuration, if the system evolves towards learning in real traffic, driving instructors, and consequently their trainers, must be trained in teaching driving in traffic, because this involves much more demanding specific skills.

If training the teaching staff is necessary, in the DL system it is also necessary to consider improving and strengthening the capacities of DL inspectors, in particular regarding passing of tests in real traffic. This implies:

- having a suitable training framework for the training of DL inspectors both in terms of:
  - passing theoretical tests adapted to goods and passenger transport vehicles; and
  - practical driving tests, including on the road.
- anticipating specific training and equipment needs.

For these two aspects, and beyond the preparation of the regulatory framework and the definition of the respective training programs and their contents, it is necessary to anticipate the needs:

- in investment both in premises and equipment;
- the needs in maintenance and upkeep over time; and
- in the financing of training.

For this, the elements described in the previous section can be replicated here in terms of design methodology and formalization of an effective pragmatic approach

ii. Accompany driving schools

The driving school link is the central point of the system, but in many countries, the driving training sector, and in particular for heavy vehicles, is very weak, often informal and largely under-equipped.

Thus, modernizing the DL system through a regulatory system is positive but it must also include a dimension of support for the modernization of driving schools.

In many countries, there are no heavy training vehicles, whether they are heavy goods vehicles, semi-trailers or articulated units, nor buses or coaches. Given the informality of the sector, its difficult economic situation conditioned by the fact that obtaining a DL is socially considered a right without few obligations, and therefore must remain inexpensive, the profitability of the sector does not allow heavy investments in both high-performance

teaching materials and recent school vehicles, especially those equipped according to international standards. Indeed, in many developing or emerging countries, the vehicles used as school vehicles are standard vehicles, locally adjusted, either only with double pedals, but without dual controls or rearview mirrors for the instructor. On the other hand, in developed countries, school vehicles after three years of service are dismantled to return to the standard vehicle and resold as second-hand. However, these school vehicles, if they were sold as they could validly serve for a few more years and contribute, at an affordable price, to modernizing the fleet of school vehicles while complying with international standards.

This implies that within the framework of the process of modernizing the DL system, support should be examined for the benefit of driving schools. This would focus on the following key issues:

- support to enable the training of driving schools' teachers involved in training in driving transport vehicles (goods and people), for covering training costs and salaries during the training period.
- support for financing the acquisition of heavy goods vehicles and coach type training vehicles.
- creation of a channel for importing second-hand driving schools' vehicles that comply with international standards together with a specific fleet renewal scheme that is adapted to this subsector.

iii. Develop/create conditions to integrate attractiveness of training capacities for vulnerable people and women

Transport inequality persists when individuals or social groups lack equitable access to mobility, transport options, or infrastructure, and when structural barriers hinder their participation in the labor market. These barriers often stem from inequalities linked to sex and gender, disabilities, economic status, and other characteristics.

Conducting equality assessments can reveal the specific challenges faced by disadvantaged groups, enabling targeted interventions. This process should involve:

- **Collecting equality data:** Disaggregated and qualitative data make structural inequalities visible, offering evidence to inform interventions. This step ensures that policies are rooted in an understanding of diverse experiences.
- **Assessing equality impacts:** Examining data trends related to characteristics such as gender, age, and ethnicity helps identify patterns of exclusion and disparity in transport access and employment.
- **Using findings for action:** Insights from equality assessments should drive strategies to ensure inclusivity throughout the policy cycle, embedding equality at every stage.[35]

Creating attractive training capacities to foster the attraction and retention of women in road transport professions is essential. To that end, training programs should focus on concrete gender components addressing the specific needs of women, namely:

- **Promoting belongingness and recognition:** Drawing from Maslow's hierarchy of needs, fostering a sense of belonging and esteem can be transformative.[36] Providing incentives, rewards, and opportunities for recognition not only builds confidence but also inspires sustained participation.
- **Showcasing role models and success stories:** Highlighting women in the industry through platforms like social media can encourage others to consider careers in transport. Real-world examples create a ripple effect, dismantling stereotypes and sparking interest among young women.
- **Addressing professional challenges with support:** Women entering male-dominated fields often face technical challenges and stereotypes. Equipping them with skills to overcome these barriers not only promotes satisfaction but also helps redefine the narrative around their capabilities.

Sustaining the effort to make the transport sector more inclusive involves several interconnected strategies. Structuring training and employment opportunities to accommodate personal commitments enhances well-being, making the sector more appealing to women and vulnerable individuals. At the same time, fostering an organizational culture that values diversity, safety, and equity helps retain trained individuals, ensuring long-term success in reducing disparities. Leveraging digital platforms

35 European Commission (2024), Handbook for Equality Mainstreaming at DG Move: Training Materials for Equality Mainstreaming in Mobility and Transport.

36 Ovhagen, and Arora (2024) Women Behind the Wheel: A Grounded Theory Study about Attracting Young Women to the Trucking Industry, Lund University.

for training, outreach, and storytelling can amplify the sector's appeal, effectively reaching under-represented groups and broadening participation.

Moving forward, a cohesive approach is essential, integrating policy support, organizational commitment, and community engagement. Deliberate efforts to assess, adapt, and implement inclusive measures ensure that training programs address not only technical requirements but also the empowerment of vulnerable groups and women.[37] It is not just about providing access – it is about fostering empowerment and equity at every level.

e. Recommendations to assess the social impact reform

Whether we are talking about managers of transport and intermediary companies, professional drivers, or the driving training sector, the reform of access to and exercise of the various professions (goods and passenger transport and intermediation – in particular in terms of professional capacity conditions), can have a significant social effect, despite well-thought-out support measures and transition measures and deadlines. This is why it seems essential that, in the designing process, the question of its social impact in terms of people who are working and who, despite the transition and support measures, would not be able to comply with the new ones, in particular in terms of training and upgrading conditions, be considered.

It is therefore recommended to approach this issue to enable for each profession concerned to:

- identify the situations that may lead to an inability for certain actors to comply with the requirements of the professional capacity condition.
- identify the profiles, by profession, of those who would present either difficulties or inabilities to comply with the new provisions (age, language, level of education, illiteracy, etc.).
- quantify or evaluate the potential number of these actors.
- identify and quantify those who:
  - could benefit from special programs/trainings to support them on the path to satisfying the new conditions (those who, with additional support will be able to comply);
  - could benefit from support for professional retraining in a profession in another professional sector, but who are unable to comply with the new provisions preventing them from remaining in their current occupation/job;
  - could benefit from support for professional reclassification, in the same sector, but in a different profession (for example, a driver can become a mechanic, or a former manager can become a manager of fleet).

Of course, these approaches require having an administration in charge of these issues and having developed an appropriate policy with the corresponding financial means.

Finally, this also implies being able, beyond funding, to have a continuing adult training system capable of fulfilling the various obligations related to reclassification or professional reorientation.

37 Ovhagen, and Arora (2024) Women Behind the Wheel: A Grounded Theory Study about Attracting Young Women to the Trucking Industry, Lund University.

G. Access to market and operating conditions

Section summary

In many developing countries, regulations often confuse access to the profession with access to the market. To exercise the profession of public carrier of goods or passengers, one must first meet the conditions of access to the profession. Once these conditions are met, the company can operate in the domestic or international transport market. Market access influences the extent of a carrier's involvement in transport of goods or passengers, while operating conditions ensure safety, profitability, and social compliance.

Traditionally, market access rules relied on quantitative restrictions, but these have largely been eliminated. For intermediation professions, meeting the conditions of access is sufficient to practice. In road transport, meeting professional access conditions may not always be enough for market access. Authorization schemes are often imposed, issued by the Ministry of Transport or local authorities. For goods transport, a simplified authorization mechanism is recommended, while passenger transport requires a more complex system covering urban, interurban, and national transport.

International market access is based on protecting economic interests through quantitative allocation of transport volumes. There are three main types of schemes: national criteria, bilateral road transport agreements, and multilateral agreements. National criteria, like those in China and Türkiye, require operators to gain experience domestically before performing international transports. Bilateral agreements define conditions for obtaining authorizations and their implementation. Multilateral agreements, such as the ITF multilateral quota system, facilitate international transport operations and promote harmonization and professionalization.

Operating conditions affect everyone in the transport and logistics chain. Formalization through incorporation should not be confused with operating methods in groupings or cooperatives. Contractual relations in passenger transport often lack detailed laws, depriving passengers of visibility on compensation rights. For goods transport, contracts may be standard commercial contracts or special contracts governed by specific rules. The CMR Convention and OHADA Uniform Act provide frameworks for road transport contracts, ensuring liability and compensation standards.

Goods transport requires a consignment note, while passenger transport involves a passenger manifest and a ticket. Some countries have introduced a Single Transport Document for both public and private transport.

Lack of profitability in road transport is often due to pricing that ignores time factors, unfavorable operating conditions, and unbalanced contractual relationships. Introducing the principle of "fair remuneration" in the regulatory framework can help address this issue.

Trade and transport facilitation processes are often hindered by infrastructure and procedural inefficiencies. Digital tools like TIR-EPD streamline customs clearance and reduce border waiting times, enhancing transit security and efficiency.

Confusion in insurance mechanisms leads to unnecessary costs. Clear definitions of compulsory and optional insurance coverage, aligned with international trade frameworks like INCOTERMS, can reduce costs and improve coverage.

Reforming market access and operating conditions should be part of a global development policy supported by the highest levels of government. It requires collaboration between public and private actors, including the Ministry of Transport, vocational training institutions, and professional organizations. The reform should address administrative rules for market access, contractual and economic rules, and the framework of responsibility for safety and security.

Clear rules for domestic and international market access shall be established. Improve operating conditions through formalization, contractual transparency, and fair remuneration principles. Enhance trade facilitation with digital tools and prioritization methods. Define insurance coverage to reduce costs and improve protection. Ensure sustainable financing and training capacities for long-term viability.

1. GENERAL CONSIDERATIONS

Many national regulations, particularly in developing and emerging countries, tend to confuse access to the profession and access to the market for the exercise of the latter, whether in domestic or international transport. In fact, in the context of this sectoral reform, it is important to understand that the absolute prerequisite for exercising the profession of public carrier is to satisfy the conditions of access to the profession recalled in Section IV. C.

It is only once the conditions of entry into the profession have been met irrespective of the geographical scope of activities (urban, interurban or international), and the company has obtained recognition of its status as a public carrier (goods and/or passenger transport), that the exercise of the profession can develop, either for internal or international road transport market.

If market access influences the extent of a carrier's involvement in local or international transport, it is crucial to focus on the operating conditions under which these activities occur. This ensures a sufficient level of safety, profitability, and decent social compliance by all participants. Therefore, while market access pertains specifically to transport operators, operating conditions affect everyone in the transport and logistics chain – from the sender to the recipient, including all intermediaries – without overlooking the importance of intermodality.

2. ACCESS TO NATIONAL MARKET PRINCIPLES

Market-access rules have traditionally relied on quantitative restrictions on transport supply. These restrictive rules have largely been eliminated. Theoretically, if the conditions for professional access are met, they should be sufficient to practice the profession directly.

This is true for the professions of intermediation, freight forwarder, or freight broker, for which the satisfaction of the conditions of access (formalization in a company, establishment in the country, financial capacity of the company and professional capacity and honorability of the manager or director) is sufficient to exercise this profession.

In road transport, once an operator meets the conditions for professional access (public carrier) or activity access (carrier for own account), the issue of market access arises. Various models exist in this context, and while the principles may be similar, the specifics can differ between goods and passenger transport. For road transport (public or own-account) and the rental of commercial vehicles with or without drivers for public or private transport of goods or passengers, meeting the conditions for professional or activity access may not always be sufficient for market access.

When domestic transport authorization schemes are imposed, these authorizations are either issued by the ministry in charge of transport (and sometimes its decentralized administrations) or by regulatory authorities. For urban transport, it is generally by urban or peri-urban mobility authorities.

It is often observed in developing or emerging countries wishing to reform their road transport sector, it is often considered that good governance of the sector requires having control over the operation of commercial vehicles for the transport of goods or passengers involved in public or own-account transport activities. This control involves making the operation of a vehicle conditional on the holding of a transport authorization which is attached to this vehicle and to the company that operates it. The purpose of this authorization system is not to define quotas or quantitative limitations, but to provide reliable information on the nature and offer of road transport according to the subsegments of the markets concerned (urban, interurban, national, regular, occasional, tourist or other).

Thus, in such a transport authorization system, the authorization is only issued by the administration in charge if the company justifies the satisfaction of the conditions of access to the profession (public carrier or vehicle rental company) or to the activity (own-account transport).

For goods transport, it is recommended to implement an authorization mechanism in a simplified manner for goods transport (public and own-account) through an authorization which gives access to the national market for a given vehicle without internal geographical limitation for general goods. Additional requirements could be imposed for the access to specialized markets, like the transport of dangerous/hazardous goods or perishable foodstuff.

For passengers' transport, the mechanism is generally more complex, as it should cover simultaneously the type of transport (urban, interurban, national) and the category of transport (regular, occasional or touristic). Special rules are usually implemented for taxi. While in any case, access to professions rules must be complied with to be allowed to be granted with passenger transport authorizations,

a clear distinction should be made between interurban and urban (suburban) transport. Indeed, for interurban transport, usually national authorities are empowered to allocate interurban passenger transport authorizations, while for urban transport (or para-transit), including taxis, local authorities, municipalities are in charge of issuing urban transport authorizations (public and own-account transport). These urban authorizations may be of different categories, either with a general local coverage or through attributes lines, in that case, appropriate indications appear on the administrative authorization for control purposes.

3. ACCESS TO INTERNATIONAL ROAD TRANSPORT MARKETS

The concept of access to the international road transport market through an authorization mechanism is based on a traditional approach to protecting the economic interests of a country that wishes to control its international trade by controlling transport. This is how the systems for sharing the market for international goods and passengers transport has been organized on the basis of quantitative allocation of transport volumes between carriers in the country of departure and respectively in the country of destination.

These systems of bilateral and then multilateral quotas have developed and continue to govern a large part of international road transport of goods and passengers.

There are three main types of schemes applicable to international market access:

- national criteria (e.g., China, Türkiye);
- bilateral road transport agreements; and
- multilateral (transport-led) agreements and schemes (e.g., ECMT or BSEC).

A fourth type of market access is regulated through multilateral (trade-led) agreements, for example, United States-Mexico-Canada Agreement. The provisions of such agreements cover a multitude of complex issues; in general, road transport is not the main subject, hence this type of scheme is not discussed in the present Guide.

a. National criteria

The example of China is relevant in that transport operators must acquire experience on domestic markets, use the services of good drivers and use vehicles corresponding to high technical standards, before being authorized to perform international transports.

Similarly, in the EU, a road carrier willing to operate at the international level must first meet the access to profession criterion and get registered as professional road carrier before being in a position to access bilateral or multilateral road transport permits/authorizations.

Example of Türkiye: Using national criteria

The example described hereafter reflects the approach of policy makers in Türkiye. They introduced criteria for access to the profession and markets for road transport operators performing international activities, before applying such criteria to the entire industry. There were several reasons for that, but the main one might have been to support the exports of the country by good quality transport. Secondary reasons may include the desire to create a good image of professionalism for the Turkish industry abroad, or the intention to create a champion for the complex reforms of the sector, which were undertaken later.

In Türkiye, there are two types of certifications for road transport companies operating internationally:

- International road freight transport company for commercial purposes (L2 certificate)

  Applicants for an L2 certificate must have at least five fully owned heavy good vehicles with a total capacity of no less than 200 tonnes and a working capital of 300,000 Turkish lira. At least five vehicles that will be registered under the L2 certificate during the application must be less than 15 years of age. There are no requirements as to company premises. The certificate is issued by the Ministry of Transport, and Infrastructure.

- Organizer of transport operations (TİO certificate)

  Applicants for a TİO certificate must have a working capital of 150,000 Turkish lira and the usage right of independent premises suitable for this type of operation. This type of company shall operate its own vehicles, which are kept at and operated from the company premises. The TİO certificate is issued by the Ministry of Transport, and Infrastructure. The forwarder type

company (TİO) is normally the organizer of international road freight transport operations carried out by a company in the possession of a certificate for road freight transportation (L2).

According to the rules in force, one senior executive and one mid-level executive of a L2- or TİO-certified company must be in possession of a CPC. As to the requirement for their good repute, transport managers shall not have been sentenced for smuggling, fraudulency, fraudulent bankruptcy, counterfeiting, breach of confidence, drug trafficking, human trafficking, theft, bribery, and terrorist activities.

There are no quantitative restrictions regarding the number of transport companies admitted to the occupation as long as the conditions of certification are met. The authorized number of vehicles and tonnage capacity are contained in the L2 or TİO certificate, but they are not restricted either.

Each type of certificate has to be renewed every five years by paying the renewal fee 60 days before the expiration date.

It should be noted that the confusion between the forwarder and the fact that she/he can, at the same time and under the same legal entity, carry out transport operations with her/his own vehicles is not necessarily desirable in a context of sectoral reform where the distinction of roles and professions must prevail for an optimal organization of the sector, at least in the initial phase of reform.

NOTE: This approach establishes an initial selection process for accessing the international transport market. Before obtaining bilateral or multilateral transport authorizations, one must first acquire a form of international carrier status at the national level. However, this status does not exempt the holder from obtaining the necessary international transport authorizations to operate in other countries.

b. Bilateral approach

Most regions of the world have international transport systems based on bilateral authorizations (for goods and for passenger transport), the principles of which are prescribed in bilateral agreements on the transport of goods and passengers. International bilateral schemes are based on quantitatively restrictive models deriving from an intertwining system of bilateral governmental agreements, which started to develop as haulage became a significant mode of carriage of cargo across frontiers after WWII. Among European governments alone, in the 1960–70 period, there were about 900 such bilateral agreements in force. The bilateral agreements covered similar subjects. Due to their multiplication, they became difficult to manage and to implement. All the important decisions on the practical implementation of the agreements, including the decision on the number of permits to be exchanged between the countries, are entrusted to a joint committee, composed of representatives of both countries who meet generally once a year.

These bilateral agreements generally aim, between the two signatory countries, to define:

- the conditions for obtaining bilateral authorizations.
- their nature (per journey or per time with a period of validity).
- routes and border-crossing points to be used in bilateral relations.
- possibly the technical standards and norms of vehicles.
- the rights and fees for passage and use of infrastructure.
- the possibility or not to have rights to load and unload at several points.
- the cases and procedures for withdrawal or suspension of bilateral authorizations.

According to World Bank's QuARTA[38] the most preferred limits imposed on international operations applied in quantitatively restricted bilateral relationships are the following:

- limited number of trip permits exchanged between contracting parties of a bi- or multilateral governmental agreement;
- limited annual quotas fixed in the same international legal context for various types of haulage, e.g., for bilateral traffic (export, import), transit traffic, traffic in the vicinity of national borders (e.g., within a 50 km wide strip on both sides of the border), third-country traffic with or without transit obligation through the country of establishment; an annual review of the usage level of

38 Krausz, Kunaka, Latrille, and Tanase (2013), Quantitative analysis of road transport agreements (QuARTA).

quotas and a related redistribution of unused permits that might solve permit shortage problems;

- restrictions imposed on return-cargo acquisition;
- total prohibition of cabotage;
- limitation of the number of tax-free permits exchanged;
- limitations of the validity of permits in time (monthly, annually, etc.); and
- tolerances in the system: permit-free and/or quota-free operations allowed for certain types of transport, like using vehicles the total laden weight of which does not exceed 6 tonnes (or the payload remains under 3.5 tonnes), occasional transport to/from airports, transport of broken-down and breakdown vehicles, transport of livestock and perishable goods, carriage of medical supplies for humanitarian purpose, transport of mail, initial/ terminal legs of combined transport operations, removals, funeral transport, etc.

Deregulation (replacement of quantitative restrictions with qualitative criteria) emerged in the same period when the system of bilateral agreements reached its peak, but it did not have much influence on the content and functioning of bilateral agreements. Some basic qualitative elements for access to the profession were integrated in some bilateral agreements, but quantitative market-access rules remained almost untouched.

In parallel to this development, the introduction, and implementation of a set of international transport conventions have reinforced the legal context of the qualitative nature of bilateral agreements. Efforts were undertaken to create harmonized provisions in bilateral agreements, although without notable success. Discrimination, which is an inherent characteristic of bilateral agreements, continued to play against operators, who were treated differently in each agreement. Even if provisions of agreements were drafted according to the same formal patterns and sometimes principles, discrimination prevailed among operators.

Bilateral agreements lost significantly in their importance across Europe because of unprecedented political and economic changes at the end of the 1980s and early 1990s, continuing with the enlargement of the EU eastwards, which made many bilateral agreements lose their purpose.

On the other hand, the emergence of the newly independent states that succeeding former Yugoslavia and former Soviet Union, led to a surge of new bilateral agreements partly for good reasons and partly for the simple demonstration of newly born national independence.

Although at a multilateral level the approaches have steadily moved towards transport liberalization, bilateral road transport agreements continue to prevail as instruments to regulate the access to international markets in all the regions of the world. For example, in Western Africa, ECOWAS Member States adopted in 1982 a Convention to regulate interstate transport. This Convention defines the basic rules to be applied for itineraries of international routes, and the technical conditions for vehicles (weight and dimension), but leaves the implementation of freight distribution to bilateral agreements. A similar approach has also been developed in Central Africa and in East Africa.

However, on the African continent, the sustainability of bilateral transport agreements based exclusively on freight sharing organized by quota systems are doomed to disappear with the advent of the AfCFTA and its protocol on trade in services. Indeed, the stated objective of the AfCFTA and its protocol is to allow and achieve a progressive liberalization of trade in services with the disappearance of quantitative restrictions or limitations. In anticipation to this gradual but inevitable disappearance of quotas, Benin, Burkina Faso, Niger, and Togo have undertaken, with the support of UNCTAD, to prepare a quadrilateral transport agreement intended to lay the foundations for the gradual disappearance of quota systems and to replace them with qualitative provisions enshrined in the framework of a quadrilateral approach to regulatory convergence between the four countries.

c. Multilateral agreements and schemes for goods transport

International cooperation can have a significant positive impact on facilitating road transport for countries in their respective subregions. For goods transport, the best-known examples to date are the ECMT[39] established in 1953, and the Black Sea Economic Cooperation Organization (BSEC) permit system.

39 ITF, "ECMT Road Transport Platform".

The ECMT was established in 1953, with the objective of facilitating international and inland transport, including road freight, and integrate the markets concerned. In 1974, the ECMT, faced with the development of road transport and the increasing need for trade and transport facilitation, developed a permits scheme (the "multilateral quota") which facilitates multilateral transport operations and supersedes the recourse to bilateral permits issued under bilateral agreements. The scheme was seen by the Council of Transport Ministers as a practical step towards the gradual liberalization of international road freight transport. In 2006, the ITF took over the management of the **ECMT multilateral quota system**.

The ITF multilateral quota of ECMT transport licenses authorize transport undertakings established in an ITF/ECMT member country to carry goods by road for hire or reward between ITF/ECMT countries and in transit through the territory of one or several ITF/ECMT country(ies). The authorizations/permits are not valid for transport operations between an ITF/ECMT country and a third country, nor for cabotage operations.

Currently, all EU Member States and 15 other countries are part of ITF. Besides being a significant facilitation tool, the ITF multilateral quota of ECMT transport licenses has played an important role as the main incentive towards harmonizing and professionalizing the road transport industry and making the fleets cleaner, safer and more efficient.

More specifically, the scheme rewarded an increased number of permits to companies operating vehicles with higher standards, notably regarding noise and emissions. Also, only operators authorized in conformity with the criteria for access to the profession could avail themselves of permits.

The ECMT quota system user guide is accessible through: User Guide | ITF

The ECMT quota system went through a number of challenges over the last ten years, the most important being:

- an unbalanced distribution of licenses between the countries;
- certain restrictions imposed on the use of the licenses which reduced the efficiency of usage of the ITF multilateral quota of ECMT transport licenses;
- the system of controls and sanctions in the Quota System are mainly the responsibility of the country where the vehicle is registered and there is little cooperation between the various national supervisory authorities as well as between authorities of various countries in terms of road transport enforcement and infringement; and certain countries have become more protectionist, a trend undoubtedly reinforced in times of economic crisis.

The Quality Charter[40] for international haulage operations performed under the ITF multilateral quota of ECMT transport licenses was adopted in May 2015. To allow further development of the system by creating a level playing field and enhancing the compliance with quality requirements, the Charter focuses on four specific areas:

- admission to the occupation of transport operators;
- compliance with driving and rest times;
- categorization of infringements; and
- driver qualification.

The Quality Charter addresses these issues and sets some rules that aim at reinforcing the qualitative criteria for obtaining ECMT permits, in particular, regarding professional competence for transport managers and professional drivers.

As far as the access to the profession is concerned, the four criteria are taken on board: professionalism, honor, financial standing, and establishment in one of the ITF/ECMT countries. The Charter goes into more detail than UNECE resolution R.E.4, in particular as far as the examination to pass the CPC is concerned. The Charter states that the "standards set out by the IRU Academy for the approval of examination and training centers, and also for the issuing of Certificates of Professional Competence, are recognized as a reference model. The certificates issued by such centers are considered as meeting the requirements of the ECMT multilateral quota provided that they are countersigned by the national authorities of ITF/ECMT member countries that are competent in this area."

The Black Sea Economic Cooperation Organization (BSEC) was created on June 25, 1992, the Heads of State and Government of 11 countries and counts to date 13 Member States.[41] It has established a BSEC permit system to facilitate trade and transport in the Black Sea region. The BSEC permit is a single document designated for

40 ITF, "Quality Charter".
41 BSEC Member States are Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, North Macedonia, Romania, Russian Federation, Serbia, Türkiye, and Ukraine.

the international transit of road transport of goods and/or bilateral road transport through territories or to/from the following states: the Republic of Albania, the Republic of Armenia, Georgia, Moldova, North Macedonia, Romania, the Republic of Serbia, the Republic of Türkiye and Ukraine.

Third-country transport operations are allowed to be carried out by road transport operators from the Republic of Albania, the Republic of Armenia, Georgia, Moldova, North Macedonia, Romania, and Ukraine as participating countries to the project which agreed upon such transport operations.

It is the duty of competent authorities of each Participating Member State to deliver according to their own criteria, these BSEC permits to their national transport operators. The validity of the BSEC permit is of one calendar year, but prolongations may be allowed when the previous year permits have not been fully utilized.

BSEC has developed a BSEC permit user guide, in cooperation with IRU and BSEC-URTA. The 2025 user guide is reproduced in Annex 6.

4. OPERATING CONDITIONS

a. Cooperative and grouping opportunities to rationalize operating conditions

As explained in V, C2b) above, formalization through the incorporation (commercial company), even though a single-person company, should not be confused with methods of operating an activity in a grouping or cooperative.

As has been demonstrated, in certain market conditions where the parallel conduct of operations by several competing operators does not necessarily provide a satisfactory approach in terms of profitability and quality of service, as each actor involved is not able to perform while clients do not really benefit from such market organization nor in term of pricing, nor in terms of quality of services.

In such a context, the establishment of an operating group can both rationalize operations while improving the quality of service without infringing on the right of customers to benefit from a diversified offer.

BOX 18.

Digitalization of goods transport international permits

- Discussions are ongoing on digitalization of the BSEC permit with the Turkish Ministry of Transport (MoT).
- The Turkish MoT already digitalized road permits between Türkiye and Uzbekistan as well as between Türkiye and Azerbaijan and started to use only ePermit by using their IT systems.
- BSEC aims to use the same infrastructure to digitalize BSEC permits and exchange data via the same system.

Such a mechanism can notably be leveraged in passengers transport, on regular intercity lines where several companies can pool their services to optimize the occupancy rate, reduce the number of frequencies with reduced occupancy, pool a ticket sales service.

This can also be useful in goods transport to allow, through a group (GIE or joint venture), access to certain large markets that would be inaccessible to small/medium-size companies.

b. Contractual relations in passenger road transport

In many developing or emerging countries, there are few detailed laws for road passenger transport. Most only have basic references in their civil or commercial codes. These references usually state that the carrier is presumed responsible but do not specify exemptions, proof requirements, appeals, or compensation limits for passenger injuries, deaths, or luggage damage. Such a legal vacuum situation often deprives passengers/customers of visibility on the applicable contractual conditions and especially on their means and rights to compensation in the event of an accident.

c. Road transport of goods and intermediation contractual relations

The contractual relation that is established between the carrier and its client, whether a shipper or a forwarder/intermediary, is of a different legal nature depending on the countries or regions. The road transport contract or the

transport intermediation contract may be either a standard commercial contract or a special contract governed by specific rules.

- Road transport of goods and intermediation contracts are considered as general service contracts.

  In many developing or emerging countries, the contract of transport of goods by road is considered as a standard commercial contract. As such, it is governed by general commercial law. It is considered as a consensual contract, meaning that it is concluded by exchange of agreement that is not formalized. In that sense a written contract is not necessary. The carrier's liability is standard, meaning she/he is responsible for her/his acts or omission as well as the one of its subordinates and employees if a damage, delay, or loss happens, if this damage is caused by a fault. The carrier is simply bound by an obligation of means; she/he must undertake all possible efforts to realize the contract but is not bound by an obligation of result. Under such a liability regime, the claimant must establish that the damage was caused by a fault imputable to the carrier, while her/his right to compensation is subject to carriers unilateral selling conditions.

  The same applies to intermediation contracts, transport commission, or freight brokerage contracts that are also considered as standard service contracts, with similar consequences.

  As far as transport intermediation contracts are concerned, there is no international legal norm that defines the legal status and liability of the transport intermediaries, there is even no standard definition applicable.

  In Anglo-Saxon countries, the "forwarders" are considered as simple intermediaries whose task is to put in contact a client and a transport operator in order for them to conclude a transport contract. They are liable only for their personal faults or breaches, and they are not responsible for the good accomplishment of the transport nor for the good state of the goods at destination. They act according to an obligation of means but not according to an obligation of result like the carrier. In such a legal framework they are acting as freight brokers.

  Therefore, this results in a lack of overall visibility for users of transport or intermediation services on their exposure to risk, which then depends on the conditions set unilaterally by each operator for what concerns them. This also results in an increase in the cost of insurance for transported goods due to the uncertainty surrounding the conditions of liability of carriers and transport intermediaries.

  NOTE: Freight brokerage may coexist together with transport commission as described below, but both professions being of a different nature.

- Road transport of goods and intermediation contracts are considered as special contracts.

  As far as the contract of transport of goods by road is concerned, many countries consider this contract as a special commercial contract due to its specificities, thus following international standards as per the UN CMR Convention[42] or the Uniform Act from OHADA[43] on the road transport contract. In such a legal framework, the carrier is bound by an obligation of result to complete the transport properly and must deliver the goods in the same condition and quantity as when they were picked up at the place of loading. To compensate for this strong liability regime, the indemnity due by the carrier in case of damage, loss, or delay is limited by law. The limit is defined by a fixed amount per kilogram of lost or damaged goods, or per shipment. In case of delay and proven resulting damage, the indemnity equals the transport price. The carrier may accept upper limits but cannot exclude her/his liability or decrease the level of indemnity.

As far as transport intermediation contracts are concerned, in Latin influenced countries it is considered that the transport commissioners operate under an obligation of result, meaning that they are responsible for the good accomplishment of the transport and the good state of the goods at destination. This is the regime known as "commissionaire." In practice they are liable for both their own and their subcontractors' fault. Under this liability regime, they can contract in their own name with transport operators. In that case, they act as the sender towards the transport operator. For the client it is a real simplification as his only counterpart is the forwarder (commissionaire) and not a multitude of operators.

42 UN (1956), Convention on the Contract for the International Carriage of Goods by Road (CMR), E/ECE/253, E/ECE/TRANS/489.
43 OHADA, "Les Actes Uniformes Issus de l'OHADA".

d. Contractual relations within multimodal/ intermodal goods transport chain involving road transport

International instruments relating to the contract for the carriage of goods by road, whether it is the UN CMR Convention ratified by 58 countries or the OHADA Uniform Act relating to the contract for the carriage of goods by road applicable in international or national traffic of the 17 Member States, provide for an intermodality approach on the following bases:

- If goods entrusted to a road carrier with the vehicle containing them (or container) must use another mode of transport, then the road transport contract remains applicable and the road carrier remains responsible for the successful completion of the transport, from end to end, even for intermediate modes of transport.
- However, if it is demonstrated that the damage occurred during the non-road leg of the transport, then the liability of the road carrier will be sought based on the liability regime applicable to the non-road carrier.
- For example, if part of a journey occurs while the vehicle is placed on a railway, and the goods are damaged during rail transport, the road carrier remains solely liable to its customer, but its liability and the compensation due will be defined based on the liability regime applicable to the rail carrier. The customer will not have to sue the rail carrier, she/he will sue the road carrier, who will benefit from the recourse action against the rail carrier and will then be able to sue it and obtain reimbursement of the compensation paid by itself to the customer.

The United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea adopted by the UN General Assembly on December 11, 2008, also known as the "Rotterdam rules"[44] foresees the possibility, under a unique end-to-end maritime transport contract, that if the goods or the loading unit containing them happens to take another mode of transport, and if it is demonstrated that the damage or loss or delay occurred during a non-maritime segment of the carriage, the liability of the maritime carrier (principal carrier) will be sought based on the liability regime and the limits of compensation applicable to the carrier of the non-maritime mode in question.

e. Road transport documents (goods and passenger transport)

- **Goods transport:** It is usual to consider that goods, whatever the mode of transport, must for their transport be the subject of a transport document which allows the identification of the good, its weight, the sender, and the recipient and possibly specific instructions for the realization of the transport.

  It should be noted, however, that in road transport, the international reference instruments, the CMR Convention, and the OHADA Uniform Act already mentioned, provide for the edition of a consignment note and list the mandatory and optional data that must or may appear on the consignment note, but do not define a model to be used.

  Contrary to what is often written about CMR or OHADA consignment notes, the consignment note is not a road transport contract, as by definition the transport contract is consensual and not written. The road transport consignment note is only a document which materializes certain elements of the contract and ensures the monitoring of the transport from start to delivery. Moreover, the two instruments specify that the absence of a consignment note does not call into question the validity of the transport contract that remains valid and in force. Although the IRU CMR model consignment note[45] is used in most of the 58 contracting parties to the CMR Convention, it is unfortunately noted that in the 17 OHADA countries, the OHADA consignment note is in fact ignored.

  Additionally, it should be mentioned that both international instruments foresee a consignment note in a road transport contract, by definition involving a road carrier and a client, they do not apply for own-account transport that in many countries remain unregulated as far as transport document is concerned.

  Some countries have adopted regulations on transport documents applicable to both public and private transport. This is the case of Côte d'Ivoire, Niger, and Guinea, which have introduced the principle of a Single Transport Document.

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44 UN (2009), United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea.
45 IRU (2027), IRU CMR Model 2007.

- **Passenger transport:** There is no international reference for road passenger transport documents. However, it is customary to provide for intercity and international transport:
  - a passenger manifest that identifies passengers according to the point of departure and destination as well as their checked baggage;
  - a passenger ticket that formalizes the passenger's right to board and confirms payment for the journey.

Some countries have decided to impose these documents and to establish their models, such as Guinea, Niger, and Togo.

f. Road transport pricing

All sectoral diagnostics carried out in developing or emerging countries identify as a weakness resulting from both its structure and its sociology, the lack of profitability in particular of road freight transport.

A thorough analysis of this lack of profitability of course reveals a combination of factors creating a kind of negative circle:

- pricing per tonne or per tonne-kilometer that does not take into account the time factor which is nevertheless essential, because in road transport, what counts is the time the vehicle and its crew are made available to the customer. Not taking this time into account means ignoring the fact that carriers have variable costs when the truck is running, but also have fixed costs incurred whether the truck is running or not. Ignoring them is condemning carriers to bankruptcy.
- the lack of intrinsic profitability is itself aggravated by unfavorable operating conditions, such as unconsidered waiting times for loading and at destination, long waiting times at borders, faulty infrastructure leading to very low commercial speed, and even in certain regions, a critical security situation (Sahel).
- an unbalanced contractual relationship between the carrier and the freight holders which makes the transport contract no longer the result of a negotiation, in particular of the quality of transport and the price, but a contract of adhesion in which the price is imposed by the customer.
- the resulting lack of profitability also creates a situation of impossibility of releasing productive investment capacities, preventing not only the financing of current activities, but above all the renewal and expansion of the fleet.
- the worsening of the average age of the fleet then becomes in turn a factor aggravating the operating conditions by creating additional operating costs and also increased maintenance and immobilization costs due to an accumulation of breakdowns.

g. Road transport of goods, trade facilitation, and digitalization tools

In many regions of the world, operating conditions are aggravated by difficulties that directly influence the realization of transport.

In particular:

- the absence of appropriate structures and infrastructure for receiving vehicles transporting goods and people, in particular:
  - in port or airport areas;
  - in bus stations;
  - on the main traffic routes;
  - at the vicinity of large towns;
  - at border points;
  - at customs points or offices of departure and destination.
- the circumvention of transport and trade facilitation processes, despite efforts to dematerialize procedures and documents and the interconnection of customs systems (such as the interconnected system for the management of goods in transit (SIGMAT) in Western Africa).
- the duplication of border controls and procedures without coordination between the authorities of neighboring countries.

These dysfunctions are materialized by unjustified waiting at the border, in particular for goods in transit with long queues at borders, causing sometimes not just days, but weeks of delays.

Combining the need for trade and transport security and the objectives of facilitation, several instruments have been adopted, such as the WCO SAFE frameworks

BOX 19.

Advance cargo information to facilitate border crossings and reduce transit times

- TIR-EPD is a digital tool developed by IRU in 2009 to enable TIR transport operators to electronically submit advance cargo information to customs offices along their route. It streamlines customs clearance of goods moving through multiple countries. With TIR-EPD, operators can exchange messages with customs authorities in full compliance with each country's specific customs requirements and data formats, ensuring secure and efficient communication.
- Widely used by transport operators and their representatives across Europe, Asia, and the Middle East, TIR-EPD significantly reduces border waiting times and associated costs. Based on advance cargo information received, customs authorities can process necessary information before the truck arrives at the border or at the customs office of departure. This allows for corresponding risk assessments, reduces redundant data entry, and lessens the administrative burden on both customs officers and transport operators.
- Submitting advance information enhances the accountability and professionalism of transport companies, while improving transit security. As a result, operators experience fewer security checks and faster border processing, leading to reduced fuel and delay-related costs, as well as minimizing misunderstandings due to language barriers.
- A particular convenience and effectiveness of TIR-EPD has been seen with hauliers transporting consolidated cargo and e-commerce goods, which requires them to submit data on multiple consignments. While the required information can be imported to TIR-EPD from other documents, thus even further simplifying its submission, using third parties for the same would incur high costs. Based on the security provided by the TIR system and the possibility to separate high-risk cargo from low-risk, thanks to advance information received via TIR-EPD, some customs authorities decide to establish dedicated priority lanes or find other ways to prioritize such secure transport subject to the available infrastructure.
- TIR-EPD serves as both a risk management and facilitation tool, embodying best practices in risk-based facilitation. By enabling customs authorities to assess risks beforehand, it supports smoother, more secure transit processes, benefiting both transport operators and customs officials.

Source: IRU TIR-EPD User Guide, 2023.

of standards, and the concept of authorized economic operator (AEO), while electronic advance declarations were made increasingly compulsory in many TIR contracting parties.

Such a combination of international instruments – such as the WCO SAFE Framework of standards, the AEO concept, or the advance cargo declaration for TIR operations – allowed many initiatives aimed at implementing at many congested borders prioritization of transit traffic.

The prioritization of trucks and cargo is closely linked with the ongoing efforts undertaken by the public and private sectors to reduce excessive physical controls for secure transport, in particular under TIR transit procedure. Such initiatives aim at differentiating between secure TIR transport and higher-risk transport and thus provide border-crossing priority to TIR movements accompanied by advance cargo information possibly coupled with e-queue mechanisms.

To be efficient, such facilitation tools, the prioritization should be implemented on both sides of the border to deliver maximum effect, related procedures should be optimized as well, through re-engineering the procedures to separately handle TIR and non-TIR vehicles well before their arrival at the border. In addition, the quality of advance cargo information submitted by TIR carnet holders is key to benefit from streamlined and smooth border crossing. Such an approach also involves capacity building for all actors, TIR operators, as well as their clients, and of course customs and key border control agencies, to ensure optimal data quality, and proper advance risk analysis by customs.

Such facilitation based on digitalized procedures has been implemented at many borders thus allowing to experiment and confirm the efficiency of border prioritization methods at many key border posts in Afghanistan, the Islamic Republic of Iran, Kazakhstan, Kyrgyz Republic, Moldova, Romania, Saudi Arabia, Ukraine, United Arab Emirates Uzbekistan, and Turkmenistan, including at seaports. Details can be found in Annex 7.

h. Insurance in trade and transport (goods and passenger transport)

On many continents, there is great confusion in the insurance mechanisms applicable to international trade and transport. In particular, the liability rules applicable to road carriers are ignored and trade players impose insurance obligations that are often useless in terms of protection but extremely costly for trade costs.

In road transport, insurance coverage for transported goods, vehicle traffic insurance, civil and contractual liability insurers are often confused, even by some insurers who offer "transport" coverage but who in fact expose their subscribers to serious risks of non-coverage.

In fact, it appears that trade and transport operators are often not mastering the general conditions of the various contracts involved in international trade, known as "INCOTERMS". This ignorance leads to many overcasts to regional trade, as it is the case in Western Africa where goods imported are very often covered by two to four insurance contracts:

- one contracted by the sender being also the seller of these goods often sold under an incoterm foreseeing insurance by the seller up to destination;
- one contracted by the buyer as per its national legislation to cover transport risk from arrival port to destination;
- one being part of a package sold by the maritime company;
- one contracted by the road carrier as imposed by the client (often the maritime company agent in the port of arrival to secure its recourse in case of damage during the road transport leg).

These various insurance contracts have the same object: the goods transported. However, the accumulation of insurance covers does not provide better security. To the contrary, it may be interpreted by insurance companies as voluntary insurance fraud. Yet, the multiplication of insurance costs dramatically increases trade of goods overall cost.

Furthermore, in passenger transport by road, in the often absence of an explicit legal framework for the passenger transport contract, passenger insurance is often neglected, ineffective and ultimately costly without any real effect in terms of coverage.

The insurance aspect is very important in the road transport sector as it may help transport operators secure their operations and their clients and contribute to the sustainability of their companies. In addition, a thorough and appropriate insurance cover may also be an important element that banks and financial institutions may take into account in granting credit or loans to a transport company. However, it is important to define the risks to be covered and the insurance coverage that can be organized.

Depending on national legislation, the insurance may be compulsory for certain risks and optional for others. Besides the insurance being seen as a burden or administrative requirement at the beginning, when it is made compulsory, the later understanding of risks and internal measures to reduce them may bring significant advantages for transport operators, beyond any formal approach.

5. PATH TO REFORM

a. Drivers of reform

The approach to rationalizing operating conditions for both goods and passenger road transport is naturally inseparable from the framework for access to the profession presented in Section C and the framework for strengthening the capacities of the actors described in Section F. Indeed, all the measures relating to the framework for access to the market and improvement of operating conditions only have an impact if they complement the conditions of access to the different professions.

This means that reforming the conditions of access to the market and improving operating conditions must be a process that is built at the same time as that relating to access to the different professions and that relating to the creation of an adapted training capacity.

Thus, the overhaul of the framework of road transport and intermediation sector operating conditions must be part of a holistic vision that involves not only the traditional players in the sector, but also industrial and agricultural players, those in commerce in the broad sense, and those who contribute to financing business, without forgetting the legal players who have an important role to play in the implementation of the contractual framework that is indispensable to ensure the sector's enhancement.

The entire reform must also be anchored in a development policy and strategy that identifies road transport, not only as an essential link in the country's economic, social, and environmental development framework, but also as a specific strategic objective distinct from the infrastructure component but complementary.

Reforming access to the market and improving operating conditions (goods and passenger transport) should:

- be part of a global development policy supported and desired at the highest level of the government.
- involve a design that associates all the public actors potentially involved:
  - the Ministry of Transport must be the leader but in consultation with its implementing agencies and branches, with a systematic heavy involvement of the private sector;
  - the Ministry of Trade (trade policy and objectives should condition and support operating conditions);
  - the Ministry of Agriculture (as it may positively impact and facilitate access of agricultural products to national and international processing and/or consumption markets);
  - the Ministry of Justice (texts to be adopted and implemented not only by the actors, but also through the judiciary system);
  - the Ministry of Economy and Budget (budgeting the reform needs, as well as connected administrative fees and taxes);
  - the Ministry of Interior (control and implementation);
  - the ministry in charge of higher education, and of vocational training (to adapt transport and trade related curricula and training programs).
- involve key private-sector stakeholders:
  - professional organizations representing the transport of goods and passengers;
  - professional organizations representing intermediation professions;
  - professional organizations representing users of transport and intermediation services;
  - professional organizations representing the actors of own-account transport;
  - chamber of commerce and trade related consular organizations;
  - lawyers specialized in transport;
  - insurers active in trade and transport;
  - specialized public and private training institutes.

b. Main challenges

As already mentioned, reforming market access and improving operating conditions is the corollary of modernizing the conditions of access to the various professions.

But just as with access to professions, reforming access to the domestic or international transport market and improving operating conditions challenges not only well-established practices, but also sometimes quasi-monopoly situations in certain markets, so that resistance can be strong to simply maintain the status quo and the resulting quasi-automatic income.

But beyond acquired habits and practices, the overhaul of operating conditions can also affect certain economic models whose transformation must be supported to ensure the achievement of the set objectives. This also means developing a participatory approach with all the stakeholders involved in order not only to keep them informed, but to involve them in the design of the various components of the reform to create real ownership of the content of the reform and enable stakeholders to prepare for the implementation of the new rules. This also involves developing a framework not only for consultation but also for popularizing the elements of the reform among all stakeholders concerned, with inventive training systems, practical guides, and remote support tools.

Therefore, these popularization efforts must focus on:

- the administrative rules for access to the various markets;
- the new contractual and economic rules; and
- the framework of responsibility of the actors, in particular in terms of security.

c. Recommendations

i. Recommendations for rules on access to market

Domestic market

In the transport of goods, several models exist for what concerns access to the market:

- **Liberal approach:** some countries or economic regions/Unions consider that as long as the conditions of access to the profession or activity are met, it is not necessary to submit access to the market to a special authorization regime. This is the case of the EU for example, where the certificate of registration in the register of public or own-account carriers is sufficient to allow access to the market in the Union, provided that a certified copy of the company's registration certificate is on board each vehicle operated.

  However, this apparent flexibility in the EU is limited as far as "cabotage"[46] is concerned, which remains allowed but with certain restrictive criteria.

- **Administrative regulation approach:** Many countries condition market access to:
  - the issuance of transport authorizations allocated to each vehicle (used for public or own-account transport) according to the development and needs of the market to avoid situations of overcapacity. This is the case, for example, of Côte d'Ivoire, which provides for such an approach in its texts, even if in practice, the allocation of goods transport authorizations is not linked to the market situation;
  - the issuance of transport authorizations depending on the type of traffic concerned (local, regional, national), as is the case in Côte d'Ivoire, for example;
  - the issuance of transport authorizations depending on the type of goods transported, refrigerated, dangerous goods, etc., and coupled to the type of transport (local, regional, national), as it is the case in Guinea, Niger, and Togo.

- **Specific restrictive rules for certain types of transport:** In almost all countries, the transport of oversized goods or exceptional transport is subject to a very specific authorization regime due to the potentially dangerous nature for traffic (oversized size) or due to the weight characteristics (beyond the authorized tonnages). This type of transport is generally subject to prior declaration and authorization per trip with specific conditions depending on the case (traffic restrictions, escorts, fixed routes, etc.).

- **Principle of prohibition except in special cases:** this often concerns the transport of certain types of goods which by their nature or by their destination are prohibited from transport except with specific transport authorization, such as transport intended for the armed forces (weapons, munitions), or goods subject to special measures such as radioactive waste.

  Certain types of transport are subject to specific regulations outside the framework of general road transport regulations: this is the case for transport carried out under international postal conventions, or funeral transport.

- **Some types of public or private transport are not subject to any regulation either by legal vacuum or by political will:** it is the case in certain countries which condition the rules of access to professions and to the market to the operation of vehicles with a transport capacity greater than a certain tonnage threshold for example. This type of regulation by the threshold effect created leads to the multiplication of the number of actors who operate vehicles just below the threshold set to escape any constraint. This is notably the case of transport by tricycles, moto-taxi or pick up, which due to the limits set can escape any regulation and thus create unfair competition versus those subject to regulation (example: Togo with a threshold of 3.5 t for the application of the regulation of public or private transport of goods).

For the transport of passengers, the same principles as for goods transport are witnessed but with variations in the modalities. Indeed, in road transport of passengers, the differentiation between public transport and transport for own account also prevail, but the transport authorization systems are much more complex because they mix both complexities from the issuing authorities and those linked to the different types of transport.

46 Cabotage: transport of goods (loading, unloading) or passengers between two points in a national territory, carried out by a non-resident company.

The majority of passengers domestic road transport authorization systems are established on the following transport segmentation:

- own-account/private transport of passengers;
- urban transport, including taxi; and
- interurban, including taxi.

Additionally, the following categories of different types of transport are also used as criteria:

- regular transport;
- occasional transport;
- touristic transport.

Depending on the combination of segment and types of transport, the competent authorities for issuing transport authorizations or concessions vary.

Thus, and generally speaking, intercity transport authorizations or intercity concessions authorizations for regular or occasional services are the responsibility of the ministry in charge of transport or its decentralized structures.

On the other hand, for urban transport authorizations, there is often a coexistence of urban public transport services (fixed lines and networks), services concessions allocations, and urban taxis. The various authorizations are generally issued by municipalities or local mobility authorities.

For touristic transport, in general, the ministry in charge of tourism is responsible for related authorizations, however, local regulations may interfere in terms of restriction of traffic, parking, etc.

International market

Access to international markets is still largely dominated by quantitative restrictions. Despite quota limitations, bilateral agreements have played a crucial role in developing international road freight transport during decades. They supported the spectacular growth of export-import and transit operations as well as to a certain extent third-country road freight traffic. International organizations have done their utmost to harmonize these agreements, with mixed success. In order to maximize national reforms of the road transport sector, governments should overcome the drawbacks of bilateralism and quantitative restrictions. While the sudden abandonment of quotas and quantitative restrictions on the grounds of economic efficiency may be desirable, it may be seen as a loss of sovereignty or economic potential by many countries. In particular, landlocked countries may feel threatened by such a measure, because their operators might lose favorable quotas for transport from and to the ports of their transit neighboring countries. A gradual movement towards qualitative restrictions may be preferred.

In order to increase efficiency of the current bilateral and multilateral quota-based agreements, it would be useful to introduce qualitative elements that would reserve (part of) the international/regional transport operations to road transport operators meeting those qualitative criteria, such as:

- basic criteria for access to profession (professional competence, good repute, sound financial standing);
- use of vehicles meeting certain criteria in terms of weight and size, emissions, road safety;
- equipment; and
- employing drivers trained according to agreed, higher standards.

These would enhance the quality of the services offered. It would be up to the negotiating countries to set the limits that their road transport sector is able to afford. However, a gradual approach would allow for the harmonization of the transport requirements at subregional levels, which would create a market based on fair competition. Eventually, these would contribute to better regional integration and a liberalization of road transport.

ii. Recommendations for improving operating conditions

Contracts of transport for goods and passengers by road

As far as goods transport is concerned, shippers/senders/consignors and receivers/consignees are of course key clients/commercial partners for the road transport operators. However, this client/provider relationship that exists between the road transport operator and its contractual partner is of a specific type, as the quality of service provided by the carrier is importantly dependent on the conditions and practicalities offered by the client.

The quality of road transport services (goods) will be highly dependent on:

- the quality of the information provided by the Sender of the goods, their nature, quality, and quantity so that the carrier may provide the appropriate vehicle and driver and can comply with specific regulations (e.g., dangerous goods, perishable foodstuffs, etc.);
- the information on the nature of the services expected (e.g., loading, unloading by driver, etc.) so that the carrier can take the necessary measures such as foreseeing loading material;
- the compliance with the agreed time for loading and unloading so that the driver would not be obliged to face long waiting times;
- the provision of instructions compatible with the legal obligations in traffic, in particular as far as road safety is concerned;
- the appropriate packing of the goods to allow their safe transportation; and
- the agreed remuneration.

All these elements, which will all contribute to the level of quality of the transport service, are dependent on the transport operators' clients. In this context, it is important to envisage this commercial relationship in its legal context as it may influence if not condition its economic dimension.

The transparency of contractual relations is important in the road transport sector. Informality and consensus-based transactions are still dominating the sector in many parts of the world. The quality of road transport services may only get better if these important issues are addressed within the reform. Indeed, if the reform addresses the organization of the road transport market, its structure, and the access to freight, it will add value to also include the legal aspect connected to the road transport contract. In countries where oral traditions are common, establishing basic rules is crucial to ensure fair competition among operators.

By adopting clear and transparent rules to regulate transport and intermediation contracts and by setting the obligations of the shippers, the carrier, and the receiver respectively, market habits may change towards more transparency and more equity. Leaving these aspects aside, the reform would compromise some important elements such as the access to freight on an equal basis.

BOX 20.

Example of a regional instrument dedicated to road goods transport contracts: The OHADA Uniform Act

The OHADA, which counts 17 western and central African countries, has adopted a Uniform Act related to the contract of transport of goods by road. This act is inspired by the CMR Convention. It confirms the consensual nature of the contract and the obligation of result imposed on the carrier compensated by a limitation of indemnity due. This Uniform Act is governing in principle all transports undertaken at the national or international level between the Member States of the OHADA.

Faced with the development of international transport by road and taking into account the need to harmonize contractual law to facilitate the settlement of disputes and harmonize the competition conditions between operators registered in different countries, some attempts have been made to define the basic conditions of the road transport contract.

As far as **passengers transport by road** is concerned (interurban and international), many developing and emerging countries do not dispose of detailed legislation to govern the contractual relations between a passenger and the road carrier.

However, the quality of services will highly be dependent on:

- the quality of the information provided to the passenger in terms of schedule, comfort, stops en route, services on board;
- adapted vehicles; and
- clear rules on luggage acceptance and check-in conditions (weight, packaging, labeling.) and personal belongings allowed on board.

BOX 21.

Example of an international instrument dedicated to road goods transport contracts and dematerialized road transport consignment notes: eCMR

- The United Nations Convention on the Contract for the Carriage of Goods, known as CMR had an unprecedented impact on national legislations, and international transport with a wide geographical scope covering Europe, Caucasus, Asia, the Gulf Cooperation Council (GCC) region, and North Africa. It now has 58 signatories. It establishes a liability regime based on an obligation of result imposed on the carrier with a limitation of the indemnity. The CMR Convention applies as long as the country of departure or that of the destination of the transport is a contracting party to the convention. The convention also considers that the transport contract is of a consensual nature, but it fixes the minimum information that should appear on the transport documents that may take the form of a consignment note.
- In February 2008, a protocol was added to the CMR Convention, which set a legal base to move from a CMR paper form to a digital version, e-CMR. Since its entry into force on June 5, 2011, 39 countries have signed the e-CMR Protocol to date. In most cases, the private sector was the main driving force behind the accession process. The expectations of the private sector are for e-CMR to enhance the benefits offered by CMR. e-CMR solutions should retain all the benefits of its paper form while modernizing the system. By eliminating paperwork, e-CMR lowers handling costs, ends administrative and invoicing delays, and reduces discrepancies at delivery sites. E-CMR also elevates transparency and security across the entire logistics chain. It provides more accurate data to track shipments with real-time pick-up and delivery information.
- The constructive debate on e-CMR adoption continues at the national and regional level as well as within relevant UN bodies, following a number of bilateral and multilateral e-CMR pilots. The diversity of e-CMR solutions on the market would allow economic operators to choose the one that best fits their needs, while the interoperability of e-CMR solutions can be ensured through United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT)'s international standards. Governments are encouraged to create an enabling environment and regulatory frameworks, while the private sector will naturally take the leading role in advancing the operationalization of e-CMR and its promotion as a critical tool to enhance the speed, efficiency, and security of trade and logistics.

To overcome the vacuum of dedicated regulation, it may be recommended to build a legal framework for the road passenger transport contract based on the content of the CVR Convention, adopted in Geneva on March 1, 1973.[47]

The content of this Convention could be useful to create national or regional legal instruments and to:

- define the passenger;
- define baggage (loaded in the hold) and differentiate it from personal belongings;
- define carriers and passengers' rights and obligations;
- frame the carrier's presumption of liability, and conditions of exemption of liability;
- set the conditions of compensation and limit of indemnity in case of passenger's injury, death, or damage or loss of checked-in luggage;
- define claims procedures;
- define legal prescription of actions.

The contractual aspects on intermediation and "bourses de fret"

In the field of intermediation, it has been indicated that there are essentially either freight brokers or forwarders, the latter being defended in different manners according to the legal systems in place.

In order to create an appropriate legal environment to organize the freight brokerage contract, it is recommended to address the following elements when drafting related law or regulation:

Freight brokers are mostly intermediaries acting upon a mandate by which the principal instructs the freight broker to find her/him a carrier if she/he is a freight holder, or a freight holder if she/he is a carrier.

47 UN (1973), Convention on the Contract for the International Carriage of Passengers and Luggage by Road (CVR).

This mandate is classic, the freight broker is liable because of an obligation of means and is therefore liable for her/his proven faults in the execution of her/his mandate.

The freight broker is bound by:

- an obligation to advise;
- an obligation of loyalty both towards her/his client and the third-party contractor;
- she/he does not intervene in the transport contract that will be concluded between the carrier and the freight holder that the broker will have put in contact;
- she/he has no obligation of result as to the subsequent conclusion of the transport contract and she/he is not bound by an obligation of proper completion of the transport.

She/he is remunerated by a brokerage commission which is usually expressed as a percentage of the amount of the contract that will be concluded between her/his client and the identified third-party contractor. She/he is also entitled to reimbursement of expenses incurred for her/his mission on supporting documents.

BOX 22.

Freight exchange platform (bourse de fret)

The activity of a freight exchange platform (bourse de fret), when it consists of matching supply and demand for transport, must be considered in a reform process as a freight broker, and such a structure must therefore meet the conditions of access to this profession, and on the contractual level, a freight exchange must be treated as a broker. This is the choice that Niger made in its decree 2019-270 organizing the transport and intermediation sector.

In order to create an appropriate legal environment to organize the forwarding services contract, it is recommended to address the following elements when drafting related law or regulation:

As mentioned above, the concept of forwarder covers two different realities depending on the historical context of the legal system considered:

- In the Anglo-Saxon legal environment, the forwarder is an agent who enters into a classic but reinforced mandate contract with her/his client by which the "forwarder" undertakes to follow the instructions of his principal for the organization of transport. she/he has no freedom of choice of either the mode or the carrier, and in any case, she/he is not a party to the transport contract that will be concluded with the carrier. she/he is:
  - bound by an obligation to advise her/his client;
  - bound by an obligation of means for the performance of her/his mandate, she/he is responsible for her/his proven faults in the accomplishment of her/his assignment;
  - not bound by an obligation of proper completion of the transport nor by an obligation of result.

She/he is paid by a commission which is generally expressed as a percentage of the cost of transport that she/he has organized. she/he is also entitled to reimbursement of expenses incurred for her/his mission on supporting documents.

If her/his client asks her/him, she/he can also conclude the transport contract, but she/he does so on the orders and on behalf of her/his principal; she/he is not a party to the transport contract, she/he is not the principal of the carrier.

- In the Latin legal environment, the "forwarder" is a commissioner who enters into a transport commission contract with her/his client by which the "forwarder" undertakes to organize freely the transport of goods, she/he can choose the transport mode, the carrier, and negotiate and conclude the transport contract on her/his own name. She/he is the principal of the carrier, she/he acts as the shipper under the concluded transport contract, she/he is liable for paying the transport fee and related costs. She/he is:
  - bound by an obligation to advise her/his client,
  - bound by an obligation of result for both her/his own intervention, and for the good arrival of the goods at destination,
  - the only contractual partner of her/his client.

She/he is paid by a commission which is generally expressed as a percentage of most of the cost of transport that she/he has organized and concluded. She/he is also entitled to reimbursement of expenses incurred for her/his mission on supporting documents.

Therefore, in order to create a legal framework for transport intermediation contracts, decision-makers have the possibility of opting for one or other liability regime depending also on their own legal environment.

Renting of commercial vehicles contracts (goods and passengers)

In order to complete the legal arsenal of transport, it is also recommended to provide a legal framework defining the rental of commercial vehicles, with or without a driver, intended for public or own-account transport of goods or passengers.

The characteristics of the commercial vehicle rental contract with or without driver, are generally not defined by sectoral laws or regulations, while it is a sector that is growing and is sometimes used to avoid road transport regulations.

The main characteristics of a commercial vehicle rental contract, with or without a driver, to be included in legislation/regulation are as follows:

- Commercial vehicle rental contract is by nature consensual.
- It is a contract by which a commercial vehicle rental company meeting the conditions to access the profession, undertakes:
  - for a fee labeled “rent”;
  - to make available to a contractor (tenant);
  - a commercial vehicle (with driver/without driver);
  - for her/him to undertake operations of public or for own-account transport of goods or passengers.
- The essential elements required for the existence of a commercial vehicle rental contract intended for the public or private transport of goods or people (with/without driver) are:
  - the type of vehicle to be rented, and where applicable its equipment and accessories;
  - the duration of the rental, and the agreed mileage;
  - the place where the vehicle is handed over to the renter and returned to the rental company;
  - any additional services;
  - the rent, the invoicing terms, deadline, and method of payment.
- With such a contract, the renter usually performs the services listed below and is responsible for them:
  - providing the lessee with a commercial vehicle that meets the regulatory conditions and satisfies the minimum requirements of functionality and comfort required from a safety point of view;
  - ensuring the rented vehicle meets the needs of the lessee for the operations for which it is intended;
  - providing the required equipment, vehicle accessories and prescribed onboard documents, including devices, documents, and all monitoring devices for the duration of working, driving and rest times for which the lessee is required to ensure their use and proper maintenance;
  - providing the user manuals for the equipment and accessories with which the vehicle is equipped;
  - performing major vehicle maintenance, scheduled inspections and servicing, mandatory technical inspections and major repairs and covering the corresponding costs;
  - the lessor is liable for proven faults in the performance of her/his obligations, she/he can limit her/his liability in its general conditions;
  - the lessor shall not be liable for any goods, passengers, their luggage, or personal effects, she/he is not a road carrier, she/he is not bound by an obligation related to transport operations;
  - is liable for driving faults in case of renting with driver.
- On her/his side, the lessee that will operate the vehicle for its own operations (public or own-account transport) should respect the following obligations:
  - operate the vehicle for the purpose of public or private transport of goods or people in accordance with the rules applicable to public or private transport and according to the liability conditions arising therefrom;
  - take out an insurance policy covering third-party liability, the validity period of which must cover the duration of the rental contract and for the type of traffic planned (national or international);
  - is responsible for routine maintenance of the vehicle, fueling and abnormal wear of tires;
  - is liable for any damage to the vehicle;

  - is liable, in case of renting with driver, of any action undertaken by the driver (except driving faults).

- To ensure the proper execution of the contract, the law, or regulation must provide for the contradictory establishment of the condition of the vehicle upon delivery to the tenant and upon return of the vehicle to the lessor by the tenant
- The rent can be fixed per day, week, month, year, or may include a fixed part and a variable part depending on the mileage traveled

Offering transport and intermediation actors the possibility to recourse to model/standards contracts

Whether it is the CMR Convention or the OHADA Uniform Act for the transport of goods by road, or the CVR Convention for the transport of persons by road, these international instruments outlined the main principles applicable to the contracts they organize, but do not necessarily cover all aspects of a contract for the transport of goods or persons. Therefore, the aspects not covered by these instruments are left either to national law or to applicable customs and practices. However, as already indicated, national law is often silent, and professional customs and practices may vary from one country, or even from one region to another.

Whatever the legal system adopted it could be of assistance to set some road transport model/standard contracts that will help in organizing the relationship based on clear indications for what is not covered by these instruments, such as:

- minimum time covered by the agreed price for loading, offloading, border crossings;
- loading and unloading responsibilities;
- boarding and disembarking passengers;
- ancillary services; and
- procedure to follow in case of loss, damage, delay.

To fill this legal vacuum, many countries have included in their national legislation the principle of the possibility for parties to a contract for the transport of goods or persons or to a transport commission or freight brokerage contract to use standard contracts (contract types) defined by regulation. Many countries, such as Côte d'Ivoire, Niger, Guinea, Togo have opted by law to such a mechanism of standards contracts which are simple to use and that simplify conflicting situations between commercial partners.

Such model/standard contracts should be drafted in close cooperation between the professional organizations representing the road transport and intermediation operators as well as the ones representing the shippers and transport users.

A similar approach should be followed for intermediation contracts, as well as for renting of commercial vehicles as no international instrument exist and national legislations are usually very superficial on these types of contracts.

BOX 23.

How to organize model/standard contracts by law (contract type)

A national law may provide that the parties to a contract for the transport of goods or passengers by road, to a contract for the rental of a commercial vehicle with or without a driver, to a transport commission or freight brokerage contract, in the absence of a written agreement to the contrary between them which would completely or partially exclude its application, may rely on the application of "Standard Contracts" defined by law or regulation.

"Standard Contracts" complement the principle of contractual freedom, by allowing the parties to conclude their contract freely without having to discuss all the practical details of the performance of the services. The parties know that the detail is regulated by the applicable standard contract. If the parties wish to deviate from the standard contract, they must do so in writing.

Therefore, if the parties do not exclude the applicable standard contract or certain of its provisions in writing, the standard contract applies automatically, this is the "supplementary effect of the Standard Contracts".

When the parties agree to exclude in writing the applicable standard contract or some of its provisions, they cannot derogate from the mandatory provisions of applicable law (National CMR, OHADA, etc.). Should such a derogatory clause contradict applicable law, it would be declared null and void without affecting the existence of the contract and its validity, the other clauses of which remain.

Safety and security obligations of contractors up to penal sanctions

If the carrier and its clients are linked through a transport contract, the carrier's commercial partners may also be liable for their acts or omission outside the scope of the contractual relation that exists between the carrier and its clients (shippers, forwarders, receivers, or passengers). Indeed, it is increasingly considered that the shipper or client in particular, bears direct responsibility at the penal level in situations that impact either road safety, social, and environmental regulations.

As such, the liability of shippers or passengers is increasingly outlined in national penal legislations or regulations when their acts, omissions, or behavior leads to a situation that creates danger either for the driver or for road users in general. It is particularly the case for overloading situations, non-respect of social rules (driving and resting times) or speed limit rules when they result from the shippers or passengers acts or instructions (imperative delivery deadline for arrival). With such penal incrimination, shippers and passengers expose themselves to fines and possibly other sanctions. Such responsibility of shippers and passengers has been introduced in many countries such as France, in some US states, and in the Côte d'Ivoire recently, as well as Togo or Guinea.

Therefore, as part of the reform, the liability of transport users may be considered and established as a powerful tool to moralize the practices and fight against abusive behavior as well as road safety infringements. Direct penal responsibility of shippers and passengers may be established in particular for situations of:

- overloading and non-respect of weight per axle rules;
- conditions of transport that do not allow the respect of driving and resting times or of speed limits.

BOX 24.

List of standard/model contracts

- Standard contracts for general road transport
  - General standard contract for the transport of goods by road
  - Standard contract for the transport of goods by road by tonnage, by time, or by exclusive provision of a vehicle and driver
  - Standard contract for the transport of people and their luggage by road
- Specific types of goods transport model contracts
  - Standard contract for the transport of goods by road in bulk
  - Standard contract for the transport of loaded or empty containers by road
  - Standard contract for the transport of goods in tanks by road
  - Standard contract for the transport of perishable goods at controlled temperatures by road
- Rental types of model contracts
  - Standard contract for the rental of a commercial vehicle intended for the public or private transport of goods or people, without a driver
  - Standard contract for the rental of a commercial vehicle intended for the public or private transport of goods or people, with a driver
- Intermediation types of model contracts
  - Standard contract for transport commission
  - Standard contract for freight brokerage

BOX 25.

Australia's chain of responsibility laws

The National Transport Commission (NTC) has pioneered the development of chain of responsibility (CoR) laws, which makes parties other than drivers responsible for the safety of heavy vehicles on the road.

Initially approved in 2003 as part of the model road transport reform (Compliance and Enforcement) Bill, CoR imposed obligations on all parties in the transport chain and all individuals in the corporate chain of command. Those parties were required to either take reasonable steps to prevent a contravention of the road transport laws, or to not encourage or coerce others to contravene those laws.

In Australia's federal system, CoR was incorporated into the Heavy Vehicle National Law (HVNL) which came into effect in 2014 in all states and territories, excluding Western Australia (WA) and the Northern Territory (NT). WA introduced its own CoR legislation in 2015. The NT does not have specific CoR provisions, but does specify that some offenses can be the responsibility of the person or organization which caused the offense to occur (such as with vehicle loading).

The HVNL was amended in 2018 as CoR in older versions was based on extended liability and the laws were an exception to normal legal principles that a person is innocent until proven guilty and that it is up to the prosecution to prove beyond reasonable doubt that a person has committed an offense. CoR obligations are now expressed in a different form, and non-compliance is proved in a different way.

Under the HVNL, CoR identifies ten functions within the supply chain and applies a primary duty to these parties. This includes the employer of a driver, a prime contractor of a self-employed driver, an operator, scheduler, consignor, consignee (receiver of the goods being transported), packer of the goods for transport, loading manager, loader of the vehicle, and the unloader. The primary duty requires these parties to eliminate or minimize the risk of transport activities they influence or control, so far as is reasonably practicable.

A breach of the primary duty is usually a result of not having measures in place to manage safety, or by evidence that a CoR party caused another party to breach the HVNL. A business could be charged with a breach of the duty even if no incident has occurred.

For example, the scope of the primary duty can include how heavy vehicle procurement and maintenance is undertaken, if recruitment strategies consider if the skill and experience of a driver is suited to higher-risk driving or specialized loads, board decisions and their implementation, policies and procedures of a business which influence the use of heavy vehicles, and communication systems, negotiation and contracts with other parties.

The HVNL also imposes a due diligence duty to the executive of any CoR party. It requires the executive to exercise due diligence to ensure their business complies with its primary duty and other safety duty provisions of the HVNL.

Drivers and other employees who are not a party under CoR still have other duties under the HVNL, drivers must also meet state and territory transport laws and road rules, and all employees have obligations under work health and safety laws.

CoR enables authorities to better target the party or parties at fault in each case, which ultimately leads to improved compliance and safer roads.

Priority social aspects

The ILO's road transport guidelines outline a number of priority areas on social aspects that can support reform, which should be underpinned by the ILO Declaration on Fundamental Principles and Rights at Work and its Follow-up (1998), and relevant ratified ILO Conventions protect and apply to all road transport workers under the conditions outlined in each Convention. In addition, the ILO guidelines include and highlight key regulatory aspects to be taken into account, including formalization, sustainable payment systems, working times, driving times and rest periods, and inspection.

Own-account transport (goods and passenger road transport)

The proper organization of the road transport and intermediation sector requires inclusion in the market-access process and operating conditions, own-account transport.

If this type of transport must be defined, as already mentioned, both for the transport of goods and passengers, and supervised for access to the activity, it must also be subject to rules like those of public transport to ensure fair competition conditions, and in particular in the following areas:

- registration to the transport register;
- authorizations per vehicle to operate;
- traffic rules;
- vehicle standards;
- vehicle safety;
- rules of access and exercise of the profession of professional drivers, including training obligations;
- driving and rest times for drivers;
- transport documents (consignment note, passenger manifest).

Transport services pricing (goods and passenger road transport)

To remedy the endemic problem of under-profitability in the sector, it is important, beyond the rebalancing of contractual relations, to introduce into the legal framework the principle of "fair remuneration" of the carrier. Indeed, in a sector where most transport professionals in emerging or developing countries do not know how to calculate their cost to define their prices allowing them to maintain a reasonable profit margin, the introduction of the principle of fair remuneration in the regulatory framework constitutes an important educational element, both for the customer and for the professional carrier.

Thus, a legal provision can be introduced in the legislation/regulation which prescribes that the transport price must allow the carrier to cover its cost price (for the operation in question) and grant it a reasonable margin. Such principle complements the competition law principles that prohibits in many countries/regions, to sell at loss that is to say that a service price must ensure at least the coverage of the cost price incurred for the realization of the operation, with a reasonable margin.

This principle of fair remuneration has been introduced into the legal arsenal of many countries, such as Côte d'Ivoire, but also Guinea, Niger, Togo.

This principle aims to send a strong signal to both carriers and customers, whether they are freight holders, passengers, or transport intermediaries, that the price of road transport, like any price of goods or services, cannot correspond to a sale at a loss, that is to say that it does not allow the coverage of at least the cost price incurred for the realization of the operation.

This in fact implies the abandonment of price systems based exclusively on the tonne or tonne-kilometer and allows the effective consideration of the time the vehicle is allocated to the customer, from its availability at the loading point to the release of the vehicle at the delivery point. It implies including in the model/standard contracts

Figure 13. Social aspects: interconnected and mutually supporting priority areas that can pave the way for more sustainable road transport operations

Source : ILO

some provisions to define the minimum acceptable waiting times at loading, border posts and offloading that are included in the negotiated price. Any further delay would then open for the carrier the right to invoice additional immobilization costs (to be expressed per hour or per day). Therefore, the transport price for a given operation must cover:

- the fixed costs incurred (expressed per day);
- the variable costs (expressed per kilometer);
- generation of a reasonable margin.

It should be noted that this price only covers the transport service itself, with additional or complementary services giving rise to additional remuneration.

NOTE: this key aspect for improving the economic conditions of the sector and restoring its profitability and therefore investment capacity, is also closely connected to other elements of the reform:

- the contractual conditions and standard contracts;
- the consignment notes on which the transport price appears;
- the control powers of the authorities in charge of commercial transport, but also of the authorities in charge of competition.

BOX 26.

Principles on payments for a sustainable industry

A national law may provide that the parties to a con-
The ILO's road transport guidelines include the first international tripartite agreement (between workers, employers, and governments) on the elements that compose a sustainable transport payment:

76. In consultation with social partners and road transport chain parties, governments should establish mechanisms to encourage predictable cost recovery for non-wage-earning commercial motor vehicle drivers by making provisions to support:

a. recovery of fixed costs – typical fixed or annual business costs that a business must pay each year regardless of how many kilometers a vehicle travels;
b. recovery of variable costs – typical variable business costs, i.e. costs (such as fuel and tyres) that vary with how many kilometers are traveled;
c. payment for personal labor at the national minimum-wage rate or higher;
d. return on investment;
e. remuneration for both driving and subsidiary non-driving work activities.

Adapt road infrastructures to road transport operations (goods and passenger road transport)

The systemic nature of the reform also highlights the need to conduct a multitude of actions in different areas in parallel but in a coordinated manner, which will be essential to achieving the overall objectives set.

Thus, many aspects of the overall reform to be undertaken will only be able to have all the expected effects if, at the level of the design, rehabilitation and maintenance of road infrastructure, certain key elements are considered, such as:

- include in road infrastructure design and maintenance policies consideration for building secure parking areas and areas for vehicles, drivers, passengers, and goods (in particular taking into account existing or future regulations on professional driving and resting times);
- consider the safety and comfort of roads and their ancillary facilities for vulnerable people and women (toilets, accommodation, etc.), including at border crossings;
- position fixed weighing stations at critical locations, while keeping them away from areas where before and after, vehicles could be handled, partially unloaded for control and then reloaded.

Road transport efficiency and sustainability are dependent not only on vehicle technology and driver behavior, but also on the larger ecosystem in which transportation occurs. Infrastructure quality, energy transition, digital tools, and integration with urban planning are key levers for increasing vehicle productivity, lowering operating costs, and reducing environmental impact (World Bank Document). Middle-income nations can make progress faster by aligning their investments and regulations with international norms, such as those set by the UNECE.

A strong, well-maintained road infrastructure is critical for lowering fuel consumption, increasing safety, and optimizing vehicle utilization. Poor road conditions can raise vehicle operating expenses by up to 34 percent,

while deteriorating surfaces increase fuel consumption by 10-15 percent due to increased rolling resistance. Middle-income countries frequently experience chronic underinvestment in maintenance and a lack of systematic performance monitoring. The UNECE European Agreement on Main International Traffic Arteries (AGR) establishes a realistic framework for road classification and geometric criteria, thereby facilitating the development of high-capacity, transnational corridors.

In practice, countries such as Türkiye have adopted performance-based maintenance contracts through public–private partnerships (PPPs), which encompass over 15,000 kilometers of roads and include measurable service criteria and consequences for noncompliance. Similarly, Morocco's expansion of its highway network through concession contracts has been cited as a best practice in North Africa.

Intelligent transport devices, which include WIM devices, automatic traffic counts, and road condition monitoring, improve road network efficiency and enforce axle load standards.

Specific traffic regulations: prohibitions and limitations (goods and passenger road transport)

It goes without saying that road transport operations whether involving goods or passenger transport, cannot develop without rules or restrictions, not only for road safety conditions (highway code and driving and traffic regulations), but also in terms of the use of infrastructure, the preservation of the quality of life of populations and environmental constraints.

However, in the context of reform, it is positive to design a general framework which defines and regulates the powers of the devolved authorities and local authorities in terms of issuing restrictive traffic or circulation regulations in order to ensure both a harmonization of the applicable principles, and also of the conditions of prior notice and information of users in order to avoid unexpected interruptions of traffic and activity.

It is also recommended to provide specific information channels via social networks, local radio, or television channels, and the relay of professional organizations to the stakeholders concerned.

Trade and transport Insurance (goods and passenger transport)

The issue of insurance in the trade, transport (goods and passengers) and logistics system must be given special attention by the authorities and stakeholders, because there is often an accumulation of insurance coverage, without purpose but with extremely significant additional trade costs.

Moreover, many economic players confuse the rules of contractual or tort liability with insurance mechanisms which are of a different nature.

It is therefore essential to place "transport insurance" in the global context of trade, and in particular in the international context of "incoterms", because a good knowledge, a good understanding, and a good interpretation of incoterms would make it possible to avoid many situations of double, or even triple insurance. All of this creates both very significant surcharges but can also create situations of lack of risk coverage that can be detrimental. Thus, national or regional regulations should already be part of a consideration of the framework applicable to international trade, and in particular incoterms.

In this remit, it is notably useless to impose local insurance coverage for goods in transit for example, when these goods are already the subject of door-to-door insurance under the purchase-sale contract for the goods in question.

Furthermore, this accumulation of insurance coverage results in an unjustified increase in the customs value of the goods in question, which also leads to the application of customs tariffs on inflated values, which further penalizes trade and ultimately increases the cost for end consumers.

As far as passenger transport is concerned, proper carriers' liability insurance is essential in case of injuries, or death of transported passengers. Indeed, in this field, it is recommended to provide for specific regulations to organize this subsector, including at the level of contractual relations; it is also recommended to provide for specific provisions in terms of insurance coverage in passenger transport.

Finally, the imperatives of strengthening the complementarity between modes of transport by better considering multi- or intermodal chains are also necessary in the field of insurance, through better involvement of supervisory

insurance authorities at the national and regional levels, in order to allow the marketing of insurance coverage adapted to these imperatives.

As far as transport insurance is concerned, governments may wish to include in the law some obligations in terms of insurance coverage as a tool to strengthen the sector but also to create a more favorable climate in the relationship between the transport operator and its clients for both goods and passenger's transport. Such measures should include traffic (third party) and vehicle insurance as well as civil and professional liability insurance coverages.

Providing clarity in the road transport and intermediation sector should focus on the following key aspects.

- **clearly identify compulsory and optional insurance coverage:** In fact, in many countries only vehicle circulation insurance and liability insurance are mandatory for commercial companies, all other areas being left to the discretion of operators and insurers. In this context it is recommended that the law/regulation defines for commercial activities, mandatory insurances but also optional insurances, and that these provisions are also adapted to the transport and intermediation sector.
- **civil liability:** In many countries, civil liability insurance is compulsory for any commercial professional activity. It aims at covering the moral or material damage created or generated by the activity of the company, its employees and subordinates to third parties. It covers the company for damages (material immaterial) created to third parties by the physical equipment and constructions and physical assets.
- **third-party liability insurance for vehicles:** This type of insurance is often called "vehicle insurance" or "third-party insurance" and is compulsory by law almost everywhere in the world. In most countries, presenting a valid third-party insurance is a pre-requirement for vehicle registration. This insurance covers the risk of a traffic accident and the resulting damages to people (injured or dead), to other vehicles or properties. There are countries where such insurance does not cover the driver of the vehicle insured; for example, this is the case in France, where a guarantee extension must be obtained for that risk.

Such coverage, contrary to what is often understood, does not cover goods transported nor public transport passengers.

- **commercial liability insurance of road carriers or transport intermediaries (goods transport):** In general, this type of insurance is not compulsory by law, but it has become indispensable, in particular in case of damage to the goods transported. It is not an insurance of the goods; the risk covered is the liability of the carrier in relation with the goods transported according to the contractual applicable obligations. The transport company, or the transport intermediary is the insured entity, the holder of the insurance. Such insurance enters into play to compensate damages, delays, or loss of the goods when the transport company is declared liable according to the applicable transport/commercial law. The coverage is often limited in amount, per incident, and per annum.
- **commercial liability insurance of road carriers for passengers and their luggage:** If. in the field of motor insurance, passengers are insured in case of injury or death, this does not apply to public or private transport of passengers using commercial vehicles.

It is recommended that public carriers take out contractual liability insurance regarding the passengers they transport. Such contractual liability insurance will cover damage to passengers, and to their checked baggage if the carrier is liable, up to the carrier's liability limits defined by law.

- **goods or cargo insurance:** This type of insurance is not compulsory by law; where it exists, the insurance covers the goods irrespective of any liability of the carrier or transport intermediary in case of damage, and the beneficiary of the coverage is the owner of the goods. The owner of the goods generally negotiates such insurance, but the carrier or a transport intermediary may also offer this service through a cargo insurance policy she/he may have negotiated with more favorable terms. In that case, the carrier, or the transport intermediary will only be a facilitator; the beneficiary of the coverage will remain the owner of the goods, and the cost of insurance remains the one of the beneficiaries.
- **commercial risks:** In addition to the specific transport and intermediation-related insurance policies, there are other types of risks and related insurance coverage that may be considered with a view to insuring commercial risks, such as risks of nonpayment by clients, risk of loss of income and turnover, or currency exchange risks. IRU provides examples of commercial transport contracts, which are available via IRU's website document library.

H. The vehicle (goods and passenger)

Section summary

This section focuses on the vehicle as a fundamental production tool in road transport. The quality and productivity of vehicles directly impact the efficiency and quality of transport services. Improved vehicle technology has led to significant advancements, such as reduced fuel consumption and enhanced safety features, which are crucial for sector reform.

The management and maintenance of technical standards ensures vehicle safety, durability, and compliance with emission requirements. The section discusses international agreements and regulations that provide benchmarks for vehicle standards and technical inspections. The implementation and enforcement of these standards are essential for optimizing fleet renewal investments, promoting environmental protection, and facilitating access to international markets.

Many low-income and emerging economies grapple with challenges related to outdated and poorly maintained vehicle fleets. The section explores fleet renewal programs as a critical component of road transport reform. These programs aim to improve road safety, protect the environment, enhance efficiency, and stimulate the purchase of locally manufactured vehicles. It further discusses various mechanisms for fleet renewal, including financial and fiscal incentives, and examines the experiences of different countries in implementing such schemes.

However, it recognizes as well that there are several challenges that hinder effective vehicle management and sector reform, particularly in low-income and emerging economies. These include poorly organized or unenforced technical standards and emissions regulations, a prevalence of obsolete vehicles, high taxes, and duties on new vehicles, difficulties in accessing financing for transport operators, among others.

The section then identifies several paths to reform, organized into four main categories:

- enhancing regulatory frameworks;
- improving vehicle inspection and standards enforcement;
- leveraging technology and addressing emerging challenges; and
- optimizing fleet renewal programs.

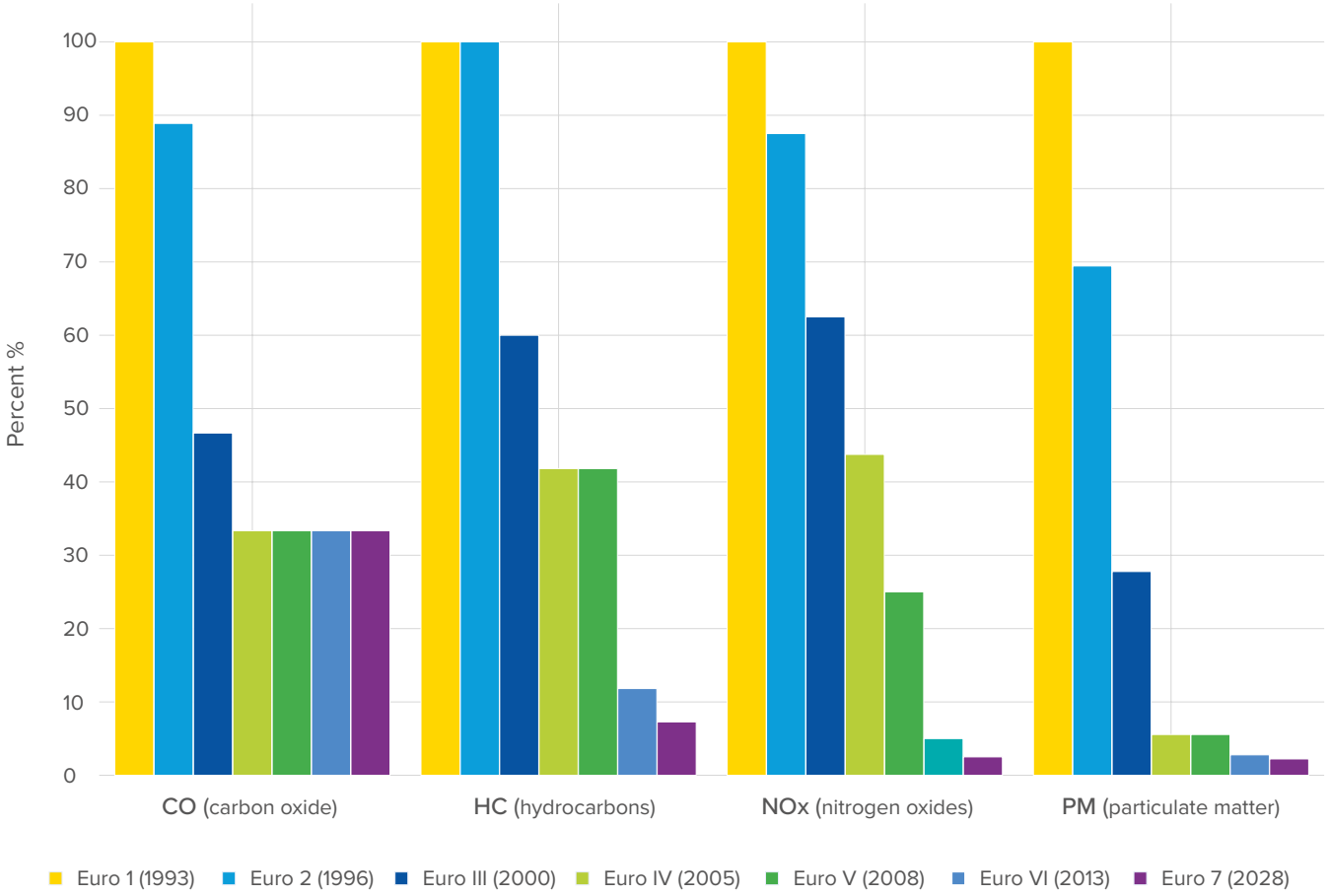
Addressing vehicle-related issues is crucial for successful road transport sector reform, particularly in low-income and emerging economies. By improving vehicle quality, implementing effective technical standards, and supporting appropriate fleet renewal strategies, countries can enhance the efficiency, safety, and sustainability of their transport systems.

1. INTRODUCTION

The vehicle is to road transport (goods and passengers) what the loom and the sewing machine are for the textile industry: an essential production tool. The better the tools, the higher the productivity and quality of the deliverable.

In the last 40 years new heavy vehicles' average consumption of fuel decreased by a third, from 45 liters per 100 kilometers in the 1970s to about 25 liters/100 km in 2025. The consumption is obviously dependent of various factors such as load, drivers' eco-skills, vehicle speed, etc. The trend in GHG emissions intensity of vehicles in the EU has been even more pronounced. Pollutants emissions are governed by regional regulations such as Euro norms in the EU, the latest Euro VI regulation setting stringent emission limits for heavy-duty vehicles, both for trucks and buses. However, the future Euro 7 regulation, which was agreed upon by the European Parliament and the Council of the EU in December 2023, sets new requirements for the type approval of vehicles, tighter pollutants emissions, and new limits of particles emissions coming from brake systems and tires behavior. The new regulation aims to reduce pollutant emissions from cars, vans, trucks, and buses, and includes emission limits, minimum durability requirements, and compliance verification methods. Additionally, the EU has established CO_2 emission standards for heavy-duty vehicles through Regulation (EU) No. 2019/1242, which targets a 15-percent reduction in CO_2 emissions by 2025 the most used trucks variant.

Figure 14. Evolution of commercial vehicle emission standards in the EU (steady-state)



Source: IRU, EU regulations

Not only medium and heavy-duty vehicles become more efficient, vehicles become also safer thanks to the integration of new technologies enhancing drivers control on the vehicle dynamics. Disc brakes, electronic braking system (EBS), front under-run protection and electronic stability control (ESC) introductions in 1990-2000, greatly increased vehicle safety performances and thus road safety overall. The latest introductions of advanced emergency braking system (AEBS), lane change warning system (LWS), and retarders in the recent years gave even more control to drivers on vehicle performance, allowing to increase safely average commercial speeds.

However, the potential for good vehicle productivity can be jeopardized by several features related to the vehicles especially in low-income and emerging economies: technical standards and emissions are poorly organized and/or enforced while fleets are typically acquired as used vehicles and obsolete. There can also be issues regarding the legislation and the ancillary areas. For example, even in many countries that prohibit the importation of second-hand trucks older than a certain number of years (in general, five to eight years) customs duties and taxes for new vehicles remain prohibitively high, and conditions for access to financing are difficult to comply with by the vast majority of transport operators. In addition, third-party liability insurance is either not mandatory as a pre-requirement for a vehicle's registration or not properly enforced. The causes of these prevalent problems are multiple and complex, and the solutions are not always easy to identify and implement. Many countries have implemented with varying degrees of successful fleet renewal schemes. The reasons for fleet renewal schemes were varied, but mostly to improve road safety, protect the environment and the infrastructure assets, improve efficiency or to encourage purchase of locally manufactured vehicles. The experiences of different countries offer valuable lessons on how to implement such schemes.

2. TECHNICAL STANDARDS FOR VEHICLES (GOODS AND PASSENGERS)

Technical standards and their proper implementation for vehicles ensure that vehicles meet specific safety, durability, and emission requirements. All vehicles degrade in service; moreover, inadequate maintenance increases the number of defective vehicles in use, which has adverse effects on efficiency, safety, and the environment. Legislation should set the minimum standards that must be complied with in order for the vehicle to be admitted into traffic and should introduce the obligation of regular technical inspections. These are paramount for improving safety and environment protection and for optimizing the investments in fleet renewal schemes by increasing the productivity of the vehicle capacity. The technical inspection of vehicles, together with training of the vehicle crew, also play an important role in accessing international markets: the higher the level of harmonization with international best practices, the shorter the list of reasons for exclusion from markets.

The UNECE through the World Forum for Harmonization of Vehicles Regulations is a source of international regulations applicable to vehicle standards and technical inspection. It is a source of good practices in land transport, which are applicable irrespective of geographical location and level of development of the countries.

As far as **technical standards** are concerned, the Agreement concerning the Establishment of Global Technical Regulations for Wheeled Vehicles, Equipment, and Parts which can be fitted and/or be used on Wheeled Vehicles can be taken as a reference. It was adopted on June 25, 1998, known as the GTRs and complemented by numerous regulations (24 regulations to date) aimed at defining international standards to respect when producing vehicles and their equipment.

As far as technical inspection is concerned, the following agreements are the reference:

- the Convention on Road Traffic (Vienna, 1968), which establishes the principle that vehicles of more than 3,500 kg used for the carriage of goods and their trailers are subject to mandatory technical inspections.
- the 1971 European Agreement supplementing the Convention, which goes further, establishing rules to be observed in respect of noise and pollutant emissions, and imposing an international technical inspection certificate.
- the Agreement Concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles and the Reciprocal Recognition of Such Inspections, which was adopted in 1997.

To complement the agreement, specific rules have been adopted:

- Rule No. 1 – Protection of the environment.
- Rule No. 2 – Uniform provisions for periodical technical inspections of wheeled vehicles regarding their roadworthiness.
- Rule No. 3 – Periodical technical Inspections of motor vehicles using compressed natural gas (CNG), liquefied petroleum gas (LPG) and/or liquefied natural gas (LNG) in their propulsion system.
- Rule No. 4 – Uniform provisions for periodical technical inspections of motor vehicles equipped with electric or hybrid propulsion system(s) regarding their roadworthiness.

The UNECE's Global Technical Regulations (GTRs), created under WP.29, establish a consistent framework for EV safety, battery durability, and charging system compatibility. Countries like as Chile have established national EV initiatives that include lower import levies, public charging infrastructure improvements, and incentives for electric buses and delivery trucks. Pilot initiatives in urban logistics, such as last-mile delivery or public-sector fleets, can offer viable EV entry points in cities with high vehicle density and pollution levels. Furthermore, battery second-life rules and recycling legislation should be developed early on to minimize future environmental issues.

All these legal instruments provide a solid basis that countries may wish to build on, irrespective of their status with regard to these agreements.

Generally speaking, it is necessary to distinguish between different stages in a vehicle's lifecycle. To resolve this, it is necessary to distinguish:

- technical and environmental compliance with international, regional, and national standards in the country of first registration, where it is subject to type approval or individual approval aimed at confirming the road worthiness of the vehicle. It is sanctioned by a certificate of approval (per type or individual);

- periodic technical inspection that aims at ensuring regularly the vehicle compliance with applicable regulations, it is sanctioned by a technical inspection certificate; and
- processing the end of life of a vehicle and its removal from the fleet.

This is quite simple when the vehicle is produced and registered in the same country. However, when the vehicle is subject to export/import, whether new or used, the problem takes on another dimension. Indeed, the question then arises of the vehicle's exit from the country of production and first registration, then of its entry into the country of importation. This is the most widespread configuration in many emerging or developing countries that do not have local vehicle manufacturers.

In this case, the question arises of the procedure to be followed to allow the entry of new or used vehicles into the country of importation. In general, this generates a procedure of reception of the vehicle in the country of importation which then results in its registration. This reception procedure takes various forms but is generally composed of three elements: tax customs clearance, technical reception, and homologation, and registration.

In many countries, technical inspections of vehicles are generally ineffective in ensuring minimum levels of roadworthiness. The standards are often impossible to achieve without enormous repair costs on many vehicles. The lack of suitable testing equipment can also constrain the scope of the inspections. In practice, the inspectors may even lower the standards so that most vehicles can pass the test. Establishing effective administrative controls over the inspection standards and code of conduct is extremely difficult. Unless the government acts, administrative control becomes even more difficult and the basis for passing the inspection becomes extremely arbitrary, with enormous scope for corruption. Enforcement efforts generally become seriously undermined.

Ideally, the national legislation on technical inspections should address the following minimum conditions and areas:[48]

- A national authority should be established and equipped to handle the technical inspection of vehicles, while the inspections themselves may be carried out by designated entities or bodies.
- Vehicles dedicated to the professional transport of goods, including those involved in own-account, trans-

BOX 27.

Example from Togo

As part of the Logistics Services Competitiveness Program financed by the World Bank, the International Motor Vehicle Inspection Committee (CITA) conducted a mission related to the modernization of the technical control system for vehicles and observed the procedure applied to imported vehicles, which in its observation report from September 2017 is described as follows:

1. The importer goes to the Foreign Trade Single Window to initiate the reception of imported vehicles and pay customs taxes and duties.
2. After verifying the import documents and paying the import taxes and customs duties, customs send a certificate of conformity via the customs unit located on the campus of the Road and Rail Transport Directorate (DTRF) to the head of the Vehicle Technical Inspection Directorate (DCTV). The customs unit on the DTRF campus was created to limit fraud.
3. The DCTV requests proof of payment of customs duties and vehicle insurance. The DCTV is linked to the insurance network (via the insurance pool) and has access to the customs software for duty payment management (SYDONIA). The insurance pool is a centralized private insurance system established to limit insurance fraud (particularly the presentation of false insurance certificates): vehicle owners are insured by the insurance pool, not by a specific insurance company.
4. Approval is carried out by the DCTV inspector (on the DTRF website) and includes a visual and administrative inspection of the vehicle (chassis number, power, steering wheel position, etc.).
5. The technical inspection is then carried out by the technical inspection services.
6. The vehicle is registered if the technical inspection is favorable.

48 Annex 1 to the Consolidated Resolution on Road Traffic (RE1) contains a list of items that should be included in a periodic vehicle inspection. It also identifies the vehicle system or component to be inspected, gives the method of inspection, and provides information on the criteria to be used to determine whether the vehicle's condition is acceptable.

port should be required to undergo a technical inspection at regular intervals after admission to traffic in order to ascertain that they satisfy statutory requirements, particularly regarding the basic road traffic safety and environmental protection regulations.

- Weight and dimension limits should be set for the purpose of the regulation. It may be recommended to apply the above obligation to vehicles with permissible maximum mass above 3,500kg.
- The intervals referred to above may be reduced to six months for vehicles requiring more rigorous testing, such as those used for public transport and vehicles carrying dangerous goods.
- Vehicles subject to change of ownership may be subject to technical inspection in addition to the intervals mentioned above.
- Moreover, vehicles which have been seriously damaged in accidents should be submitted to a technical inspection with stricter checks before they are allowed to go back into traffic.
- During random roadside checks, it should also be ascertained that the vehicles comply with the mandatory periodic technical inspections.
- Sanctions and fines may be specified by law in case of noncompliance, including an obligation to repair and the possible immobilization of noncompliant vehicles.
- Control components and the number of control points.
- Special requirement applicable to vehicles dedicated to transport dangerous/hazardous goods.

While the benefits are clear, the options for government to improve roadworthiness are limited, especially in low-income and emerging economies. If strict enforcement of the standards is practically impossible or if the government does not wish to abandon the inspections completely, then steps can be taken to define more clearly the essential minimum requirements for passing the inspections. This is the approach adopted by many countries. For example, in the Philippines an attempt was made during the 1980 to distinguish between 'musts' and 'needs'. The 'musts' were the standards that all vehicles must reach to pass the test, while the 'needs' were the standards which should ideally be achieved for safe operation. This approach offered the potential advantage that basic minimum standards could be set for all vehicles, while owners could receive advice to make their vehicles more roadworthy. However, initially these attempts

BOX 28.

Example of WAEMU Directive No. 16/2009

Article 7: Controlled components

The vehicle technical inspection covers the following main components or components:

- Vehicle identification (registration number, serial number, registration document, other vehicle documents);
- Bodywork;
- Braking system;
- Steering;
- Visibility (field of vision, condition of windows, mirrors, windshield wipers, windshield washers, antifog system);
- Lighting system and electrical system components;
- Axles, wheels, tires, suspensions;
- Chassis and chassis mountings;
- Other equipment (seat belts, fire extinguisher, warning triangle, first aid kit, horn, speedometers, locks and/or anti-theft devices, wheel chocks, tachograph, speed limiter, airbags);
- Nuisances (noise, exhaust fumes, electromagnetic interference).

Article 8: Number of inspection points

The number of inspection points on components varies depending on the vehicle category and is a minimum of seventy-five (75) for light vehicles and ninety (90) for heavy vehicles. The minimum number of inspection points per vehicle component is:

- Vehicle identification: two (2);
- Bodywork: one (1);
- Braking system: ten (10) to twenty (20) depending on the vehicle category;
- Steering: five (5) to eight (8) depending on the vehicle category;
- Visibility: three (3) to four (4) depending on the vehicle category;
- Lighting system and electrical system components: twenty-one (21);
- Axles, wheels, tires, suspensions: eleven (11);
- Chassis and chassis mountings: thirteen (13);
- Other equipment: seven (7);
- Nuisances: three (3).

failed because they were only introduced for taxis and school buses and the vehicle owners objected to being discriminated against. This suggests that an appropriate approach to be recommended could be:

- to introduce step by step increasingly higher standards of inspections;
- to inform sufficiently on the new standards before implementation so as to give vehicle owners time to adjust to the future higher standards;
- to define the new standards in order to encourage compliance and reduce scope for corruption;
- to generalize the new standards to all vehicles concerned without exceptions, starting initially with purely advisory inspections as an incentive to comply;
- to define inspection charges on realistic estimate of the real costs, so that the necessary equipment can be obtained; and
- to define parallel programs of roadside spot checks, widely advertised in the media as part of a road safety campaign, in order to monitor the effectiveness of the approach.

Consideration could also be given to delegating the vehicle inspection process to a private company based on a concession of public service. Such an approach is adopted in some African and European countries but requires close monitoring by government to ensure that the inspections are carried out in the proper manner.

Digitalization and EV's last developments

Digital fleet management provides a high return on investment by decreasing downtime, optimizing routing, and increasing regulatory compliance. Telematics solutions, which include GPS tracking and fuel sensors, as well as predictive maintenance and electronic logging devices, can reduce fuel use by 5-15 percent and vehicle idle time by up to 20 percent. The UNECE Working Party on Road Transport (SC.1) and the World Forum for Harmonization of Vehicle Regulations (WP.29) encourage the use of digital tachographs, e-CMR (electronic consignment notes), and real-time data systems, especially for cross-border operations.

Georgia's World Bank-supported introduction of a digital freight permit system has increased transparency and cut permit processing times by more than 50 percent. Similarly, Ukraine's ProZorro e-procurement platform incorporates transportation logistics for governmental contracts, increasing efficiency and lowering corruption. In middle-income nations, providing small and medium-sized transport operators with affordable digital tools and training can help reduce the digital divide while also encouraging compliance with vehicle safety and environmental requirements.

By 2023, the global stock of EVs had surpassed 40 million units, with robust demand in China, Europe, and North America. However, most middle-income countries' EV penetration remains around 1 percent of the fleet due to high purchase costs, inadequate charging infrastructure, and grid capacity limits. Heavy-duty EVs, notably electric trucks, are coming, although they are limited by range, battery size, and cost.

The UNECE's GTRs, created under WP.29, establish a consistent framework for EV safety, battery durability, and charging system compatibility. Countries like as Chile have established national EV initiatives that include lower import levies, public charging infrastructure improvements, and incentives for electric buses and delivery trucks. Pilot initiatives in urban logistics, such as last-mile delivery or public-sector fleets, can offer viable EV entry points in cities with high vehicle density and pollution levels. Furthermore, battery second-life rules and recycling legislation should be developed early on to minimize future environmental issues.

As urbanization accelerates – it is expected to reach 68 percent of the world population by 2050 – cities confront increasing pressure to manage freight movements while minimizing congestion and pollution. Smart cities use data, automation, and networked infrastructure to optimize transportation systems. UNECE promotes Sustainable Urban Mobility Plans (SUMPs) as a strategy for incorporating freight into urban planning while balancing mobility requirements and environmental goals.

Cities such as Bogotá, Colombia, have implemented scheduled delivery windows, electric cargo bikes, and digitally regulated loading zones to combat last-mile congestion and air pollution. Smart traffic signals and GPS-based public transportation monitoring have improved urban mobility in Tbilisi, while also providing a data layer for future freight integration. Middle-income countries can take practical initiatives such as introducing digital curbside management systems, rewarding off-peak deliveries, and establishing urban consolidation centers for pooled logistics. Coordinated governance among transporta-

tion agencies, municipalities, and the corporate sector is critical to ensuring that smart city solutions are inclusive and scalable.

3. TRADE AND OBSOLESCENCE OF VEHICLES (GOODS AND PASSENGER)

There is a thriving global trade of used vehicles, particularly for low- and middle-income countries. To meet the growing demand for affordable transportation, low- and middle-income economies heavily rely on importing used vehicles, with many countries importing most of their vehicle stock. For example, Japan has regularly exported one million used vehicles annually to over 100 different countries all over Asia, Africa, and the Middle East. The Republic of Korea exported over 220,000 used cars and trucks in 2007 mainly to Viet Nam and the Russian Federation, and the same year (2007) media reported that used car imports from the United Kingdom to Ireland hit 50,000 a year. In Europe, after political changes took place at the beginning of 1990s and most of the trade restrictions were eliminated, the used vehicles were traded eastwards from high-income countries to lower-income countries in "waves": as the vehicles depreciated, they were traded to lower-income countries that could accept and pay for lower quality. This also coincided with stricter environmental standards taking time to be adopted and enforced in the respective lower-income new democracies.

One of the main drawbacks of used vehicles is that as technical standards evolve, older vehicles do not comply with the latest regulations and become obsolete. The obsolescence of the fleet of commercial vehicles has a series of negative consequences on:

- the quality of transport services, their reliability, and predictability;
- the economic and financial viability of operators: high operating cost (increased fuel, oil, and tire consumption, repeated breakdowns and costly maintenance and repairs) reduced profit and drastically limited operators' capacity to invest in new vehicles;
- the direct impact of the sector on environment (increased congestion, consumption, and emissions); and
- the road safety performance (increased number of accidents caused by the bad condition of the vehicles).

These effects are even more dramatic where the road transport market is poorly organized and where operators have difficulties in accessing financing to develop their activities. The design of the reform should be based on detailed preliminary assessment of the existing situation, resources available, and economic, financial and social projections. Its implementation should be done in a coordinated manner, aiming to ensure a sustainable modernization of the road transport sector and a maximization of the utilization of the (new) vehicles. For the above reasons that trade in used vehicles is often regulated on trade and environmental grounds.

a. Restriction on importing used vehicles

Several countries prohibit the importation of used vehicles. This is for a variety of reasons (Table 4) – including a fear that a country can become a junkyard for used vehicles in poor condition, with all the consequent risks for safety, efficiency, and environmental protection. It is also common for countries that manufacture or assemble vehicles to encourage exports in order to drive local consumption, although admitting it openly remains rather exceptional. Most countries have put in place certain restrictions on new and used vehicles brought into a country based on age, technology (e.g., diesel vehicles), and emissions. These often go hand in hand with economic instruments such as subsidies (for example, rebates, or buyback programs), taxes and tariffs (for example, vehicle registration fees, road user charges, and various other taxes).

In general, the more recent restrictions on used vehicles are justified based on environmental impacts and especially to minimize GHG and harmful emissions.[49] The measures aim to reduce air pollution, improve road safety, and ensure that imported vehicles meet higher environmental standards. Often, the condition of vehicle fleets can be improved by proper maintenance by well-trained technicians. With progress of manufacturing technologies and the global improvement of road infrastructure and fuel quality, and with regular technical inspections and proper maintenance, the average life span of vehicles is considerably longer than three or four decades ago. Figure 8 illustrates the dramatic decrease in emissions in the EU as a consequence of the technological developments and introduction of Euro standards.

49 UNEP (2020), *Used Vehicles and the Environment: A Global Overview of Used Light Duty Vehicles: Flow, Scale and Regulation*.

However, even with proper maintenance, more wholesale fleet modernization can be necessary and typically accomplished through real fleet renewal programs. Such programs typically exist in the form of incentives within a global reform of the transport sector and may combine and incorporate various mechanisms addressing financial, fiscal, or other types of measures.

b. Fleet renewal programs

In the majority of countries where a reform of road transport services is needed, the trucks used to carry goods both for commercial purposes and for own account are old and in poor technical condition, hence presenting a low economic potential and a high risk for road safety and environment. In "do-nothing" scenarios, the condition of these trucks worsens, the repairs' cost increases, as well as the TCO, and the environmental and safety risks. Furthermore, the transport offer drops, the operators focus exclusively on selected segments of the business and compensate their losses by increasing transport tariffs. The solution is complex and does not entail just replacing the vehicles, because a new vehicle driven on bad roads by a bad driver will jeopardize any gains. Rather, policy makers can offer financing or incentives to upgrade transport fleets.

Table 4. Examples of regulations restricting import of used vehicles

Country	Objective	Specific provisions
Andean Community	Protect local industry and ensure safety standards (1993)	Bans imports from other countries of used cars, trucks, and buses; bans trade among member nations
Bolivia	Protect local industry and ensure safety standards (January 2015)	Prohibits importation of cars over 5 years old, diesel vehicles with engines smaller than 4,000 cc, and all vehicles using LPG
Brazil	Protect local industry and ensure safety standards	Prohibits importation of used vehicles; special authorization required for used parts
Chile	Control the quality and environmental impact of vehicles entering the country	Prohibits importation of used vehicles except certain special-purpose vehicles; 9% import duty plus VAT on such vehicles
Costa Rica	Control the quality and environmental impact of vehicles entering the country (2021)	Allows importation of used vehicles but imposes high tax up to 54% of assessed value depending on age; various cumulative taxes applied
Jordan	Ensure the quality and environmental standards of the vehicles	Importation of used vehicles less than five s old allowed with specific regulations
Mexico	Control the quality and environmental impact of vehicles entering the country (December 2023)	Importation allowed under strict conditions, such as vehicles being exactly 10 years old; increased import tax to 15%
Pakistan	Protect local industry and ensure safety standards (2013)	Age restriction (not older than 5 years) on import of used commercial vehicles; allows importation of some special purpose used vehicles
South Africa	Protect the local motor vehicle manufacturing industry	Permits only issued under specific circumstances, such as for returning residents or special-purpose vehicles
Türkiye	Protect local industry and ensure safety standards	Prohibits importation of remanufactured, rebuilt, used, and reconditioned vehicles; only current or following models allowed; special laws allow tax exemption for returning residents
United Arab Emirates	Ensure safety and compliance with state standards	Importation allowed if vehicle conforms to state standards and steering wheel not modified; prohibits vehicles involved in accidents or used as taxicabs or police cars

Financing and fiscal incentives are major factors in fleet renewal schemes. In countries with emerging markets and unstructured road transport industry, small road transport operators struggle to secure financing for the replacement of their obsolete and inefficient fleets. In many cases, even new vehicles domestically produced remain unaffordable to these operators. Together with other factors (lack of training, etc.) these keep their potential locked. In such cases, allowing the importation of used vehicles in good technical conditions (certified formally) may prove to be a good option, contributing to the creation of the enabling environment for the provision of safe, clean, and affordable transport services. In order to mitigate potentially adverse effects, the governments of countries where vehicles are manufactured or assembled, might also strive not to affect the interests of their domestic industry when designing the importation rules.

Adopting one policy or another must be preceded by careful economic and social consideration of all the benefits and disadvantages, and due consideration must be given to the design and implementation of mitigating measures; for example, where affordable personal mobility is impeded by restricted import policies, public transit alternatives must be planned and made available.

Many countries in the world have implemented vehicle replacement programs in forms that depended on various factors: development priorities, level of income, if the country is manufacturing vehicles, situation of sectors that are ancillary to transport (banking and insurance), etc. As a rule, the programs were designed to encourage consumers to trade in (and scrap, in many cases) their old, inefficient vehicles, in exchange for more efficient ones. With few notable exceptions, the programs were adopted in 2009, amid the major economic crisis, and set to last for a limited time, with two major objectives: to encourage vehicle purchase and thus stimulate economic growth, and to protect the environment. In Türkiye, the scrapping scheme was placed under the road safety improvement priority. In general, the scrapping and buyback programs covered private cars while the subsidized fleet renewal schemes covered commercial vehicles (trucks and buses).

A commonly used fiscal mechanism is the “Feebate” approach. This is a fiscal policy designed to encourage the purchase of more efficient, lower-emission vehicles by imposing a fee on inefficient technology and providing a rebate on efficient vehicles. The policy uses a “benchmark” to determine who pays and who receives benefits based on fuel economy or emissions levels, and a “rate” to set the marginal costs and benefits. Depending on the benchmark, feebates can generate revenue, be revenue-neutral, or subsidize cleaner car purchases. Best practices for implementing feebate programs include a continuous rate line, a self-funding benchmark, a linear metric like CO_2 emissions, and adjustments based on vehicle size. Properly implemented, feebate programs can promote the adoption of clean vehicle technologies and support vehicle fleet renewal schemes. Additionally, registration fees and periodic in-use fees based on CO_2 emissions and fuel consumption can further incentivize low-carbon, fuel-efficient vehicles.

c. Scrapping schemes and buyback programs

Scrapping schemes and buyback programs have been implemented in various countries to accelerate the retirement of older, often more polluting transport means, motivated by safety, environmental, efficiency, or economic reasons. The success of these programs varies depending on legislation and accompanying measures. Buybacks offer incentives, either monetary or in other forms, to owners to voluntarily scrap their older vehicles, with incentives provided directly to the owner, as tax benefits, or paid to the vendor of the newer transport means. While governments typically provide these incentives, the private sector, and local administrations also contribute in some cases. Large-scale buyback policies were introduced in the 1990s in several European countries, including France, Spain, Italy, Hungary, Norway, Denmark, and Greece, as well as in several US states and Canada. Table 2 presents examples of different vehicle tax regimes.

Most scrapping and buyback programs are popular wherever implemented. However, most tend to be for private cars rather than commercial vehicles. Although literature evaluating scrapping schemes is rather rich, a full assessment of the pros and cons of scrapping schemes, including all the dominant effects and their determinants in an advanced way, has not been done yet. The balance of costs and benefits from these programs are neither straightforward nor easy to determine. All schemes had rather large costs and each scheme had weaknesses and strengths; their success depended on multiple factors: implementing arrangements, magnitude of the program, sustainability. On the positive side, it seems obvious that there are environmental improvements. According to research68 the most favorable cost-effectiveness scores of scrapping schemes occur in large densely populated areas, and only (or mainly) if cars with old (or no) emissions

Table 5. Examples of vehicle scrapping schemes

Romania			
Objective	**Coverage and eligibility**	**Requirements**	**Operation**
Eliminate old vehicles and replace them with newer, less polluting ones	• Cars older than 10 years (5 years for public institutions) • Vehicles must be in working condition • Both individuals and legal persons (NGOs, public institutions, commercial companies) can apply	• Fulfill obligations toward state and local budgets, and Environmental Fund • No recorded financial or customs violations • Not in insolvency, liquidation, or bankruptcy • No sponsorship of activities with negative environmental effects • No state aid above a specific ceiling in the past three years • Discount on new vehicle price if old car is scrapped at an authorized center • Proof of destruction and voucher for premium (up to €1,500) • Eco-bonuses (€120 each) for new hybrid or Euro 6 vehicles • Voucher transferable between individuals, eco-bonus not transferable • Legal persons must scrap their own old vehicles • Discount value for each new vehicle not to exceed three scrapping premiums	Increased from 14,607 cars traded in 2005 to 32,327 in 2010

Germany			
Objective	**Coverage and eligibility**	**Requirements**	**Operation**
Accelerated vehicle retirement	• Cars older than 9 years, registered in owner's name for at least one year • Only individuals eligible for premium	• New car can be bought from another person or company if not registered with them for more than 14 months • Designed to cover 600,000 cars with a budget of €1.5 billion • Car sales increased dramatically (40% higher in March 2009 compared to March 2008)	Small and upper small car segments profited (84% of newly registered cars) Required owners to retire vehicles from circulation and take them to junkyards Discovered illegal scheme exporting 50,000 scrapped vehicles to Africa and Eastern Europe

United States			
Objective	**Coverage and eligibility**	**Requirements**	**Operation**
Stimulate expenditures by households, businesses, and governments	• Trade-in of an older, less efficient vehicle that met certain criteria • Eligible vehicle types: automobiles (passenger cars), category 1 trucks (SUVs, small trucks, minivans <6,000 lbs), category 2 trucks (vans, pickup trucks from 6,001 to 10,000 lbs), category 3 trucks (large vans, trucks from 10,001 to 14,000 lbs) • Traded-in car must have been registered and in use for at least one year • Traded-in car must have a federal combined city/ highway fuel-economy rating of 18 or fewer mpg • Purchase of a new car priced at maximum US$45,000 and rated at least 4 mpg better than the old one for US$3,500 voucher • Purchase of a new car rated at least 10 mpg better for US$4,500 voucher	• Owner brings a “clunker” to a dealership to trade in • Dealer gives a voucher worth US$3,500 or US$4,500 to be applied toward the purchase (or long-term lease) of a new vehicle • Dealer disables the engine of the trade-in vehicle by running a sodium silicate solution through the engine, causing its permanent destruction • Dealer sends the disabled vehicle to either a salvage auction or disposal facility • Dealer must prove that the vehicle was successfully destroyed to the National Motor Vehicle Title Information System (NMVTIS) to be reimbursed for the voucher by the National Highway Transportation Safety Administration (NHTSA)	• Program spanned over a little more than one month • Cost for the federal government: US$3 billion • Resulted in 690,114 dealer transactions • Average fuel efficiency of trade-ins: 15.8 mpg • Average fuel efficiency of new cars purchased: 24.9 mpg (58% improvement) • 84% of vehicles traded in were category 1 trucks • 59% of vehicles purchased were passenger cars • Slight improvement in fuel economy and some reduction in carbon emissions • Reduction of carbon dioxide emissions: 8.58 to 28.28 million tonnes • Cost per tonne of carbon dioxide reduced: US$91 to US$301 • Criticized for lack of recycling incentives; shredding preferred over recycling • Estimated 50,000 scrapped vehicles exported to Africa and Eastern Europe

control technologies are scrapped to prevent further re-circulation of vehicles or selling to developing countries, as well as avoiding the importation of old cars for the sole purpose of benefiting from the schemes. Typical measures to avoid such behavior include imposing a minimum time requirement that the vehicle should be registered in a state or country, a valid (safety or maintenance) inspection, the stipulation that the vehicle be driven to the scrapyard under its own power, or other technical requirements. Besides, an OECD/ITF assessment69 of the United States, Germany, and France schemes also concluded, among others, that for the monetized benefits in terms of CO_2, NOx, or safety to exceed the costs associated with vehicle replacement, scheme design should ensure that larger and older “dirty” vehicles are traded in for lighter, cleaner ones equipped to higher safety standards. If anything else is allowed by the scheme, then CO_2, NOx, and safety benefits are eroded. The schemes should ideally target older vehicles that are still being driven. In Europe, for example, this means covering pre-1992 cars that predate Euro standards and Euro-1 cars produced from 1992 to 1996.

d. Fiscal incentives

The number of schemes aimed at supporting the private sector (road transport operators) to acquire trucks for commercial transport is smaller in number and value than those for private cars. In general, in countries where such schemes are needed the most, the ancillary sectors such as banking and insurance are neither well-established nor well-functioning. The market is dominated by small road transport operators, informal, who are not organized in any form of professional associations. Accounting books and liability deriving from formal transport contracts between the carrier and the client are quasi-inexistent, and there is little predictability of revenues. Consequently, small transport operators represent higher-risk customers for banks and other financial institutions because of weak or no guarantees for reimbursement in case of possible default on their debt. Furthermore, banks would require that the truck bought with a long-term credit is insured against all risks, which represents an additional cost for the borrower. In the absence of bank loans, many operators buy vehicles with funds from outside the banking circuit: own funds, family contribution, or supplier financing. These create a vicious circle, because for a small amount invested the only affordable vehicle would be a cheap, most likely used one, in a questionable condition. Fleet renewal programs should thus be one of the core elements of reform as they may represent excellent incentive mechanisms that would help in creating acceptance and ownership of the reform by the profession. From the various schemes implemented, it appears that fleet renewal programs are a combination of measures of different natures, such as:

- fiscal incentives;
- direct financial assistance;
- facilitated access to credit; and
- control and enforcement.

Several countries in West Africa implemented complex fleet renewal schemes. In most of the countries, the main reasons for the programs are to ensure compliance with the regional weight standards and to improve road safety performance. Some of the most relevant examples are described in Table 6.

Table 6. Fleet renewal schemes in Côte d'Ivoire and Burkina Faso: Timeline and objectives

Côte d'Ivoire	Burkina Faso
2008: Discussions to create a framework for fleet renewal **2009:** The Government establishes the Fund for the Development of Road Transport (FDTR) FDTR initially provided sureties towards banks and financial institutions for fleet renewal. **2014:** The FDTR's legal status changes to a public establishment with commercial and industrial character The FDTR's Managing Council includes representatives from key ministries, road transport professional body, and vehicle traders' organizations. **Objective:** To facilitate financial assistance for transport operators to renew their fleet. Public–private partnership involving banks, financial institutions, vehicle traders, and state bodies. **Goal:** To finance 300,000 vehicles (new or used less than 5 years) by 2020 with a budget of FCFA 150 billion (nearly US$ 260 million) The FDTR is setting up internal procedures and eligibility criteria; no concrete proposals yet.	**2011:** The Government adopts the exemption of taxes, duties, and VAT on new or used vehicles Program led by the Ministry of Transport and managed by a Piloting Interministerial Committee The Committee includes representatives from the ministries involved, drivers' organizations, road transport federations and associations. **Objective:** To acquire 400 heavy vehicles (articulated vehicles) and 200 vehicles for oil transport **Eligible vehicles:** New vehicles less than 6 months old and with mileage under 6,000 km; used vehicles less than 5 years old. Vehicles must comply with UEMOA rules: rolling gross weight between 28 and 51 tonnes (59 tonnes for controlled temperature vehicles and petrol tanks). Vehicles cannot be sold before 7 years of use within the benefiting company; VAT and import taxes become due if sold earlier. As of 2015, the Committee has handled over 600 files, leading to import authorizations for around 700 vehicles (300 for general cargo and 400 for petrol transport).

e. Vehicle leasing

Leasing is an effective strategy for modernizing commercial vehicle fleets, offering numerous benefits to transport operators. By opting for leasing instead of purchasing, companies can access the latest vehicle models equipped with advanced technology and enhanced safety features without the significant up-front capital investment. This approach allows businesses to maintain a modern and efficient fleet, which can lead to improved fuel efficiency, reduced maintenance costs, and lower emissions. Additionally, leasing agreements often include maintenance and repair services, further reducing the operational burden on transport operators. The flexibility of leasing terms also enables companies to adapt to changing market conditions and scale their fleet size according to demand. Overall, leasing provides a cost-effective and flexible solution for fleet modernization, ensuring that transport operators can stay competitive and meet evolving regulatory standards.

Typical considerations for leasing include:

- **Creditworthiness:** Leasing companies often require businesses to demonstrate good credit history and financial stability. This ensures that the lessee can meet the lease payments over the term of the lease.
- **Lease agreement terms:** The terms of the lease agreement, including the duration, mileage limits, and maintenance responsibilities, must be defined. Lease terms can vary, typically ranging from two to five years.
- **Down payment:** While some leases may not require a down payment, others might. The down payment amount can vary based on a lessee's creditworthiness.
- **Insurance:** Lessees are usually required to carry comprehensive insurance coverage for the leased vehicles. This protects both the lessee and the leasing company in case of accidents or damage.
- **Maintenance and repairs:** Some lease agreements include maintenance and repair services, while others may require the lessee to handle these responsibilities. It is important to understand what is covered on the lease.
- **Residual value:** The residual value of the vehicle at the end of the lease term is a key factor in determining lease payments. This is the estimated value of the vehicle at the end of the lease period.
- **Mileage limits:** Lease agreements often include mileage limits, and exceeding these limits can result in additional charges. It is important to estimate the expected mileage accurately.
- **Early termination fees:** If the lease is terminated early, there may be penalties or fees. Understanding these terms is crucial before signing the lease agreement.

While attractive, leasing presents some challenges in low-income countries and for small fleet operators. These include a lack of a robust legal and regulatory framework to support leasing contracts, limited availability of financial services, and an underdeveloped financial sector. Businesses may struggle to meet creditworthiness criteria, and high interest rates can make leasing less attractive. Additionally, access to skilled mechanics and spare parts is often limited, leading to higher operational costs, though vehicle as a service, an evolution of leasing, could address it. Economic instability and fluctuating exchange rates pose further risks, affecting the affordability and predictability of lease payments. Cultural and institutional barriers, such as a preference for owning assets and a lack of trust in leasing companies, also hinder adoption. Addressing these challenges is crucial for the successful implementation and adoption of leasing as a viable option for modernizing commercial vehicle fleets in low-income countries.

f. Vehicle renting and letters of authority

Renting and letters of authority (LOAs) are two important strategies for accessing newer commercial fleets.

- **Renting for commercial fleets:** Renting commercial vehicles offers flexibility and cost-effectiveness for fleet managers. It allows businesses to access additional capacity and equipment without committing to long-term financial investments. This is particularly useful for managing short-term surges in demand, such as seasonal peaks or promotional events. Renting also enables companies to trial new opportunities, such as expanding into new territories or testing alternative routes, without the risk of long-term leases or ownership. Additionally, renting provides an opportunity to test different equipment sizes and configurations, evaluate efficiency, and explore alternative-fueled vehicles. This approach helps businesses stay agile and responsive to market changes while maintaining a modern and efficient fleet.
- **LOAs for commercial fleets:** An LOA is a formal document that authorizes a third-party representative to act on behalf of a company in specific business tran-

sactions. For commercial fleets, an LOA can be used to authorize representatives to negotiate and finalize commercial transactions, such as purchasing goods or services, signing shipping documents, or handling logistics. This helps streamline communication and authority between the involved parties, ensuring that all actions are within the specified scope of the representative's powers. LOAs improve efficiency, reduce risks of misunderstandings, and provide a formal record of the representative's authority, which is crucial for auditing and compliance purposes.

By leveraging renting and LOAs, businesses can effectively manage their commercial fleets, ensuring flexibility, efficiency, and compliance with regulatory requirements. However, as with leasing, low-income economies and small operators may lack the policy, regulation and financing facilities to underpin these methods to access modern operating vehicles.

4. PATH TO REFORM

While obsolescence of the fleet is an endemic obstacle to the modernization of the road transport sector (goods and passenger transport), reform in low-income and emerging economies is best conceived as an incentive mechanism to operators to enhance the profitability of their operations. It should not be an isolated objective of the reform. Experience has demonstrated, e.g., in Côte d'Ivoire, that establishing a fleet renewal program without creating primarily the enabling environment to improve the overall functioning and economic condition of the sector, leads to insignificant (if any at all) results.

- there is no justification of a program that facilitates the financing of new trucks and buses if the operators cannot afford to reimburse their loans;
- there is no progress if the vehicle is new, but the driver is unprofessional, or the manager has no skills to run the business and the vehicle is often idle;
- facilitating the investment in new or used but better vehicles would make little sense if the old vehicles are not taken out of the market;
- develop adequate maintenance capacity able to handle locally new technology and engines of new generation;
- in general, a fleet renewal program entails, at least at its beginning, important impacts on the state budget, either directly in case of financial assistance (subsidies) or indirectly through budget loss due to the exemption of tax; and
- availability of spare parts for the renewed vehicles (trucks, buses, coaches, even taxis). This condition underscores a need to cover improvement of environment impact which implies working on improving petrol quality in certain regions to accept Euro 5 and more engines.

Therefore, if the reform envisages a fleet renewal program, it is important to include it from the very outset in the framework of the global modernization policy. The program should be designed realistically, based on an assessment of needs and capacities to satisfy them, and with due consideration of the ways to ensure a program's sustainability. Such a program could also be ambitious and aim to become a viable economic model in the medium or long term, in the sense of being entirely financed from sources other than public budget.

Just like any reform element, the success of such a program depends on clarity, transparency, proper governance, and monitoring, and prompt sanction of deviations, irregularities, or abuses.

a. Drivers of reform

Reform around vehicles in road transport services (goods and passenger transport) is driven by several important motivations. The main ones are:

- Enhancing efficiency. Introducing and incentivizing the use of newer vehicles (trucks, buses, coaches, and even taxis) leads to more fuel efficiency, which translates to lower operational costs for commercial transport services. Additionally, modern vehicles typically require less frequent and less costly maintenance, further contributing to cost savings. These efficiencies can lead to increased profitability and competitiveness in the market.
- Regulatory compliance. Updating vehicles ensures that commercial transport services (goods and passengers) remain in compliance with the latest regulations and standards set by authorities. Some of the most important regulations relate to environmental considerations. Modern vehicles are built to meet stricter emission standards, which helps in reducing the environmental footprint of commercial transport services. By adopting cleaner technologies, operators contribute to the

fight against climate change and improve air quality, aligning with global sustainability goals and enhancing their corporate social responsibility profiles. Staying compliant also demonstrates a commitment to adhering to industry best practices and maintaining high standards of operation.

- **Safety.** Modern vehicles are equipped with advanced safety features such as collision avoidance systems, lane departure warnings, and automatic emergency braking. These technologies significantly reduce the likelihood of accidents, ensuring the safety of both drivers and passengers. Enhanced safety measures not only protect lives but also reduce the financial and reputational risks associated with accidents.
- **Customer satisfaction.** Modern vehicles can offer a more comfortable, reliable, and enjoyable experience for users but especially passengers. Features such as improved seating, climate control, and entertainment systems can enhance the overall travel experience, leading to higher customer satisfaction and loyalty. Satisfied customers are more likely to return and recommend the service to others, driving business growth.
- **Technological advancements.** Incorporating the latest technology, such as GPS tracking, telematics, and autonomous driving features, can greatly improve the management and operation of commercial transport services. These technologies enable better route planning, real-time monitoring, and efficient fleet management, leading to optimized operations and improved service delivery. Embracing technological innovations ensures that companies stay ahead of the curve and remain competitive in a rapidly evolving industry. Moreover, modern vehicles are easier to drive than older models, improving the access to the profession for drivers.

b. Main challenges

Modernizing vehicle fleets (goods and passenger transport) has to overcome several significant challenges but especially the following:

- **Cost.** The financial investment required to purchase new vehicles, upgrade existing ones, and integrate advanced technologies can be substantial. This financial burden can be particularly daunting for smaller operators or firms in low-income economies with limited resources, making it difficult for them to keep pace with larger competitors.
- **Compliance.** The landscape of regulations and standards governing vehicles can be complex and constantly evolving. Ensuring that modernized vehicles comply with all relevant regulations requires a thorough understanding of these rules and continuous monitoring of regulatory changes. Failure to comply can result in fines and legal issues, adding to the difficulties faced by companies undertaking modernization efforts.
- **Technological integration.** Integrating new technologies into existing systems can be complex and time-consuming, discouraging some operators from embarking on fleet modernization. Ensuring compatibility between new and old systems, training staff to use new technologies, and managing the transition period can be daunting tasks. Companies must invest in training and support to ensure a smooth transition and to maximize the benefits of modernization. Ensuring that there are adequate resources and expertise available to maintain and repair modernized vehicles can be difficult, particularly in regions with limited access to specialized services. Companies must invest in training and support infrastructure to address these needs.
- **Supply chain.** Delays in the delivery of new vehicles or parts, shortages of critical components, and disruptions in the supply chain can slow down the modernization process. Companies must develop strategies to manage these risks and ensure a steady supply of necessary components.
- **Data security.** Newer vehicles often have electronic data streaming capabilities that require systems for data integration. Protecting sensitive data from cyber threats and ensuring compliance with data protection regulations are critical challenges that need to be addressed. Operators must implement robust security measures and stay informed about evolving threats to safeguard their data and maintain customer trust.

c. Recommendations

i. Defining a fleet renewal program (goods and passenger transport)

Fleet renewal programs are attractive for transport operators (goods and passenger transport), but in order to produce positive effects such programs should be designed after thorough evaluation of the realities of the sector and its capabilities to become sustainable. One of the major initial assessments should be estimating the TCO of commercial vehicles. TCO encompasses all the costs

associated with owning and operating a vehicle over its entire lifecycle, including purchase price, financing, fuel, maintenance, insurance, taxes, depreciation, and residual value. By evaluating TCO, businesses can gain a comprehensive understanding of the true financial impact of their fleet investments and identify cost-saving opportunities. For example, a vehicle with a lower purchase price might have higher fuel consumption, maintenance costs, or lower residual value, leading to higher overall expenses. By considering all these factors, fleet owners can select vehicles that offer the best long-term value.

Additionally, TCO analysis helps in budgeting and financial planning, allowing businesses to allocate resources more effectively and avoid unexpected expenses. This is particularly important for maintaining cash flow and ensuring financial stability. TCO assessment also supports sustainability goals by evaluating the environmental impact of different vehicles, including fuel efficiency and emissions. This helps businesses make choices that align with their sustainability objectives, reduce their carbon footprint, comply with regulatory requirements, and enhance their reputation. Furthermore, TCO analysis can improve operational efficiency by identifying vehicles with lower maintenance needs and higher reliability, minimizing downtime, and ensuring better service delivery and customer satisfaction.

In countries where the sector is already well-established and functioning, the operators have reached a level of development that gives them reasonably easy access to financing (credit, loan, lease, etc.). In these countries, the fleet renewal may be encouraged through "feebates," registration fees, or scrapping schemes without direct public budget intervention (subsidy, tax exemption, etc.).

In countries where the road transport sector needs major and complex reform in order to fulfill its role in ensuring mobility and connectivity, the renewal of the fleet may be envisaged as an incentive for change acceptance, a reform accompanying measure.

The overarching goal of fleet renewal programs should be to achieve a rejuvenation of the fleet on a step-by-step, sustainable basis. As such, and depending on the needs and on the local financial market, a fleet renewal program may be composed of a variety of coordinated measures.

Administration of the program

The fleet renewal program should be defined, and should be managed in a professional and transparent manner. As the fleet renewal would be one component of the road transport sector modernization or reform, it would make sense to place its management under the Ministry of Transport. A management committee composed of representatives of other ministries concerned, notably the ministry in charge of finance, economy, and budget, could administer the program. The committee should also involve representatives of the road transport sector, as the main category concerned by the program. They could be specifically involved in issues concerning the eligibility of candidates applying for fleet renewal, notably on aspects like trust or professional competence.

The management committee would be tasked at the initial stage to propose:

- the establishment of the program on the basis of the policy adopted, including the financial mechanisms and sources;
- the eligibility criteria for the companies, the old vehicles to be renewed and the new vehicles to be financed, and the sanctions to be imposed when beneficiaries are not respecting their obligations under the program; and
- the internal management procedures of the program.

Once the program is defined, the management committee would be in charge of:

- implementing the rules defined;
- checking that the eligibility criteria are met;
- assisting eligible candidates to prepare their application file;
- monitoring the implementation of the program;
- monitoring permanently the compliance of the beneficiaries with their assumed obligations;
- applying sanctions in case of noncompliance by the beneficiaries; and
- monitoring the elimination from the market of old vehicles eligible to the program (scrapping scheme).

In addition, the management committee could be responsible for the management of the funds that will be allocated to the program.

Creation of a dedicated fund

The creation of a fund dedicated to facilitating the financing of the new vehicles is essential in countries where the operators are not in a position to obtain and reimburse

credits or loans. In such circumstances, public financing may be envisaged to either provide direct financial assistance to operators eligible to the program, or serve as a guarantee for the loans contracted by operators through the program. The fund can be established based on:

- public allocation through the budget;
- financial contribution from development partners; and
- contribution by the financial institutions (banks, insurance companies, etc.).

Another possibility to "feed" such a fund would be by establishing a tax/levy/fee based on companies' turnover, or on products or activities such as transport insurance products, financial services, selling of vehicles, etc. However, such a solution could only be envisaged in countries where the road transport sector would be able to support this additional fiscal burden.

The management of the fund may be placed under the responsibility of the management committee, which would carry on this task according to state or donors' financial standards.

Defining eligibility criteria for operators (goods and passenger transport)

In order for the program to be successful, and in particular to ensure that it addresses the needs of the majority of operators while it constitutes an incentive to formalize and better organize the sector, defining the eligibility criteria for the operators is an important element of the program. To use the program as an incentive it may be useful to direct its benefits to:

- commercial/public/for hire and reward transport companies (not the own-account operators, because transport is not their main activity);
- companies duly registered as transport operators and operating under a legal commercial status and formal operators;
- companies that maintain accounting records which can be audited and are at least deposited (in the sense of being safe kept);
- companies effectively active on the road transport market for a certain time to be defined according to local circumstances (one to two years minimum); and
- companies operating vehicles owned and exclusively used by the company.

As an incentive for individuals or natural persons to mutualize their business and operating means through commercial groupings or cooperatives, the benefit of the fleet renewal program may be extended to such groupings under the conditions that the old vehicles belong to one of the members of the grouping and respects the eligibility criteria, and that the new vehicle will be used exclusively within the grouping or cooperative.

Defining eligibility criteria for old vehicles (goods and passenger transport)

The eligibility criteria for the old vehicles to be replaced is key to the program as they may underpin its credibility. The most common criteria used in other parts of the world where such programs were successful include:

- being old. a step-by-step approach may be recommended by fixing first an age limit which would be half of the average age of the fleet. this age limit could be diminished after initial results have proven a reduction of the average age of the fleet;
- being owned by the applicant company, to hold a registration certificate and a technical inspection;
- providing a certificate proving that it is still authorized for traffic; and
- being effectively used within the company (documented with copies of transport documents referring to the registration number of the vehicle concerned).

In addition, to be credible and to avoid that the old vehicles remain on the market, the program should foresee a compulsory and automatic destruction of the old vehicle that will be replaced. The program may allow recycling of individual spare parts, provided these are stipulated in the regulations establishing the fleet renewal program.

Defining eligibility criteria for new vehicles (goods and passenger transport)

The program should state from the outset that a simple purchase of new vehicles is out of the program's scope.

The facilities of the program shall only apply based on an old-for-new exchange. The program should define the criteria that are essential for achieving the objectives of the strategic reform: safe, clean, and efficient transport (with its consequence, the affordability). Such criteria could be related to age and technical parameters, for example:

- being new or used but with an upper limit of age, e.g., five years maximum; in this latter case, the vehicle

should also correspond to safety and pollution norms;

- being purchased (renting or leasing is not possible) and used exclusively by the company; and
- remaining within the company for a minimum given period (five or seven years), and if vehicles are sold before, advantages obtained should be reimbursed (VAT, import duties, and taxes, incentive, etc.).

Beyond these essential criteria, it may be wise to allow the eligible operators to select additional technical characteristics of the vehicle they would purchase, to correspond to their activities and operating conditions.

Eliminating old vehicles from the roads (goods and passenger transport)

Proper maintenance of commercial fleets is crucial for ensuring the safety, efficiency, and longevity of their vehicles. Regular maintenance helps prevent unexpected breakdowns, reducing downtime and keeping the fleet operational. It also ensures that vehicles are running at optimal performance, which can lead to significant cost savings on fuel and repairs. Moreover, well-maintained vehicles are less likely to cause accidents, protecting both drivers and the public. Additionally, adhering to maintenance schedules can help fleets comply with regulatory requirements and avoid penalties. Overall, investing in proper maintenance not only enhances the reliability and safety of the fleet but also contributes to the overall success and profitability of the business.

However, in the absence of a viable mechanism to remove old fleets from the roads, then the overall policy on fleet renewal should include a mandatory scrapping scheme for eliminating such vehicles. Depending on the actual situation of the country concerned, this may even be taken as an isolated measure aimed at contributing to environmental and road safety improvements. When it is part of a global road transport modernization or strategic reform, scrapping schemes may be complementary tools to be used in connection to other mechanisms. Irrespective of the goal, the efficiency of the scrapping schemes will depend on the control measures and enforcement capabilities of the authority in charge of this part of the program. In particular, the program may be set in such a way that as soon as an old vehicle becomes eligible under the program:

- the beneficiary immediately hands over the registration certificate, technical inspection certificate, special authorization (dangerous goods, transport licenses, etc.);
- the vehicle is sent to a dedicated station aimed at scrapping the vehicle;
- the scrapping is attested by a certificate given to the authority in charge; and
- proper information is immediately transmitted to the register of the vehicle, road transport authority attributing transport licenses or authorizations, and insurance companies.

Sanctions should be foreseen and strictly enforced in case of non-respect of obligations concerning the usage or recycling of registration documents, or usage of vehicles covered by the program.

Incentive measures

In addition to an adapted scrapping scheme, additional incentives, mainly of a fiscal nature, could be granted. For example, the program may foresee exemptions of import taxes, duties, or VAT on new or used vehicles under a certain age limit (depending on the fleet and market situation). These exemptions may be extended to spare parts to be used for maintenance or repairs of eligible vehicles.

The program should include provisions by which, in case of noncompliance by the eligible company to its obligations within the program, the exempted amounts (VAT and import taxes and duties) become due.

Financial component of the program

Notwithstanding the fiscal advantages, operators in many developing countries engaging a road transport reform will be confronted with difficulties or even the impossibility of access to credit institutions and obtaining loans, simply because they are not financially credible. In many of these countries, the operator has no direct contact with the shipper (because of intermediaries) and is not in a position to negotiate global contracts. Hence, the operator is not in a position to establish credible account books and to mobilize important guarantee amounts to the banks.

In such a context, the program should encompass at least the following:

- The fund established for fleet renewal purpose could be partly used to serve as a guarantee/surety for the banks granting a loan within the program; this way the company would not be forced to mobilize this amount, which they may need for their current operations. In addition, this would not increase the fix operating costs

of the company and would not reduce further the commercial margin.

- The reimbursement period could be extended up to five years (it is often limited to three years) to decrease the monthly amount to be reimbursed, thus contributing to preserve a commercial margin.
- The participating banks may grant special interest rates compensated by an obligation to eligible companies to domicile their accounts in the given bank.

Regulation of vehicles imported (goods and passenger transport)

As part of the overall program, it may be appropriate to adopt a regulation limiting the import of used vehicles, in order to avoid a parallel market to emerge and ruin the benefits of the fleet renewal program. The regulation could forbid the import of used vehicles above a certain age limit. The limit should be as low as realistically possible but should be based on the actual situation of the existing fleet and more importantly on the capabilities of the road transport companies to finance their purchase.

Enforcement capabilities

As is the case for all reform components, the enforcement capabilities are key for the success of the fleet renewal program. Part of the program and of its financing should be dedicated to this crucial aspect. The management committee of the fleet renewal program or any authority in charge of the project will need to be allocated with sufficient:

- human resources, trained and meeting the job description criteria to be established;
- financial resources to cover their operating costs engaged for fulfilling the mission;
- technical equipment in particular offices and IT; and
- delegated authority to manage the program without external interference (e.g., political pressure).

Government, international organizations, and private-sector financial incentives for fleet renewal of low-emission trucks

The financial dimension of a fleet renewal program for low-emission vehicles can take several forms, the form of which can result from governments or international organizations, but also from the private sector (details in Annex 8).

Government schemes

- **Grants:** Government grants represent non-repayable funds allocated by federal, state, or local authorities to support projects and initiatives that advance public policy objectives. In the context of fleet renewal of low-emission trucks, these grants play a crucial role in assisting businesses and public agencies in transitioning from traditional diesel vehicles to cleaner, more environmentally friendly alternatives. Unlike loans or other types of financial aid, government grants do not require repayment, provided that the funds are exclusively used to achieve defined public benefits or specific projects, such as reducing carbon emissions and promoting sustainable transport.
- **Subsidies:** Government subsidies constitute a form of financial assistance provided by federal, state, or local authorities to lower the cost of goods or services, spurring economic development, and encouraging activities that align with public policy objectives. In contrast to grants, which are non-repayable funds dedicated to specific projects, subsidies are typically delivered as direct cash payments, tax credits, rebates, or reduced interest rates. This form of support is strategically designed to make investments that might otherwise be financially prohibitive more viable and appealing. When replacing a conventional diesel truck fleet with cleaner energy vehicles, government subsidies serve to effectively reduce the up-front cost associated with acquiring low-emission trucks. Rather than directly funding projects like grants, subsidies work by offsetting costs (for example, reducing the purchase price of low-emission trucks) and making investments more attractive and financially viable over time.
- **Concessional loans:** Concessional loans are extended on significantly more favorable terms than what borrowers typically access in commercial markets. These loans are provided by public or quasi-public financial institutions, such as development banks and green banks, which secure their funding through a blend of public contributions from Member States and private equity sourced from green bonds. Concessional loans are publicly backed financing facilities – capitalized by development banks, green banks, or government revolving funds using a mix of public contributions and green bond capital – that offer below-market interest rates and extended tenors to advance policy goals; while many programs prioritize public entities such as municipal transit agencies, school districts, or public works departments (often by statute or bond covenant), the majority of these credit lines also extend to

private carriers (for hire trucking firms, waste hauliers, private bus operators) via credit enhancement structures (first loss reserves, partial guarantees) and on lending through partner banks, thereby maximizing emissions reductions across all fleets – though eligibility can vary, so operators should always consult the specific program guidelines to confirm whether commercial fleets are permitted or if the facility is restricted to government-owned fleets.

- **Tax and other fiscal incentives:** Fiscal incentives not only include one-off tax credits and accelerated depreciation allowances to reduce the up-front capital cost of purchasing low-emission trucks, but also ongoing relief measures – such as reduced or waived annual ownership taxes, vehicle registration fees, and road-use levies – which lower operating expenses over the life of an asset. Together, these combined incentives help commercial fleets improve cash flow, shorten payback periods, and more readily adopt clean-technology vehicles by addressing both the initial purchase price and the recurring fiscal burden.
- **Retrofitting funding:** Retrofitting refers to the process of modifying an existing vehicle by replacing its internal combustion engine (ICE) and fuel system with a low- or zero-emission powertrains. In most cases, this involves installing electric motors and batteries or hydrogen fuel cell systems to substitute conventional diesel-based components. The primary benefit of this approach lies in its ability to dramatically reduce GHG emissions and improve air quality while extending the operational lifespan of the vehicle. While the technical promise of retrofitting is clear, widespread adoption requires substantial up-front investment. This is where financial schemes play an essential role. In the case of retrofitting, they serve to absorb part of the conversion costs, making the process financially viable for fleet owners – especially for SMEs.
- **Trust funds:** A government trust fund is a dedicated financial mechanism established to secure and manage revenues for specific, long-term policy objectives. In contrast to general budget allocations, these funds are earmarked by legislation and supported by designated revenue streams – such as taxes, fees, or levies – that ensure a stable and predictable source of funding over time. When applied to the replacement of conventional diesel truck fleets with cleaner energy vehicles, a government trust fund serves as a sustained financial reservoir dedicated exclusively to advancing environmental sustainability and reducing greenhouse gas emissions. The establishment of such a fund is typically underpinned by legislative action that defines its purpose, identifies its revenue sources, and delineates its management and governance structures. Trust funds are fundamentally different in that they are not just a one-off transfer of funds, but a dedicated financial mechanism established to support long-term policy objectives. As opposed to grants and subsidies, trust funds provide a systematic and enduring source of finance, in contrast to the more temporary or case-specific nature of grants and subsidies.

International organizations' scheme

- **European Commission – De Minimis Regulation (EU) 2023/2831:** The revised De Minimis Regulation (EU) 2023/2831 establishes a straightforward EU-wide legal framework enabling road freight operators to obtain up to €300,000 in small-scale state aid over any rolling three-year period – without needing prior approval from the European Commission. This increase from the previous €200,000 ceiling applies across all eligible aid instruments: direct grants, interest-rate subsidies, tax exemptions capped in advance, loans, guarantees and even equity or quasi-equity injections.
- **European Commission – Just Transition Mechanism:** The Just Transition Mechanism (JTM) offers a comprehensive EU framework designed to support regions and sectors most affected by the transition to climate neutrality. At the core of the JTM is the Just Transition Fund (JTF), which provides €19.7 billion (in current prices) through shared management with Member States under the umbrella of cohesion policy. The fund is designed to mitigate the socio-economic impacts of the climate transition by supporting economic diversification, clean energy investments, environmental rehabilitation, and the development of green technologies. For the transport sector, this opens the possibility of funding not only fleet renewal – such as subsidies for ZETs – but also investments in supporting infrastructure, including electric charging stations and hydrogen refueling networks, provided national authorities identify such priorities in their programming.

Private-sector schemes

- **Residual value guarantees:** RVGs are an innovative financial instrument designed to mitigate the depreciation risks associated with fleet vehicles – particularly those using advanced, clean technologies such as electric or hydrogen power. Essentially, an RVG represents a contractual commitment, typically provided by manufacturers, financial institutions, or leasing

companies, that sets a guaranteed minimum value for a vehicle at the conclusion of its lease or financing period. This fixed buyback price ensures that, regardless of market fluctuations or accelerated depreciation, the fleet operator can sell the asset at a predetermined price, thereby controlling the TCO.

- **Equipment-as-a-service:** EaaS offers a transformative approach to fleet management by retaining equipment ownership with the vehicle manufacturer while allowing customers to utilize the fleet without the traditional burdens of ownership. Under an EaaS model, the vehicle manufacturer assumes full responsibility for maintenance, repairs, and ensuring high equipment availability through its dedicated customer support and fleet management teams. This arrangement enables customers to concentrate on their core business operations rather than on the complexities of equipment upkeep and management. Unlike conventional rental or leasing agreements, where the equipment remains on the customer's balance sheet and fixed monthly payments are common, EaaS represents a fundamentally different model. In traditional finance or operating leases, the customer's financial statements reflect the leased assets and the payments, thereby impacting capital expenditures. Conversely, EaaS allows for extended fleet usage over several years with pricing linked directly to actual usage rather than predetermined fixed charges.
- **Credit risk guarantees and alternative financing instruments:** Credit risk guarantees have emerged as a viable solution to address the financial challenges facing SMEs and unlock the necessary capital for fleet modernization. These schemes, particularly when backed by government or reputable institutional support, serve to mitigate default risks by covering a portion of potential losses should a borrower fail to meet repayment obligations. The presence of a credit guarantee significantly reduces the perceived risk for lenders, thereby enabling them to offer more favorable terms and lower interest rates. Successful models, notably those inspired by California's low-emission vehicle programs, have demonstrated that these guarantees can effectively stimulate private capital flows into fleet renewal initiatives, benefiting both lenders and borrowers by creating a robust risk mitigation framework.

In addition to credit guarantees, alternative financing instruments play a critical role in supporting the transition to fleets of low-emission trucks. Financial tools such as green bonds are specifically structured to attract investments dedicated to sustainable projects, including fleets of low-emission trucks investments, while offering predictable returns and reducing the administrative complexities typically associated with such funding. Institutional investors, like pension funds with their long-term investment outlooks, also provide a stable source of capital. Generally, debt products are preferred over equity investments in this context due to their more predictable return timelines and lower risk profiles, as equity investments are often subject to greater market volatility and uncertainty.

ii. Synthesis of fleet renewal experiences

Based on a report financed by the EU, some conclusions can be drawn on the advantages and inconveniences identified in the various components of fleet renewal schemes developed in various countries.

iii. Setting and implementing vehicle size and weight regulations

Overloading of trucks is often regarded as one of the most serious problems in road transport because of the economic consequences on the road transport market as well as the damages to infrastructure and associated maintenance costs incurred. It not only damages infrastructure such as roads and bridges, leading to costly repairs and maintenance, but also creates unfair competition by allowing overloaded vehicles to transport more goods at lower costs, undermining the efforts of compliant operators. Opinions are divided about how to deal with this important issue. Often the solution is envisaged only under the angle of implementing strict controls and sanctions on drivers and transport companies. This approach may have immediate results but ignores the causes of these practices and endangers the sustainability of the sector. Another approach should be to sanction the shippers/consignors who may even be (in some cases) the primary beneficiaries of overloading practices. For example, in Burundi often newspapers publish tenders for the carriage of beer or soft drinks that specify that the truck should be able to carry 75–90 tonnes of cargo on the domestic network, while this is conceived to carry much less than that (53 tonnes on the main roads).

The call for stricter enforcement is common to all instances where this issue is discussed. However, there is an increasingly embraced view that enforcement is virtually impossible because of institutional constraints, for example, enforcement officers do not apply the rules because

Table 7. Exemption of taxes and duties

a. Experience of Burkina Faso (1998–2012), Mauritania (2009) and Mali (2004)

Strenghts	Weaknesses
• Decrease in the vehicles' costs/prices • Easy to implement through the finance law (national budget)	• Decrease in state budgetary income • Limited duration of the program (1 to 5 years) • May contribute to developing own-account transport if it is not excluded from the program, to the detriment of public transport

b. Grant loans with reduced interest rates experiences in Senegal (2003–2008) and Burkina Faso (2013)

Strenghts	Weaknesses
• Reduced interest rate compared to normal market conditions • Facilitate the modernization of the profession and its formalization	• Not easy to finance • Limited available amounts (grants, loans, or subsidies) • Short-term loans (5 to 7 years and often less) • Requires some organizational capabilities

c. Scrapping schemes experience in Morocco

Strenghts	Weaknesses
• Contribute to reducing the purchase price of new vehicles	• Cost for the state budget • Short duration of the program (3 to 5 years) • Needs implementing and enforcement capacities

d. Leasing experiences in Mauritania (1998) and Senegal (2003)

Strenghts	Weaknesses
• Reduced need for capital • Easy to realize (if financial institutions practice this method) • Does not affect the credit possibilities of the company for other needs • Brings some fiscal advantages • Does not affect the immobilization part of the accounts	• Leasing costs are usually higher than standard bank loans • The transport company does not own the vehicles and cannot use them as assets when demonstrating its financial credibility

e. Road transport development funds experiences in Mali (1996), Senegal (1997), Côte d'Ivoire (2009 and 2012, without significant results yet)

Strenghts	Weaknesses
• Facilitate the provision of guarantees to the participating financial institutions on behalf of the transport companies • Contribute to the professionalization of the stakeholders as it may cover more than the simple renewal of the fleet. • Long-term measure	• Affects the state budget • Requires organizational capacities • Must be attractive compared to standard financing mechanisms

there are substantial material advantages for them if conniving with truck operators to elude the law.

Attempts to counter these incentives with stricter supervision or monitoring systems have not proven effective, so there is increasing interest in changing the nature of the incentives by placing responsibility for road maintenance at a local level, coupled with appropriate incentives to keep the roads in good condition at a minimum cost.

Some possible solutions to improve the enforcement of road vehicle size and weight regulations are presented hereafter.

Ensure that the size and weight regulations are based on economic criteria

It is rather common for the maximum axle load and gross vehicle load limits to be much lower than the optimum. Strict enforcement would not allow efficient use of road transport vehicles and impose substantial additional transport costs. In practice, everyone ignores the regulations except when enforcement officers want favors from the truckers. This generally fails to check even extreme overloading and undermines enforcement efforts.

Make the regulations clear to road users and enforcement officers

In many cases, the rules are not clear. The road administration may have its own design standards while vehicles have their own weight specifications. There may also be subregional norms and standards which could be different from the national ones, or even bilateral agreements imposed on foreign trucks using the country's roads' different weight standards. These are practices that should be avoided, because they create confusion and opportunities for subjective enforcement.

Advertise the regulations clearly

Even when the rules are clear, road users and enforcement officers may not understand them completely or in the same way. This calls for advertising the rules clearly, especially at the weighbridge control points. Efforts should also be made to raise awareness of the road transport commercial partners (shippers/consignors, forwarders, and logistics providers) and make them take responsibility in operator's compliance with the rules.

As a reminder, hauliers have different operational tasks, and vehicles need to perform accordingly, in order to provide all services. Therefore, commercial vehicle designs are optimized for specific tasks which influence the weight distribution on loading platforms and on axles, requiring vehicle manufacturers to meet transport operators' demands by providing specific features such as wheelbase, weights and dimensions, number and type of vehicles in a combination, number of axles, engine size, transmission characteristics, differential gear ratios, suspensions and type of brake system.

Place weighbridge stations under the right responsibility

Road wear is a process in which different deterioration mechanisms, including environmental and traffic related factors, create different modes of distress such as cracking, rutting and potholes. For pavement fatigue and wear assessment, axle loads, and configurations are much more important than the gross vehicle mass (GVM). Several other factors affect road wear such as speed, axle spacing, etc. Furthermore, there is a difference between the impact permitted and the impact measured.

The road administration has the greatest interest in minimizing road damage so, provided regulations are based on economic criteria, this may be the most appropriate organization to enforce weight rules.

Maintain the weighbridge equipment

Often the equipment does not work in the proper manner and so measurements cannot be used for enforcement purposes. Appropriate means of financing the weighbridge stations is usually the problem and this can be tackled as part of the measures adopted to improve financing of road maintenance. The World Bank possesses a comprehensive collection of good practices on road maintenance and assets protection.

Put in place effective coordination measures at the local level

The police and highway authority have to work together to enforce size and weight regulations at the local level, and the regulatory authority at the central level has to monitor enforcement. This can be achieved with minimal staff at weighbridge stations, provided there are procedures for stopping and checking vehicles and for informing the regulatory authority about checks made. In some countries lack of effective procedures and mistrust among agencies result in duplication of controls and overlapping of competences between several agencies working at weighbridge stations. This can increase the number of checks and produce delays to vehicles, and may considerably increase the risk of unofficial payments being requested from transport operators.

For enforcement authorities, weighbridge stations will improve roadside check effectiveness compared with the traditional methods of randomly targeting noncompliant operators and will reduce the consequences of overweight vehicles for road safety and road wear.

Gain support for enforcement from road users

Where enforcement is weak, there is no incentive for legitimate operators to obey the rules because they would only be placed at a competitive disadvantage compared to other operators. Building up support for enforcement among road users is vital. This requires the regulatory and enforcement agencies to establish a dialogue with road users, possibly through periodic meetings involving representative organizations (transport customers, trucking associations, freight forwarders, and major operators). The National Facilitation Committee could be an adequate forum to host and coordinate discussions on enforcement matters (among others).

Create legal sanctions for consignors in case of overloading

In most countries, the road transport operator or even the driver are the only persons/legal entity considered as responsible in case of overloading, when it is increasingly understood that shippers benefit directly from these practices. For example, requirements of rational handling and load securing do not usually allow the rearrangement of the cargo during a distribution journey to avoid an overloaded axle. A 3-axle semi-trailer coupled to a 2-axle tractor unit will be carrying about 25 tonnes of goods when fully loaded, within a 40-tonne GVW. At the beginning of the journey the drive axle load will be 11.5 tonnes, but could increase to 13 tonnes when 7 tonnes of goods are unloaded from the rear of the semi-trailer. The vehicle will suddenly become illegal when it is first unloaded but will become legal again as more goods are removed along the journey. There are many good initiatives in the road transport sector, like best practice guidelines, but one still lacks an overall understanding of cause and effect and how to overcome the problem of overloading and inadequate securing of loads.

This lack of understanding may lead to putting the blame on the wrong party, who may not have caused the problem.

Some countries like France have activated a regulation by which the shippers/consignors are responsible under criminal law and sanctioned with heavy fines in case of overloading. This responsibility is independent from the one of the transport company, which is also sanctioned. In Greece, the responsibility for overloading is also shared between the operator and the consignor.

Introducing such a principle may help in facilitating the implementation of weight rules and would also contribute to improve the operating conditions of transport companies.

Involve other authorities in the control of weight and dimension regulation

Often, trucks are leaving their loading place in a visible situation of unloading; this happens in particular in ports, where in principle customs authorities have accepted the customs declaration (transit, import, warehousing) which clearly indicates the weight of the goods transported, and where port authorities have also allowed the truck to leave the area. Both authorities, in their tasks and functions, have access to the weight information as well as to the truck loading capacity.

These authorities could be entitled to immobilize a truck not complying with the weight rules. Such a measure combined with a sanction on shippers/consignors may prove to be extremely powerful tools to fight against overloading and enforce compliance with the weight and dimension rules.

All recommendations above are also valid for passenger transport as long as they are adapted to the specificities of this subsector. Indeed, the issues of total load, axle load, height and width, total loading gauge, securing loads in the hold or in galleries are just as important for road safety and that of passengers as for the transport of goods. Thus, the global approach described above also applies to passenger transport.

I. Holistic approach to decarbonization (goods and passenger transport)

Section summary

A comprehensive strategy for decarbonizing the road transport sector focuses on trucks and buses that currently rely on fossil fuels. Fossil fuels are the current energy of choice for heavy vehicles, thanks to numerous physical and cost advantages, at the expense of carbon dioxide emissions, a greenhouse gas powering climate change. From the 8GtCO_2e emitted by transportation annually, trucks and buses need to reduce its current 2GtCO_2e emissions to meet the 2015 Paris Agreement, while addressing existing issues like driver shortages, road safety, and digitalization.

Four levers can be used to design successful decarbonization strategies, being carbon offsetting, carbon capture, improving energy efficiency, and transitioning to alternative fuels. Offsetting involves compensating for emissions by supporting decarbonization projects elsewhere. Carbon capture aims to remove CO_2 from the atmosphere, either directly or at its entry points, like tailpipes. Triggerable by road transport stakeholders, emissions can be reduced by improving energy efficiency, displacing people and goods with less energy, and by transitioning from fossil fuels to greener energies. Technologies ready at hand can transform fleets to make them less energy intense, such as newer diesel engine design, low rolling resistance tires and aerodynamic devices. Best practices can better leverage existing logistics tool and vehicles such as eco-driving, load consolidation and eco-trucks. However, new technologies are required to meet carbon neutrality, with green energy having lower carbon emission factors, such as biofuels, biogas, hydrogen, and electricity. ZEVs and low-emission vehicles (LEVs) play a pivotal role in this transition.

The foundation of a pragmatic decarbonization strategy is built by the understanding of trucks and buses operations, but not only, as green energies potential varies worldwide, and other industries are moving at the same time away from fossil energies. Measuring and collecting data describing businesses practices and energy systems allow policy makers and private stakeholders to prepare a pragmatic road map to meet transport demand, reduce emissions and lower the cost of the transition. Modeling, communication, and global cooperation are the key enablers for a successful implementation. Examples of successful decarbonization efforts in regions like China, the EU, and the United States illustrate the effectiveness of combining regulatory measures with technological innovation and industry collaboration.

Achieving carbon neutrality in road transport requires a multifaceted approach that combines technological innovation, regulatory support, new financial schemes, and industry collaboration. Setting clear decarbonization targets, fostering stakeholder cooperation, and continuously monitoring progress to adjust strategies as needed are essential steps.

1. INTRODUCTION

To mitigate global warming and climate change, nations around the world reached an agreement in 2015 to work on decarbonization of human activities during COP21. The Paris Agreement's objective is to keep the rise in mean global temperature below 2°C above pre-industrial levels and preferably limit the increase to 1.5°C. Greenhouse gas emissions should be reduced as soon as possible and reach net zero by the middle of the twenty-first century. To stay below 1.5°C of global warming, emissions need to be cut by about 50 percent by 2030.

Trucks and buses today rely on fossil fuels to power the transportation of goods and passengers on roads. These fuels' advantages are numerous: stable at ambient conditions, easy to distribute, low costs, proficiency on the market, with few shortcomings, such as pollutant emissions, which have now been almost completely resolved thanks to advanced exhaust gas treatment and higher fuel quality, at least in advanced economies. However, the use of carbon-based fossil fuels in combustion engines inherently emits carbon dioxides, a molecule that plays an active role in climate change.

Figure 15. Perfect diesel combustion

$$C_{21}H_{44} + 32.O_2 \rightarrow 21.CO_2 + 22.H_2O$$

Decarbonization presents the road transport industry with its greatest challenge and opportunity to date. The industry's current shape results from gradual evolution from the early twentieth century. Over time, new practices and technologies have shaped the sector, lowered TCO, reducing thus transportation costs, improved reliability and uptime, and shortened delivery times. However, the rapid change needed to achieve carbon neutrality by 2050 is unprecedented for an industry already grappling with other issues such as driver shortages and digitalization efforts.

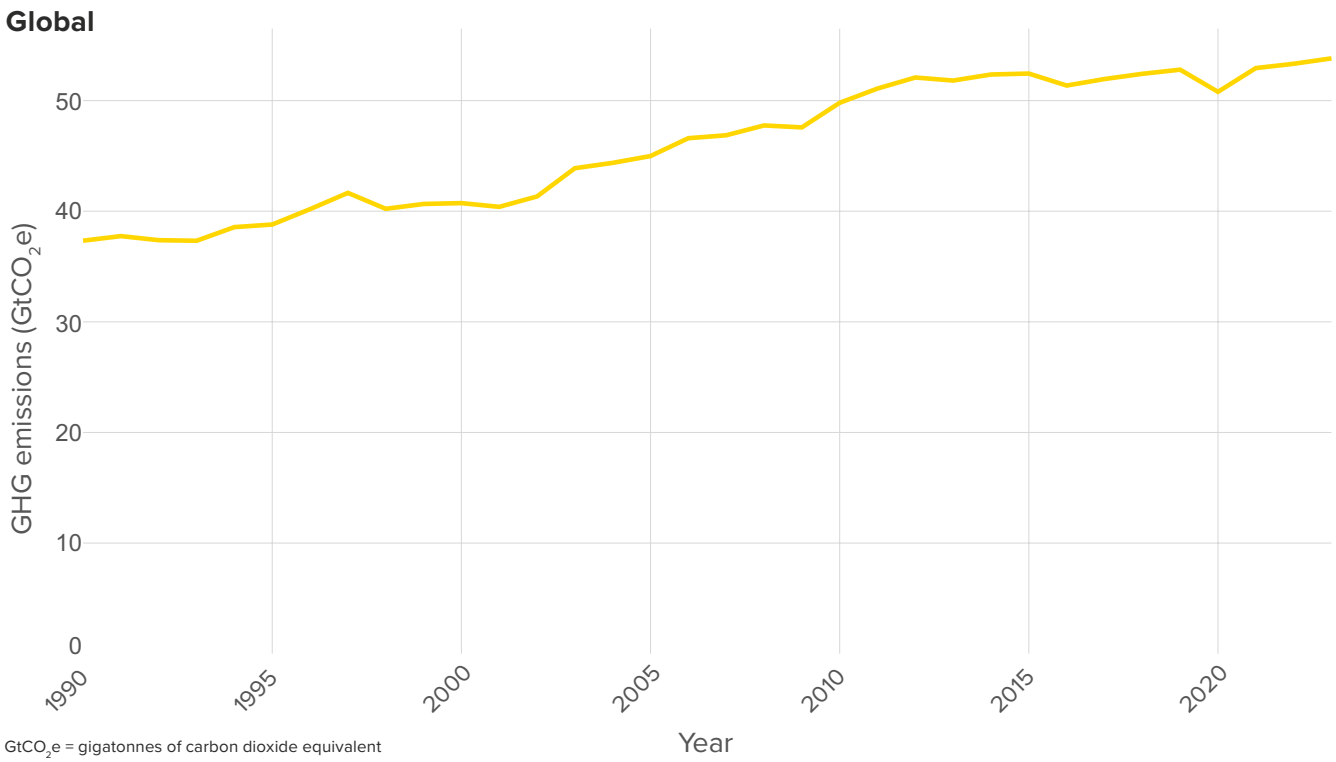
While there is a global commitment to reduce greenhouse gas emissions and mitigate climate change, progress varies worldwide. Other political and economic crises are impacted priorities given on climate change mitigation. Some regions have more resources to deploy decarbonization solutions, while others face greater constraints. Nations begin this challenge from different starting points, with varying access to carbon-free energy at viable prices and quantities.

This chapter provides policymakers and industry stakeholders key principles and guidelines, adaptable to their specific economical contexts, to establish their national road transport decarbonization road map.

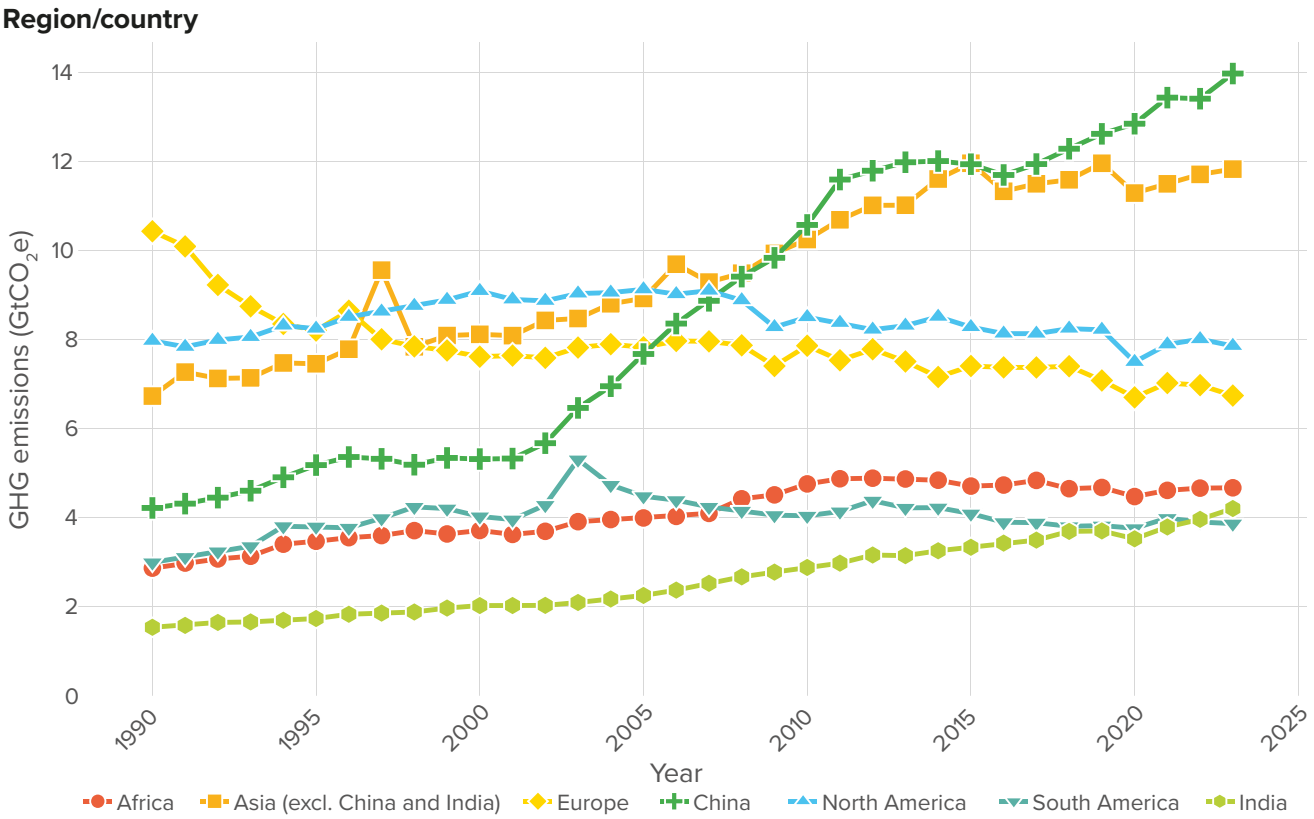
2. STATE OF PLAY REGARDING EMISSIONS

To date, all economies emit GHGs into the atmosphere, increasing its capacity to block heat dissipation toward space. GHG gases are a set of gases involved in global warming. The list includes carbon dioxides CO_2, methane CH4, dinitrogen oxide N2O, and ozone O3, among others. These gases are naturally present in Earth's atmosphere, allowing the planet to host life as experienced today. However, human activities add GHG molecules, coming from the combustion of fossil fuels, combustion used to power economies worldwide. In 2023, it is estimated that all countries together emitted about 54GtCO_2e of GHG,[50] with Asia, and China in particular, being the greatest emitter, and Oceania being the lowest one.

Figure 16. GHG emissions: global; by region/country



50 Ritchie, Rosado, and Roser (2023), "CO_2 and Greenhouse Gas Emissions", Our World in Data.



$GtCO_2e$ = gigatonnes of carbon dioxide equivalent

Source: Ritchie, Rosado, and Roser (2023), "CO_2 and Greenhouse Gas Emissions", Our World in Data.

BOX 29.

The unit of GHG emissions: CO_2e

GHG emissions are typically expressed in CO_2 equivalence (CO_2e). This standardized unit accounts for the impact of various greenhouse gases, not just CO_2. Scientists convert the effects of other gases to their CO_2 equivalent, enabling easier comparison of different greenhouse gases' climate impacts.

BOX 30.

Carbon emissions accounting: Different measures

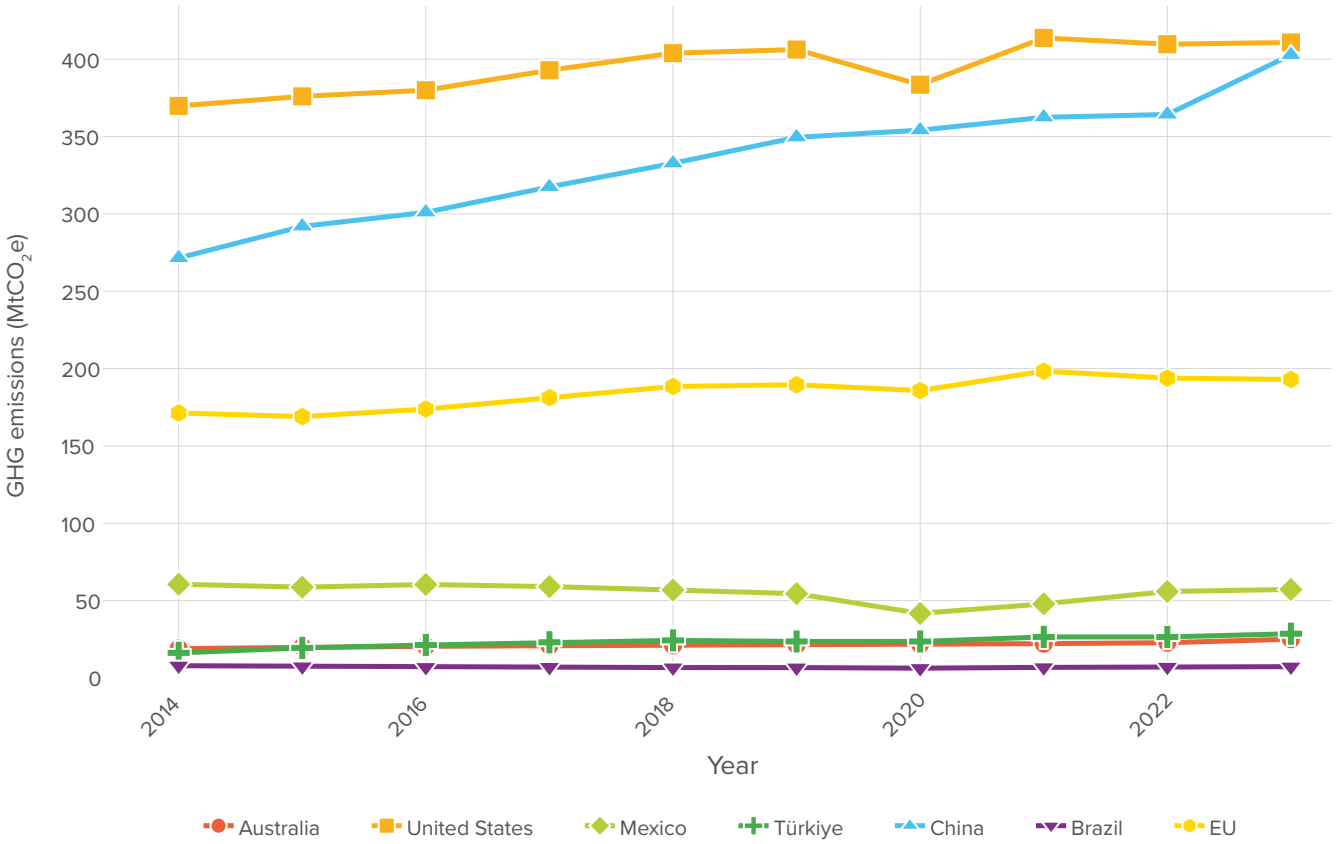
There are three main approaches to measuring CO_2e emissions in transport: TTW, well-to-wheel (WTW), and life cycle analysis (LCA). TTW focuses solely on vehicle emissions, such as tailpipe emissions for a diesel vehicle. WTW expands this to include emissions from fuel extraction, production, and distribution. LCA goes further, encompassing emissions from vehicle production and fuel production equipment, on top of WTW emissions. These methods increase in comprehensiveness and complexity from TTW to WTW to LCA.

Within global GHG emissions, transport contributes to $7.6GtCO_2e$[51] in 2021, with trucks and buses worldwide accounting for 23 percent (2018 share, resulting $1.8GtCO_2e$ in 2021)[52] in 2018. These estimates said TTW exclude GHG emissions from fuels production and distribution.

51 Our World in Data, "CO_2 Emissions from Transport".
52 SLOCAT (2021), Tracking Trends in a Time of Change: The Need for Radical Action Towards Sustainable Transport Decarbonisation.

The 1.8GtCO$_2$e emissions from trucks and buses are based on modeling estimations, which might be far from reality. To better understand the challenge, it is crucial to isolate emissions from trucks and buses. The Intergovernmental Panel on Climate Change (IPCC)'s guidelines[53] provide a framework for collecting and analyzing this data. Using this framework, the United States and the EU now offer a detailed view of their emissions, specifically for trucks and buses. In 2022, US-registered trucks and buses emitted 0.45GtCO$_2$e TTW,[54] while their EU counterparts emitted 0.2GtCO$_2$e TTW.[55] These absolute figures should be looked at with road transport volumes in mind, as they result from transport activities. the United States has twice the EU road freight volumes, explaining its bigger figure. These CO_2 emissions need also to be read with other industries in mind. As other industries decarbonize, commercial road transport share in global emission is increasing. For example, the EU global emissions decreased by 30 percent between 1990 and 2023, while trucks and buses emissions increased by 30 percent in the same period, putting additional pressure on road transport to quickly decarbonize.

Figure 17. Estimated GHG emissions from trucks by country



Source: IRU Green Compact (2023).

53 IPCC (2006), IPCC Guidelines for National Greenhouse Gas Inventories – Chapter 3: Mobile Combustion.
54 US EPA (2024), Fast Facts: U.S. Transportation Sector Greenhouse Gas Emissions 1990–2022.
55 EEA, "Datahub: Total GHG Emissions and Removals in the EU".

Countries have pledged to reduce their carbon emissions to limit global warming to 1.5°C, requiring an 84 percent reduction from 2019 figures.[56] The EU has pledged to reduce its domestic GHG emissions by 55 percent in 2030, with 1990 emissions as baseline. the United Kingdom has pledged a 68 percent reduction with the same baseline. Brazil has pledged to reduce its emissions by 53.1 percent by 2030, with 2005 as baseline. The United States has pledged a 52 percent reduction with the same baseline, and China 65 percent. Ethiopia has pledged a 49.2 percent GHG emissions reduction by 2030, with 2010 as baseline[57, 58, 59, 60]. All these ambitious pledges require an effort from all sectors, including commercial road transport. However, while most of these pledges mention transport, only a third include an emission-reduction target for the sector. Georgia for example, pledges to reduce its transport emissions by 15 percent in 2030, with 1990 as a baseline, and Liberia pledges to reduce by 15.1 percent transport emissions compared to a business-as-usual projection in 2030. It should be noted that road transport is not taken here in isolation, and targets do not follow the IPCC suggestion that transport must decarbonize faster than other industries to stay in the 1.5°C agenda.

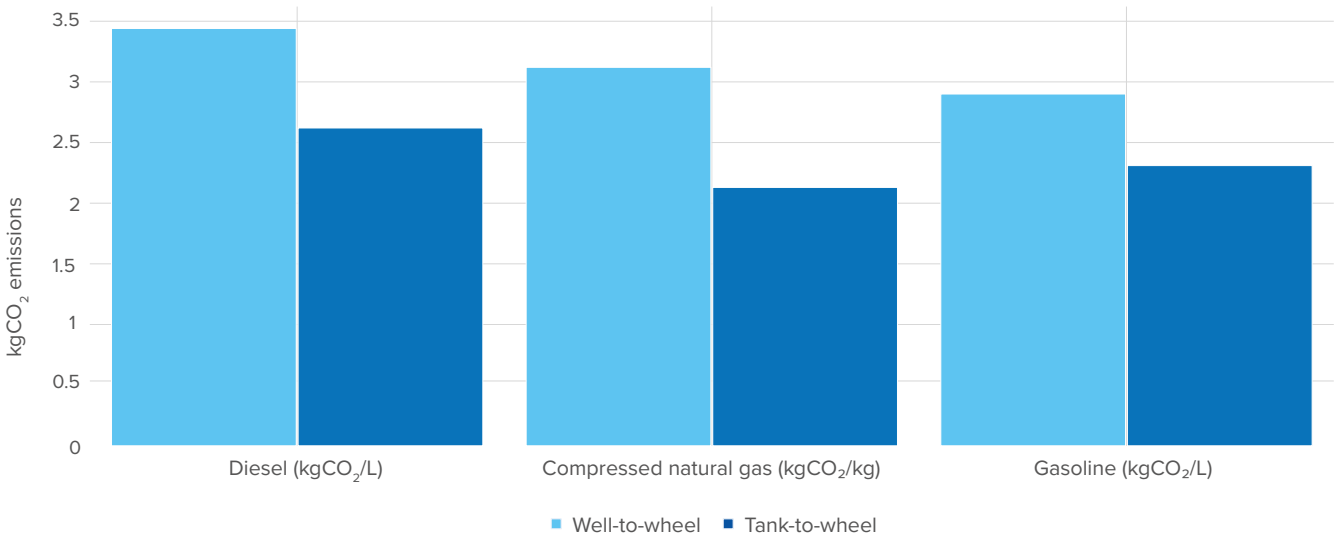
3. ROAD TRANSPORT DECARBONIZATION

a. Processes

Road transport emits carbon emissions due to the use of fossil fuels, rich in carbon atoms, to cover the energy needs of moving goods and passengers. Carbon emissions are consequences of energy usage, as energy production and consumption emit CO_2 into the atmosphere.

The link between energy and CO_2 materializes by the carbon emission factor (CEF), generally given in gCO_2 per unit of energy (kWh, but oftentimes reduced to kilogram or liter of fuel). It can also be given through an energy proxy such as mass or volume. For example, a liter of diesel emits 2.6 kg of CO_2 TTW, and 3.4 kg of CO_2 WTW in the EU. The first value is intrinsic to fuel chemical composition; the second depends on the energy system. In both cases, the CEF of diesel will be 2.6 $kgCO_2$/L TTW and 3.4 $kgCO_2$/L WTW. For methane (CH4), the carbon emission will be 2.1 $kgCO_2$/kg TTW.[61]

Figure 18. Carbon emission factors: Differences between fuels



56 IPCC (2023), Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Table SPM.1.
57 UNFCC, "Nationally Determined Contributions Registry".
58 IEA, "Climate Pledges Explorer".
59 Our World In Data, "Status of Net-Zero Carbon Emissions Targets", based on "Net Zero Tracker" (2023), by Energy and Climate Intelligence Unit, Data-Driven EnviroLab, NewClimate Institute, and Oxford Net Zero.
60 ITF, "How Serious are Countries about Decarbonising Transport?".
61 Vourliotakis, and Platsakis (2024), ETC CM Report 2024/04: Greenhouse Gas Intensities of Transport Fuels in the EU in 2022, EEA.

The decarbonization process aims to reduce the amount of GHG emissions, which is linked to energy consumption to power movements of people and goods on the road, energy having a positive carbon emission factor. Levers available to policy makers and industry stakeholders to decarbonize can be thus grouped in four categories to mitigate GHG emissions:

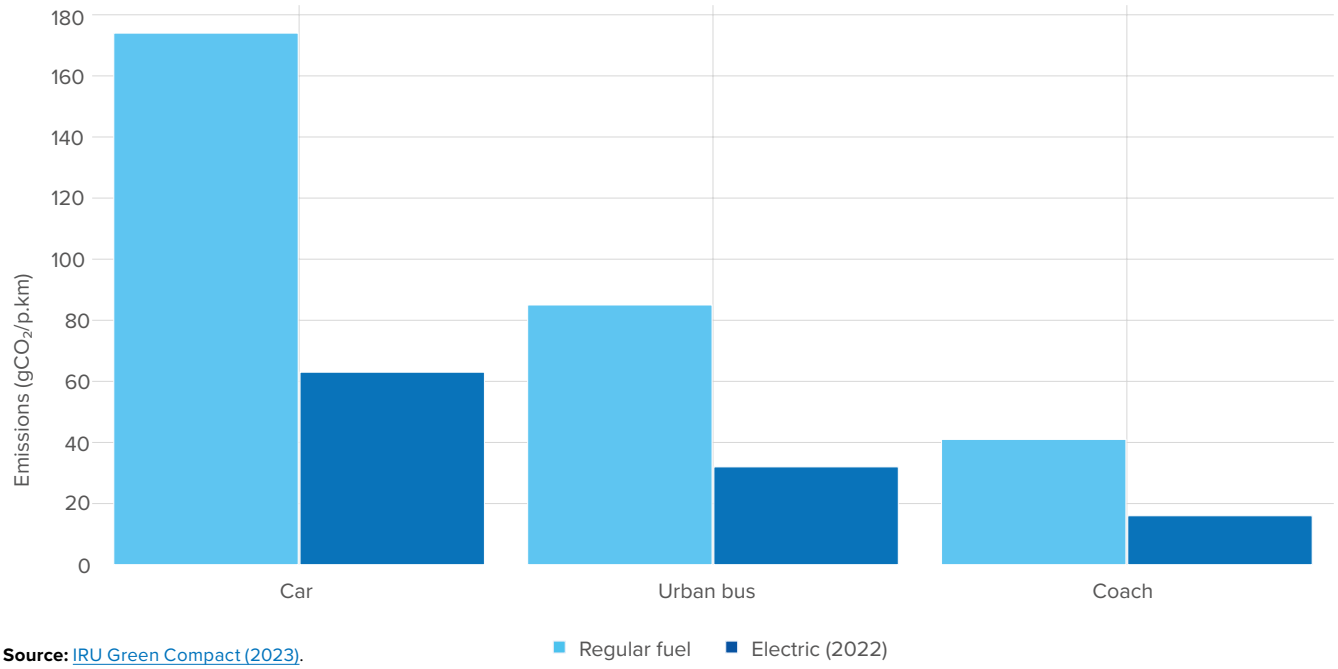
- **Carbon offsetting (sometimes called insetting):** Offsetting is a strategy to compensate for GHG emissions. Offsetting supports decarbonization projects of other industries or economical actors. These projects can include reforestation, renewable energy development, or energy efficiency improvements for other industries. The idea is that, for every quantity of GHG emitted, an equivalent amount is reduced elsewhere. While offsetting can be a useful tool in a comprehensive carbon reduction strategy, it is often criticized for potentially allowing polluters to continue harmful practices without making significant changes to their own operations. Critics argue that direct emissions reduction should be prioritized over offsetting. However, carbon offsetting is also perceived as a pragmatic solution to start the transition toward carbon neutrality. Practices appear today on the European market where one transport operator is decarbonizing one customer's transport operation but reporting the credit to another customer. As not all transport operations are easily decarbonizable, such practice gives more freedom to deploy technology where it works, while being financed elsewhere. Energy savings certificates are also used to finance road transport decarbonization. An energy provider can use such certificates to mitigate their emissions while helping a transport operator to purchase ZEVs, for example.
- **Carbon capture:** Capture is a strategy to either capture carbon dioxide from the atmosphere or capture molecules before they are released into it. Direct air capture (DAC) encompasses all technologies removing carbon dioxide from the atmosphere. Among them, one technology uses large fans to draw in ambient air and pass it through a filter or chemical solution that selectively removes CO_2. Another technology leverages fast-growing plants, capturing CO_2 from the atmosphere during their development. These plants are then burned to produce energy, and the carbon emissions are captured after combustion. With DAC, the captured CO_2 can then be stored underground or used in various industrial processes. While promising, DAC is currently energy-intensive (due to the low-carbon concentration in the atmosphere) and thus, expensive, making it challenging to implement on a large scale. The second option consists of capturing molecules at industrial sites or even at vehicles' tailpipes. Called point source carbon capture (PSCC), this is a more mature technology than DAC, leveraging materials capturing CO_2 just after being produced. CO_2 molecules are then redirected to be reused industrially (offsetting) or stored underground. As with DAC, despite having higher efficiency, PSCC is energy-intensive, leading to great cost per unit of CO_2 captured.
- **Energy consumption reduction:** Energy consumption can be reduced in two ways: by decreasing initial energy needs through reducing road freight and passenger volumes, or by improving energy efficiency – that is, using less energy to transport the same amount of cargo and people on roads.

  Deliberately reducing road freight and passenger volumes could be a dangerous endeavor. It would either reduce economic activity, and thus economic growth, or decrease road transport capacity, creating tensions in the supply-demand equilibrium. This would result in higher transportation costs and, consequently, inflation. Moreover, road passenger transport is a powerful tool for reducing carbon emissions from private cars thanks to its greater energy efficiency.

  Improving energy efficiency means performing more transport with less energy. This results in road transport either handling more volume with the same energy input, or using less energy to handle the same freight and passenger volumes. Either way, it leads to a decoupling between transport demand and energy usage. The impact on GHG emissions is significant, as this efficiency improvement occurs before applying the CEF in the calculation. Consequently, greater energy efficiency lowers emissions even at a constant CEF, and emissions reduction is amplified by a lower CEF. Efficiency improvement is particularly interesting as lowering energy's CEF often comes at the cost of higher energy prices: by using less energy for the same operation, efficiency could compensate energy costs inflation.

  Boosting energy efficiency naturally involves making vehicle use more efficient, primarily by improving the vehicle itself. Several actions can be taken, based on the second law of motion. This physics law states that a vehicle consumes energy while moving forward to overcome rolling resistance, aerodynamic drag, climbing force, momentum, and friction. Therefore, more efficient vehicles will have energy-efficient tires (lower

Figure 19. CO_2 intensity differences between vehicle type



Source: IRU Green Compact (2023).

rolling resistance), improved aerodynamics (lower frontal surface area and drag coefficient), reduced curb weight (through lightweighting, removing unnecessary parts, and using advanced materials and modern designs), and reduced powertrain friction (using advanced lubricants and better maintenance). Many technologies are available on the market to reduce energy and fuel consumption, ranging from simple to complex, and from inexpensive to costly. Historically, transport operators have slowly field-tested these solutions to assess their impact on savings, costs, and vehicle uptime. One of the challenges in road transport decarbonization is to accelerate this implementation pace.

Another way to enhance energy efficiency is through optimizing vehicle usage. Truck or bus operation can be characterized by three key aspects: the driver, the route, and the payload.

The driver has a direct impact on energy consumption as they are the ones ordering vehicle speed variations based on their perception. They are also the ones deciding whether idling is necessary. Driver education and feedback loops are therefore essential to minimize driver impacts on energy consumption.

BOX 31.

Vehicle powertrain

Vehicle powertrain refers to all components that generate mechanical energy and deliver it to the driving wheels. Components generating mechanical energy are parts of the engines. Components transferring and transforming the mechanical energy between the engines and the driving wheels are parts of the drivetrain.

A more efficient driver is said to be 15 percent more energy-efficient than an untrained driver. However, this is an average, and this value has no upper limit, as the driver could negate any efficiency gains through poor driving, increasing even more the impact of training. Driver education will become even more crucial with the deployment of new powertrain technology, as the driver will be the best tool to compensate for technology limitations, using their energy management skills to select the right charging strategy or leverage energy recovery potential.

The route choice has a direct impact too, as it determines the speed variations and climbing gradients the vehicle will encounter during its journey. Traffic is another significant factor influencing energy consumption and is part of the route selection process. Routes are typically defined in two timeframes: before and during the journey. The fleet manager's role is to determine the route beforehand, considering tender requirements (such as pick-up and delivery timing, cargo safety) and cost calculations (including tolls and fuel costs). If permitted by the fleet manager, the driver may also reroute during the journey to avoid unexpected traffic jams or road conditions. Interestingly, the most efficient route is often not the shortest one, and software tools are employed to analyze options. Timing is also a crucial factor in minimizing fuel consumption. It helps avoid traffic, which negatively impacts speed fluctuations, and takes advantage of weather conditions, such as generally more stable wind conditions at night.

Finally, energy efficiency should also be considered in terms of the unit transported. While a greater payload for a given vehicle increases overall energy consumption, it lowers the energy consumption per unit transported. Energy intensity is a critical key performance indicator (KPI) in this context, measured as the amount of energy consumed per unit transported, either in kWh/t.km for freight or kWh/p.km for passengers. Commercial vehicles, along with bicycles, are unique among on-road vehicles in that they typically weigh less than their cargo. Consequently, a higher payload improves the ratio of payload to kerb weight, leading to greater vehicle productivity. However, increasing the payload is not always straightforward, as it does not solely depend on transport operators' choices. Shippers influence this through their transport conditions, while regulators play a role in determining vehicle combinations allowed. Another way to enhance energy efficiency, reducing miles covered with no payload, known as empty miles, is a delicate endeavor as it depends on many stakeholders and parameters but leads to higher energy efficiency per goods transported.

- **Lower carbon emission** from the energy used is the last action on the list to reduce GHG emissions, either by reducing the well-to-tank carbon intensity for the fuels in use today, or by switching to energies with lower carbon emission factors.

BOX 32.

Vehicle combinations

Vehicle combinations or configurations describe how vehicles are combined to form a transportation unit. These combinations are based on engine-powered and towed vehicles. Road tractors and lorries belong to the engine-powered category. The key difference is that road tractors cannot directly transport a load – they need to tow a semi-trailer. Semi-trailers, along with trailers, belong to the towed category. Unlike semi-trailers, which partly transfer their load to a road tractor, trailers carry their entire load independently. Typically, lorries tow trailers.

Reducing the well-to-tank emissions is a first step toward decarbonization, as WTW values are greater than TTW values. For example, diesel has a WTW CEF of 3.4kgCO_2/L, while its TTW value is 2.6kgCO_2/L. By removing the well-to-tank contribution and keeping the same fleet of vehicles, GHG emissions could be reduced theoretically by 24 percent. The GHG reduction potential is limited, but powerful, as it implies the involvement of fewer stakeholders (only energy providers) in the process. However, not all this potential could be leveraged, as some aspects of fossil fuel extraction, refinery, distribution, and leakages could not be decarbonized. Nevertheless, having a modern supply chain for fuels that responds to the latest international standards, such as the European EN590, are participating at the well-to-tank decarbonization, and creates the right enabling conditions to leverage the use of more modern combustion engines, and their lower energy consumption.

Switching toward lower carbon emission factors is more disruptive than other decarbonization solutions, as some of these cleaner energy sources require the use of new powertrains. This is the case for battery-electric vehicles (BEV), catenary and induction EV, and hydrogen vehicles (fuel cell electric vehicles (FCEV) and hydrogen combustion engines). But others offer less disruption, such as drop-in biofuels and biogas, which can be used with more classical powertrains, thanks to no or little powertrain modification. These new energies can be separated into two powertrain families: ZEVs and LEVs. Hybrid vehicles are counted as LEVs, however, EU regulations on new vehicles are limiting

research and development for this type of vehicles, limiting the offer from manufactures. They will not be covered next.

ZEVs do not emit pollutants and GHGs from a TTW perspective. Their CEFs depend on the local energy system and the well-to-tank carbon emission factors. This is why the integration of such vehicles in the fleet needs a deeper understanding of local energy systems. Economically speaking, ZEVs are more expensive to acquire for transport operators, who need to compensate for higher capital expenditure (CapEx) with lower operational expenditure (OpEx), heavily influenced by the energy costs component.

To be relevant, ZEVs need to get the right enabling conditions:

- numerous charging/fueling points well-distributed geographically, suited to large vehicles;
- energy prices allowing to compensate higher CapEx with lower OpEx;
- carbon emission factors allowing powerful decarbonization;
- energy supply security.

Different technologies are also helping to facilitate the implementation of such enabling conditions, such as battery swapping, subsystem standardization between brands, models, and regions, or machine learning.

LEVs do emit pollutants and GHGs at the exhaust, but first at a lower level than classical diesel engines, and second, which could be compensated for GHG by a negative well-to-tank emission factor. In the case of biofuels and biogas, the process is to create an energy that can be used in a combustion engine generating carbon dioxides from feedstocks that previously captured such molecules. When looking at the full energy cycle, biofuels and biogas contribute to drastically reducing GHG emissions of trucks and buses. However, land management needs to be considered, as the transformation of land to increase biofuels and biogas production will have a negative impact on the well-to-tank carbon emission factor, not to mention negative impacts on local biodiversity and competition with food production. Other drop-in low-carbon fuels are e-fuels, either e-gasoline or e-diesel. These fuels are sourced from hydrogen and carbon dioxides to form fuels similar to those in use today. If hydrogen is sourced from renewable sources and carbon dioxides comes from carbon capture solutions, e-fuels' well-to-tank carbon emission factors will compensate for positive TTW emission factors. However, the full energy cycle efficiency is the poorest of all solutions, as efficiencies are imbricated: efficiency of green energy production, then efficiency of green hydrogen production, efficiency of carbon capture, efficiency of e-fuel production, efficiency of distribution, and the efficiency of the vehicle combustion engine. Finally, hydrogen is not only for FCEVs; it can also be used in internal combustion engines, thanks to recent design method improvements. In this case, it is not considered a ZEV, as there are emissions of pollutants at the exhaust (nitrogen oxides) and traces of carbon dioxide coming from lubricants, but these engines are expected to be cheaper to produce than fuel cells, and the hydrogen purity needed less stringent than for fuel cells.

These four processes could, and should, be combined to solve the d ecarbonization as the size and pace of the challenge calls to activate all possible levers to quickly mitigate GHG emissions. For example, IRU uses a five pillars representation, leveraging offsetting, energy improvement and change of carbon emissions factor in the Green Compact, its decarbonization project.

When switching towards new energy sources, transport operators will base their investment choices on the enabling conditions and TCO, especially as the biggest TCO component is energy expenditure. These TCOs then need to be weighed against vehicle production intensity, as new powertrains could impact on the available payload and axle loads distribution.

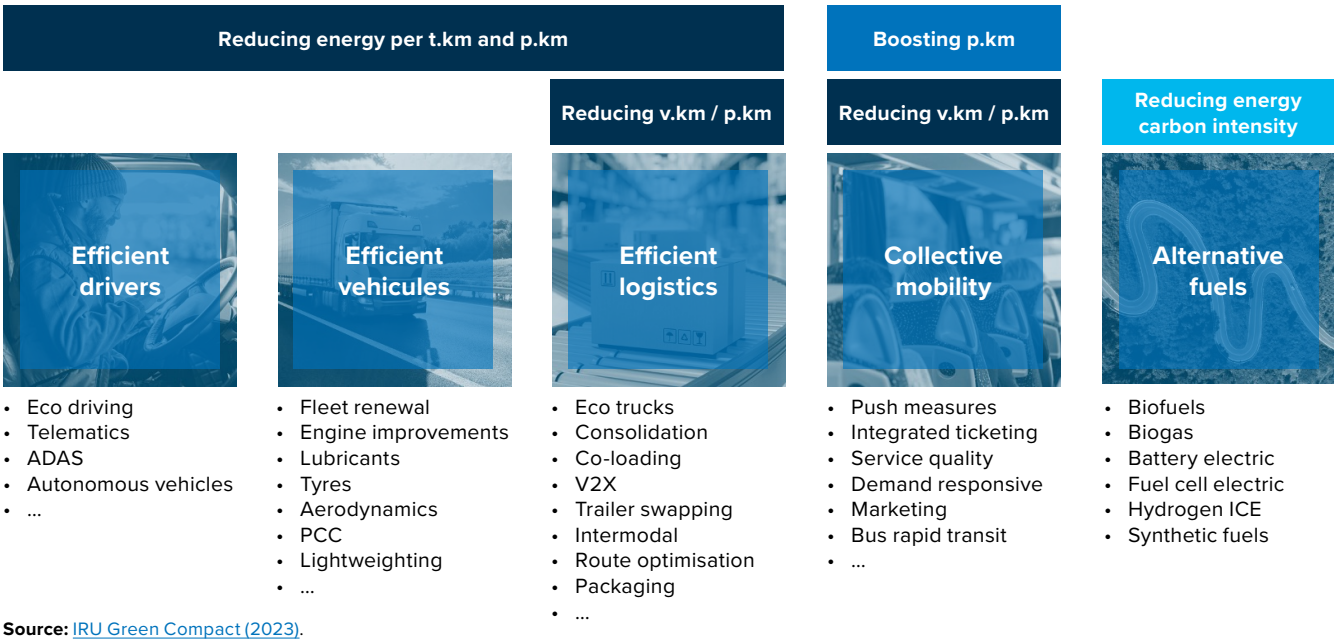
b. Technologies available to decarbonize

Several technologies are used to either capture carbon, increase energy efficiencies and reduce carbon emission factors.

i. Carbon capture

For trucks and buses, PSCC aims to remove CO_2 emissions directly from the vehicle exhaust, leveraging thermal losses passing through hot exhaust gases to activate the capture of CO_2 molecules before storing them on board in cylinder tanks. The beauty of the system is the direct

Figure 20. The five pillars of IRU's Green Compact



Source: IRU Green Compact (2023).

decarbonization of a diesel powertrain, with efficiency reaching 90 percent. This means that the technology can be used in retrofit applications, decarbonizing vehicles already in use today.

This mobile solution is, however, not transparent for the powertrain, as it creates back pressure, increasing fuel consumption. Moreover, the system has a cost of around €100 per tonne of CO_2 captured in the case of diesel, creating a decarbonization fee of €0.3 per liter. Before investing in this technology, countries should carefully consider the economics of the solution, notably compared to green energy. Finally, an infrastructure allowing the handling and emptying of the cylinder tanks must be in place to leverage the full potential of PSCC.

ii. Energy efficiency

Reducing energy consumption involves making drivers, vehicles, logistics, and roads more energy-efficient. Several technologies are in use in parts of the world to reduce fuel consumption, with a positive impact on GHG emissions. Modeling and testing are mandatory to get a clear understanding of efficiency coupling, as they are not additive. For example, if low rolling resistance tires bring a 10 percent fuel economy, an aerodynamic cab brings a 10 percent fuel economy, and an efficient driver 15 percent, the combination of the three will be lower than the sum of their own gains (<35 percent). Tools like VECTO or alternative fuels and efficiency model (AFEM) from IRU are needed to investigate the right mix of energy efficiencies based on specific transport operations.

Working on efficiency improvements starts in the cab and with the driver. Driver training and professionalization have a great impact on emissions as drivers' behaviors determine how far they will be from optimal energy consumption. This optimum is a virtual value, a minimal fuel consumption physically reachable based on vehicle configuration and route profiles. All drivers move fuel consumption away from this optimum due to their driving style, influencing the weight of the inertial component of mechanical forces in the final energy consumption. Proper training can reduce the gap between real and optimal fuel consumption by teaching how to use the powertrain in combination with road conditions. The goal is to maximize the time spent in the most efficient working area of the engine, leading to energy efficiency gains. A professional driver will also assess the state of the vehicle before their journey, setting up its conditions for optimal consumption and avoiding adding energy-intensive accessories. Finally, professional drivers possess the skills to adapt their route according to traffic conditions, if allowed by the fleet manager. From a TCO perspective, driver training allows for a win-win situation, with gains on both TCO and CO_2 emissions, as not only does a more efficient driver lower fuel consumption, but also maintenance costs, for a relatively low investment compared to other decarbonization

technologies. IRU Green Compact research suggests that the most efficient form of training is twice a year, with a mix of theoretical training combined with real life practice.

Onboard technologies can help drivers lower their energy consumption. Several solutions based on telematics systems, collecting data measured by the vehicle's electronic network, can be leveraged to provide instructive feedback to drivers, either during or at the end of the journey. However, such telematics are actionable only on modern vehicles, Euro IV and younger, having such an electronic network. Smartphone applications, using speed, GPS, and the device's accelerometer data, can also be a powerful tool to provide driving feedback, notably as they can compensate for the absence of vehicle sensors.

Advanced systems can now replace some driver inputs. Modern predictive cruise control systems select the optimal gear ratio based on the vehicle's payload, speed, topography, and machine learning algorithms. The effectiveness of these systems heavily relies on the quality of cellular infrastructure, which is crucial for leveraging machine learning benefits. Autonomous vehicles take this further by replacing additional driver inputs such as accelerating, braking, and steering, bringing fuel consumption closer to optimal levels. The Society of Automotive Engineers (SAE) defines various levels of autonomy. Depending on their autonomous capabilities, trucks and buses can operate without a driver for certain periods, for example, when traveling on highways (levels 2 and 3). The highest level of automation (level 5) eliminates the need for a driver entirely. This opens new possibilities for decarbonization by allowing vehicles to operate during nighttime hours when weather conditions and traffic patterns are most conducive to reducing energy consumption. However, autonomous driving systems are expected to have a greater CapEx, and OpEx should be carefully considered to assess the economic viability of such technology.

Different technologies exist to make new and old vehicles more efficient. Often the easiest way to make **a vehicle more efficient is by looking at its tires**. Tires are the link between the vehicle and the road, passing forces back and forth between the two. Made of viscoelastic rubber, they deform under loads to mitigate impacts and to generate vehicle guiding forces. This viscoelastic characteristic leads to thermal losses, which result in rolling resistance. Rolling resistance is the opposite force of tire movement, depending on tire structure, materials, air pressure, and axle load. Tires historically used a diagonal structure, known for its ease of production and robustness, at the expense of rolling resistance and durability. This structure is still in use today in Asia and Africa. The radial structure is the most modern form of tire structure, allowing lower rolling resistance and more durability, at the expense of production costs. Materials making the tire rubber compound also have a great impact on rolling resistance, and tire manufacturers leverage material characteristics based on the intended usage of the tire. Tire pressures and adequate maintenance can maintain healthy rolling resistance values. In the end, the market is seeing a great variation of rolling resistance, with values going from 3kg per tonne for the best ones up to 10kg per tonne for a diagonal tire. Such difference results in a fuel consumption difference of 10L per 100km,[62] or 25 percent fuel economy and CO_2 emissions reduction. Once again, TCO should be considered, as tire impact is not only based on its rolling resistance value but also its durability, which is sensitive to vehicle usage and road surface.

The aerodynamic performance of a vehicle is defined by the exposed surface-to-air movement and its drag coefficient, reflecting its ease of aerodynamic penetration. Improving vehicle aerodynamics involves either reducing its frontal surface (width and height) but at the expense of payload capacity – or reducing its drag. Vehicle manufacturers have several tools to reduce vehicle drag, with devices better guiding the air around the vehicle. It starts with a spoiler connecting the cab and trailer, lateral skirts, wheel covers, and digital side-mirrors. Drivers can influence the vehicle's drag too, by removing all unnecessary accessories, such as lamps or decorations, and correctly setting up spoilers and skirts to ease airflow. Moreover, drivers can influence the aerodynamic load by decreasing the top speed by a few percent, as speed has a significant influence on aerodynamic resistance. It is now common practice in Europe for drivers to set a top speed of 85 km/h instead of the maximal legal value of 90km/h. Load placement and securing also have an impact, with box trailers having lower drag than deck trailers. Depending on drag differences in vehicle usage, fuel consumption could be reduced by 20 percent.

62 AFEM simulation for a 40-tonne articulated truck, 15 tonnes of payload, long-haul operations.

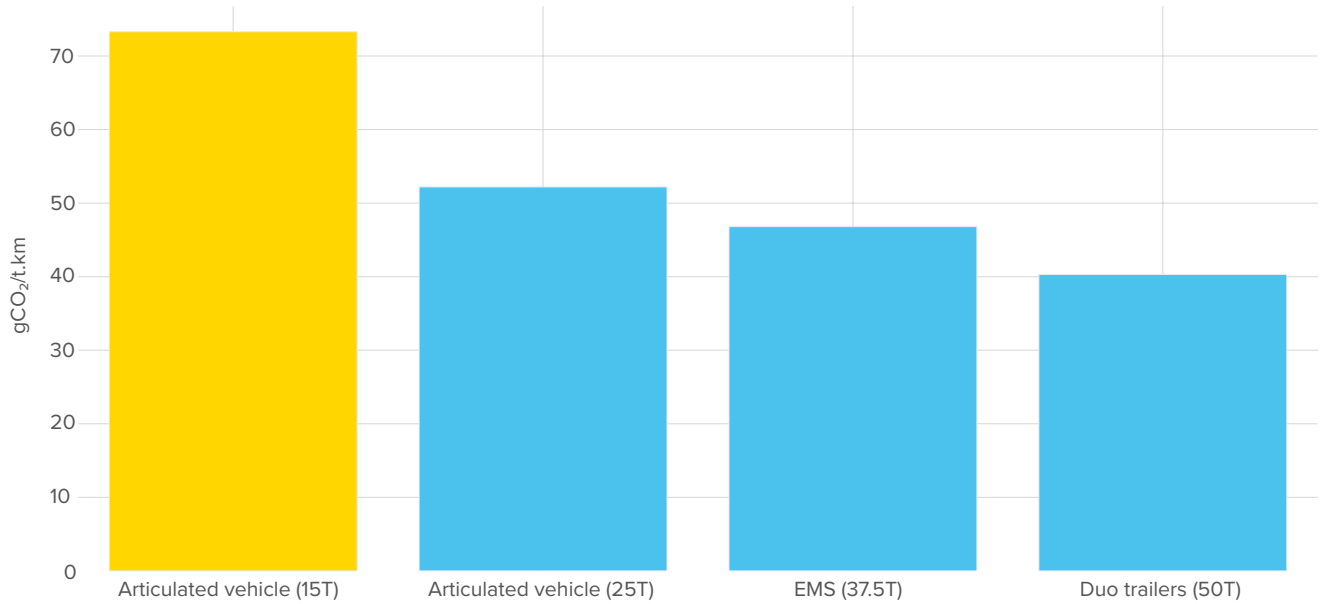
Lightweighting means for commercial vehicles reducing the ratio between the mass of the vehicle and the payload it can carry. Lightweighting starts by selecting the right vehicle according to the transport operations and maximizing the vehicle payload ratio. Lightweighting continues then by removing once more all unnecessary equipment. By having the right market conditions, it can pursue by removing equipment such as spare wheels by relying on effective and reliable breakdown services. At its extreme, lightweighting ends by leveraging advanced materials, with the caution as saving weight comes at the expense of reliability, costs, and lifespan.

Combustion engines are still being optimized by vehicle manufacturers, and newer models are bringing efficiency improvements on the market. Thanks to the use of turbochargers, more powerful cooling systems, new pistons designs, high pressure injection systems and more efficient exhaust gases treatment, today's combustion engines are seeing top efficiency reaching values inconceivable not so long ago, the current record being at almost 54 percent (to be compared with 40 percent as past standard). However, the use of such engines requires enhancing fuel quality (detailed later) and supply other fuel additives, such as AdBlue, for the exhaust system. As these engines, with their drivetrains, involve many moving parts, lubricants are needed, having an impact on the powertrain overall frictions. Advanced but more environmentally sensitive lubricants can lower such frictions.

Predictive maintenance and breakdown anticipation are another way to maintain a vehicle at the top of its efficiency. Predictive maintenance can be facilitated by sensors, measuring oil quality, brake pads thickness and tire tread wear. Machine learning and digital twins are other solutions available to fleet managers for assessing vehicle overall efficiency and trigger repair when needed.

Technologies within logistics exist to lower the energy intensity of goods transportation, meaning reducing the energy used by goods to travel. It can start with route choices, leveraging mapping algorithms to assess energy intensity of vehicle trips and by selecting one compatible with shippers' request and lowering energy needs. Route choice can also be optimized once the vehicle is in movement, by collecting traffic information and deploying vehicles to infrastructure communication, to modify the route when the traffic ahead gets too dense, and to facilitate the flow of vehicles at junctions. Other logistical technologies can have the same effect of lightweighting, decreasing the ratio between vehicle mass and its payload. Larger truck combinations, such as the European Modular System (25.25m long and 60T of GCW) and Duo Trailers (34.5m long and 75T of GCW) in the EU, or eco-trucks in Australia, allow to reduce carbon emissions by increasing the amount of payload per truck, reducing then the number of vehicles on the road. Double-decker trailers are also a similar solution, offering extra loading surface to maximize payload occupancy.

Figure 21. CO_2 emissions per tonne-kilometer per type of truck



Source: IRU Green Compact (2023).

However, larger trucks and double-decker trailers require the right loading and unloading bays. Infrastructure is also critical to leverage efficiency gains of the technologies mentioned above, either by the quality of the road surface, or by having a road network compatible with the use of such systems (not only in pure mechanical form, but also with the right level of digitalization).

Road infrastructure can also enhance drivers' efficiency thanks to easily understandable markings and high levels of ahead visibility. Road design is also having an impact on energy consumption, not only by the road surface quality, but also by the choice of gradients and lengths. However, upgrading road infrastructure is a lengthy and costly process.

iii. Fuels and carbon emission factors

Leveraging ZEVs and LEVs to lower CEF means oftentimes switching from classical powertrains (gasoline, diesel, etc.) towards modified or new powertrains.

The classical truck and bus powertrains run on diesel, converting a chemical form of energy to a mechanical form thanks to a combustion engine. A typical diesel engine is a four-stroke engine, in which the combustion is auto-ignited. Losses happened during these four steps, due to moving parts (friction losses) and thermal losses. It is why a common diesel engine has an efficiency of 40 percent, meaning 40 percent of the chemical form is converted toward a mechanical form.

There are fuel variations of diesel worldwide, with different fuel quality based on crude oil origins and refinery processes. Thanks to engine development, modern engines are more energy-efficient while less pollutant. However, these modern powertrains are more sensitive to fuel quality, notably sulfur content and cetane numbers. Sulfur brings several issues for a combustion engine. The biggest one is the production of particulate matter at the exhaust and the production of pollutants (SO2). Other non-negligible effects are the apparition of corrosion in the combustion chamber and in the injection systems, in combination with the degradation of lubricants performance. As a result, fuel having a high level of sulfur limits engine power output and fuel efficiency, as well as increasing the requirement of frequent oil changes. Low sulfur fuel allows the use of higher injection pressure, cleaner combustion, and the use of low viscosity lubricants, as well as the use of advanced exhaust systems.

Upgrading fuel quality is then creating the right environment for using advanced modern engines, with latest Euro VI vehicles closing 50 percent top efficiency compared to around 40 percent for a Euro III engine. As emissions come from fossil fuel consumption, using more modern vehicles is a great lever of decarbonization, moreover as many Euro VI vehicles will be available at low residual values in the middle-term. However, to leverage such technology, a supply chain of AdBlue must be set up. AdBlue is a urea-based chemical required by exhaust system (selective catalyst reduction (SCR)) to mitigate nitrogen oxides emissions and requested by the engine to run properly.

- **Biodiesel** is a biofuel that can be used in compression-ignition internal combustion engines (diesel engines). Different generations of biodiesel coexist in the current market.

  First-generation biofuels are derived from sugar-starch feedstocks (such as sugarcane and corn) and edible oil feedstocks (like rapeseed and soybean), typically converted into bioethanol and biodiesel, respectively. Second-generation biofuels, on the other hand, use different feedstock and extraction methods. These include lignocellulosic biomass, woody crops, agricultural waste, and dedicated non-food energy crops grown on marginal land unsuitable for food production. The term "second-generation biofuel" is broadly applied to both the advanced technology used to process these feedstocks and the use of non-food crops, biomass, and wastes in conventional biofuel processing. This dual usage can lead to confusion. For example, hydro-treated vegetable oil (HVO) is considered an advanced first-generation biofuels, despite its more sophisticated production process. Trucks and buses primarily use first-generation biodiesel due to their lower production costs.

  Within the first generation of biodiesel, several products exist. The most prominent is called FAME (fatty acid methyl ester), produced through the transesterification of the feedstock. This biodiesel has a lower energy intensity than diesel (38 versus 43 MJ/kg), resulting in an increase of vehicle fuel consumption. A more advanced process uses the same feedstock through hydrogenation, creating HVO. Although more expensive to produce, HVO has characteristics closer to diesel, including the same energy intensity. In the United States and Europe, HVO is known to have a lower CEF than FAME. It emits about 0.3kgCO_2 per liter WTW on average in the EU, representing a 90-percent

reduction in carbon emissions compared to fossil fuel diesel (0.8kgCO_2/L for FAME – 75 percent reduction – WTW). Current HVO prices in the EU bring a 10 percent price increase compared to diesel, however, it could be compensated if regulation allows the same tax incentives for HVO than for diesel (partial recovery of excise taxes).

HVO usage does not require engine modifications and is fully miscible with diesel. FAME can also be mixed with diesel but requires adapting fuel filters to handle fatty content. To describe the degree of mixing, the denomination "B-X" is used in the EU, where X represents the percentage of biofuels blended with regular ones. B5 means a 5 percent blend, while B100 is pure biodiesel.

Biofuels being very close to regular fuels, offer a way to reduce carbon emissions without any major disruptions on engines and fuel distribution network, making it a readily decarbonization solution. Nevertheless, biofuels are energy negative (like all alternatives to diesel), meaning there are energy losses in the full cycle. Based on feedstock, using biofuels might have a limited effect on carbon reduction when all aspects are considered, and put more stress on food prices and availabilities. In the EU, the EEA estimated that carbon dioxides reduction is about 40 percent for biodiesel when considering the impacts on land management, from 80 percent without. While HVO made from waste or residues (e.g. used cooking oil or animal fats) brings emission savings, such feedstocks are only available in very limited volumes and are expected to be primarily used to produce sustainable aviation fuels (SAF).

- **Synthetic fuels** are drop-in fuels that can be used in a classical diesel powertrain. Also called e-fuels and e-diesel, they are produced from the combination of green hydrogen (to be carbon-neutral) combined with captured CO_2. Synthetic fuels are energy-intensive, meaning the full cycle efficiency is quite low, at a typical value lower than 25 percent. It is due to the need to capture CO_2 from the atmosphere and the need for green hydrogen produced from green electricity, before being burned in a regular combustion engine. To date, volumes are not there yet and expected prices could be five to ten times diesel prices. However, if a country could produce very economical green electricity in vast volume, synthetic fuels could replace diesel, not only with the same vehicle engines, but also with the same fuel supply chains.

- **Fossil methane and biogas** offer lower CEF than diesel, from 20 to 90 percent WTW CEF reduction. However, these fuels cannot be used in an auto-ignited combustion, but a spark-ignited one. The powertrain needs then to be adapted, making it impossible to run on diesel anymore. Both fuels are made of methane (CH4), sourced either from fossil or renewable sources (in the case of biogas, RNG, for renewable natural gas). The vehicle architecture needs to be slightly modified to store methane. Diesel tanks must be replaced by new tanks, either cylindrical when methane is stored compressed (CNG) or cryogenic (LNG, liquid natural gas). A new fuel supply chain and adequate skills for maintenance workers must be developed to increase transport operators' confidence in the technology. Leakages must be carefully monitored. As methane is a powerful GHG, its direct emission into the atmosphere will offset its carbon saving potential. Gas vehicle prices are quite comparable to diesel vehicles, with a limited increase.

- **Bridging LEVs to ZEVs**, hydrogen combustion engines are the next innovation to come on the truck market. Hydrogen (H2) could be burned either in a regular diesel engine, in which the air intake is mixed with hydrogen, and the combustion piloted by injecting a small quantity of diesel. The second technology is to adapt a methane engine to handle hydrogen. The benefits of hydrogen combustion engines are their costs, as a common engine factory could be used, and no rare and costly materials are needed. Maintenance and vehicle fueling principles are also close to diesel, requiring less training and adaptation from the workforce. However, hydrogen tanks are costly, as storing hydrogen, the smallest molecule, is a challenge requiring a trade-off between sealing and costs. Leakages could be significant for vehicles with high idle time. Hydrogen combustion engines have also low overall efficiency: production green hydrogen, distributing it and burning it oftentimes results with an overall efficiency of 30 percent. That written, these engines can handle poorer H2 quality than fuel cells.

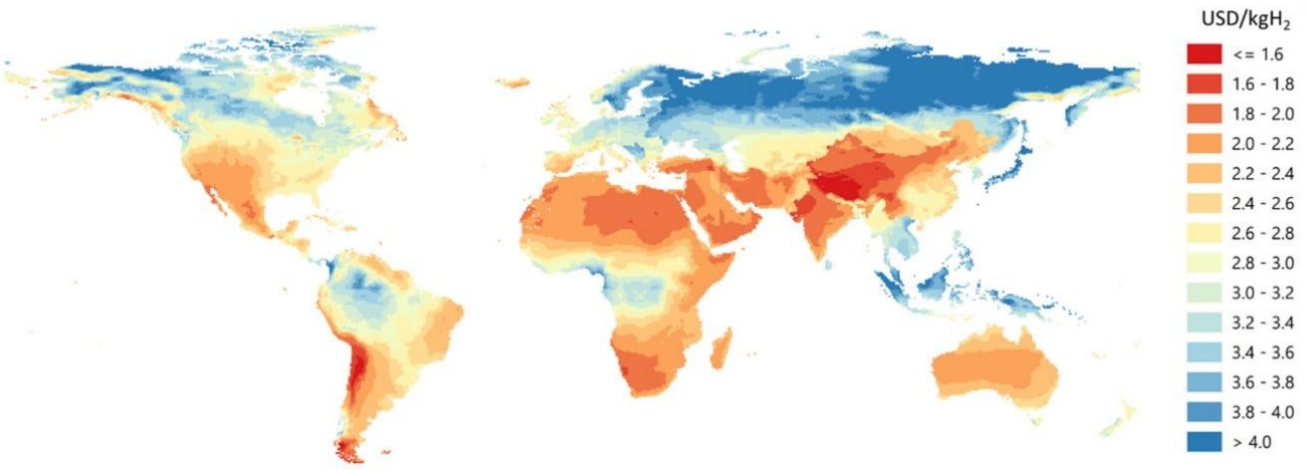
- **FCEVs belong to ZEVs**. The powertrain architecture consists of a fuel cell transforming hydrogen and air into water and electricity, sent to an electric engine to move the vehicle. A battery pack is used as a buffer to handle engine load variation as fuel cell load dynamic is poor. As a result, efficiency is greater than a hydrogen combustion engine, with a value about 35 percent overall. It is one of the most expensive solutions, as tanks and powertrains are costly. Current

prices are five times higher than a diesel truck. Another known issue of fuel cells is their lifespan, which is about 25'000 hours before replacing them, which is expensive as they contain rare materials. The benefits however are there are no CO_2 emissions at the tailpipe, and the fueling time is comparable to diesel.

The reduction of CO_2 emissions of hydrogen-based powertrain highly depends on the hydrogen sources. Today, 99 percent of hydrogen produced comes from fossil natural gas (grey hydrogen), and as a result, grey hydrogen has a WTW CEF at 13kgCO_2/kg. As a result, a hydrogen powertrain will emit more CO_2 molecules than diesel when using grey hydrogen. Carbon capture and storage could reduce hydrogen CEF to a minimal value (blue hydrogen), but the technology is not yet fully scalable. Hydrogen can be produced from electricity and water, using electrolysis to split oxygen and hydrogen molecules. As a result, the H2 CEF depends on the electric carbon intensity of national production, and if the carbon intensity is higher than 260gCO_2/kWh, grey hydrogen will emit fewer CO_2 molecules. When the electricity used is purely coming from green electricity, the CEF will be equal to zero. Regarding current prices, grey hydrogen is almost ten times less expensive than hydrogen made from water electrolysis. Another aspect to consider is that the production of hydrogen through water electrolysis consumes 10 liters of water per kilogram of hydrogen produced. The next figure displays the International Energy Agency (IEA)'s estimates (2019) of green hydrogen production cost from hybrid solar and onshore wind systems, in the long term.

Finally, EVs are the most common ZEV form on the market. The diesel classical powertrain is replaced by an electric system, made of a charging plug, a battery pack, high-power electronics and electric powertrain, made of a specific gearbox and electric engines. The battery pack is the most complex, heavy, and costly component. Battery technology is quite close to electric cars, with lithium-ion and lithium iron phosphate (LFP) being the most popular options. Lithium-ion is slowly being replaced by less costly LFP on trucks and buses, as, despite a heavier weight, they offer more usable energy (about 95 percent, compared to 80 percent for lithium-ion). Questions remain about battery durability and replacement, particularly for trucks and buses having a lifespan much longer than cars and vans. Battery state of health can be assessed to check battery remaining life, and recent studies suggest battery performing better than expected and OEMs warranting 1.5 million kilometers of potential use. Charging is generally done through a combined charging system (CCS) plug (version 1 in the United States, version 2 in Europe) when charging power is lower than 350kW, or megawatt charging system (MCS) for greater power. Electric engines can be placed in replacement of a diesel engine or being placed in the drive axle allowing to remove the regular diesel gearbox and to partially compensate battery weight. Typical values for a road tractor are a vehicle price 2 to 2.5 times greater

Figure 22. IEA estimates of green hydrogen production cost from hybrid solar and onshore wind systems, 2019



Source: IEA (2019), The Future of Hydrogen Report: Seizing today's opportunities.

than diesel tractor, and a battery penalty of 4 tons (for 500km range). Trailers are also being electrified, with their own battery pack and powertrain. They are not per se a ZEV but a device helping to reduce the energy consumption of the towing unit, reducing carbon emissions in the case of a diesel road tractor or increasing operational range for an electric road tractor.

Decarbonization potential of EVs depends on the electricity production and the distribution grid. Cleaner electricity production will leverage the full potential of EV, as they now emit only because of the well-to-tank (WTT) part. To emit less than a diesel road tractor, the electric variant needs to rely on an electric production emitting less than 700gCO_2/kWh (diesel at 30L/100km and BEV at 140kWh/100). Countries such as Botswana, India, South Africa, Turkmenistan, and Uzbekistan have no incentive to use EV before cleaning their electricity production mix. On the other hand, countries like Uganda and Namibia have the potential to fully leverage such technology, at the condition of sufficient energy availability. The distribution grid is for all countries a bottleneck of EV penetration, as it needs to be upgraded to implement sufficient charging point at the right power. Such investments need to be planned by grid operators in relation to the number of EVs running on the roads. Modeling and forecasting are tools which can facilitate grid operators planning.

Finally. typical energy consumption for 40 tons articulated vehicles is 30L/100km for a diesel engine, 140 kWh/100km for an electric engine, 10kg/100km for a fuel cell electric vehicle, and 30kg/100km for a methane engine.

c. Best practices facilitating decarbonization

Technologies are not the only levers to transition toward a carbon-neutral industry. Transport practices can also mitigate carbon emissions by increasing operational efficiencies.

Efficient logistics cover all operational practices reducing energy intensity of goods movement, or the amount of energy spent to move goods from start to destination. In a nutshell, efficient logistics are increasing the payload value per vehicle, increasing their load factor (ratio between payload and vehicle empty mass). Despite increasing vehicle carbon emissions in absolute, these emissions are distributed between more goods, making their movement less carbon intense.

Transport operators are already using organizational schemes to increase their load factor. Consolidation centers and physical internet are strong examples. Consolidation centers are places where goods are unloaded from smaller vehicles and consolidated in larger vehicles before long-distance trips. Physical internet is a network of roads connecting these consolidation centers, generally limited in number, to facilitate goods consolidation. Such practices allow not only to increase trucks load factors, but also to facilitate the deployment of clean energy fueling stations, thanks to a higher utilization rate. They allow the reduction of empty trips as well, as goods transit by fewer corridors. However, such practices need cooperation between road network operators, transport operators and shippers to be successful. Without forgetting that a high degree of digitalization is mandatory to get an efficient system.

Intermodal transport can facilitate transport decarbonization, with the same principle as the physical internet. However, a great level of cooperation is needed between transport operators to leverage such practice while assuring high service levels for shippers. Modal interfaces are keys to success, for a smooth transfer of goods between modes. Particular attention needs to be given to the handling of trailers and containers as maritime, rail, and road do not have the same technological progress pace. To illustrate this point, a truck is generally used for 15 years in Europe, while wagons are in use for 30 years.

Other practices facilitating decarbonization efforts are trailer swapping and retiming. The first one consists of having a network of transport operators running road tractor units, working together to move trailers. The swapping allows first to limit the working area of drivers, making the profession more attractive, and second, to facilitate the deployment of alternative fuels, as a road tractor is never going too far from the same charging stations, and then most compatible with ZEV limited operational range. Retiming consists of moving working time away from peak traffic hours. As a result, trucks reduce the number of starts and stops, with a positive impact on energy consumption.

Another focus is on the reduction of the empty miles, which is annihilating the load factor. In some countries, the counting of CO_2 emitted during the empty operation between two loaded operations, will be distributed on the loaded ones. Reducing empty miles is easier said than done, as the fleet needs some flexibility to dispatch the right vehicle to the right place at the right time. A

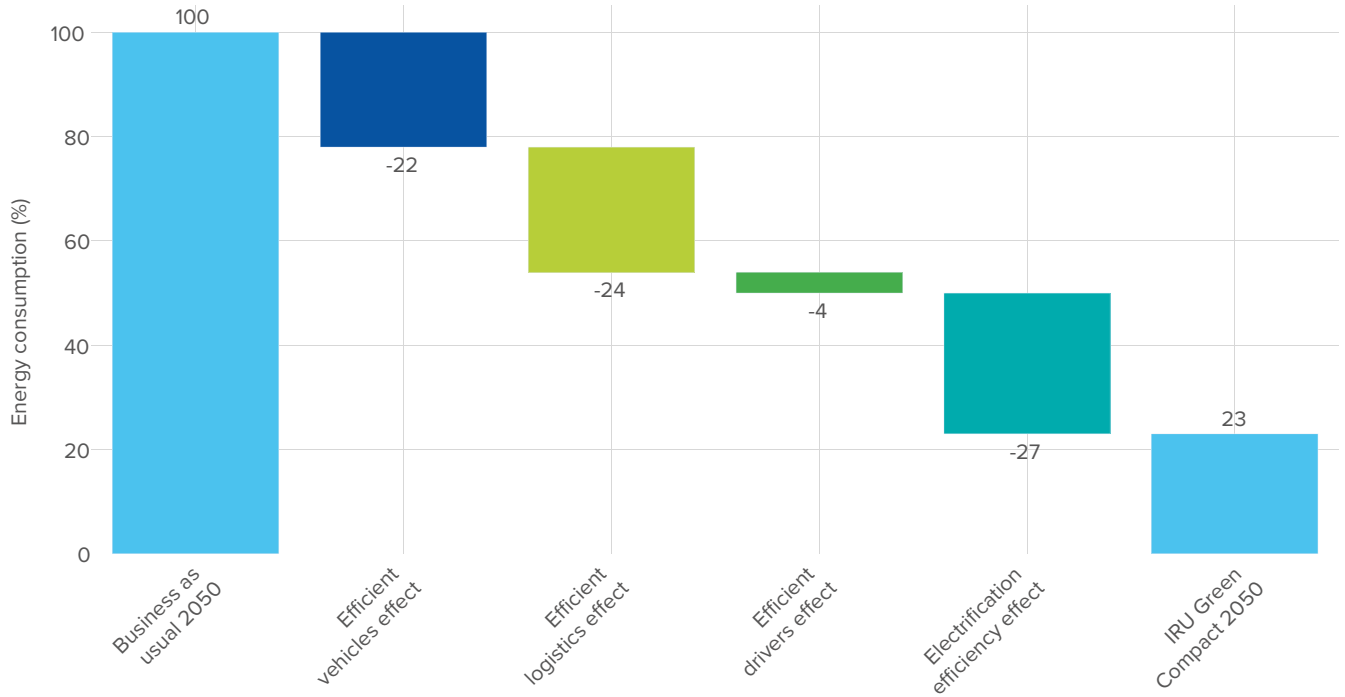
zero empty mile objective is physically impossible, but the top performing countries are seeing their fleet doing less than 10 percent of empty miles. Digitalization and strong fleet managers' skills are the foundation to reach such minimal value.

Decarbonization negative practices shall be mitigated. As written before, vehicles technological developments offer the potential of making logistics more efficient. However, practices such as overweighting and over speeding are obstacles to their deployments. These practices need to be discouraged to allow technology suppliers to optimize and to standardize their products. Another negative operational practice to avoid is waiting time at borders crossing, encouraging engines idling and useless carbon emissions. Border-crossing facilitating tools such as TIR and eTIR are effective ways to reduce carbon emissions without having to invest in new technologies. Moreover, long border-crossing time will require the development of massive infrastructure at checkpoints in charging stations for electric trucks or new fueling stations for hydrogen, which will require great investment as these checkpoints might not have a strong grid today.

Transport practices can use current and future technologies in a way to maximize gains. However, it generally involves greater education and communication between road transport stakeholders. Professionalization of road transport is needed to spread best practices and to facilitate the decarbonization effort. Digitalization offers the potential to facilitate communication between road transport stakeholders, telematics systems for example, helping fleet managers better understanding their operations, gauging efficiency potential, while providing real-time position to transport customers and infrastructure managers. Trust is however mandatory to facilitate data exchanges, and data ownership clarity must be addressed by local regulations.

Efficiency potential highly depends on the national operations. The next figure, coming from IRU Green Compact, shows the energy savings potential when leveraging technologies and best practices.

Figure 23. Energy savings potential by technology and best practice



Source: IRU Green Compact (2023).

d. Examples of national and international reforms

i. China

China is at the forefront of road transport decarbonization, with the most advanced electric vehicle manufacturers, especially for commercial vehicles. Through a long-term approach, China has successfully kick-started its carbon transition using various push and pull measures.

Starting with the push measures, the Chinese authorities began working on fuel consumption in 2011 with their Phase I limits regulation, setting up a threshold of maximal fuel consumption for new truck models according to their design (lorry, tractor, bus, etc.). Over time, new standards came to lower these maximal thresholds until today with the current Phase III limits, and the future Phase IV applying to new 2027 models. Fuel consumption is estimated directly on the engines or via simulations, according to standard fuel cycles. These standards come alongside Euro-like standards, China VI to date, similar to Euro VI standards.

New energy vehicle (NEV) policies, started in 2009, are a set of legislation incentivizing the purchase of ZEVs by transport operators, the sales of ZEVs for manufacturers, as well as setting up ZEV sales mix targets for OEMs. NEV policies also allow end users to be exempted from purchase tax.

In 2023, about 54,000 electric trucks and buses were being sold in the world, with China having a 70-percent share to these numbers. Chinese manufacturers offer today 430 different models to transport operators.

Chinese latest regulations are also pushing manufacturers to work on innovations. Recent rules on battery swapping allowed the technology to accelerate its deployment in the country.

ii. Europe

The EU is another region leading decarbonization efforts globally, thanks to combined efforts from regulators and vehicle manufacturers, people's willingness to reduce their carbon footprint, and companies embracing the challenge. As EU truck manufacturers export their products and technologies, the EU approach to decarbonization influences not only bordering countries but other regions as well.

The EU created a set of regulations acting as push measures, impacting vehicle production and energy systems, pushing transport operators away from fossil fuel-based powertrains. The two foundation texts on the vehicle side are the Euro norms and CO_2 standards for trucks and buses. Euro norms do not regulate CO_2 emissions directly but mitigate other pollutants, some of them belonging to the GHG family, such as methane (CH4) and dinitrogen oxide (N2O). The latest Euro 7 regulation now also regulates battery durability and battery health inspection for newer vehicles. CO_2 standards regulate vehicle manufacturers' sales mix, assessing CO_2 sales performance by looking at the CO_2 performance of vehicles sold. Vehicle manufacturers must report on the type of vehicle sold and their emissions based on modeling. A calculation tool called VECTO has been designed to provide a common and transparent tool for all manufacturers. Emissions are assessed based on vehicle characteristics and mission profiles. After setting a baseline for each manufacturer (sales in 2019and2020), each manufacturer has a time-based set of targets to meet on CO_2 reduction, incentivizing them to move their offer toward ZEVs. This approach allows an acceleration of ZEV technology development but does not tackle the layout of the enabling conditions to use such vehicles.

The Alternative Fuels Infrastructure Regulation (AFIR) is the regulation doing so, requiring countries to deploy a minimal number of public electric charging stations and hydrogen fueling stations on the main routes. These routes are identified as the TEN-T network. AFIR is part of the set of regulations targeting the energy system, with the Renewable Energy Directive requiring, among other things, the decarbonization of fossil fuels by mixing with renewable fuels and the decarbonization of electricity production, and the Energy Taxation Directive, aiming to harmonize energy taxation at the EU level. The last significant piece of legislation is called ETS-2 (Emission Trading System 2), which will set a carbon price for road transport fuel, a price which can be traded on a stock exchange-like system.

For transport operators, push measures have been set on tolling (Eurovignette), setting up fee differentiation based on VECTO results for trucks, with more CO_2-intense vehicles paying higher tolls than ZEVs.

The EU is also working on pull measures, for example, with the CountEmissions EU, mandating transport operators and shippers to report their CO_2 emissions, foresee-

ing as an enabling condition to include carbon reduction in procurement processes. Taxes collected by ETS-2 will be sent to a social climate fund, used to help smaller businesses buy decarbonization solutions. The EU is also adapting its current policies to give more freedom to operators and vehicle manufacturers for ZEVs, such as the revision of the Weight and Dimension Directive, compensating for new powertrain overweight and aerodynamic devices' dimensions.

Countries are also setting up pull measures for transport operators to invest in and use LEV and ZEV, thanks to either purchase subsidies, tax reductions linked to vehicles, and financial help schemes to set up private charging stations.

iii. United States

US legislation combines federal and state regulations. At the federal level, the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) develop regulations that set tailpipe emission thresholds for vehicle manufacturers. The EPA's latest regulation, the Phase 3 GHG emission standard, requires manufacturers to meet CO_2 sales mix targets similar to the EU CO_2 standard. Though technologically neutral, this mandate effectively pushes manufacturers toward ZEVs since internal combustion engines cannot meet these stringent requirements.

States can then go a step further in regulation, as is famously the case in California. The California Air Resources Board (CARB) is notably working on new regulations, adding to the federal Phase 3, with its own Advanced Clean Truck (ACT), Advanced Clean Fleet (ACF), and Low-Carbon Fuel Standard (LCFS) regulations. ACT mandates large truck manufacturers to meet a ZEV sales mix by 2035 (55 percent of Class 2b–3 truck sales, 75 percent of Class 4–8 straight truck sales, and 40 percent of truck tractor sales), and mandates fleets owning more than 50 trucks to report their fleet operations. ACF mandates fleets suited to using ZEV to meet buying targets when renewing their fleet and then to remove classical fossil fuel powertrains from their vehicle park. ACT and ACF have been designed to work together, pushing manufacturers to sell ZEVs and transport operators to buy them. The LCFS regulation sets declining carbon intensity targets for transportation fuels used in the state. Fuel producers that do not meet these targets must buy credits from those that do. The updates increase the LCFS target to reduce the carbon intensity of California's transportation fuel pool from the current 20 percent to 30 percent by 2030 (2010 baseline) and introduce a new target of 90 percent by 2045. LCFS is close to the EU ETS2 regulation.

Fourteen additional states and the District of Columbia have joined California by signing a memorandum of understanding (MoU). This agreement commits them to collaboratively advancing the market for electric medium- and heavy-duty vehicles – including large pick-up trucks, vans, delivery trucks, box trucks, school buses, transit buses, and long-haul delivery trucks. The MoU aims to achieve 100 percent ZEV sales for all new medium- and heavy-duty vehicles by 2050, with an interim target of 30 percent by 2030.

The Inflation Reduction Act (IRA) of 2022 serves as a key pull measure, allocating US$369 billion toward climate and clean energy initiatives, with significant funding for trucking decarbonization. The Act provides substantial incentives, including tax credits of up to US$40,000 for clean commercial vehicle purchases, along with support for infrastructure development and clean hydrogen production.

4. PATH TO REFORM

a. Drivers of reform

Decarbonization of road transport could be motivated by companies' own goals and public pressure; however regulation is needed to establish a coherent industry framework, avoid market distortion and involve all stakeholders. A well-designed regulation passes national and international carbon emissions objectives (coming from pledges) into action and law.

Road transport operators serve as the crucial link between goods producers and their final customers. Their primary objectives are to deliver goods swiftly, safely, and due to fierce competition, at the lowest possible cost. However, incorporating decarbonization targets into tenders is not yet a widespread practice. This often limits carriers' options for adopting cleaner technologies, as these typically increase TCO of vehicles and decrease transport operators' flexibility (lower uptime), both subsequently raising transportation costs.

TCO stands as the most critical KPI within the road transport ecosystem. Shippers rely on TCO to gauge transpor-

tation expenses, while road carriers base their investment strategies on TCO, aiming to reduce it to maintain their profit margins. In response, suppliers and manufacturers design products and services to help carriers lower their TCO.

To help road transport transition toward carbon neutrality, two options are conceivable:

- implementing decarbonization targets in the tendering process to create cost acceptance: and
- developing solutions to mitigate TCO increases while transitioning toward cleaner technologies.

To reduce global road transport GHG emissions, regulators shall start by understanding and quantifying the various sources of emissions, meaning the different carbon intensities of transport operations. To do so, regulators shall incentivize transport customers to measure and communicate their GHG emissions, from scope 1 to scope 3. This will promote CO_2 reporting among stakeholders, push implementing CO_2 reduction objectives into tenders, enhance communication between transport actors, and generate data collection to better understand the issues. By involving transport customers in this challenge, transport operators can better leverage the decarbonization potential of cleaner practices and technologies, as their customers will also need to reduce their emissions to meet their own targets.

Scope 1 emissions are GHG emissions generated by an entity direct operation. Emissions coming from energy consumption to power such operations are considered as scope 2. Finally, scope 3 emissions cover all indirect emissions generated throughout the value chain (including those generated by suppliers), product use, and end-of-life disposal. Scope 1 of one entity could be then scope 3 of another one. In a transport operation, vehicle's TTW emissions fall into scope 1, WTT into scope 2, and WTW emissions fall into shippers' scope 3 emissions.

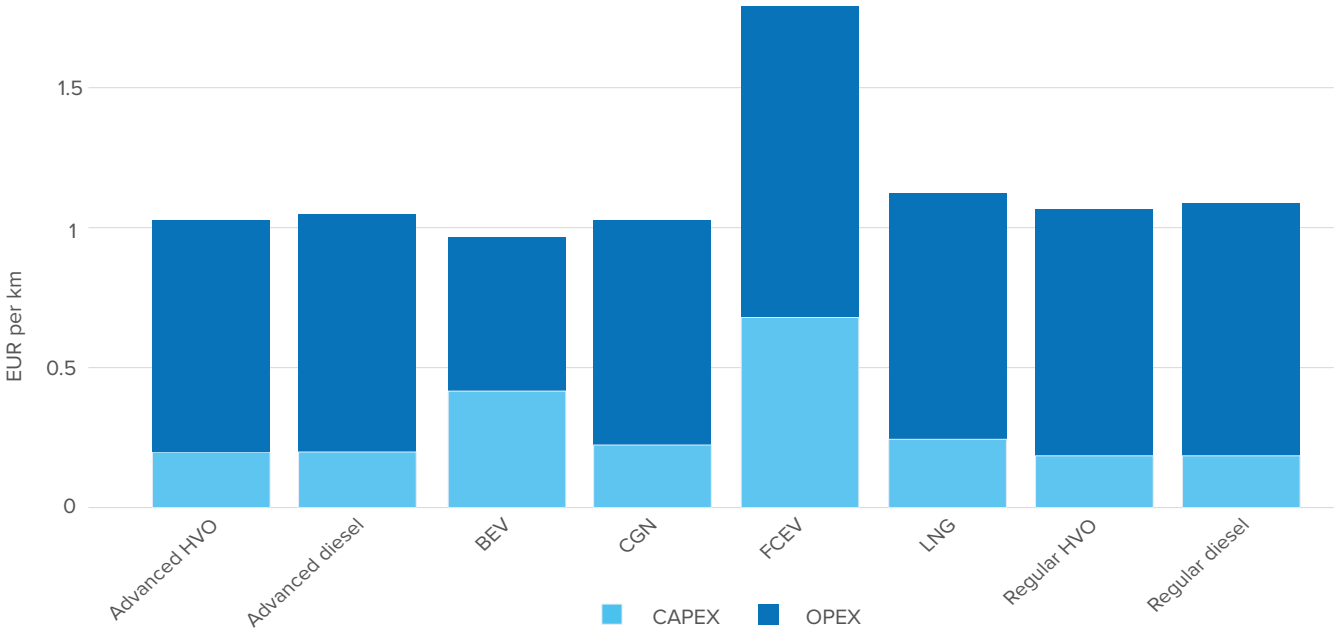
However, this might not be sufficient, as uncontrolled rising transportation costs would lead to strong inflation for final customers. The greatest TCO component being linked to energy consumption, regulators should allow transport stakeholders to use practices and technologies leading to energy consumption reduction, while also working on bringing clean energies to the market at a price comparable with diesel.

In the case of decarbonization, regulations are either considered as pull or push measures. Pull measures are regulations to make the use of practices and technologies more relevant to transport operators, by increasing productivity or reducing TCOs. Push measures are regulations forbidding or limiting the use of certain practices and technologies favoring GHG emissions. Push and pull measures are working together to facilitate the transition, motivating the transport ecosystem to move away from fossil fuels while limiting the costs of the greening effort.

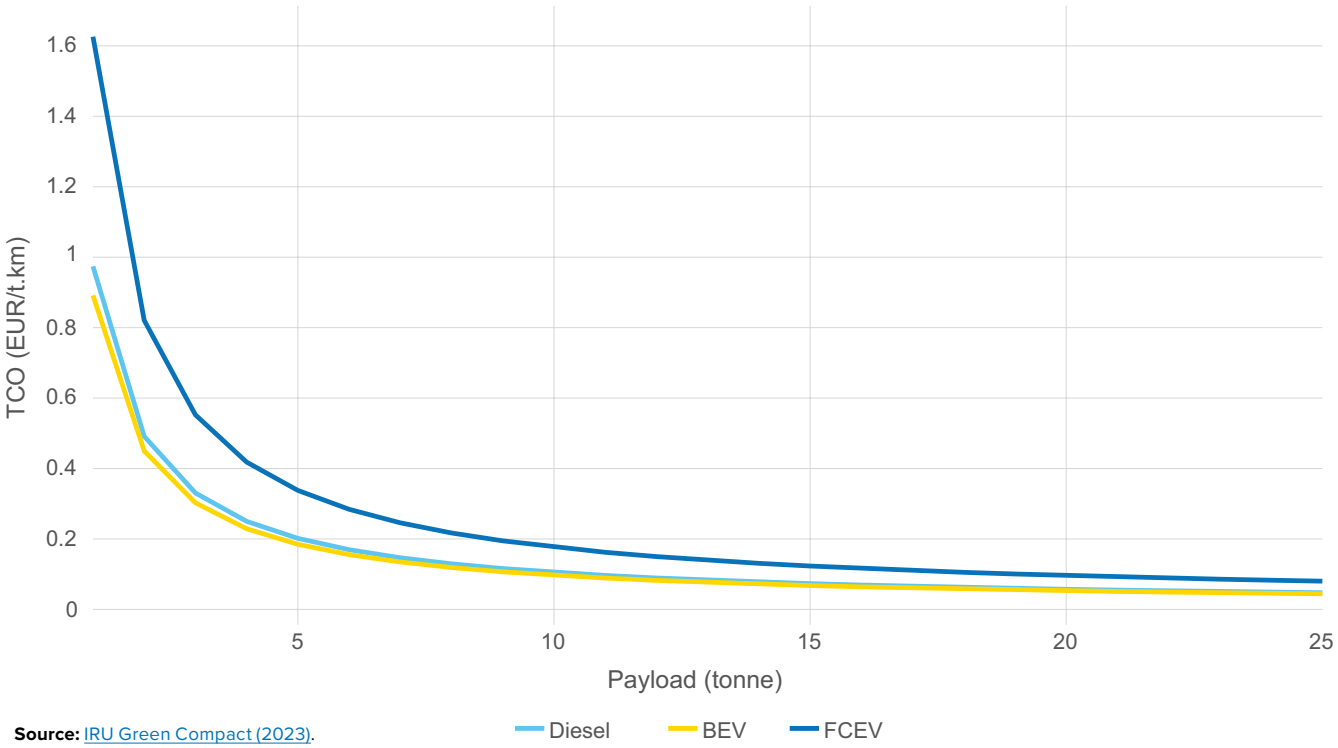
Regulation design shall be done with the help of modeling, to assess the costs of the transition not only for transport operators, but also for society. A proven way to develop a pragmatic road map is to evaluate the current performance of trucks and buses fleet and transport operations to assess its economic and environmental working principles. There is a need to model road transport operations, to forecast transport demand, and then to optimize the energy mix and technologies deployment based on TCO and investments, following a carbon emission-reduction curve, ideally reaching carbon neutrality by 2050. Reducing transition costs is the most pragmatic way to decarbonize road transport as low transport operators' margin is put at risk when investing in new working tools. Such modeling can also assess the impact of new regulations on the final cost of the transition, while assessing the probability of success regarding national green energy supply and manufacturing capacities. Next figures are illustration of such modeling applied to the EU, for an estimation costs of €8 trillion to fully decarbonization trucks and buses in this region.

IRU has developed a comprehensive model looking at road transport operations as an energy system. This model called decarbonization road map maker (DRM) quantifies and forecasts road freight volumes and the distribution according to operation types (goods, distances, usages) and vehicle combinations to assess industry energy consumption. From these data, the model investigates pragmatic decarbonization road map, looking at the optimal combinations of efficiencies and technologies to follow a carbon dioxides reduction objective while minimizing the cost. The model can also assess the cost of transport policies aiming at reducing GHG emissions.

Figure 24. Cost structure by powertrain and payload in Germany

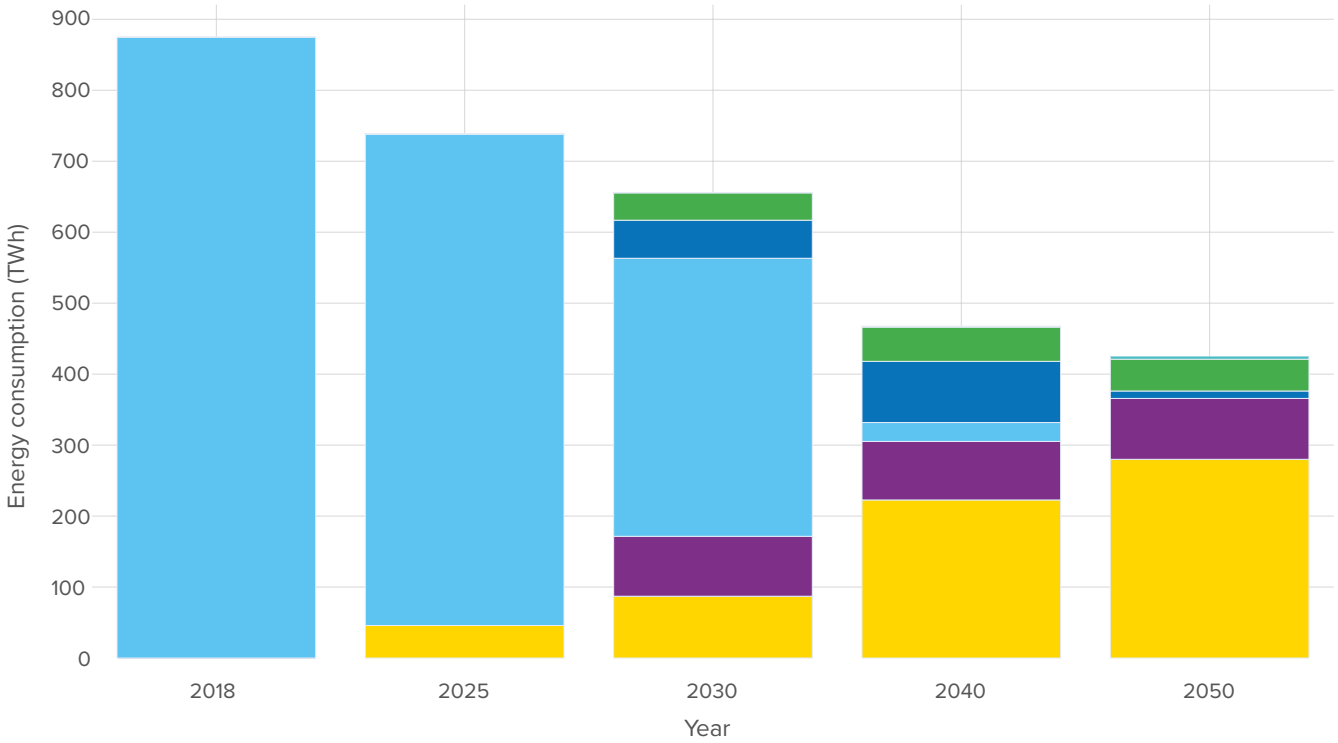


Operational cost differences for different payloads in Germany



Source: IRU Green Compact (2023).

Figure 25. Energy consumption by energy source, 2012–2025



Source: IRU decarbonization road map for the EU (2023).

b. Main challenges

i. Data collection

Decarbonization requires unprecedented investment figures to be successful, while road transport is vital for a healthy economy. Understanding accurately national transport operations are keys to building a pragmatic decarbonization plan. It will not be enough though, as decarbonization involves necessarily energy production and distribution. Countries should then facilitate the data collection of two major data sets:

- energy systems metrics; and
- road transport metrics.

Energy systems are defined here as the combination of energy generation, transmission network (grid), and distribution. For a given country, an energy system encompasses the quantity of energy (in joules [J] or watt-hours [Wh]) by type (electric, fuels, hydrogen, methane, etc.) produced, stored, and consumed across the entire industrial landscape. Supply and demand should be balanced to avoid excessive price distortion.

Energy is neither consumed nor produced – it is transformed. For example, a combustion engine transforms thermal energy into mechanical energy to move a vehicle. However, for clarity, "production" and "consumption" are used to describe these two forms of energy transformation.

Data needed to characterize an energy system, with a road transport decarbonization perspective, are looking at how much energy will be available per source of energy through local production and importation; current and future prices; current and forecasted consumption for other industries; as well as current and forecasted carbon emission factors. This data can be collected through energy provider surveys or market monitoring.

A note on collecting energy consumption data from other industries: the most pragmatic road transport decarbonization plan considers the energy needs of other sec-

tors. As clean energy production increases, industries will compete to secure the most suitable energy forms at the best prices. Since road transport connects these industries, limiting other sectors' output to secure energy would often lead to freight volumes reduction, thus lowering road transport's energy needs. A smart approach balances energy distribution across industries while minimizing overall activity reduction.

Understanding how the industry operates enables the identification of the most suitable solutions to decarbonize road transport according to the local economical and energetic environment. Road transport metrics encompass data needed to understand how transport operations happen. The more data types are available, the greater the understanding. While not exhaustive, a basic set of KPIs includes road freight volumes, road passenger volumes, vehicle fleet characteristics (number, age, type), and types of transported goods, with a granularity in usages and distances. These key figures help identify the best decarbonization options at a national level.

Data collection is not an easy task, as it is often based on surveys, requiring high statistical skills and great harmonization levels between statistical departments. Data should also be anonymized before being shared with industry stakeholders. For reference, the EU uses Eurostat, a free data exchange platform covering all types of statistics describing the region. Eurostat compiles data from national statistical offices and provides guidelines and templates to harmonize data collection.

ii. Industries coordination

Road transport decarbonization is expected to reduce its current uptime and flexibility, potentially degrading the service level offered to other industries. Without forgetting the need to distribute adequately green energy between industries, with limited stock in the next few decades.

A higher level of coordination should be set in place by national governments between all economic actors. It is by itself a great challenge, due to the size of the effort and the vast diversity of industries and stakeholders.

Governments and national authorities shall encourage cooperation and coordination between all part of the industry to foster a societal common approach for decarbonization, to take advantage of cost reductions thanks to massification, to reduce uncertainties and facilitate business strategies, and to create a broader challenge acceptation.

c. Recommendations

As decarbonization requires a multi-angle approach and global cooperation between public and private actors, the first recommendation is to build a governance body responsible for driving and coordinating activities between stakeholders. Such governance body would then be the best suited to adapt and to implement the following recommendations according to its local working environment.

i. Track CO_2 emissions

Measuring CO_2 emissions coming from trucks and buses shall be the first step in a decarbonization journey, and will serve as a foundation when designing carbon emissions reduction objectives. Detailed knowledge of emission levels and emission sources enables the creation of smart and realistic goals, and the implementation of effective monitoring tools will ease tracking industry progress.

ii. Assess national energy potential

Evaluating the country's capacity for producing various types of green energies will guide investment and infrastructure development. Countries with large feedstock could rely more on biofuels and biogas. Countries with large sun or wind potential could rely more on renewal energy, and according to the energy output, green electricity or green hydrogen. Countries with nuclear affinity and hydropower could rely more on green electricity. Assessing energy potential should not only limit on deciding on energy choice, but also understanding production potential and prices dynamics, without forgetting estimating carbon emission factors.

iii. Establish a robust data collection system

Gathering comprehensive data on energy systems and road transport metrics are key to inform decision-making and to characterize progresses. The right level of understanding will enable a smooth and successful transition by allocating the appropriate energy to each operation, while improving energy efficiency and controlling costs. TCO are critical to assess to facilitate the transition, as well as uptime, involving notably a steady flow of green energy. Data sharing and data transparency are critical to assess

TCO and uptimes, to share knowledge and reduce frictions between stakeholders. Countries shall tackle data ownership regulations to facilitate such data exchanges.

iv. Set clear decarbonization targets

Defining a carbon neutrality end date and intermediate objectives based on collected data and realistic projections is next. CO_2 objectives for road transport should be carefully considered in regard of energy systems development and in regard of other industries' decarbonization objectives. Objectives clarity and stability are fundamental in the long run to encourage stakeholders to assess new business cases and to invest accordingly. Objectives must also come from an open-source impact assessment, based on modeling, with shared assumptions. Such assumptions and models shall be discussed with transport stakeholders to collect opinions and to get buy-in. A gradual transition from current emissions to carbon neutrality is recommended to encourage road transport stakeholders to reduce emissions. This approach, with clear and consistent objectives, minimizes uncertainties while allowing transport ecosystems and various supply chains to adopt new practices and adapt to new technologies.

v. Implement a multi-angle approach

To maximize investments impacts and lower decarbonization overall costs, the national plan shall avoid relying on a unique solution, such as one alternative fuel. A multi-angle approach increases the chances of success by creating the enabling conditions for using new technologies, and by lowering the risk of disruption for transport stakeholders. This multi-angle approach shall be based on professionalization, education, standards improvements, efficiency improvements, and the use of new carbon-neutral powertrains.

- **Road transport professionalization:** the foundation of a more efficient system lies in professionalism. Having a more professional road transport allows an easier integration of new practices and technologies, clearer communication between stakeholders and law makers, and nurture a culture of improvements.
- **Education and training:** even professionals need to continue their education and training to continue improving. New practices and technical solutions require new knowledge and know-how, that shall be recognized at the state level by certifications.
- **Standards improvements: industry standards shall be improved to ease the deployment of new technologies.** Fuel quality needs to meet international standards for allowing the use of modern powertrains. The last Euro VI trucks are already more energy-efficient than the first Euro VI models, and they need greater fuel quality than previous generations. Road infrastructure needs to meet international standards to facilitate energy efficiency, with modern road surface and smoother topography. Maintenance needs to be upgraded (thanks also to education and professionalization) to be able a knowledge transfer for fixing new technologies and keeping uptime at diesel standards.
- **Efficiency improvements:** practices and technologies reducing energy consumption shall be enabled and promoted. Policy makers can leverage greater vehicle weight limits to improve load factors, facilitate the creation of consolidation centers and intermodal hubs. Historically, improving efficiency led to reducing costs and increasing transport demand, known as the rebound effect on a more efficient system. It might not be the case for road transport decarbonization as transportation costs would rise in the transition: efficiency could compensate for this rise and keep transport volumes at similar current levels.
- **Alternative fuels:** alternative fuels are the ultimate solution to reach carbon neutrality. Investments are needed to create the right infrastructure based on the national energy environment and local transport practices. Numerous charging and refueling points, low energy prices, low-carbon emission factors and steady supply of green energies are the mandatory conditions to ease their use.

vi. Foster stakeholder collaboration

Diesel vehicles successfully brought low transportation costs, reliability, and flexibility, at the expense of the environment and awareness should be raised that transitioning to carbon-neutral powertrains implies a fundamental switch from the traditional way of doing business in transportation. Countries shall facilitate communication and cooperation between regulators, transport operators, shippers, and energy providers to handle the quick losses of switching away from diesel.

vii. Consider the international context

A national plan needs to take account of neighboring conditions to facilitate import and export operations, and to avoid loss of interoperability. Facilitation of international transport leads to minimizing technological costs, as well as avoiding carbon emissions coming from waiting time at borders. Digital solutions such as eTIR have the potential to reduce idling, and investments required to power trucks and buses at borders.

viii. Implement supportive regulations

Regulations shall facilitate the adoption of new technologies and practices leading to carbon neutrality. There are two sets of regulations, push measures, penalizing the emission of carbon dioxides, and pull measures, incentivizing the decarbonization efforts. Push measures shall be carried out in parallel of pull measures, with greater taxation and restrictions on one technology being compensated by incentives and legal advantages to using another. Countries shall ensure that capacities are in place before enforcing penalizing measures. Regulations should ensure technological transfer ease, such as adoption of international vehicles and infrastructure standards. Many international standards exist on vehicle technology, and adopting these standards is a way to reduce costs as research and development investments are distributed over a greater number of products. Standardization facilitates the emergence of new ideas, practices, and technologies, accelerating even further innovations.

ix. Provide financial incentives

Based on the first market assessment on efficiencies and alternative fuels readiness, countries could kick start the transition by offering subsidies, tax breaks, or other financial support to offset the higher initial costs of cleaner technologies. Push measures at the origin of tax collection shall be redirected to support decarbonization industry efforts in the most efficient manner, i.e. based on TCO estimations, carbon dioxides abatement performances, but also with innovative financial incentives: purchase subsidies involving vehicle scrapping, insurances on battery value or vehicle residual value, etc.

Green financing offers new solutions to financially support operators in their transition, such as backing up the vehicle residual values, basing purchasing incentives on carbon market bounds or offer carriers the opportunity to rent partly or entirely its fleet based on the usage done.

x. Support research and innovation

Investing in research and development, facilitate rapid patenting and regulatory approval are creating the enabling conditions to locally adapted solutions. Countries should also embrace green corridors testing and pilots, showcasing decarbonization solutions in real business cases.

xi. Monitor to adjust

Regularly assessing progress towards decarbonization goals would allow evidence-based adjustment of strategies. Tracking progress passes by monitoring carbon emissions, and the industrial context to understand them: carbon emissions intensity (amount of CO_2 per tonne-kilometer and passenger kilometer), fleet compositions, infrastructure upgrade, green energy production. Stakeholders' surveying is a powerful tool to assess market readiness and responses to new technologies, practices, and regulations.

J. Externalities in road transport services

Section summary

In the road transport sector, a key distinction is made between internal and external costs. Internal costs are those directly incurred by transport operators in acquiring, operating, and maintaining vehicles and facilities. External costs, however, are the effects of transport services that are borne by society as a whole, and often not taken into account by transport operators and users. These external costs include environmental impacts such as air pollution, greenhouse gas emissions, and noise, as well as the costs associated with accidents and congestion. Increasingly, it is recognized that internalizing these external costs is essential to ensure that prices accurately reflect the total costs of transport activities and that these prices increase in proportion to the costs imposed on society. This section identifies four main categories of external costs associated with road transport services:

1. Infrastructure costs, while not a direct externality, are closely linked, as infrastructure decisions influence transport service choices and their long-term impacts, with climate change increasing the need for resilient and more costly infrastructure.
2. Environmental costs include greenhouse gas emissions, which harm human health and the atmosphere; air pollution from fossil fuel combustion (a particular concern in developing countries where data for determining appropriate taxes is often lacking); and noise, which has negative impacts on health, well-being, and property prices.
3. Road safety imposes external costs – including personal injury, death, lost income, and medical and policing expenses – with heavy goods vehicles often causing the most severe accidents.
4. Congestion increases transport service prices by impacting time, as each vehicle on the road delays others, creating a marginal cost that is difficult to internalize, though congestion charges and access restrictions can help.

The section suggests a gradual and incremental approach to internalizing these external costs. Several measures can be taken, including educating users and service providers about the social and economic costs of externalities to gain support for internalization efforts; promoting eco-driving techniques to reduce emissions and fuel consumption; and recovering infrastructure costs through various charges and taxes. Pricing carbon emissions is identified as an effective way to reduce costs, although fuel prices vary globally and their impact depends on demand elasticity. Fleet modernization, including upgrading to higher vehicle standards, can also lower emissions, but should be combined with pricing and better regulation. In many developing countries, regulatory approaches need to address the prevalence of small-scale operators using old, polluting vehicles, and should aim to minimize operational constraints and optimize route networks. Finally, transit countries can recover costs related to infrastructure, environmental protection, security, and administration through electronic toll systems and standardized fees.

1. INTRODUCTION

In road transport it is important to make a distinction between internal and external costs. Internal costs are those borne directly by transport operators by acquiring, operating and maintaining vehicles and facilities. Most, if not all, direct costs of transport are borne by operators and shippers and passed on to users of the transport services as well as society. External costs, on the other hand, include the effects of transport services, arising from environmental impacts (air pollution, greenhouse gas emissions, noise), accidents and delays and congestion. The external costs of transport are borne by society and are often not taken into account by transport operators and users.

However, it is increasingly recognized that internalizing external costs of transport is important in order to ensure that prices reflect all the costs associated with transport activities and that they increase in proportion to the costs imposed on society. Proposals to internalize costs should be based on some form of regulatory impact assessment.[63] This is critical given the extensive role that road transport plays in the modern economy. Awareness of the full costs of transport can help operators to plan and manage their operations in as efficient and sustain-

63 IRU's position, as stated in its paper CMT/G8351/JHU, is to apply the cheapest cost avoider principle, based on coase.

able a manner as possible. With proper internalization, prices of transport will reflect the full cost of services and therefore influence consumption patterns of users. Where the "polluter pays" principle is applied, these costs can be reflected in transport prices and are therefore paid by users. However, in many cases, this principle is not practicable nor socially acceptable, and other mechanisms have to be found to either reduce the level of external costs or to recover the costs through other means such as taxation. The basic rationale of taxation is to discourage use, making it the most obvious instrument to internalize external costs.

2. ESTIMATING EXTERNAL COSTS

There are four main categories of external costs imposed by road transport services:

- increase in infrastructure costs;
- environmental costs (greenhouse gas emissions, air pollution, noise);
- road crashes; and
- congestion.

The proportion of each of these costs in total external costs will vary depending on context, be it country, rural versus urban areas, developed versus developing country, etc. Table 8 presents the general averages of the costs estimated at a global scale. It shows that costs related to global warming are highest followed by pollution at a local level. The characteristics of each of the above four categories of costs are described below.

a. Infrastructure costs

While infrastructure costs are not an externality as such, there is a link between infrastructure and externalities which is important in part because infrastructure choices made today will determine transport service choices and impacts over long periods of time (Riha et al. 2022)[64]. In addition, due to the sector's contribution to climate change, there will be increases in expenditure to make transport infrastructure resilient. A higher frequency of extreme weather conditions related to climate change, such as storms and floods, will require more costly infrastructure repairs and development.

Table 8. Estimated costs of transport externalities

Externality	Heavy goods vehicules costs (USD/km)
Traffic congestion	0.0005
Local pollution	0.0135
Crashes	0.0075
Global warming	0.02050
TOTAL	**0.0420**

Source: Based on Parry (2011), Reforming the Tax System to Promote Environmental Objectives: An Application to Mauritius, Working Paper WP/11/124

b. Environmental costs

Transport is one of the largest contributors to greenhouse gas emissions. It is estimated that the logistics and transport sectors generate more than 5.5 percent of total greenhouse gas emissions (TTW) in the world (Milligan, et al. 2014). The combustion of fossil fuels in transport leads to two types of emissions: noxious gases and greenhouse gas emissions. These emissions are associated with harm to human health and to the atmosphere.

However, in many developing countries environmental and congestion costs are difficult to determine and therefore to recover. As noted elsewhere in this Guide, data on the quantum of these externalities are normally not available. As such, it is difficult to determine what the taxes should be that could be levied to compensate for these externalities. Rather, the approach that is taken is to levy a nominal tax, either through fuel or other taxes, or to impose vehicle standards that seek to minimize negative environmental impacts.

The upgrading of vehicles to higher standards, such as the Euro emission standards, and improvements in fuel consumption both help to reduce air pollution, though increasing traffic congestion in some countries can counteract these measures. Advanced economies have implemented emission control measures for more than a decade. For example, in the United Kingdom there are several measures that seek to make logistics operations sustainable in economic, social and environmental terms while the EU in the early 2000s promoted a "fair and efficient pricing" policy designed to ensure all external

64 Riha, Zdenek, Dockalikova, Iveta, Tichy, Jan and Koštiaľ, Daniel. "Solving transportation externalities, economic approaches, and their risks" Open Engineering, vol. 12, no. 1, 2022, pp. 1-10. https://doi.org/10.1515/eng-2022-0001

damage by road traffic is fully internalized in the price of transport. Polluters are expected to pay the marginal cost of their activities.

Noise can be an annoyance and prolonged exposure has negative effects on health and personal well-being. Noise has also been determined to impact property prices.

c. Road safety

Road safety is a major consideration in any meaningful reform of the road transport sector. The imperative for its integration stems from the profound human and economic consequences of road traffic crashes, which constitute a significant global public health crisis. Annually, approximately 1.19 million lives are lost,[65] and tens of millions more are injured on roadways worldwide, with a disproportionate impact on young people. This tragic toll underscores the urgent need to prioritize safety within transportation strategies.

The economic repercussions of inadequate road safety are substantial, often costing nations around 3 percent of their gross domestic product.[66] The WHO also notes that low- and middle-income countries are estimated to experience even greater economic losses, losing up to 5 percent of their gross domestic product (GDP) each year.[67] These costs encompass a wide array of factors, including healthcare, lost productivity, legal proceedings, emergency services, and infrastructure damage. In the United States, motor vehicle crashes cost American society US$340 billion in 2019, representing 1.6 percent of the US GDP (Blincoe, et al. 2023).[68] Recognizing this impact, the United Nations has embedded specific road safety targets within the Sustainable Development Goals, highlighting its critical role in achieving broader developmental objectives.

Addressing the multifaceted challenge of road safety requires a comprehensive and collaborative approach. Effective reform must consider human factors, road infrastructure design, vehicle safety standards, and the efficacy of post-crash care systems. Furthermore, ethical and equity considerations demand attention, as vulnerable road users and populations in LMICs are disproportionately affected by road traffic injuries. Therefore, the integration of robust road safety measures is not merely a desirable component of road transport sector reform but an indispensable element for fostering sustainable, equitable, and economically sound transportation systems.

d. Congestion

Congestion can be reflected in the price of transport services by operators as it impacts on time, which is a major variable in the costs structure of transport services. However, each vehicle on the road causes delays to other vehicles, which is the marginal cost of congestion. Therefore, congestion costs have to include also costs imposed on other road users and therefore to society through delays. However, such costs are difficult to determine and internalize. Still, some measures can be taken, including congestion charges, to reduce the volume of traffic or through restrictions on access to parts of the road network during certain times of the day. For example, several port cities (including Chittagong, Hanoi, and Manila) have resorted to daytime bans on truck movements to ports as a first measure to combat congestion (AAPA 2008). Although they reduce congestion, the bans add to the cost and time of shipping or distributing goods, and can thus have significant economic impacts.

Congestion resulting from port traffic is a more serious problem than simple figures might indicate. A typical container berth handling 300,000 containers per year will generate about 2,000 truck movements per day, assuming that trucks have to make two trips for each container, one in and one out. But to this must be added the other traffic generated by the terminal – the journey to and from work for the terminal operating staff, customs agents, other public agency staff, and other logistics and service providers. This additional traffic can more than double the traffic associated with moving freight in and out of the port. City traffic can also cause delays to trucks trying to reach the port, reducing port operational efficiency.

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65 WHO (2013), "Road Traffic Injuries".
66 WHO, "Road Traffic Injuries".
67 PIARC (2024), *Road Safety Manual*, section 1.3.
68 Blincoe, et al. (2023). *The Economic and Societal Impact of Motor Vehicle Crashes*, US National Highway Traffic Safety Administration Report No. DOT HS 813 403).

3. PATH TO REFORM

For purposes of economic efficiency, it is important to internalize costs, but internalizing the external costs of road freight transport is difficult. A gradual and incremental approach is advisable.

a. Drivers of reforms

There are several drivers of reform related to externalities of road transport services. The main ones are:

- **Environmental concerns.** Such concerns have over time become a primary driver of reform in addressing the externalities from road transport. The need to reduce greenhouse gas emissions, air pollution, and noise pollution has become increasingly urgent. Reforms are focused on promoting cleaner technologies, such as electric and hybrid vehicles, and implementing stricter emission standards. These measures aim to mitigate the environmental footprint of road transport and contribute to broader climate change goals.
- **Global commitments to sustainability and climate change mitigation.** International agreements such as the Paris Agreement require countries to take action to reduce carbon emissions and promote sustainable transport solutions. These commitments are shaping national policies and driving reforms that align with global sustainability goals. These measures aim to create a more sustainable and resilient transport system that supports long-term environmental and economic objectives.
- **Economic efficiency.** Optimizing the use of road infrastructure, reducing congestion, and minimizing the costs associated with road transport are major consideration when dealing with externalities of road transport. Measures such as congestion pricing, improved traffic management systems, and investments in infrastructure are being implemented to enhance the efficiency of road transport networks. These reforms aim to reduce travel times, lower operational costs, and improve overall economic productivity.
- **Safety and security.** Reducing the number of crashes, injuries, and fatalities on the roads is a top priority. Reforms include implementing stricter safety regulations, improving road design and maintenance, and promoting the use of advanced safety technologies in vehicles. These measures aim to create safer road environments for all users and reduce the human and economic costs associated with road accidents.
- **Social equity.** Ensuring that all segments of the population have access to safe, reliable, and affordable road transport services is essential. Reforms focus on improving public transport options, ensuring equitable access to transport infrastructure, and addressing the needs of vulnerable populations. These measures aim to create a more inclusive and equitable transport system that benefits everyone.
- **Public health concerns (increasingly).** The health effects of air pollution, noise pollution, and road accidents are significant. Reforms aim to mitigate these health impacts by promoting cleaner technologies, improving road safety, and reducing exposure to harmful pollutants. These measures contribute to better public health outcomes and a higher quality of life for communities.
- **Technological advancements.** The adoption of new technologies such as autonomous vehicles, telematics, and smart infrastructure is transforming the industry. Reforms aim to leverage these technologies to improve the efficiency, safety, and sustainability of road transport. These advancements offer new opportunities to address long-standing challenges and create a more modern and resilient transport system.

b. Main challenges

Reforming road transport to address externalities presents several significant challenges. These include:

- **Costs of reform.** The costs of upgrading infrastructure, adopting new technologies, and enforcing new regulations can be substantial. The financial strain can be particularly challenging for governments and smaller transport operators, making it difficult to allocate the necessary resources for comprehensive reform.
- **While reforms aim to reduce negative externalities, the process of implementing these changes can have unintended consequences.** For example, the production and disposal of old vehicles, the extraction of raw materials for new technologies, and the potential displacement of workers are all factors that need to be considered. Ensuring that reforms are implemented in a way that minimizes adverse effects and promotes social equity is essential.

- **Road safety improvements face several challenges, chief among them:**
  - Inadequate funding – especially in low- and middle-income countries, limited financial resources hinder infrastructure improvements, enforcement, and public awareness campaigns;
  - Data deficiencies – accurate data on crashes, injuries, and fatalities are crucial for understanding the problem, identifying risk areas, and evaluating interventions;
  - Weak enforcement – insufficient police presence, corruption, and lenient penalties reduce the effectiveness of road safety measures; and
  - Poor infrastructure – bad road design, inadequate maintenance, and a lack of safety features like pedestrian crossings and barriers significantly contribute to crashes. Large investment and long-term planning are necessary to address these issues.
- **Technological integration.** The adoption of new technologies, such as EVs, autonomous driving systems, and smart infrastructure, requires significant investment and expertise. Ensuring compatibility between new and existing systems, training staff to use new technologies, and managing the transition period can be daunting tasks. Companies and governments must invest in training and support to ensure a smooth transition and to maximize the benefits of technological advancements.
- **Political economy.** Reforms often require changes in behavior and practices, which can be met with resistance from the public and stakeholders. For example, measures such as congestion pricing or stricter emission standards may face opposition from drivers and businesses. Overcoming this resistance requires effective communication, public engagement, and efforts to demonstrate the long-term benefits of the reforms.
- **International coordination and cooperation.** Addressing the externalities of road transport often requires coordinated efforts across borders, particularly in regions with interconnected transport networks. Ensuring that reforms are aligned with international standards and commitments, such as those related to climate change, requires effective collaboration and negotiation between countries.

c. Recommendations

There are various though still evolving measures that can be taken to internalize the external costs of transport. Some of the more common and proven approaches are described below.

i. Educating users

Internalizing the external costs of road transport often faces skepticism and resistance from users. Therefore, it is important that users and service providers are provided with information on the social and economic costs that are involved. There are high costs due to air pollution, congestion, accidents, and climate change. So, society already pays these costs but needs education on their contributory factors. This is the reason why it is important for countries to collect and provide information on all the different aspects of externalities. Information on trends should also be provided. The collection of transport statistics is poor in many developing countries, yet is critical to proper planning and regulation of the sector.

In passenger transport, GHG emissions can be reduced in part by encouraging greater use of public transportation systems, such as buses and trains. Suh systems can significantly lower GHG emissions by up to two thirds per passenger, per kilometer compared to private vehicles. This shift not only helps in curbing climate change but also brings numerous societal benefits, including reduced traffic congestion, improved air quality, and enhanced access to jobs, education, and urban services. By investing in reliable and efficient public transport infrastructure, cities can make substantial progress towards their climate goals while fostering sustainable and equitable urban development.

ii. Driver training

Driver training is covered in Section IV. D. However, for efficient use of commercial vehicle, the following should be considered.

Eco-driving is an effective approach to reducing transport externalities, such as greenhouse gas emissions, air pollution, and fuel consumption. By adopting optimal driving techniques, drivers can significantly cut emissions and save money. For example, avoiding hard acceleration and braking can improve fuel efficiency by up to 33 percent on highways and 5 percent in urban areas. Additionally, maintaining a steady speed, using cruise control, and en-

suring proper vehicle maintenance can further enhance fuel economy and reduce the environmental impact of driving. Eco-driving not only benefits the environment but also promotes safer driving habits and reduces wear and tear on vehicles, leading to lower maintenance costs and longer vehicle lifespans. By encouraging eco-driving practices, we can make a substantial contribution to mitigating the negative externalities associated with road transport.

Specific examples of eco-driving techniques include:

- **Smooth driving.** Using the gas pedal and brakes gently to avoid emissions.
- **Gradual acceleration and deceleration.** Applying gentle pressure to the gas pedal when accelerating and allowing the car to slow down naturally instead of applying too much pressure on the brake.
- **Regular vehicle maintenance.** Getting regular tune-ups, following the manufacturer's maintenance schedule, and using the recommended motor oil.
- **Adhering to speed limits and maintaining steady speed.** Using cruise control on highways to maintain a consistent speed, reducing fuel consumption and emissions due to constant acceleration and deceleration.

iii. Infrastructure costs

Estimating infrastructure consumption costs is the easiest of all the externalities to determine and internalize. Internalization can be achieved through levies of duties and taxes on equipment and fuel, infrastructure consumption charges (including tolls) and other indirect charges. These costs are important to determine if the total receipts cover all associated costs and whether the balance of the amounts paid is sufficient to recover external costs. The main issue is whether the direct and indirect returns from such additional costs are justifiable or whether consumption costs can be recovered from users. In those instances where infrastructure is underutilized and there is spare capacity, revenues could be well above the marginal cost of providing additional services. Investing in additional capacity to handle a higher volume of traffic on the other hand may result in under-utilization. Additional capacity can always be financed by users through user tariffs or some other cost recovery mechanisms. This is often the case with road transport where fuel taxes, tolls, or other mechanisms are common to recoup infrastructure development and maintenance costs. In East and Southern Africa, both COMESA and the SADC have defined harmonized principles for road infrastructure costs recovery which are widely used.

Cost recoveries from transport operators will grow due to climate change and the increased likelihood of damage. It will also become important to limit overspeeding and vehicle overloading, both of which reduce the lifespan of infrastructure. In Kazakhstan the authorities restrict driving during the summer months to minimize road deterioration when asphalt is soft (Tengri News, 26 February 2025)[69].

It is often easier to internalize the external costs of the domestic fleet than foreign registered vehicles. Transit countries, in particular, can bear a significant burden of the costs of externalities. Nevertheless, the costs should be estimated, and appropriate measures taken to internalize them even for the foreign vehicles. It is important to recognize that differences between countries in internalizing externalities can affect the competitiveness of transport services on international routes. The fleets of those countries that do not fully internalize external costs can have a cost advantage over those that do. In a regional context, where transport services are integrated, it would be important for the countries to adopt harmonized approaches to internalizing the costs.

Addressing the externalities is crucial to ensure that the true costs of transport activities are reflected in pricing and to promote sustainable transport practices. The legal framework supporting the freedom of transit, as outlined in various international instruments, plays a significant role in mitigating these externalities. The Convention and Statute on Freedom of Transit, Barcelona, 1921, the United Nations Convention on the Law of the Sea, Montego Bay, 1982, the United Nations Convention on the High Seas, Geneva, 1958, the United Nations Convention on Transit Trade of Landlocked States, New York, 1965, and the General Agreement on Tariffs and Trade (GATT) of the WTO collectively provide a robust foundation for facilitating transit trade while addressing the associated externalities. By ensuring the free movement of goods across borders, these instruments help to streamline transit processes, reduce delays, and minimize the environmental and social costs associated with transport.

69 Tegrni News. 2025. https://en.tengrinews.kz/kazakhstan_news/traffic-restrictions-for-trucks-will-be-introduced-in-266973/#:~:text=Tengrinews.kz%20%2D%20According%20to%20%22,Turkestan%20Region. Accessed May 15, 2025.

Transit countries, while facilitating the movement of goods, incur various costs that they can legitimately recover to ensure the sustainability of their infrastructure and services. These costs include maintenance and development of transport infrastructure, such as roads, bridges, and ports, which are essential for smooth transit operations. Additionally, transit countries can recover costs related to environmental protection measures, such as pollution control and waste management, to mitigate the negative impacts of increased traffic. Security measures to safeguard the transit routes and ensure the safety of goods and personnel also constitute a recoverable cost. Furthermore, administrative costs associated with customs and border control processes, including the implementation of efficient transit procedures and the use of technology for tracking and monitoring goods, are legitimate expenses that transit countries can recover. By recovering these costs, transit countries can maintain and improve their infrastructure and services, thereby supporting the overall efficiency and sustainability of transit transport.

The most common approach is to recover costs from foreign trucks using road infrastructure in foreign countries using electronic means, based on tolls payable by all vehicles regardless of nationality of registration. This approach reflects the fundamental principle of non-discrimination, consistent with WTO rules. Where electronic tolls are not collected, then a vignette system is used. However, the principles remain the same, designed to avoid charges that can distort the operating environment and competition.

Where roads are not tolled, it is a common practice to require foreign trucks to pay infrastructure usage fees on crossing the border. For example, COMESA adopted a standard and simple fee of US$10 per 100 kilometers for all member countries. Such standardization is particularly important if the tariffs are very high (increasing transport cost) or benefit domestic operators over foreign registered fleets (reducing competition). In the SADC, the types of charges payable by vehicle operators when entering a country and using its roads vary considerably. There are two types of charges:

- compulsory access fees, which are all charges payable at border posts upon entering a country; and
- other fees, including charges payable on toll roads, fuel levies, and fuel taxes.[70]

The types of charges that are payable by vehicle operators when entering a country and making use of the road network of the country vary considerably. These fees include:

- compulsory access fees refer to all charges that are payable at the border posts upon entering a specific country.
- other fees include fees payable on toll roads, fuel levies, and fuel taxes. Fuel levies were included in the cases where there is a dedicated fuel levy. Fuel taxes are used as a proxy for countries who do not have a dedicated fuel levy in order to arrive at comparable results. Regarding fuel levies and fuel taxes, it should be noted that cost recovery levels were calculated by including and excluding fuel levies and taxes, as these are not necessarily payable if there is no need to refuel in a specific country.
- domestic fees include annual vehicle license fees that are only paid by domestic vehicles. Although fee levels were recorded where available, these fees were excluded from the calculation of cost responsibility and cost recovery as they do not apply to transit traffic.

iv. Pricing carbon emissions

Pricing of externalities remains the most effective and direct way to reduce costs to society. Pricing discourages waste and increases fuel economy. However, fuel prices vary significantly across the world (Figure 26). The impact of price increases on consumption depends very much on the price elasticity of demand. In some instances, there would be little change in consumption, at least in the short term. It is only in the long term that prices may influence consumer behavior.

A complicating factor though is that many developing countries provide subsidies to fuel, especially diesel which is the most commonly used in farming and heavy goods transportation. There is evidence that high fuel prices have a detrimental effect on exports (Carruthers, et al., 2011). Countries therefore make decisions to keep fuel prices low as a way of pursuing other developmental goals. However, the fact remains that subsidies can often give incorrect signals to the market, though there are also instances where some countries subsidize cleaner and renewable energy sources, with beneficial effects. Without

70 SADC Member States are Angola, Botswana, Democratic Republic of the Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, United Republic of Tanzania, Zambia, and Zimbabwe.

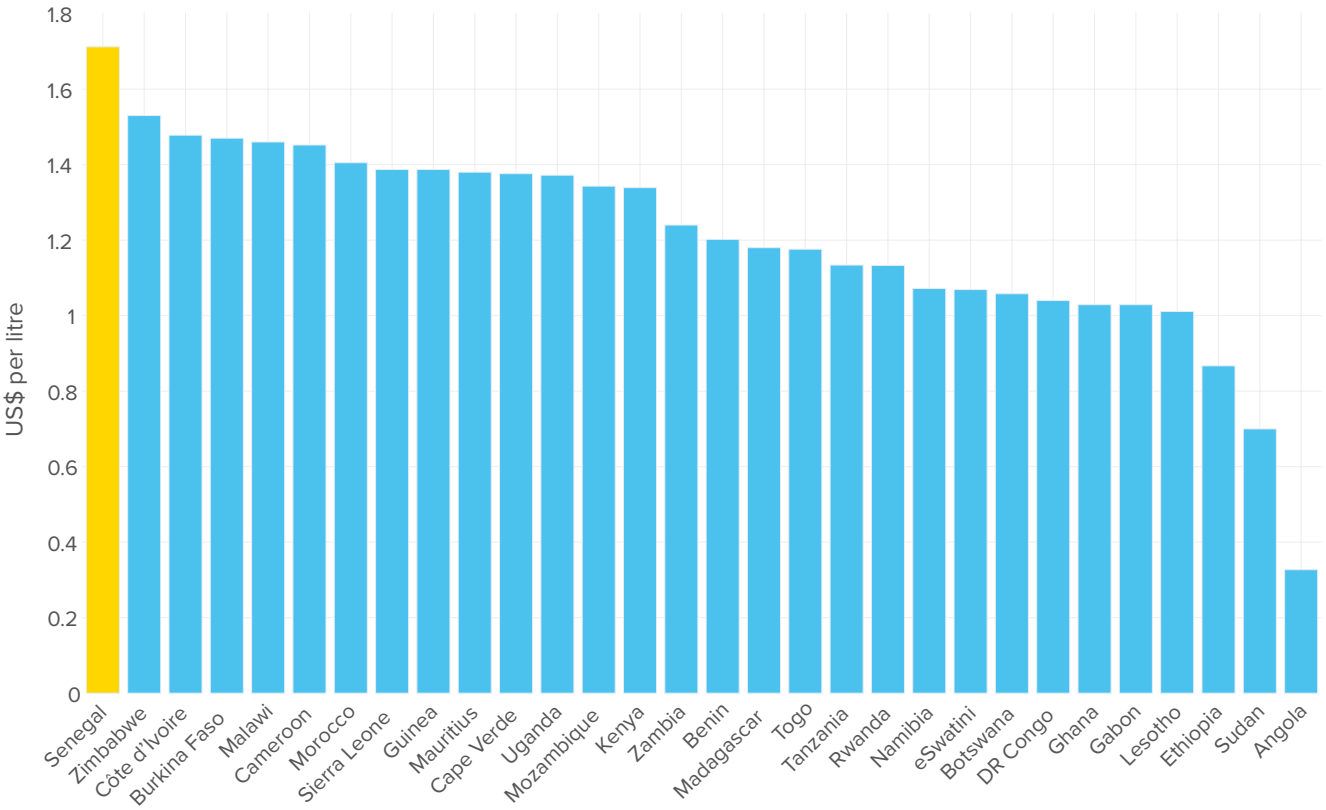
subsidies, countries can save large amounts that could be invested to improve transport and other infrastructure. Efforts to properly reflect the full cost of transport due to climate change would require the price of fuel to include those costs. For example, it is estimated that a gallon of regular gasoline contains approximately 0.0024 tonnes of carbon and depending on the pricing of carbon, this could translate into a specific amount to be included in the price. The price could then impact consumer behavior. Similar approaches could be adopted for air pollution, and health costs due to transport operations. However, as argued above, in many developing countries data is not systematically collected in order to make informed decisions. Rather, nominal amounts are at times levied, or practices such as subsidies, that encourage even more consumption are adopted.

Cordon pricing is also gaining currency as a way of reducing emissions and congestion in specific geographical areas. Both tolls and cordon pricing are particularly effective in urban areas in reducing congestion and emissions. Their main disadvantage is that they may lead to a transfer of congestion and emissions to those regions immediately outside the restricted zone. Consequently, area-wide planning is important so that all options and loopholes are included.

v. Fleet modernization as a strategy to reduce externalities

Upgrading to higher vehicle standards, such as Euro emissions standards and improvements in vehicle fuel efficiency, can contribute to reducing the total volume of emissions. However, Milligan, et al. (2014) argue that innovations in engine technology on their own would not be sufficient to significantly reduce greenhouse gas emissions. They maintain that advances in fuel and other vehicle technologies have to be accompanied by pricing, improved regulation, and availability of multimodal transport options in order to have an impact.

Figure 26. Prices of diesel in selected African countries



Source: GlobalPetrolPrices.com, "Diesel Prices, liter", accessed on April 14, 2025.

They argue that fuel taxation is the most effective and direct way to promote energy efficiency. Also, though falling, the price of some of the more transformative new technologies is still high.

Modernizing the trucking sector so as to provide higher quality and faster services at lower cost is essential. This will require not only reforming the trucking sector, but also the overall policy environment for the transport sector and tackling the causes of the negative externalities imposed by public- and private-sector operators on trucking. A prerequisite would be to undertake in-depth sector reviews based on firm level surveys of users and providers of transport services in all countries.

Some countries have offered support for vehicle scrapping schemes as a way of modernizing their fleets. This has been the case recently in the United States and also in some European countries during the financial crisis.

vi. Regulatory approaches

The trucking sectors in many developing countries are dominated by small-scale operators using old vehicles. Such vehicles have higher greenhouse gas emissions relative to their carrying capacities. There is generally an inverse relationship to scale in that large-scale operations are more efficient than small volume operations, as are found in many developing countries. One side effect of the atomized operations is that there are many inefficiencies, which contribute to high levels of emissions. One of the main causes is unproductive vehicle operations, as the amount of empty running tends to be high. The higher the empty running, the higher the emission intensity. More efficient route planning could help reduce emissions. Regulatory authorities should therefore aim to minimize operational constraints and leave operators to optimize their route networks as much as possible to minimize empty running. There are many instances where regulations, for example, on permits, encourage increased levels of empty running.

It is important to recognize that any intense regulatory touch can have significant cost implications. However, there are some approaches that have been tried and proven successful in different countries. These include:

- setting fuel economy standards;
- enforcing road traffic rules and regulations – emissions increase with speed and vehicle loading; and
- adopting inspection policies for imported and used trucks. This is particularly useful when adopted on safety and environmental grounds rather than to protect a domestic vehicle industry. Some developing countries adopt standards developed elsewhere and have been able to implement them even if gradually.

Milligan, et al. (2014) recommend that regulations should be subject to different tests including their targeting, enforceability and cost of implementation. Regulations when not properly targeted can have unintended consequences on other sectors or leave out some of the activities that should be included. The ability of the authorities to enforce is critical to the effectiveness of any regulations.

However, it is also worth considering limits in some regions where regulations may not be effectively enforced. For example, in some West and Central Africa but also other parts of the developing world, the quality of gasoil can be so poor that it prohibits the use of modern engines, such as Euro 4/5 and higher standards. This situation forces the renewal of vehicle fleets with older, more polluting engines, which is counterproductive to efforts aimed at reducing emissions and improving air quality. The low-quality fuels in these regions often contain high levels of sulfur and other contaminants, which can damage modern engine components and emission control systems. As a result, countries are compelled to rely on outdated technology that exacerbates environmental pollution and undermines global efforts to combat climate change. Addressing this issue requires significant investment in refining infrastructure and stricter fuel quality regulations to enable the adoption of cleaner, more efficient vehicle technologies.

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VI. Annexes

Annex 1. Examples of national strategies to reform the road transport industry: The Togo Trade and Logistics Services Competitiveness Project supported by the World Bank

The Togo Trade and Logistics Services Competitiveness Project supported by the World Bank helped improve road transport and logistics services in Togo by addressing regulatory, technical and financial constraints hindering their development. The Project was successfully implemented from 2017 to 2023 and laid the foundations for a better functioning transport and logistics sector in Togo. Within this framework, IRU provided technical assistance, drawing on international best practices, to support various stakeholders in advancing and implementing important reforms that started to bear fruit even before the Project was completed. This annex presents the background and the main features of the Project, highlights some of the results achieved, and useful lessons to help foster successful reforms in the transport sector.

The background

Togo is a small, fragile, low-income economy with a strategic coastal location in West Africa, making it well-positioned as a regional logistics hub. However, this potential was hindered by poorly functioning transport and logistics sector. The Port of Lomé (PAL), the deepest along the West African coast with a natural depth of 16.6 meters, provides direct access to regional and international markets. Yet, in 2016, when the Trade and Logistics Services Competitiveness Project (TLSCP) was initiated, Togo's logistics sector faced significant challenges despite the country's natural advantages and the relatively good functioning of the PAL. Inefficient and low-quality logistics services hindered performance, primarily due to widespread informality, an aging truck fleet, and the lack of a well-defined legal and regulatory framework. Transport services were largely provided by informal carriers struggling to achieve operational viability in a fragmented and disorderly freight trucking market. Consequently, the country's heavy truck fleet was outdated, as these carriers did not have access to financing for new vehicles.

Given these challenges, professionalizing the transport sector, upgrading the skills of the logistics workforce, and strengthening the legislative, regulatory, and institutional framework were identified as critical to improving trade and road-based logistics services in Togo. To address these issues, the TLSCP aimed to enhance the road transport and logistics sectors by improving regulations, promoting formalization, building private-sector capacity across the logistics value chain, and facilitating the modernization of the truck fleet. Implemented successfully over seven years (2017–2023), the TLSCP supported key reforms that significantly benefited Togo's road transport and logistics sectors. The following sections provide a brief description of the project's activities and results achieved with a focus on the transport sector, followed by an analysis of the success factors.

The project description

The TLSCP was structured around two main pillars. The first pillar (with a budget of US$12.8 million) aimed to strengthen the road transport and logistics services sector by enhancing the legislative, regulatory, and institutional framework, promoting formalization, building the capacities of private-sector stakeholders along the logistics services value chain, and improving conditions for modernizing the truck fleet. The second pillar (with a budget of US$2.7 million) aimed at supporting the implementation of WTO TFA provisions.

The following description focuses on the first pillar that supported important reforms in the Togolese road transport and logistics services sector.

This pillar comprised three subcomponents:

- The first subcomponent focused on improving the legislative and regulatory framework for the transport and logistics services sector. It supported the review and update of laws and regulations governing market entry and professional certification within the sector. Additionally, it contributed to enhancing the capacity of government agencies overseeing the sector and establishing a comprehensive registry to accurately record information about professionals.

- The second subcomponent aimed to strengthen the skills and capabilities of professionals in the trade logistics services sector. It supported the development of improved professional certification and accreditation programs, along with the introduction of new vocational and upskilling training initiatives for both new and experienced professionals in transport and trade logistics. The training targeted a broad range of stakeholders in the logistics value chain, including drivers, trucking firm managers, freight forwarders, order pickers, warehouse clerks, warehouse operators, customs brokers, and transport flow planners.
- The third subcomponent sought to create favorable conditions for modernizing the truck fleet. It supported efforts to promote the financing of new vehicles and facilitate the gradual renewal of the trucking fleet. This included adopting leasing as a financial instrument through necessary legislative reforms and capacity building for relevant stakeholders. It also included measures to improve the enforcement of vehicle standards and incentivize the scrapping of outdated vehicles.

The results

The legal and regulatory framework for the road transport sector has been improved in Togo, assisted by advisory and capacity-building activities supported by the World Bank. The TLSCP financed technical assistance for the adoption of a new transport orientation law approved on December 27, 2022. Subsequently, three implementing decrees were adopted, namely:

- the decree setting the conditions for access to and exercise of the profession of road driver;
- the decree laying down the conditions for obtaining professional licenses for transporters, intermediary, and auxiliary transport operator, and for the exercise of road transport activities; and
- the decree on the creation, organization, and operation of the transport consultation framework.

Other legal texts adopted include the leasing law, 2 customs codes and 19 related orders.

The Project helps structure and consolidate the road transport services industry. Through the regulations and capacity-building activities, the TLSCP supported the professionalization of various stakeholders in the transport and logistics value chain and fostered the consolidation of the sector. For example, IRU supported the establishment of a national federation representing the entire Togolese road transport sector, the Faitière Patronale Togolaise des Transporteurs Routiers (FP2TR).

The Project also contributed to enhance the enabling environment for transport and logistics services by supporting a comprehensive capacity development program for sector professionals. The Project financed technical assistance to develop a new certification program for transport and logistics professionals. The certification framework was complemented by the development of new training programs for the upskilling of established professionals and vocational training for new ones. The Project financed the construction and furnishing of a new training center in Lomé and provided specialized equipment such as simulators and vehicles for itinerant training. As a result, the new center became operational and achieved 352 people trained at the time during the Project's implementation. The program also trained trainers to facilitate the continuation of the program. The Project also supported initiatives to promote cooperatives and associations in the road transport sector, in support of a better organized and mutual supportive workforce. When the TLSCP closed, 30 firms had their certificate of compliance with the Transport Orientation Law successfully issued, exceeding the target of 20. Despite the late completion of the legislative reform package which resulted in little elapsed time to assess the full range of impacts on the transport and logistics sector (the last implementing decree was adopted in June 2023), the TLSCP has greatly contributed to paving the way for an improved business-enabling environment for road transport and logistics services.

The TLSCP supported reforms to enable more reliable and safer road-based logistics, especially by introducing the leasing instrument for the replacement of an aging truck fleet. The project provided technical assistance for the adoption of a new leasing law, approved in 2018. This law enabled leasing as a new financial instrument in Togo that enabled the acquisition of new heavy vehicles and other logistics-related equipment. The project also provided technical assistance for the preparation of a vehicle scrapping program featuring a designated scrappage site and a buyback incentive program. This program did not only contribute to renew the truck fleet, but also help improve operational efficiency in the sector. Indeed, the registered fleet of heavy trucks shrunk from 1,650 vehicles in 2015 to 949 vehicles in 2023, corresponding to a 42 percent decrease, which translated in enhanced operational conditions for the registered operators. For example, the number of yearly trips per truck in the Lomé-Ouagadou-

gou corridor improved materially from a baseline of 1.7 trips per year to 6 trips per year in 2023. In addition, the proportion of vehicles aged over 10 years went from 97 to 82 percent in the same period.

The success factors

A key success factor of the TLSCP is the strong ownership demonstrated by stakeholders across the transport and logistics value chain, achieved through exceptional consultation efforts to understand their constraints. The reforms were called for by the sector participants and have been designed to tackle pressing issues. To come up with relevant policy recommendations, the technical assistance did not try to "copy and paste" international best practices but started by a careful analysis of the local context and consulted with a wide range of relevant stakeholders to understand their needs and constraints from their own perspectives. This widespread consultation enabled IRU to build a consensus around the proposed measures to reform and improve the functioning of the road-based logistics services. A satisfaction survey was carried out with actors in the logistics and transport value chain about key aspects of the consultation, obtaining a positive response rate of 90 percent.

Another important success factor is that the proposed reforms were matched with capacity-building activities to support relevant stakeholders in their implementation. The project not only supported important reforms materialized by the adoption of new laws and decrees, but also ensured that all the stakeholders impacted by these reforms were equipped to comply with the new regulatory framework. The technical assistance identified capacity gaps at different levels of the transport and logistics value and worked closely with the stakeholders to provide adequate capacity-building activities to fill these gaps.

Last but not least, a good knowledge of the local and regional contexts, derived from a thorough analysis of the functioning of the sector was critical to the success of the technical assistance that supported these improvements. Prior to the formulation of any recommendation, IRU invested some time to deepen its knowledge of the transport and logistics sector in the local context of Togo. This started with the identification of (public, semi-public and private) stakeholders and potential contacts for the implementation of the Project. This was followed by a diagnosis of 1) the capacities and resources of the Ministry of Transport and the Ministry of Technical Education and Vocational Training, and 2) the existing professional organizations of the road transportation sector and intermediaries in Togo. Finally, the local picture of the Togolese transport and logistics sector was put in the broader perspective of regional trade with the analysis of the bilateral road transport agreements currently in force with neighboring and hinterland countries, likely to impose constraints on the road transport and logistics sector in Togo.

Annex 2. Syllabus of the main topics to be covered for the drivers "Certificate of Professional Competence"

International CPC Driver programme syllabus

1. **Advanced training in rational driving based on safety regulations**
   - Understanding the transmission system
     - *Technical characteristics:* Detailed study of engine types, torque curves, and power output.
     - *Fuel consumption optimization:* Techniques to reduce fuel usage, including gear shifting strategies and engine management systems.
   - Mastery of safety controls
     - *Brakes and retarders:* In-depth training on different braking systems, including air brakes and hydraulic brakes.
     - *Safety technologies:* Comprehensive understanding of electronic stability program (ESP), advanced emergency braking system (AEBS), anti-lock braking system (ABS), and traction control system (TCS).
   - Optimizing fuel consumption
     - *Traffic flow anticipation:* Techniques for predicting and responding to traffic conditions.
     - *Maintaining distances:* Safe following distances and the impact on fuel efficiency.
     - *Smooth driving style:* Importance of smooth acceleration and deceleration.
     - *Intelligent transport systems:* Integration of smart technologies to enhance fuel efficiency.
2. **Regulatory compliance**
   - Working time regulations
     - *Maximum working periods:* Understanding legal limits on driving hours and mandatory rest periods.
     - *Rest requirements:* Importance of breaks and sleep for driver safety.
     - *Penalties for non-compliance:* Consequences of violating working time regulations.
   - Documentation and legal requirements
     - *Necessary documents:* List of essential documents drivers must carry, such as licenses, permits, and vehicle registration.
     - *Road-use fees:* Understanding toll systems and road-use charges.
     - *Bans on certain roads:* Awareness of restrictions on specific routes and regions.
3. **Health and safety**
   - Emergency procedures
     - *Mechanical failure:* Steps to take in case of vehicle breakdown.
     - *Accident response:* Protocols for handling accidents, including securing the scene and contacting emergency services.
     - *First aid:* Basic first aid training for drivers.
   - Health and wellness:
     - *Driver health:* Importance of regular health check-ups and maintaining physical fitness.
     - *Stress management:* Techniques for managing stress and fatigue.
     - *Ergonomics:* Best practices for maintaining good posture and reducing physical strain.
4. **Economic environment of road transport**
   - Cost management
     - *Operational costs:* Breakdown of costs associated with running a transport business, including fuel, maintenance, and insurance.

- *Fuel management:* Strategies for efficient fuel use and cost reduction.
- *Maintenance:* Importance of regular vehicle maintenance to prevent costly repairs.

- Environmental responsibility
  - *Emissions reduction:* Techniques for reducing vehicle emissions and complying with environmental regulations.
  - *Eco-driving techniques:* Training on driving methods that minimize environmental impact.

5. Safe loading and cargo securing

- Legal requirements and responsibilities
  - *Driver and operator responsibilities:* Understanding the legal obligations for securing loads.
  - *Regulations and standards:* Familiarity with international standards such as the European Committee for Standardization (CEN)'s standard EN 12195-1:2010.
- Principles of safe loading
  - *Load distribution:* Techniques for evenly distributing weight to maintain vehicle stability.
  - *Center of gravity:* Importance of keeping the load's center of gravity low and cantered.
- Securing methods
  - *Restraints and equipment:* Use of straps, chains, and other securing devices.
  - *Securing techniques:* Proper methods for tying down and securing different types of cargo.
- Impact of forces on loads
  - *Dynamic forces:* Understanding how acceleration, braking, and cornering affect the load.
  - *Emergency situations:* Preparing for and mitigating the effects of sudden maneuvers.
- Risks and consequences of insecure loads
  - *Safety hazards:* Potential dangers of improperly secured loads.
  - *Legal penalties:* Consequences of non-compliance with loading regulations.

Annex 3. IRU Academy CPC Driver Certificate

iru.org/academy

IRU ACADEMY

CPC DRIVER CERTIFICATE

Awarded on 13 July 2016 to

Vasile Ciumaş

Born in MDA CĂLĂRAŞI, REPUBLIC OF MOLDOVA, on 17 March 1963, certifying qualification in the

Certificate of Professional Competence (CPC) for Driver

Initial Qualification for Drivers engaged in international transport

Possession of this qualification is confirmed by the IRU Academy on its web site under Graduate Viewing Code: 5297463/J1 or /P1.
This certificate is valid until (Code 95) 12 July 2019.

The training is provided by the IRU Academy Accredited Training Institute CIPTI, in addition to initial driver qualification and in full compliance with national legislation, provisions of EU Directive 2003/59/EC, the TIR Convention and international best practices. It is delivered in compliance with the strict criteria fixed by the IRU Academy, endorsed by its high level Advisory Committee, regarding Instructor qualification, training and examination to provide and ensure the highest professional skills and quality in road transport.

ID 16485616248 ABCDE
SN AKRCOCPD7 938100

Mr Umberto de Pretto
Secretary General
IRU, Switzerland

Mr John Doe
Director of Department
Ministry of Transport, Moldova

Mr Serghei Taran
General Manager
CIPTI, Moldova

Annex 4. Syllabus of the main topics to be covered for the managers “Certificate of Professional Competence”

- **Introduction to CPC Manager**
  - Overview of CPC Certification
  - Importance of professional competence in transport management
- **Transport trends and industry impact**
  - Global transport trends
  - Technological advancements in transport
  - Environmental and sustainability considerations
- **Vehicle operation and costing**
  - Fleet management
  - Vehicle maintenance and safety
  - Cost management and optimization
- **Legislative environment**
  - International transport regulations
  - Compliance and enforcement
  - Impact of legislation on operations
- **Safety, security, and environmental challenges**
  - Road safety standards
  - Security measures in transport
  - Environmental protection and sustainability
- **Managerial skills development**
  - Leadership and team management
  - Strategic planning and decision-making
  - Communication and negotiation skills
- **Business and financial management**
  - Financial planning and budgeting
  - Risk management
  - Performance measurement and improvement
- **Market access and commercial law**
  - Market entry strategies
  - International trade and transport law
  - Contract management
- **Technical aspects and standards**
  - Vehicle specifications and standards
  - Technological innovations in transport
  - Quality assurance and control
- **Health and social law**
  - Occupational health and safety
  - Social responsibilities and ethics
  - Employee rights and welfare
- **Case studies and practical applications**
  - Real-world scenarios and problem solving
  - Best practices from leading companies
  - Interactive workshops and simulations
- **Examination and certification**
  - Preparation for CPC exam
  - Examination format and requirements
  - Certification process and continuing education

Annex 5. IRU Academy CPC Manager Certificate

iru.org/academy

IRU ACADEMY

CPC MANAGER DIPLOMA

Awarded on 13 July 2016 to

Vasile Ciumaş

Born in MDA CĂLĂRAŞI, REPUBLIC OF MOLDOVA, on 17 March 1963, certifying qualification in the

Certificate of Professional Competence (CPC) for Manager

Initial Qualification for Managers engaged in international transport

Possession of this qualification is confirmed by the IRU Academy on its web site under Graduate Viewing Code: 5297463/J1 or /P1.
This certificate is valid until (Code 95) 12 July 2019.

The training is provided by the IRU Academy Accredited Training Institute CIPTI, in addition to initial driver qualification and in full compliance with national legislation, provisions of EU Directive 2003/59/EC, the TIR Convention and international best practices. It is delivered in compliance with the strict criteria fixed by the IRU Academy, endorsed by its high level Advisory Committee, regarding Instructor qualification, training and examination to provide and ensure the highest professional skills and quality in road transport.

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IRU, Switzerland

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Ministry of Transport, Moldova

Mr Serghei Taran
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CIPTI, Moldova

Annex 6. BSEC permit system user guide 2025

Black Sea Economic Cooperation Organization (BSEC)
in partnership with
International Road Transport Union (IRU)
and
Union of Road Transport Associations in BSEC Region (BSEC-URTA)

Preamble

On 25 June 1992, the Heads of State and Government of eleven countries: Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, Romania, Russia, Türkiye and Ukraine signed in Istanbul the Summit Declaration and the Bosphorus Statement giving birth to the Black Sea Economic Cooperation (BSEC). In April 2004, the Republic of Serbia became the 12th Member State of the Organization and in November 2020 with the accession of the Republic of North Macedonia the Organization reached its 13th Member State.

Since its inception, BSEC paid special attention to cooperation in transport focusing mainly on how to utilize effectively intra-region capacity and growing transit potential of the Black Sea region. In 1992, the BSEC established the Working Group on Transport, which has its regular meetings and it carries out its functions as a working organ of this cooperation.

The meetings of the Ministers of Transport of the BSEC Member States constitute de-facto a decision making regular high-level transport forum with its mechanism of implementation – working group, steering committees and expert groups.

Besides, the work on actual facilitation of road transport of goods is going on under a special MoU on Facilitation of Road Transport of Goods in the BSEC Region (signed in Kyiv in 2002 and entered into force on 20 July 2006). The Steering Committee, which was established by the signatories Member States in accordance with this MoU, works on very important issues such as the simplification of visa procedures for professional truck drivers, gradual liberalization of bilateral and transit road transport, promotion and implementation of key UN conventions and international agreements, harmonization of social rules applicable to the crews of trucks, monitoring of border waiting times, introduction of the International Vehicle Weight Certificate, harmonization of charging policies, etc.

At the 4th meeting of the Steering Committee in Istanbul on 9 September 2009 seven Member States, namely Albania, Armenia, Georgia, Moldova, Romania, Serbia and Türkiye expressed their interest and readiness to participate in a Pilot Project of a BSEC Permit.

At the 6th meeting of the Steering Committee in Istanbul on 12 April 2011, the seven Participating BSEC Member States to the Pilot Project decided to continue the Project in 2012, too.

The Council of Ministers of Foreign Affairs of BSEC Member States in Istanbul on 12 December 2012 decided to turn the Pilot Project into a permanent activity of the Organization.

During the Meeting of the BSEC Steering Committee for Facilitation of Road Transport held in Istanbul on 26 November 2013, the Ukrainian delegation informed that Ukraine will join the BSEC Permit Project starting with 1 January 2014.

On 4 October 2021, the Ministry of Foreign Affairs of the Republic of North Macedonia addressed a Note to the BSEC PERMIS asking to inform the participating Member States to the BSEC Permit Project on the intention of the Republic of North Macedonia to join the BSEC Permit System, starting from 1 January 2022.

At its Meeting, held online on 5 November 2024, the BSEC Member States participating in the BSEC Permit System underlined the importance of increasing the geographical coverage of the Permit project and reiterated

their invitation to the BSEC Member States who so far do not participate in the BSEC Permit System, to join it.

The participants agreed on the issuing of BSEC Permits for the year 2025 (with a barcode) in a quantity of 5,000 samples for the Republic of Albania, Georgia, the Republic of Moldova, the Republic of North Macedonia, Romania, the Republic of Serbia, the Republic of Türkiye and Ukraine and in a quantity of 800 samples for the Republic of Armenia.

The BSEC Permit is a single document designated for the international transit of road transport of goods and/or bilateral road transport through territories or to / from the following states: the Republic of Albania, the Republic of Armenia, Georgia, the Republic of Moldova, the Republic of North Macedonia, Romania, the Republic of Serbia, the Republic of Türkiye and Ukraine.

Third-country transport operations are allowed to be carried out by road transport operators from the Republic of Albania, the Republic of Armenia, Georgia, the Republic of Moldova, the Republic of North Macedonia, Romania and Ukraine as participating countries to the project which agreed upon such transport operations.

The BSEC PERMIS will print and dispatch to the participating Member States to the Project the quota of permits for 2025 in the agreed total amount of 40,800 samples via the diplomatic missions of the BSEC Member States in Istanbul before 15 December 2024.

It is the duty of competent authorities of each Participating Member State to deliver according to their own criteria, these BSEC Permits to their national transport operators. The validity of the BSEC Permit-2025 is as of 1 January 2025 till 31 December 2025. However, any remaining permits shall stay in use and be accepted by the Participating BSEC Member States until 31 January 2026.

This BSEC Permit-2025 User Guide was prepared by the BSEC PERMIS in coordination with IRU and BSEC-URTA in order to provide detailed information about main principles and usage guide rules of the BSEC Permit for 2025.

Definitions

The definitions of the terms are as follows:

- **BSEC:** The Organization of Black Sea Economic Cooperation.
- **BSEC permit:** The permit, which is valid for a single round journey in transit and/or bilateral road transport operations through or to/from the Republic of Albania, the Republic of Armenia, Georgia, Moldova, North Macedonia, Romania, the Republic of Serbia, the Republic of Türkiye and Ukraine and has a specific validity period.
- **BSEC-URTA:** The Union of Road Transport Associations in the BSEC Region.
- **Cabotage:** A road transport operation, where goods are loaded and unloaded at two separate points within one country by a vehicle, which is registered in another country.
- **Competent authority:** The Authority in a Participating Member State, which is authorized to perform activities related to the present BSEC permit.
- **Contingent:** the number of permits made available every year to a Participating Member State. The principles for the calculation of this contingent are outlined by the BSEC Steering Committee for Facilitation of Road Transport of Goods in the BSEC Region.
- **Hired vehicle:** Any vehicle, which, for remuneration and for a given period, is held by an undertaking that engages in the carriage of goods by road for hire or reward or for its own account by virtue of a hiring or leasing contract with the undertaking that owns the vehicle.
- **International carriage:** A journey by a laden or unladen vehicle, whose points of departure or arrival are in two different countries, with transit through one or more Member or non-Member countries; in the latter case, the BSEC permit is obviously not valid on the territory of the non-member country.
- **IRU:** The International Road Transport Union.
- **Member State:** A country, which is a member of the BSEC Organization.
- **Multilateral character:** The possibility of using the BSEC permit for runs in transit and/or bilateral road transport operations through or to/from participating Member States.
- **Non-Member State:** A country, which is not a member of the BSEC Organization.
- **Participating Member State:** Any country, which is a member of the BSEC Organization and participates in the BSEC Transit Permit Project.

- **PERMIS:** the Permanent International Secretariat of the BSEC Organization.
- **Registration country:** The country, where the subject vehicle is registered as mentioned on the registration plate of the vehicle.
- **State (country) of establishment:** Participating Member State, where the haulier/haulage company is legally established.
- **Third-country transport:** Transport of goods to/from a country which is not the Registration Country of the vehicle to a country other than the Registration Country which should be a Member State or a Non-Member State and having a point of loading or unloading in at least one Member State.
- **Transit:** A journey across the territory of a country in which goods are neither loaded nor unloaded.
- **Transport for hire or reward:** A transport operation performed by a transport undertaking for remuneration.
- **Transport for own account:** Transport that is not for hire or reward, certified by documents on board the vehicle.
- **Transport undertaking (transport operator, carrier, haulier):** Any individual or corporate entity exercising the profession of international carrier of goods by road and who is duly authorized to perform international transport operations by the competent authority in the country of establishment.
- **Vehicle:** A motor vehicle registered in a Member country, or a combination of coupled vehicles in which at least the motor vehicle is registered in a Member country and exclusively intended for the carriage of goods. The vehicle can be the property of the transport undertaking or can be put at its disposal through a hiring or leasing contract.

Issuance and limits

The BSEC Permit is a multilateral permit established by the following participating BSEC Member States in the BSEC Permit Project: the Republic of Albania, the Republic of Armenia, Georgia, the Republic of Moldova, the Republic of North Macedonia, Romania, the Republic of Serbia, the Republic of Türkiye and Ukraine. The BSEC Permit is for the international carriage of goods by road for hire or reward by transport undertakings using vehicles registered in a Participating BSEC Member State. It is established for a transport operation being performed in transit through and / or bilateral to / from the territory of one or more Participating BSEC Member States. 3rd country transport operations are allowed to be performed under the coverage of the BSEC Permit for hauliers from the Republic of Albania, the Republic of Armenia, Georgia, the Republic of Moldova, the Republic of North Macedonia, Romania and Ukraine. The BSEC Permit does not allow cabotage. The BSEC Permit is printed and distributed to the Participant BSEC Member States by the PERMIS. The BSEC Permit is printed bilingually in English and Russian languages. When a journey is undertaken using a coupled combination of vehicles, the BSEC Permit is obtained from the competent Authority in the country in which the tractor is registered. The BSEC Permit covers the coupled combination of vehicles, even if the trailer or the semi-trailer is not registered in the name of the holder of the transport license, or is registered in another Member State. If goods are transported via a BSEC country where the use of the BSEC Permit is restricted, the said country may be transited with a bilateral permit, ECMT permit or some other means of transport (including rolling road) according to the bilateral arrangements agreed upon by the authorities of the subject country and the country of registration.

Usage

A BSEC Permit may be used by only one vehicle (coupled combination of vehicles). It has to be carried on board the vehicle during a full round trip. It does not exempt the carrier from requirements relating to any other authorizations for the carriage of exceptional loads in terms of size or weight or for specific categories of goods (for example, dangerous goods). A BSEC Permit may be used for vehicles hired or leased without a driver, by the transport undertaking to which it has been issued. The vehicle must be at the exclusive disposal of the undertaking using it when hired and must be driven by the staff of this undertaking. The BSEC Permit may not be transferred by an undertaking to a third party.

The following documents must be carried on board the vehicle: the contract of hire or lease, or a certified conformed extract from that contract giving in particular the name of lessor, name of the lessee, the date and duration of the contract and registration number of the vehicle. Where the driver is not the person hiring the vehicle, the driver's employment contract or certified extract from that contract giving in particular the name of the employer, the name of the employee and the date and duration of the employment contract or a recent salary payment receipt. If need be, equivalent documents issued by Competent Authorities of the member country may serve as

replacements for the documents referred to above. The documents should also at least be translated as an annex in English or Russian.

Validity and withdrawal

The BSEC Permit is valid for one calendar year from 1 January to 31 December of the year 2025. However, any remaining permits shall stay in use and be accepted by the Participating BSEC Member States until 31 January of the year 2026. The BSEC Permit is invalid if the following mandatory particulars are not entered on it indelibly: name or business name and full address of the transport undertaking, signature and stamp of the body issuing the permit, validity year, date of issue of the permit. The BSEC Permit known as lost, replaced but found later is not valid anymore. If a BSEC Permit is lost or stolen, the Issuing Authority or body must be notified by the holder, immediately. In this regard the Issuing Authority or body will notify the BSEC PERMIS, which will circulate this information to the other Participating BSEC Member States as soon as possible. The BSEC Permit must be returned to the Issuing Authority or body within two weeks which follow the expiry of its validity. If a Participating BSEC Member State has introduced restrictions related to noise and exhaust emissions on the usage of the BSEC Permit on its territory (e.g. RO “at least EURO 3 safe”), the BSEC Permit is to be valid only accompanied by certificate(s) of conformity proving that the vehicle / combination of vehicles is/ are in accordance with the relevant requested standards.

Mutual assistance

The Participating Member States are to give each other mutual support in applying provisions governing the use of the BSEC Permit, monitoring their observance and penalizing any infringements. In order to facilitate the process of mutual assistance, it is the duty of each Participating Member State to inform its relevant competent authorities about introduction, template and usage rules of the BSEC Permit, appropriately.

The BSEC PERMIS in collaboration with the BSEC-URTA and IRU will assist to the Participating Member States wherever necessary and facilitate their mutual assistance as above.

BSEC permit 2025 – Serial Numbers

9 countries	Serial numbers of permits unrestricted		Serial numbers of permits restricted in armenia	
ALBANIA	2500001	2500800	2500801	2505000
ARMENIA	2505001	2505800	–	–
GEORGIA	2510001	2510800	2510801	2515000
MOLDOVA	2515001	2515800	2515801	2520000
N-MACEDONIA	2520001	2520800	2520801	2525000
ROMANIA	2525001	2525800	2525801	2530000
SERBIA	2530001	2530800	2530801	2535000
TÜRKIYE	2535001	2535800	2535801	2540000
UKRAINE	2540001	2540800	2540801	2545000
NUMBER OF BSEC PERMITS ISSUED FOR 2025: 40,800 SAMPLES				

BSEC permit barcode – Sample

Annex 7. Examples of border crossing priority lanes coupled with advance cargo information

Based on the security provided by the TIR system and the possibility to separate high-risk cargo from low-risk, thanks to advance information received via TIR-EPD, some customs authorities have set up dedicated priority lanes or found other ways to prioritize such secure transport subject to the available infrastructure.

1. Romania case

Romanian customs supported the initiative of giving TIR transport priority at two border crossings, for which advance cargo information was sent via TIR-EPD.

Starting from August 1, 2024, this TIR-EPD prioritization has been added to AEO lanes at the two busiest border crossings: Albita–Leuseni with Moldova and Siret–Porubne with Ukraine. The signs indicating TIR-EPD priority lanes guide hauliers accordingly. Promotional leaflets on how TIR-EPD prioritization works have been prepared in Romanian, English, Ukrainian, and Turkish and made available for distribution to drivers.

Considering that the transport between Ukraine and Romania has grown almost threefold in 2023 compared to 2022 and that 90 percent of this transport is carried out by Ukrainian drivers, Romanian has given a clear signal to the private sector through this prioritization measure that it is ready to further facilitate border crossings at the entry to the EU, but only based on security criteria, such as those provided by the TIR system and its IT tools, and for AEOs.

2. Moldova case

Priority lanes for TIR-EPD and AEO with respective signs were established at Moldovan border crossings as early as in 2013. Starting from August 1, 2022, the use of TIR-EPD became mandatory for all TIR carnet holders entering or exiting Moldova. The International Association of Road Hauliers of Moldova helps transport operators submit TIR-EPD free of charge.

In December 2023, the Moldovan government approved the implementation of an e-queue system at borders. A pilot to test an electronic queue mechanism, with TIR prioritization included, will be conducted at the Costesti–Stynka border crossing between Moldova and Romania in 2024. Transport with TIR-EPD will be treated as a priority, along with AEO and perishable goods. Trucks will be waiting at the parking area close to the border, and the e-queuing mechanism will determine priority traffic to be sent to the border crossing. The next step would be to scale it up to other border crossings. The e-queuing mechanism is a good alternative to a dedicated lane, particularly where the border-crossing infrastructure is limited, but there is an available parking space near the border.

Moldova and Romania have demonstrated the implementation of the same prioritization rules on both sides of the border. This means that the private sector, satisfying the security conditions, can benefit equally from the facilitation in both countries.

3. Kingdom of Saudi Arabia case

In March 2022, both the Customs Authority of the Kingdom of Saudi Arabia and the Federal Customs Authority of the United Arab Emirates formalized the implementation of a dedicated lane for TIR trucks at their joint border, which is the busiest crossing point in the GCC region. The customs authorities have also approved the Express Lane for AEOs for TIR operators at the Al Batha and King Fahad Causeway customs point.

The simplification of customs handling at this crucial customs point, which was achieved thanks to TIR, proved to be a game changer, and allowed to reduce the border-crossing time for TIR transport by 92 percent and grow the use of TIR in the region by 290 percent in 2024 compared to the same period in 2023.

It is yet another case of risk-based prioritization when a priority lane is granted to both AEOs and TIR operators.

4. Turkmenistan case

Further leveraging the benefits of TIR-EPD, in March 2023, Turkmenistan's customs authorities established green lanes to prioritize customs clearance for TIR transport, for which advance cargo information is submitted via TIR-EPD. Such risk-based facilitation allows customs to better manage the workload of customs officers and focus on high-risk shipments. TIR-EPD Green Lanes have

been set up on the Turkmenistan side of the border with the neighboring countries at:

- Artyk (TKM)–Lotfabad (IRN)
- Altyn Asyr (TKM)–Inceburun (IRN)
- Sarakhs (TKM)–Sarakhs (IRN)
- Garabogaz (TKM)–Temirbaba (KAZ)
- Farap (TKM)–Alat (UZB)
- Dashoguz (TKM)–Shavat (UZB)
- Kunya Urgench (TKM)–Khodjeily (UZB)
- Ymamnazar (TKM)–Aqina (AFG)
- Serhetabat (TKM)–Turgundi (AFG)
- International seaport of Turkmenbashi

In July–August 2024, the State Customs Service of Turkmenistan announced that separate windows and lanes have been arranged at border crossings to allow the entry of TIR vehicles into the TIR-EPD area and complete customs formalities in a prioritized order. TIR transport operators that have submitted advance cargo information via TIR-EPD have to notify customs officers or border guards of that when entering the border-crossing area, who then direct drivers to join a separate queue. Additional information and guidelines for transport operators on TIR and TIR-EPD prioritization have been made available at all border crossings.

This example shows that not only is it important to allocate a dedicated lane, but also to re-engineer the traffic flow at the border to achieve the optimal use of hard and soft infrastructure.

5. Kyrgyzstan case

At Kyrgyzstan's Dostuk border, operators and shippers who send advance cargo information to Kyrgyzstan customs via TIR-EPD can benefit from dedicated processing booths, saving time and money.

It has been another key step towards facilitating TIR procedures with additional security provided by digitalization. Such a risk-based prioritization of cargo flows contributes substantially to streamlining border-crossing procedures, enhancing transport connectivity and stimulating regional trade.

This public–private partnership initiative shows that even with infrastructural constraints the prioritization can be established as a simple booth or a window and the adjusted procedural flow.

6. Kazakhstan case

Back in June 2019, the Ministry of Finance of the Republic of Kazakhstan issued Order No. 619, according to which dedicated corridors shall be created, applying a simplified procedure for customs formalities for transport companies entering the territory of Kazakhstan under TIR, subject to the submission of preliminary electronic information via the TIR-EPD application.

This procedure is applicable to all types of movements carried out with TIR (import, export, transit). In case the goods are introduced into the territory of Kazakhstan under a different transit procedure, according to the Order, the Kazakh customs would conduct customs controls using a risk management system.

Once COVID-19 restrictions were removed, this facilitation measure was reactivated at a key border with China (Nur-Zholy).

7. Uzbekistan case

In June 2021, Uzbek and Kazakh customs introduced TIR Green Lanes at the Yallama (UZB)–Konysbaeva (KAZ) border crossing. TIR transport can also benefit from prioritized customs formalities at the Oybek–Fotehobod border between Uzbekistan and Tajikistan.

In all cases, the TIR prioritization was made possible through the collaborative efforts of IRU and its members, national customs authorities, regional international organizations, and development partners for a shared purpose: to drive trade and transport facilitation in the region based on security and transparency.

Annex 8. Government, international organizations, and private-sector financial incentives for fleet renewal of low-emission trucks.

Government schemes

1. Grants

- **General structure:** The overall framework of government grants is designed to ensure transparency, accountability, and alignment with strategic environmental goals. While the grants are essentially financial gifts without hidden fees or ancillary costs, they are accompanied by rigorous compliance and reporting requirements. Applicants must demonstrate that their projects will yield significant environmental and community benefits. This competitive process demands a well-structured proposal that not only underscores the positive impact of transitioning to low-emission trucks but also provides a detailed financial breakdown and an implementation schedule.
- **Implementation phase:** Agencies responsible for administering these grants issue specific opportunities that clearly outline the objectives, such as the replacement of outdated truck fleets with low-emission models, along with the funding limits and priorities. Applicants are expected to provide a comprehensive proposal that explains in detail how the introduction of low-emission trucks will enhance fleet efficiency and contribute to emission reductions. The proposal must include a realistic estimate of the overall project costs and a timeline for implementation, as well as an analysis of the anticipated broader benefits to both the community and the environment. Given the complexity and competitive nature of the application process, many organizations seek the expertise of professional grant writers to refine their submissions.

  Once awarded, the grant serves as an acknowledgment of the recipient's potential to contribute significantly to sustainable transportation. The disbursement of funds may occur as a lump sum or through a series of installment payments, which are typically tied to the achievement of predefined project milestones or performance indicators. Recipients are required to manage these funds strictly according to the approved budget and to provide periodic, detailed financial and performance reports. These reports ensure that funds are used appropriately and that any deviations from the proposed project plan are promptly addressed. Ongoing monitoring, including regular audits and performance reviews, is conducted to verify compliance with all grant conditions, thereby reinforcing a culture of transparency and accountability.
- **Example:** Plug-in Truck Grant – UK Department for Transport.

  This scheme, which has been extended by an additional 12 months, was originally launched in 2012 to assist with bridging the price gap between ultra-low-emission and diesel vans. It was later expanded in 2016 to cover heavy goods vehicles (HGVs).

  Under the 2025 extension, the grant offers:

  - Large trucks (over 12 tonnes): Up to GBP25,000 per vehicle.
  - Small trucks (between 4.25 and 12 tonnes): Up to GBP16,000 per vehicle.

Eligibility: Only new vans and trucks at first registration are eligible for funding.

Manufacturers (or third-party entities authorized by manufacturers to market the vehicle under a different trade or brand name) must apply for new variants to be approved under the grant scheme.

Pre-registration conversions are eligible under the scheme. However, post-registration conversions are not.

This initiative is an example of how government grants provide financial support to accelerate the adoption of cleaner commercial vehicles, helping businesses transition towards a sustainable and low-carbon transport sector.

2. Subsidies

- **General structure:** The operational mechanism behind government subsidies involves several well-defined steps. Initially, government agencies announce subsidy

programs that detail the eligibility criteria, the available subsidy amounts, and the overarching project objectives, such as the decarbonization of transport fleets. Prospective beneficiaries are required to submit comprehensive applications that outline how the subsidy will facilitate their transition to cleaner energy vehicles. These applications include detailed cost analyses, projections of environmental impact, and assurances of compliance with established regulatory standards. Once submitted, proposals undergo a rigorous review process where they are evaluated based on potential emission reductions, the feasibility of the proposed project, and their overall alignment with national or regional policy goals. Subsidies may take different forms. The most common ones most common being:

- Direct purchase subsidies involve governments providing financial incentives to reduce the up-front cost of acquiring zero-emission trucks (ZETs). These subsidies can be in the form of grants or rebates, effectively lowering the purchase price for fleet operators.
- Scrappage schemes encourage the retirement of older, high-emission vehicles by offering financial incentives when these vehicles are scraped and replaced with ZETs.

- **Implementation phase:** Upon approval, the subsidy may be disbursed in a variety of forms, including direct payments, tax credits, or post-purchase rebates. The disbursement method is often tailored to the specific needs of the project and is designed to alleviate the financial burden associated with the acquisition of trucks with reduced emissions. Recipients of the subsidy are mandated to adhere strictly to the approved project plan and to manage the allocated funds in accordance with established guidelines. This includes providing detailed progress reports, documenting the utilization of funds, and ensuring that the newly acquired vehicles meet the specified environmental standards. Such oversight ensures that public funds are judiciously employed to achieve the intended environmental benefits and that the transition to cleaner technologies is executed transparently and efficiently.
- **Example:** MOVES III Program – Spanish government subsidy

  This initiative is designed to accelerate the transition towards electric mobility. This program, which has been reactivated retroactively from January 2025 and will run until the end of the year, directly supports the procurement of plug-in and FCEVs as well as the implementation of EV charging infrastructure. The program is governed by RD 266/2021, which provides the legal basis for the allocation and management of the funds. The MOVES III Program aims to facilitate the transition from fossil fuel-based vehicles to low- or zero-emission alternatives. Additionally, it is aimed at developing both public and private EV charging infrastructure. This includes installations for residential use, public parking areas, commercial spaces such as hotels and shopping centers, and on public roads, including service stations. It is an integral part of the European Recovery, Transformation, and Resilience Plan and is co-financed by the European Regional Development Fund. The program was initially launched in 2021 and expanded in December 2022 by an additional €400 million, bringing the total budget to €1.2 billion. In 2024, additional funding raised the allocation to €1.55 billion, and with the recent addition of €400 million, the total funds now available amount to €1.735 billion. The subsidy amounts are staggered by vehicle category:

  - Battery-electric, hydrogen cars, and plug-in hybrids (electric range >90km): Up to €7,000.
  - Plug-in hybrid EVs (electric range 30–90km): Up to €5,000.
  - Commercial vehicles (BEV, FCEV, or PHEV): Up to €9,000.
  - Other EVs: Lower subsidy rates apply to electric motorbikes, tricycles, and light EVs.

  For commercial vehicles, detailed subsidy values and eligible costs (including EV charging infrastructure, electrical pre-installation, and smart recharging communications services for communities of owners) are specified in Annex III of RD 266/2021

  The central government, through the Instituto para la Diversificación y Ahorro de la Energía (IDEA – Institute for the Diversification and Saving of Energy), transfers funds to the Autonomous Communities. The Autonomous Communities directly administer the allocation of funds to eligible applicants on a competitive basis, organizing competitive calls for grant allocation directly to final users. The eligible beneficiaries are individual and self-employed persons, communities of owners, legal entities, local entities, and public sector institutions.

3. Concessional loans

- **General structure:** Characterized by below-market interest rates and extended repayment schedules, these loans can ease the financial burden of high up-front investments associated with the fleet renewal for low-emission trucks. However, their practical application in Europe remains limited. At present, concessional loans are rarely extended to the purchase of low- or zero-emission trucks, restricting their immediate utility for fleet renewal in the transport sector. The scarcity of well-capitalized green banks – essential intermediaries for delivering such loans – further constrains the scalability of concessional loan programs, particularly for larger fleet projects that require significant financing volumes. As such, while concessional loans offer strong potential in theory, their effectiveness in practice depends on expanding institutional capacity, aligning loan eligibility with sectoral needs, and increasing the availability of capital dedicated to transport decarbonization. Governments or green banks sometimes offer concessional loans as part of national or regional programs, which come with better terms than regular bank loans – things like lower interest rates, longer time to repay, and sometimes even grace periods where operators do not have to start repaying right away.
- **Implementation phase:** Operators seeking a concessional loan are required to submit a comprehensive business plan that clearly outlines their existing fleet and identifies which trucks they intend to replace. This plan must include detailed specifications of the new low-emission trucks proposed as replacements and provide an estimation of the anticipated environmental benefits – such as reductions in CO_2 emissions and improvements in fuel efficiency. Upon approval of the application, the operator will receive a loan with interest rates substantially lower than market norms and a repayment term that may extend between 10 and 15 years. In certain arrangements, the loan funds are disbursed directly to the truck manufacturer or dealer upon delivery of the vehicle, allowing the operator to commence repayments following delivery under a vendor financing model. Given the public support inherent in this financing, operators must also commit to annual reporting on vehicle usage, verify actual emissions reductions or kilometers driven, and consent to periodic audits or inspections as required.
- **Examples:**

  The European Bank for Reconstruction and Development offered a €2.6 million five-year loan to an oversize cargo fleet operator in Ukraine to purchase up to 42 Euro VI low-emission trucks and 18 trailers (EBRD, 2018).

  In California, the Zero-Emission Truck Loan Pilot Project is a pilot project designed to provide financing opportunities for both heavy-duty ZEVs and charging or fueling infrastructure. The program is currently under development and staff is considering stakeholder feedback to develop the pilot with an anticipated 2024 launch date. The program will be administered by the California Pollution Control Financing Authority through their California Capital Access Program (California Air Resources Board).

  The Government of the Republic of Korea is providing blended concessional financing for hydrogen refueling stations and HGVs, providing a one-time grant of up to 60 percent of the funding cost for stations and 50 percent for vehicles (The Scottish Government – Zero-Emission Truck Taskforce).

4. Tax and other fiscal incentives

- **General structure:** Deploying effective tax benefits can reduce the cost parity between ZETs and ICE trucks for fleet operators, making ZETs more competitive. Two main categories of tax benefit can be identified:
  - Tax breaks aimed at reducing vehicle purchase and registration costs; and
  - Other fiscal benefits aimed at reducing the cost of operating the vehicle.

  Other fiscal benefits (e.g. road tax exemptions/reductions, road toll exemptions/reductions, income tax deductions) help to reduce ongoing operating costs and, albeit not directly addressing the barrier of high up-front purchasing costs, contribute to shorten the time frame in achieving TCO parity.

  The programs typically set clear eligibility criteria that define which types of vehicles and organizations can participate. For example, specific weight thresholds and vehicle classifications ensure that incentives are

targeted toward fleets that contribute significantly to emissions reduction goals. Financial benefits are provided through mechanisms such as tax credits that directly reduce a company's tax burden based on the number of qualifying vehicles purchased.

Implementation phase: The implementation of these schemes begins at the policy level, where governmental agencies develop and enact legislation tailored to support clean vehicle adoption. This process involves extensive stakeholder consultation, ensuring that the schemes align with market needs and industry practices while meeting environmental objectives. Once the policies are in place, detailed guidelines and application procedures are issued, outlining the criteria for eligibility and the mechanisms for claiming incentives. Fleet operators then engage in a process of application and verification, where their vehicles are reviewed for compliance with established standards. Government bodies work collaboratively with tax authorities and regulatory agencies to monitor and evaluate program uptake, adjusting parameters as necessary to maximize impact.

- **Examples:**

  In the United States, commercial fleets and tax-exempt organizations that purchase qualified commercial vehicles – encompassing all-electric, plug-in hybrid electric, or FCEVs – may be eligible to receive a clean vehicle tax credit on a per-vehicle basis. For qualified commercial LEVs with a GVW rating below 14,000 pounds, this credit can be as high as US$7,500, whereas for vehicles exceeding this weight threshold, the credit may reach up to US$40,000. Similarly, fiscal incentives for ZETs are available in Europe; for example, Ireland offers a reduction in annual road tax of €120, thereby directly lowering operational costs for ZET operators. In addition, countries such as Czechia and Slovenia have implemented policies that exempt operators owning ZETs from road taxes and, in the case of Czechia, from road tolls as well, further supporting the transition to low-emission fleets.

5. Retrofitting funding

- **General structure:** Instead of scrapping otherwise serviceable vehicles or investing in expensive new fleets, retrofitting allows operators to update their assets to comply with environmental standards at a fraction of the cost. A typical retrofitting scheme supported by grants is structured in several interdependent components. It begins with the definition of eligibility criteria, which determine which vehicle categories, fuel types, or fleet operators may benefit. This is followed by a technical validation process, in which retrofit technologies must be pre-approved to ensure safety and emissions performance.

  Next, the scheme outlines the financial parameters, such as the percentage of retrofit costs covered by the grant, the total budget envelope, and the application procedures. In many cases, funding is tiered to prioritize high-impact vehicles (e.g. urban delivery trucks, long-haul vehicles) or support low-income regions and small fleet owners.

  Regulatory oversight and coordination mechanisms ensure that funds are disbursed fairly and in line with objectives. Importantly, the success of such schemes also depends on market readiness – availability of certified retrofit kits, installation expertise, and infrastructure (e.g. charging or hydrogen refueling).

- **Implementation phase:** The implementation phase of a retrofitting scheme begins with a call for applications, where eligible operators submit retrofit plans aligned with the scheme's technical and environmental requirements. Once selected, recipients receive grants to cover part of the retrofit conversion costs, often in installments linked to milestones such as vehicle inspection, roadworthiness certification, or operational deployment. This phase also includes monitoring and verification. Authorities must assess whether retrofitted vehicles meet expected performance in real-world conditions, including emissions reductions and operational safety. Ongoing data collection may be required to evaluate the environmental and economic return on public investment. In parallel, stakeholder engagement – including outreach to fleet operators, retrofit providers, and financing institutions – is essential to encourage uptake and build trust in the scheme. Where needed, complementary incentives (such as access to low-emission zones or tax relief) can be layered to increase participation.

In summary, the implementation of a retrofitting scheme is both a logistical and policy-driven process, requiring coordination across multiple actors to ensure effective delivery and long-term impact.

- **Example:** Retrofitting public funding – ADEME, France

- Governments such as France have implemented national retrofit action plans with dedicated public funding (e.g. €100 million allocated through ADEME) to stimulate uptake in retrofitting. These grants are typically provided on the condition that retrofitted vehicles meet performance and safety standards and contribute to emissions reduction. Unlike subsidies or tax credits, which often work by reducing operating costs or tax burdens, grants provide up-front capital for project implementation. In this model, grants reduce the financial risk for early adopters, help scale up innovative retrofitting technologies and ultimately support the creation of a retrofit ecosystem that includes technology providers, testing facilities, and regulatory bodies. Furthermore, by linking public funds directly to emission-reduction outcomes, grants ensure a measurable public value in exchange for financial support.
- Against this background, the UNECE World Forum for Harmonization of Vehicle Regulations (WP.29) and its Working Party on Pollution and Energy (GRPE) has launched a new informal working group to develop globally harmonized provisions for EV and hydrogen fuel cell retrofit systems. The objective of this harmonized regulatory framework would ensure minimum requirements for retrofit systems, provide robust performance requirements for converted vehicles and support the deployment of retrofit systems that could be installed on many vehicles in the countries that adopt the developed requirements. This new UNECE informal working group is expected to deliver on harmonized requirements for targeted vehicle categories and powertrain types by 2027.

International organization schemes

1. European Commission – De Minimis Regulation (EU) 2023/2831

- **General structure:** In practice, a carrier could secure a grant to purchase zero-emission trucks, benefit from a subsidized loan for BEVs, or obtain a guarantee to ease collateral requirements on financing hydrogen trucks. Crucially, only "transparent aid" – measures whose gross grant equivalent can be calculated ex ante – qualifies under this regulation, and loans up to €1.5 million (over five years) or €0.75 million (over ten years) secured by at least 50 percent collateral are automatically presumed to meet the De Minimis criteria.
- **Implementation phase:** During the implementation phase, road transport operators should engage with their national managing authorities – typically the ministries responsible for transport or economic affairs – to identify De Minimis-funded calls for "green transport" or "clean mobility" projects. It is advisable to sequence any fleet renewal investments so that previously received De Minimis aid (for example, training or research grants) does not exceed the €300,000 cap. Operators can then apply for the most suitable combination of grants, subsidized loans, or guarantees in line with their cash flow needs and low-emission fleet strategy. While the regulation stops short of prescribing fixed "€ X per truck" subsidies, it effectively removes all legal hurdles to rapid, small-scale state support for transitioning to low- and zero-emission vehicles – forming the cornerstone upon which tailored national incentive schemes can be constructed.

2. European Commission – Just Transition Mechanism

- **General structure:** Complementing the JTF is a dedicated scheme under InvestEU which mobilizes private investment in the transition through debt or equity financing. The scheme is reinforced by an EU budgetary guarantee, allowing for preferential financing terms. Crucially, regions must first develop and secure Commission approval for a territorial just transition plan (TJTP) to benefit from this support. These plans outline the specific transition needs of the territory, the sectors most affected – such as road freight – and the types of projects to be supported. Once approved, they unlock access to InvestEU-backed finance for infrastructure and decarbonization efforts, which could include support for the modernization of transport fleets and the rollout of depot-scale zero-emission technologies.

  In addition, the Public Sector Loan Facility, implemented with the European Investment Bank (EIB), complements the JTF and InvestEU scheme by offering a blend of €1.3 billion in EU grants and €6 to €8 billion in EIB loans. This facility is intended to help public entities finance essential infrastructure that may not attract commercial investment, including transport and energy systems. It creates opportunities for municipalities or public transport operators to invest in low- and zero-emission mobility infrastructure, such as regional charging hubs or clean vehicle depots, thereby enabling and incentivizing private operators to renew their fleets in tandem.

- **Implementation phase:** The implementation of these instruments is driven at the national and regional levels. Member States are responsible for identifying eligible territories through their TJTPs, selecting sectors such as road freight for targeted intervention, and designing appropriate funding mixes that may include JTF grants, InvestEU financing, and EIB loans. Once the plans are approved, managing authorities launch calls for proposals or establish direct support schemes to deliver these funds.

  For transport operators seeking to benefit from these opportunities, engagement with national or regional managing authorities is essential. These authorities will define the eligibility conditions, application procedures, and financial terms once the funding schemes are in place. Operators are encouraged to monitor the publication of TJTP-backed initiatives under their country's cohesion policy programs and prepare investment strategies that align with the available funding ceilings and conditions.

  In essence, while the JTM does not provide fixed allocations or predefined aid levels per vehicle, it establishes a robust and flexible funding architecture through which low-emission fleet renewal can be enabled – provided national and regional authorities seize the opportunity to prioritize the road transport sector within their just transition strategies.

Trust funds

- **General structure:** The funding mechanism of a government trust fund is characterized by the collection of earmarked revenues, which might include environmental levies, fuel taxes, or congestion charges. These revenues are systematically accumulated, providing a continuous and reliable financial base that supports ongoing and future fleet renewal projects. In certain cases, the trust fund may also invest a portion of its assets to generate additional income, thereby expanding its capacity to finance extensive and long-term infrastructure projects.
- **Implementation phase:** In the context of fleet replacement initiatives, the trust fund is deployed to support projects that demonstrate clear environmental benefits. Prospective projects typically involve comprehensive proposals that outline detailed cost analyses, environmental impact assessments, and specific implementation timelines. These proposals are rigorously evaluated against predetermined criteria, ensuring that only projects with strong potential to reduce emissions and enhance air quality are approved. Once a project meets the established criteria, funds are disbursed according to a structured schedule that is linked to predefined milestones and performance targets, such as vehicle acquisition, measurable emissions reductions, or the development of supporting infrastructure like EV charging stations.

  Governance and oversight of the trust fund are critical to its success. A dedicated board or designated government agency is responsible for managing the fund, ensuring that disbursements are aligned with the trust's objectives, and that projects are progressing as planned. This management structure is reinforced by strict accountability measures, including regular audits, detailed financial reporting, and public disclosure of fund performance. Such oversight not only guarantees transparency but also reinforces public trust by ensuring that the financial resources are used efficiently and that the intended environmental benefits are realized.
- **Example: The Global Facility to Decarbonize** Transport (GFDT) – the World Bank.

  The GFDT exemplifies how a dedicated trust fund can effectively finance the transition to low- or zero-emission vehicles by pooling earmarked revenues and implementing rigorous project evaluation and monitoring procedures.

  A trust fund's mandate is defined to support the decarbonization of the transport sector by incentivizing the adoption of cleaner energy vehicles. Earmarked revenues are pooled into the trust fund, ensuring a continuous supply of capital specifically earmarked for fleet renewal projects. This minimizes the risk of funding shortages and promotes long-term planning.

  Project selection and implementation: Stakeholders submit detailed proposals, which are then rigorously evaluated based on technical, environmental, and financial criteria.

  Approved projects receive funds through a structured disbursement schedule, linked to achieving predefined milestones such as vehicle acquisition, emissions reduction targets, and infrastructure development (e.g. EV charging stations).

  Continuous oversight ensures transparency and that the investments yield tangible environmental and economic benefits.

The trust fund model, as exemplified by the GFDT, not only finances the transition to cleaner fleets but also reinforces broader public policy objectives, such as reducing greenhouse gas emissions and fostering sustainable economic growth.

Private-sector schemes

1. Residual value guarantees

- **General structure:** The mechanism underpinning RVGs is initiated at the inception of a lease or financing agreement, during which the provider and the fleet operator mutually agree on a guaranteed buyback price. This price is derived from current market conditions and anticipated depreciation trends, considering factors such as mileage, maintenance standards, and operational conditions. As the vehicle is deployed, its usage is closely monitored to ensure adherence to the agreed terms, with parameters like mileage, service intervals, and general operational conditions playing critical roles in influencing the asset's residual value. At the end of the agreed period, the actual market value of the vehicle is assessed. If the determined resale value falls below the pre-established guaranteed price, the provider steps in to compensate the difference. This arrangement not only shields the fleet operator from the adverse financial impacts of unexpected depreciation but also provides a degree of financial certainty, enabling better long-term planning and budgeting.
- **Implementation phase:** To access RVGs, fleet operators are encouraged to undertake a detailed evaluation of their operational needs and financial projections. A thorough analysis that includes projected mileage, operating conditions, and maintenance schedules is essential. Operators should compile comprehensive business plans, complete with financial statements and operational forecasts, to clearly articulate their fleet expansion or technology adoption strategies. This process not only strengthens their negotiating position but also ensures that the RVG terms reflect realistic depreciation rates based on empirical data and market trends.

  Moreover, fleet diversification is recommended to reduce exposure to market volatility associated with any single model or brand. The incorporation of telematics and driver behavior monitoring systems further supports the preservation of residual values by promoting efficient vehicle usage. Post-contract, it is critical to establish a robust system for ongoing performance monitoring and documentation. Such systems allow operators to periodically compare actual vehicle performance against initial projections, ensuring compliance with contractual requirements and facilitating the resolution of any disputes regarding residual values.
- **Example:** DLL Group

A transport operator aiming to modernize its fleet may sell its existing diesel trucks to a finance company – such as DLL Group – and then lease them back under a sale-and-leaseback agreement. This type of deal has been employed in the broader transport sector to unlock working capital. The freed-up funds can then be reinvested into acquiring new LEVs. While the notes do not mention a specific company executing this exact strategy, similar arrangements have been common in asset-intensive industries looking to balance operational liquidity with fleet upgrades.

2. Equipment-as-a-service

- **General structure:** Within an EaaS arrangement, the provider's responsibility covers scheduled maintenance, repairs – including unscheduled interventions – and factory updates, with the performance of the fleet continuously monitored by a 24/7 management team in collaboration with local dealers. Despite the comprehensive service package, the EaaS offering does not include consumables such as fuel, diesel exhaust fluid, tires, or ground engaging tools, nor does it cover incidents resulting from operator misuse. Additionally, EaaS does not extend to providing machine operators or site management services, although customers can opt to include supplemental programs such as operator skills improvement initiatives and digital services aimed at enhancing operational efficiency.

  Financially, EaaS provides significant advantages. By classifying the service as an operating expenditure instead of a capital expenditure, companies avoid tying up finite capital and can bypass the internal cost of capital, which in some instances can be as high as 10 percent annually. The separation between fleet ownership and fleet use introduces a level of financial transparency and transfers much of the inherent risk to the provider, who covers unscheduled repairs or breakdowns, functioning essentially as a full warranty for the duration of the contract.

  Operational benefits under the EaaS model are equally compelling. The provider tailors the fleet's scope, size, and specifications to closely align with customer re-

quirements, thereby optimizing production and ensuring that operational demands are met efficiently. The pricing model is structured around actual production usage, meaning that higher fleet utilization results in lower hourly costs. In cases where forecasted usage exceeds expectations, credits may even be provided at the end of the service year, further reducing overall expenses. The inherent scalability of the service ensures that fleet expansion or geographic extension can be seamlessly integrated into the existing EaaS contract.

- **Implementation phase:** In terms of implementation, EaaS is most effective in scenarios characterized by large and predictable blocks of usage over extended periods. The process begins with a thorough assessment of the customer's needs, followed by the development of tailored service solutions and pricing options. Upon reaching an agreement, the service is delivered with continuous support from a dedicated fleet management team that coordinates closely with local dealerships. This collaborative approach ensures that the EaaS is structured appropriately from the outset and that high-quality service is maintained on a daily basis, enabling customers to focus confidently on their primary business objectives.
- **Example:** Volvo Financial Services

  In a typical EaaS arrangement, a transport operator signs a contract that bundles the lease of the vehicle chassis with additional services – such as battery as a service (BaaS), routine maintenance, telematics, and performance monitoring. For example, a logistics company in Europe may adopt this model to transition from diesel to electric trucks while offloading much of the operational risk (e.g. battery degradation and maintenance) to the provider. This holistic service model allows the operator to focus on core logistics operations without worrying about asset obsolescence or residual value uncertainties.

3. Credit risk guarantees and alternative financing instruments

- **General structure:** These schemes are primarily supported by governments – often through programs modeled after successful initiatives like those in California – but they also involve significant participation from the private sector. In many cases, government backing serves as a cornerstone by reducing lender risk, thereby enabling more favorable financing conditions. At the same time, institutional investors such as pension funds, green bond issuers, and long-term loan providers play an essential role in complementing this support through public–private partnerships, ensuring that a diverse range of financial instruments is available to meet the needs of fleet operators.
- **Example:** The Green Finance Institute (GFI)

  The GFI has championed credit risk guarantee schemes modeled on successful programs in California. In a real-world scenario, an SME transport operator might secure financing for electric HDVs with a lower interest rate thanks to a government-backed credit guarantee. This guarantee reduces the lender's exposure to default risk by covering a portion of potential losses. For example, a credit default guarantee scheme – similar to the one used in California's low-emission vehicle programs – has been discussed as a model to enable European SMEs to access private finance at more favorable terms, thereby accelerating the fleet transition.

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