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Prepared by NTU International Aalborg, Denmark

For Ministry of Communications Engineering Development Board, Ministry of Industries & Production

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Asian Development Bank

FINAL DRAFT



NATIONAL GUIDELINES FOR VEHICLE LICENCING





ENGINEERING DEVELOPMENT BOARD GOVERNMENT OF PAKISTAN MINISTRY OF INDUSTRIES & PRODUCTION



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FOREWORD

The *National Guidelines for Vehicle Licencing* have been developed to assist the Government of Pakistan (GoP) to improve motor vehicle safety. Motor vehicles provide many benefits to modern society, enhancing connectivity and facilitating economic development. There has been a rapid increase in vehicle numbers in recent years, and this is projected to continue. With the increase in vehicle numbers, there has come an increase in deaths and injuries. It is essential that measures be taken arrest this trend by ensuring that vehicles are constructed, maintained and operated safely.

Under the laws of Pakistan most motor vehicles must be registered if they are to be used on public roads. For that reason, vehicle registration – and de-registration – are tools which can be used to ensure that unsafe vehicles are excluded from the road system. Vehicle registration has a secondary benefit too; it provides the link between the vehicle and the vehicle owner. This link can be used to facilitate road safety initiatives, including regulation of road user behaviour and measures to enhance compliance with vehicle safety standards. The identification of vehicle ownership will be increasingly important as new law enforcement methods are introduced, such as automated detection of speeding and red light offences and point-to-point offence detection.

These Guidelines have been prepared in a reform context. They are part of a package of policy documents informing the development of a model Road Safety Act which will replace outdated and restrictive legislation currently in force. As with the other reform proposals it is intended to encourage harmonization of laws made by National and Provincial Governments. There are many important reasons for harmonization of all aspects of road law – but none more urgent than the harmonization of vehicle safety provisions. Vehicles are increasingly moving from one province to another. At the same time, administration of road law, including vehicle registration, is province-based. The recommendations in these Guidelines address both the need for harmonization and the need to administer vehicle registration in a decentralized system.

These Guidelines are arranged in the following sections:

- Global best practice in vehicle safety.
- Current vehicle safety standards in Pakistan.
- Current vehicle registration system in Pakistan.
- Recommended reforms to improve vehicle safety; including vehicle registration, manufacture and import standards, periodic technical inspections and insurance.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABS	Advanced Braking System
ADB	Asian Development Bank
AJK	Azad Jammu & Kashmir
CITA	International Motor Vehicle Inspection Committee
EC	European Commission
EDB	Engineering Development Board
ESC	Electronic Stability Control
ETD	Excise & Taxation Department
FBR	Federal Board of Revenue
GDP	Gross Domestic Product
GoP	Government of Pakistan
GTR	Global Technical Regulations
ISO	International Standards Organization
ITF	International Transport Forum
JICA	Japanese International Cooperation Agency
МоС	Ministry of Communications
MOIP	Ministry of Industries & Production
MVR	Motor Vehicle Rules
MoIP	Ministry of Industry and Production
MTMIS	Motor Transport Management Information System
MVRO	Motor Vehicle Registration Office
NCAP	New Car Assessment Program
NGO	Non Government Organization
NHA	National Highways Authority
NH&MP	National Highways & Motorway Police
NHSO	National Highway Safety Ordinance
NTRC	National Transport Research Center
OGRA	Oil and Gas Regulatory Authority
PAMA	Pakistan Automotive Manufacturers Association
PSQCA	Pakistan Standards and Quality Control Authority
PTI	Periodic Technical Inspection
RA	Registering Authority
SFR	Standards for Registration
TPMVI	Third Party Motor Vehicle Insurance
UNECE	United Nations Economic Commission for Europe
VIN	Vehicle Identification Number
WHO	World Health Organisation
WP29	World Forum for Harmonization of Vehicle Regulations

EXECUTIVE SUMMARY

The number of motor vehicles in Pakistan is rapidly increasing. There were 23,588,268 registered vehicles in 2018, a 171% increase over the 5-year period from 2013. (1) According to the *National Transport Policy* of *Pakistan, 2018*, this number is projected to rise to about 65 million by 2030. With the increase in vehicle numbers there has been an increase in the number of deaths and serious injuries.

This adverse consequence need not occur. In high-income countries there has been a reduction in the severity of motor vehicle crashes. A key factor in this has been improvement in vehicle safety standards. This includes ongoing improvements in minimum technical standards for vehicle manufacture supported by technical inspections.

Vehicle standards and vehicle registration are the central components of a vehicle regulatory system. Vehicle safety standards ensure minimum technical standards during manufacture. All motor vehicle used on public roads should meet the safety standards required for registration. It is possible to implement a system under which compliant vehicles are registered speedily and simply, but which excludes non-complaint vehicles from registration.

Registration provides other benefits as well, by establishing a link between the vehicle and the vehicle owner. This link enables other road safety initiatives to be effectively implemented. These include automated enforcement of traffic law and enforcement of vehicle safety standards.

These Guidelines identify the key components of an effective regulatory system, including manufacture and import standards, vehicle identification, vehicle inspections and insurance. Construction standards should be enforced through Standards for Registration, compliance with which will be a mandatory prerequisite for registration. Ongoing compliance will be enforced through the registration authority's power to de-register a vehicle and its power to impose conditions on registration.

The ultimate objective of the harmonised and improved vehicle registration system is to reduce the fatalities and serious injuries caused by road traffic crashes.

1. INTRODUCTION

In 2018 there were 23,588,268 registered vehicles in Pakistan (1). This includes:

- 17,465,880 motorcycles (74.6% of the Pakistan vehicle fleet)
- 3,043,593 cars / jeeps
- 761,890 three-wheelers
- 277,416 trucks
- 236,461 buses
- 167,209 motor cabs /taxis
- 1,449,440 other vehicles





Over the 5-year period, from 2013 to 2018, there was an overall 171% increase in the number of registered vehicles, however the number of motorcycles increased by 190% and three-wheeled vehicles increased by 200% (1). The disproportionate increase in these vulnerable vehicles exacerbated a resulting increase in road fatalities and serious injuries. According to the World Health Organization *Global Status Report on Road Safety, 2018* the fatality rate was was 14.3 per 100,000 population in 2016, up from 14.2 per 100,000 population in 2013. This increase will continue unless new, evidence-based initiatives are implemented.

These Guidelines have been developed to assist governments in Pakistan to improve technical and regulatory standards for motor vehicles. By adopting these Guidelines, the federal and provincial authorities responsible for setting and enforcing vehicle technical safety standards and registering motor vehicles will participate in national effort based on international good practice.

Guidance is provided on four key elements:

- 1. Vehicle technical safety standards
- 2. Vehicle registration
- 3. Periodic technical inspection
- 4. Insurance

2. BEST PRACTICE IN VEHICLE SAFETY

In high-income countries ongoing, evidence based improvements in technical safety standards for vehicle and equipment design and manufacturing have significantly contributed to reductions in road trauma in the past two decades. Two factors have driven improvements in vehicle safety: greater government regulation of motor vehicle manufacture and the growing influence of consumer testing programmes, such as the New Car Assessment Programme (NCAP) (2).

2.1 Safe System approach

The *Safe System* approach to road safety shifts from blaming drivers for causing road crashes, to recognizing that responsibility for a safe road network is shared between the system designers, regulators, and road users. This approach has been implemented in many countries that lead the world in road safety performance including Sweden, United Kingdom, Netherlands, and Australia. It is now also being progressively adopted by middle-income countries.

The *Safe System* approach endeavours to manage the forces involved in a road traffic crash so it does not cause death or serious injury (*3*). To achieve this, *Safe System* interventions are evidence based and focus on four key areas: safe roads and roadsides, safe speeds, safe road users, and safe vehicles.



Figure 2. The Safe System approach (4)

The *Safe System* approach is endorsed by the United Nations (UN) as the global best practice approach for road safety. The UN Global Plan, launched in 2011, is based on Safe System principles. Its strategies and actions are grouped around five key road safety 'pillars'.



NATIONAL ACTIVITIES



INTERNATIONAL COORDINATION OF ACTIVITIES

Figure 3. UN Road Safety Pillars

The UN Global Plan 'pillars' enable international coordination, monitoring and reporting on road safety progress and outcomes.

Pakistan's *National Road Safety Strategy, 2018-2030* which was launched by the Honorable Murad Saeed, Minister for Communications on 15th November 2018, reflects global best practice. It is based on the *Safe System* approach, with strategies grouped around key road safety pillars, one of which is safe vehicles.

2.2 The Role of Vehicle Safety in the Safe System approach

Vehicle safety has a significant role to play in both preventing crashes from occurring (crash avoidance), and managing the forces involved when a crash occurs. Safe vehicles have active

safety measures such as electronic stability control (ESC) and advanced braking systems (ABS) that aid in preventing crashes. Many countries now mandate these as standard inclusions in all vehicles. Safe vehicles also include passive safety measures such as crumple zones, side intrusion bars, pedestrian protection systems, safety belts and airbags. If a crash occurs, these safety features protect both vehicle occupants and other road users.

Vehicle safety measures should address the safety of all road users: including occupants in two and three-wheeled vehicles, pedestrians, and bicyclists (4).

In the past two decades, evidence-based improvements in vehicle safety have reduced the risk of death and serious injury for car occupants by 50% or more. Improvements in vehicle safety design and equipment for pedestrians and motorcyclists are expected over the next decade, as are further developments in driver support and assistance (5).

In addition to ongoing improvement in minimum safety standards for vehicle design and manufacture, enhanced and more efficient regulation, including periodic technical inspections has been implemented.

Finally, for safety standards to be controlled and regulated, a comprehensive motor vehicle registration system is required.



Figure 4. National Road Safety Strategy, 2018-2030

The European Commission has identified three main drivers for vehicle safety improvements in Europe (6). These are:

- 1. Changes in Regulation. Changes in regulations for vehicle design and manufacture result from Government requirements for increasing minimum levels of protection for all vehicles manufactured and imported into the country.
- 2. Consumer information. Consumer information aims to encourage the highest possible levels of safety performance based on state of the art vehicle testing and protocols; and car industry policies increasingly promote safety as a marketable commodity.
- **3. Car manufacturing industry initiatives.** The corporate vision of some manufacturers such as Swedish Volvo and German Mercedes, drives them to make ongoing, voluntary improvements to their vehicle safety standards.

2.3 The World Forum for Harmonization of Vehicle Regulations

The World Forum for Harmonisation of Vehicle Regulations (WP.29) is responsible for setting global vehicle safety and environmental standards. These standards, known as global technical regulations (GTRs), most closely align with the vehicle standards set by the European Economic Commission (ECE) but they have also been informed by standards set within the USA (FMVSS), Gulf States (GSO standards) and other countries.

The WP.29 Forum is managed by the United Nations Economic Commission for Europe (UNECE) based in Geneva. Three multilateral Agreements, adopted in 1958, 1997 and 1998, provide the legal framework for WP.29 activities as well as the legal framework for UN member states to voluntarily apply this wide range of motor vehicle technical standards *(6)*. The regulatory instruments which have been established by the WP.29 Forum and its associated agreements comprise the following:

- UN Regulations: These contain provisions relating to vehicles and associated safety and environmental issues. They set out performance-oriented test requirements and administrative procedures;
- UN GTRs: These are harmonized performance-related requirements and test procedures;
- UN Rules: These deal with periodic technical inspections.

Since the WP.29 Forum was established, the number of technical standards has increased and there are now 135 UN Regulations appended to the 1958 agreement. Many countries pass laws to apply WP.29 regulatory instruments as their national standards for application. A current list of GTRs can be seen on their website: https://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29glob_registry.html

The technical standards established by WP.29 regulatory instruments are widely recognised, applied and enforced. Parent companies of vehicle manufacturers in Pakistan apply the WP.29 GTRs to vehicles sold in their own country and exported to countries which apply the WP.29 technical standards.

Currently in Pakistan there is no requirement for vehicles manufactured or sold to meet the WP.29 standards. However Cabinet Division has recently approved the "Summary on Adoption of UNECE Vehicle Regulations" submitted by the Ministry of Industry and Production (MoIP) which is now being processed by the Ministry of Foreign Affairs.

2.4 UN Minimum Vehicle Technical Regulations

Reflecting the importance of improved vehicle standards in contributing to the delivery of global road safety targets, the UN has highlighted eight technical regulations as the minimum requirement for vehicle safety (8). These are set out in Table 1 and listed below:

- Seatbelts (R16) and seat-belt anchorages (R14)
- Child restraints (R129)
- Frontal impact protection (R94) and side impact protection (R95)
- Pedestrian front protection (R127)
- Electronic stability control (R140)
- Motorcycle anti-lock braking systems (R78)

Parent companies of Pakistan vehicle manufacturers apply all or most of these technical regulations to all vehicles sold in their own country, and also to all vehicles exported to countries which mandate these regulations.

However, no vehicle manufacturer or vehicle importer in Pakistan is legally required to include these vehicle safety features in all vehicles.

UN Vehicle Technical Standards	Reg. No.	Regulation Name	Reasons for this UN Regulation			
SEAT BELTS	R14	Approved seatbelt anchorages for all seating positions	Ensure that seatbelts are fitted in vehicles when they are manufactured and assembled and that the seatbelt anchor points can withstand the impact incurred during a crash, to minimize			
-Þ 🛛 🕻	R16	Approved seatbelts for all seating positions	the risk of belt slippage and ensure that passengers can be safely removed from their seats if there is a crash.			
	R129	Child restraints	Ensure that the child seat is in place with the adult seatbelt and that ISOFIX child restraint anchorage points are fitted to secure the restraint.			
CRASH TESTS	R94	Occupant protection in frontal collision	Ensure that cars withstand the impacts of a frontal and side impact crash when tested at certain speeds. These crashworthiness			
	R95	Occupant protection in a side or lateral collision	regulations help to protect occupants withstand the impact front and side impact crashes.			
PEDESTRIAN SAFETY	R127	Pedestrian front protection	Provides softer bumpers and modifies the front ends of vehicles (e.g. removes unnecessarily rigid structures) that can reduce the severity of a pedestrian impact with a car.			
ELECTRONIC STABILITY CONTROL	R140	Electronic Stability Control (ESC)	Prevents skidding and loss of control in cases of oversteering or understeering and is effective at reducing crashes and saving lives. It is effective in avoiding single car and roll over crashes, reducing both fatal and serious injuries.			
ANTI-LOCK BRAKES	R78	Motorcycle Anti-lock Braking Systems	Helps the rider maintain control during an emergency braking situation and reduces the likelihood of a road traffic crash and subsequent injury.			

Table 1. UN Minimum Vehicle Safety Standards Regulations

2.5 The ADR Conventions for Carriage of Dangerous Goods

A global body known as ADR¹ has developed and administers international conventions which set comprehensive safety standards for the transport of dangerous goods. The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) was made at Geneva on 30 September 1957 under the auspices of the United Nations Economic Commission for Europe, and it entered into force on 29 January 1968. The Agreement was amended on 21 August 1975, which entered into force on 19 April 1985.

The Agreement itself is short and simple. The structure is of the ADR consistent with that of the United Nations *Recommendations on the Transport of Dangerous Goods*. The key article is the second article which says that apart from some excessively dangerous goods, other dangerous goods may be carried internationally in road vehicles subject to compliance with:

- the conditions laid down in Annex A for the goods in question, in particular their packaging and labelling
- the conditions laid down in Annex B, in particular the construction, equipment and operation of the vehicle carrying the goods in question.

Annexes A and B have been regularly amended and updated since the entry into force of ADR. Consequently to the amendments that entered into force on 1 January 2019, a revised consolidated version has been published as document ECE/TRANS/275, Vol. I and II ("ADR 2019")

Key provisions of ADR include:

- 1. Applicable duties as: Consignor, Carrier, (Un)Loader, Packer, Filler, Driver, Vehicle Crew, Consignee
- 2. Training of employees according to their roles and responsibilities. Maintaining records of training is also required.
- 3. Requirements for vehicles used for transport and safety equipment/ plates and placards required. Vehicle audit sheets and keeping of records on vehicle maintenance, safety checks, equipment and marking.
- 4. Identify all packaging used and handled. Note correct packaging type for goods and limitations of certain packaging. Create processes and procedures to ensure correct packaging/labelling is used and when appropriate remove packaging from circulation that is damaged or out of date.
- 5. Consignors to create transport document(s). Ensure all documentation is identified and accompanies each dangerous goods shipment. Carriers to supply instructions in writing. Transport documentation must be held on record for a specified period.

¹ The name is an acronmyn of its full name in French - Accord européen relatif au transport international des marchandises Dangereuses par Route

2.6 Motorization and Road Traffic Crashes

It is not inevitable that vehicle growth results in more road traffic fatalities and serious injuries. Most high-income countries fully implement WP.29 and ADR standards or equivalent/greater standards. Most of the 40 countries which currently apply all or most of the UN minimum vehicle safety standards are high-income countries. The impact of these policy and technical standards is that high-income countries have 40% of global vehicles but account for only 7% of global road traffic deaths.

In contrast, middle-income countries have 59% of global vehicles, but account for 80% of global road traffic deaths (8).



Figure 5. Population, road traffic deaths, vehicles by country income category

Vehicle safety standards in high-income countries have significantly contributed to fatality reductions. An increasing number of middle-income countries are also implementing these UN standards (8).

Pakistan is not compliant with any of the eight minimum UN vehicle safety standards regulations. It currently only has WP.29 observer status.



Figure 6. Countries applying UN vehicle safety standards, 2018

2.7 UN 2030 Vehicle Safety Targets

In 2018, the UN gained global consensus agreement for 12 road safety service delivery and performance targets for 2020 and 2030, termed as the UN Global Road Safety Performance Targets. Pakistan is a signatory to these UN Global target (9).

Target 2 sets a target for all countries to accede to the core road safety-related UN legal instruuments, such as the ADR Agreement.

Target 5 sets a target for 100% of all new and used vehicles to meet the eight minimum UN GTRs by 2030. The MoIP and its Engineering Development Board (EDB) support the interventions recommended in the Guidelines to deliver these targets.



Target 2: By 2030, all countries accede to one or more of the core road safety-related UN legal instruments.



Target 5: By 2030, 100% of new (defined as produced, sold or imported) and used vehicles meet high quality safety standards, such as the recommended priority UN Regulations, Global Technical Regulations, or equivalent recognized national performance requirements.

Figure 7. UN 2030 Global Road Safety Performance Targets 2 & 5

2.8 Pakistan's performance assessed on a global scale

It can be seen that Pakistan's regulatory system has fallen behind that of other countries, and in particular those that have implemented globally agreed standards. This under-performance makes it likely that high fatality and serious injury rates will persist with a detrimental impact on society and the economy (10). The ADB has long highlighted that regulations governing basic vehicle control systems like braking, steering, tyres, and lights are essential in order to improve vehicle safety in developing countries (11).

2.9 Current Vehicle Technical Standards

According to the 2011 JICA *Project for Automobile Industry Development Policy in the Islamic Republic of Pakistan Main Report,* the automotive standards which currently apply in Pakistan are the following:

	PS 4707/2008 (R) Two Wheeler Motor Cycle (revised in 2010)
ENDINE INDUCTIONALITY BOARD ANNUETING CONTRIBUTING AND ACCOUNTION THE INLANC ADPUBLIC OF PRODUCTION	PS 4708/2008 (R) Three Wheeler Auto Rickshaw (revised in 2010)
PROJECT FOR AUTOMOBILE INDUSTRY DEVELOPMENT POLICY	PS 1806/1977, 88 Reciprocating Internal Combustion engine
IN THE ISLAMIC REPUBLIC OF PARISTAN	PS 4845/2008 (R) Four Wheeler Automobile (under revising)
MAIN REPORT.	PS 4870/2008 Light Commercial Vehicle
	PS 4868/2008 Semi Trailer, Full Trailers (ready for NSC)
ANGUNE DEL	PS 4869/2008 Heavy Commercial Vehicle (ready for NSC)
JARMA INTERNATIONAL COOPERATION AGENCY	PS 953/1986 (R) Exhaust Silencer for Auto Vehicles
LINCO INTERNATIONAL CORPORATION	The JICA Report notes that nothing has changed much since 2010.

Figure 8. JICA Report on Pakistan Automobile Industry Development Policy

As illustrated in Table 2, the top automotive manufacturing countries, including middleincome countries such as China and India, are fully compliant with, or are moving towards full compliance with WP.29 safety regulations covering the basic arrangement of controls and vehicle crashworthiness.

	China	U.S	Japan	Germany	India	South Korea	Spain	Brazil	France	Pakistan
	****				۲		and the second sec	0		(*
Proportion of global production (%)	29.8	11.5	9.9	5.8	4.9	4.2	2.92	2.7	2.28	0.23
Reference	National Standards ¹	FMVSS ²	UNECE WP29	UNECE WP.29	M V ³ (Amend) Bill 2017	KMVSS ⁴	UNECE WP 29	TRL Report⁵	UNECE WP29.	UNECE Observer
Instrumentation/controls										
R35 – arrangement of foot controls	Yes	Yes	Yes	Yes	Pending	Yes	Yes	No	Yes	No
R39 – speedometer equipment	Yes	Yes	Yes	Yes	Pending	Yes	Yes	No	Yes	No
R46 – rear-view mirrors	Yes	Yes	Yes	Yes	Pending	Yes	Yes	No	Yes	No
R79 – steering equipment	Yes	Yes	Yes	Yes	Pending	Yes	Yes	No	Yes	No
Crashworthiness										
R11 – door latches and door retention components	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
R13 -H – braking (passenger cars)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
R13 – braking (trucks and buses)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
R14 – safety belt anchorages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
R17 – seats, seat anchorages, head restraints	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
R27 – advance-warning triangles	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
R42 – front and rear protective devices (bumpers, etc.)	Yes	Yes	Yes	Yes	Pending	Yes	Yes	No	Yes	No
R43 – safety glazing materials and their installation on vehicles	Yes	Yes	Yes	Yes	Pending	Yes	Yes	No	Yes	No
R94 – protection of the occupants in the event of a frontal collision	Yes	Yes	Yes	Yes	Underway⁵	Yes	Yes	Yes	Yes	No
R95 – protection of the occupants in the event of a lateral collision	Yes	Yes	Yes	Yes	Underway⁵	Yes	Yes	Yes	Yes	No
R116 – protection of motor vehicles against unauthorized use	Yes	Yes	Yes	Yes	Pending	Yes	Yes	No	Yes	No
R127 – pedestrian front protection	Yes	Yes	Yes	Yes	Underway ⁷	Yes	Yes	No	Yes	No
R129 – enhanced child restraint systems (ECRS)	No	Yes	Yes	Yes	Underway ⁷	Yes	No	No	Yes	No
R140 – Electronic Stability Control (ESC)	No ⁸	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No

Table 2. Compliance with WP 29 by Vehicle Manufacturing Countries

1 China National Standards, Goubiao

3 Motor Vehicle Amendment Act 2017, Passed Lower House now in Upper House

6 New car models Oct. 2017, all cars Oct. 2020

² Federal Motor Vehicle Safety Standards - National Standard Equivalent to WP 29

⁴ Korean Motor Vehicle Safety Standards - National Standard Equivalent to WP 29

⁵ Transport Research Laboratory. (2015), The Potential for Vehicle Safety Standards to Prevent Road Deaths and Injuries. TRL Report No PPR 776.

⁷ New car models Oct. 2018, all cars Oct. 2020

⁸ China's top 12 car-makers (more than 70% sales volume) committed to ESC standard from 2018 (8).

2.10 New Car Assessment Programs

New Car Assessment Programmes (NCAPs) have been successful at increasing demand for safer vehicles through standardised crash testing of vehicles and promoting the test results to consumers (7). Since the first NCAP was launched in 1978 in the United States, national car assessment programs have commenced in Australia (1993), Japan (1995) and Europe (1997) (7).

NCAPs provide objective and transparent assessment of the safety standards and features of vehicle models by testing them and rating their performance using a star rating system (between one and five stars). The star ratings clearly identify to the consumer the safety standards and systems included in each vehicle model. This encourages consumers to purchase safer vehicles, which in turn creates an incentive for manufacturers to manufacture safer vehicles and reduce the cost of base models with safety features. More recently, NCAP programmes have been initiated in Latin America and South Asia where they are improving the safety standards of vehicles sold in these markets.

The impact of new vehicle testing in India demonstrates its effectiveness in improving vehicle safety standards.

Box 1: Vehicle safety standards in India

In 2014, independent crash tests conducted by Global NCAP 'Safer Cars for India' initiative revealed that five topselling models manufactured in India would fail the UN's frontal impact crash test. Further Global NCAP tests of the Renault Kwid, Maruti Suzuki Celerio, Maruti Suzuki Eeco, Mahindra Scorpio and Hyundai Eon resulted in a 0-star rating for each, indicating a high risk of death or serious injury. In a previous Global NCAP 2014 test, the Tata Nano also received 0-stars.

The Government of India through its federal Ministry of Road Transport and Highways (MoRTH), acted quickly to address this serious safety issue. In 2015, it announced the application of new regulations consistent with the UN standards. Manufacturers were required to apply R94 (front) & R95 (side) impact protection standards to new car models from October 2017 and to all cars from October 2020. Pedestrian protection (R127) standard was applied to new car models from October 2018 and to all cars from October 2020.

The combination of the new regulations and the increased consumer awareness is raising consumer demand for safety features such as airbags and is driving the automobile industry in India to improve safety design and manufacture. **In less than five years the Indian automobile industry will have entirely phased out production of old, unsafe designs and produce only vehicles that comply with UN standards.** A new model produced by India has now achieved a Global NCAP 4-star crash test rating. India is also developing its own new car assessment program, called the Bharat New Car Assessment Program.²

Technical requirements and test procedures are now established in the form of a new standard by the technical committees. MoRTH issues draft notification, inviting comments from the stakeholders. After the stakeholder consultation, MoRTH issues notification under Motor Vehicle Act and its Central Motor Vehicle Rules (CMVR).

India has adopted 3rd party type approval system. Under CMVR, various test agencies are authorized to carry out testing and grant approvals on behalf of Government of India. The vehicle manufacturer is responsible to ensure compliance with mandatory regulations addressing safety, emission and other requirements as notified under CMVR. Type approval certificate is mandatory for any new model, approval for any engineering changes in existing models in production or for compliance to any newly notified requirement.

Continued compliance with the mandatory requirements (Conformity of Production) is verified by carrying out testing/verification of the randomly selected vehicle/engine and component (as the case may be).

MoRTH is accountable for the Motor Vehicle Act and CMVR. State Ministries manage vehicle registration.

Source: Hindustan Times, 18 May 2016. Celerio, Kwid, Scorpio Among Indian Cars Failing Global NCAP Crash Test. http://www.hindustantimes.com/autos/celerio-kwid-scorpio-among-indian-cars-failing-global-ncap-crash-test/ story-ducPx4HXlj3vpNFJXfGErl.html.

WHO Global Ststus Report on Road Safety, 2018

Currently in Pakistan there is no NCAP program, although the setting up of a Pakistan New Car Assessment Program (P-NCAP) was proposed in the Automotive Development Policy 2016-2021 (12). A Pakistan NCAP is not recommended as a priority at this time, however domestic vehicle manufacturers should be encouraged to arrange for domestic vehicles to be independently crash tested in parent countries.

When established, the National Road Safety Observatory website should include general information on the crashworthiness of domestically produced and imported vehicles.

2.11 Global Best Practice Vehicle Safety Reports

2.11.1 Improving Safety for Motorcycle, Scooter and Moped Riders

The 2015 International Transport Forum (ITF) *Improving Safety for Motorcycle, Scooter and Moped Riders Report* notes that while the "powered two-wheeler" (PTW)2 is becoming an important component of the transport system in all countries they represent an important challenge for road safety. It includes a specific chapter on PTWs in low and middle-income countries.

The main findings of the report are that motorcycles play a significant role in mobility particularly in large cities. However, riders on these vehicles are at far more risk than car drivers per kilometre travelled in terms of fatalities and severe injuries entailing long-term disability, and the economic costs associated with these crashes are significant.

PTW crashes are frequently linked to failures of perception and control and fatal crashes most frequently occur at intersections, commonly involving problems of perception and appraisal by both car drivers and the motorcycle riders and single-vehicle crashes, due to the PTWs' higher sensitivity to external factors such as road surfaces or weather conditions. Speeding and consumption of alcohol or drugs are critical factors in the occurrence and severity of PTW crashes.

Investing in motorcycle safety can therefore bring important societal and economic benefits. The report identifies nine recommendations in the context of a *Safe System* approach which include:



Figure 9. ITF Report, 2015

- Implement a Safe System approach that caters for the safety needs of powered two-wheelers.
- Make the needs of powered two-wheelers an explicit part of transport policy.
- Make the use of helmets compulsory for all riders of powered two-wheelers.
- Enhance safety features in vehicles.
- Reduce crash risk for powered two-wheelers by introducing self-explaining and forgiving roads.

This IRF Report is a key tool for all road safety engineers and urban planners.

2.11.2 European Commission Vehicle Safety Report, 2016

Although this European Commission (EC) report addresses vehicle safety within a European Union context, it can provide the evidence basis to inform Pakistan's vehicle safety strategy over the next decades.

The report notes that countries active in vehicle safety typically engage in a range of international and national actions, some of which are:



Figure 10. EC Vehicle Safety Report, 2016

- Legislation development.
- National research and monitoring of vehicle safety.
- Ensuring that safety helmet and safety restraint usage laws are properly enforced.
- Encouraging their local car industry to fast track key safety measures through government procurement and in-house travel policies.

It identifies future priority policy actions for reducing fatalities and serious injuries, including improved methods for front; side and rear impact protection for car occupants, improved frontal protection for vulnerable road users, implementation of Intelligent Speed Adaptation systems, seatbelt reminders in all seating positions, alcohol interlocks for fleet drivers, and event and journey data recorders.

It highlights the need to implement a *Safe System* approach to inter-link vehicle safety measures with other system measures, some of which are highly applicable to the Pakistan environment, such as separated facilities in the road network and crash-protective medians and roadsides and speed management to ensure that no one is killed or serious injured as a result of a road traffic collision. It notes that achieving safe compatibility between different types and sizes of motor vehicles and between motorised and non-motorised vehicles continues to be the overarching issue for vehicle safety design in the next decade.

Finally it warns that vehicle markets inevitably will lead to a new push for global road safety regulations through the UN ECE process and warns that careful management is required to retain current vehicle safety standards and also ensure that further measures aimed at preventing fatalities and severe injuries caused by road traffic crashes are not superseded by the green agenda.

3. CURRENT VEHICLE SAFETY STANDARDS

Man Bedacted	Road transport is the primary means of motorised transport in Pakistan. The rail network is underdeveloped and caters for only a small fraction of freight and public passenger transport. The main flow of freight is to and from Karachi, the main port in the south of the 1,750 km long country.
	The <i>Safe System</i> approach highlights the importance of viewing road safety as a system which comprises vehicles, roads and road users. Where one component, for example road infrastructure, is less safe, initial efforts can focus on driving improvements in other components such as vehicle safety.

Figure 11. Road Network of Pakistan

In Pakistan, highly vulnerable motorcycles and three-wheelers comprise more than 75% of the vehicle fleet and share the road with larger, heavier vehicles (8). Road infrastructure is primarily designed and operated for four-wheeled vehicles. Many drivers have very poor knowledge of road rules and the consequences of high risk behaviours.

Mandating passenger vehicle, motorcycle and motorcycle helmet safety standards to achieve compliance with WP.29 standards can achieve significant reductions in deaths and serious injuries within a short timeframe and meet Pakistan's global road safety obligations. Long term, sustainable reductions in fatalities and serious injuries requires significant improvement in all 'pillars' of the road network system.

3.1 The Vehicle Manufacturing Industry in Pakistan

Most vehicles in Pakistan are manufactured locally either under license from international parent manufacturers or as completely local constructions. Until recently, imported vehicles were heavily taxed.

The automotive industry is one of the fastest growing sectors in Pakistan, accounting for 4% of Pakistan's GDP and directly employing over 1.8 million people. Currently there are about 3,200 automotive manufacturing plants in Pakistan, with an investment of Rs.92 billion (US\$870 million), producing 2.8 million motorcycles and 231,000 other vehicles annually. The industry's contribution to the national GDP is nearly Rs.50 billion (US\$470 million). The sector additionally creates 1.7 million downstream jobs bringing the total employment to 3.5 million people. Over 216,786 units were sold in the fiscal year 2017-18 (13).

Laws regulating vehicle safety standards are outdated. There has been little improvement over the past three decades and unsafe vehicles continue to be produced. Consumers are denied access to safe vehicles. Additionally, Pakistan has not been able to develop a vehicle export market.

Current provisions for motor vehicle registration, periodic fitness inspections and driver licensing in the Motor Vehicle Ordinance (1965) and the Motor Vehicles Rules (1969) are also outdated. In addition to the MVO there are laws governing vehicle registration applicable to some classes of vehicles in the National Highway and Safety Ordinance (NHSO 2000, Chapter 3).

Some quality standards have been developed for two and three-wheelers by the Pakistan Standards and Quality Control Authority (PSQCA) within the Ministry of Science and Technology. In addition, the Oil and Gas Regulatory Authority (OGRA) within the Ministry of Petroleum has developed standards for oil tankers (14). However, these are makeshift arrangements which do not overcome the inadequacies in MVR 1969.

A modern and comprehensive vehicle safety regulatory framework is required to reduce fatalities and serious injuries and to improve the efficiency, transparency and fairness of the framework.

3.2 Motorcycles



Motorcycles currently comprise close to 75% of registered vehicles in Pakistan and more than 1.87 million are produced each year. The 70cc model dominates the market followed by 125cc models. A few 150cc motorcycles are imported but these comprise an almost negligible market segment.

The PSQCA has established technical standards addressing braking system, load bearing capacity, marking and labelling, parking stability (2 wheeler only), maximum speed, mandatory components to be loaded on chassis and carriage, vehicle exhaust and noise for locally manufactured and imported motorcycles.



The PSQCA standards require revision to mandate anti-lock braking systems (ABS) which are one of the UN eight minimum safety standards. ABS are now mandatory for all motorcycles manufactured in the European Union, Brazil, Japan, India, and Australia *(8)*.

While Pakistan motorcycle fleet is dominated by light motorcycles (<125cc), the recommendation that inclusion of anti-lock braking systems on all motorcycles manufactured or imported into Pakistan should be mandatory is based on the unique interaction of vehicles, roads, climate, and road users in Pakistan.

- 1. Motorcycles currently comprise 74% of the national vehicle fleet. They travel on urban roads and on provincial and national highways where they mix with larger, heavier vehicles (LTVs, HTVs and PSVs).
- 2. Speed limits on the network range from 60-100km/h for LTV vehicles. Motorcycles drivers frequently exceed these speed limits.

- 3. No city (other than Karachi which implemented a pilot motorcycle lane in 2019) currently has any motorcycle-only lanes. Thus, motorcycles must mix with mix with larger, heavier vehicles.
- 4. A motorcycle is the sole mode of transportation for a significant percent of the population and they frequently carry up to four passengers. Currently, it is not practical or feasible to strictly enforce passenger limits on what is essentially a 'two-wheeled family transport vehicle.'
- 5. Much of Pakistan experiences a very wet monsoon season or snowy/icy conditions. ABS is especially useful in wet conditions.
- 6. Helmet wearing rates are very low for drivers and lower for passengers.
- 7. The incidence of unlicensed motorcycle driving is high.
- 8. Rescue 1122 Punjab data show that about 85% of the 900 crashes per day attended by 1122 ambulances involved a motorcycle (generally 125cc or less) or a three-wheeled vehicle.

Improving the mechanical safety of motorcycles will prevent crashes and save valuable health resources for other medical emergencies.

The *National Road Safety Strategy, 2018-2030* requires actions within all road safety pillar areas to be implemented. Re-engineering roads, installing speed camera systems, or mandating a requirement for all motorcycle riders to undertake compulsory government managed training courses as part of the licensing requirement take time and require significant government expenditure.

In contrast, mandatory inclusion of ABS braking systems which meet WP.29 standards on all motorcycle is affordable and can be implemented in a relatively short time-frame as ABS control algorithms for two-wheelers are far less complicated than for four-wheeled or other vehicles.

Motorcycles are mostly locally manufactured in Pakistan under CKD license by foreign companies (for example the Honda CG70 made by Atlas Honda Group) or made by local companies. Major two-wheeler manufacturers include Atlas Honda (Lahore), Pak Suzuki (Karachi), Yamaha Ravi Motors (Lahore). Honda leads the sales of 2-wheeler motorcycles in Pakistan with 60% of the market.

Given that sales of new motorcycle have increased by 20% annually since 2008, increasing sales volumes and market competition will reduce the additional cost of anti-lock brakes to purchasers.

3.2.1 Motorcycle Helmet Technical Standards

The UN R22 standard sets a comprehensive motorcycle helmet manufacture and testing standard. Motorcycle helmet law in Pakistan should be revised to require helmets to be manufactured to this standard (15) or to future standard specifically designed for the Pakistan riding environment.

A study of 109,000 motorcycle



Figure 12. Overloaded motorcycle with no rear mirrors

riders and passengers injured in crashes in Karachi between 2007 and 2013 found that due to poor helmet standards the helmets had limited effectiveness at preventing facial injuries (16). The study found that the use of helmets helped prevent fatalities and severe head/traumatic brain injuries.

3.3 Motorcycle Rickshaws / Three-wheelers





Like motorcycles, three-wheeled vehicles are highly vulnerable, particularly when they operate as public passenger vehicles transporting both passengers for a fee.

They currently comprise about four percent of the registered vehicle fleet, but this is increasing: there was a 200% increase in these vehicles between 2013 and 2018 *(17)*.

Three-wheeled vehicles use the front body (front wheel, steering, engine) of a two-wheeler as the prime mover and a body is mounted on the rear. They are a commercial vehicle.



There are two main types of three-wheeler industries in Pakistan.

- 1. A retrofitting cottage industry which retrofit a registered motorbike with a carriage.
- 2. Manufacturers licensed by the Engineering Development Board (EDB).

Even after the phasing-out of 2 stroke engines, three-wheelers continue to be manufactured on the roadside in unregulated establishments using older 2 stroke engines because of the higher power to weight ratio. Licensed manufacturing plants are restricted to using only 4 stroke engines in the manufacture of three-wheelers.



Figure 13. Three-wheeler carrying vulnerable schoolchildren

A review of 2011-2013 trauma data provided by Rescue 1122 Punjab found that these emergency ambulances in Lahore attended 51,992 road crashes involving motorcycle rickshaws (*18*). A survey of 500 riders of motorcycle rickshaws found that over half of the motorized rickshaws were overloaded (*18*).

The WP.29 standards do not address standards for three-wheeled vehicles such as qingqis and auto rickshaws. However, The PSQCA has established technical standards for locally manufactured three-wheelers. In the absence of WP.29 standards, the PSQCA technical standards should be incorporated into the SFR.

Under the *Safe System* approach, these vehicles should be restricted to the low speed road network (roads zoned at 30-40km/h).

Current arrangements are unsafe and should be addressed. Options include: to phase out three-wheel commercial vehicles, to limit their use to specific low-speed environments through enforcing route permits, or to impose enhanced technical standards. The NTRC division of MoC is currently implementing research project on three-wheeled vehicle transport.

Locally Manufactured Cars, Vans, and Jeeps 3.4



mandated for locally manufactured E.U and Pakistan cars, vans, and jeeps. In the past 10 years, the number of locally manufactured cars has grown five times faster than the growth in population.

These cars are manufactured in plants which operate under CKD License given by the parent companies of four manufacturers (Suzuki, Toyota, Nissan and Honda). manufacturers vehicle These produce 800cc/660cc hatchbacks to mid-sized 1600/1800cc sedans under international license.

As previously stated, the vehicles produced in Pakistan by these manufacturers do not meet either the vehicle safety standards of parent countries or global standards (8). In the past 30 years the safety standard of the Suzuki Mehran has not significantly improved.



UN technical standards are not Table 3. Comparison of safety equipment:

	E.U Honda Civic Model	Pak Honda Civic Model
Seatbelt pretension	\checkmark	✓
Knee Airbag	✓	×
Belt Load Limiter	✓	×
Side Head Airbag	✓	×
Side Chest Airbag	✓	×
Side Pelvis Airbag	✓	×
Frontal Airbag	✓	~
Seat Belt Reminder	✓	~
Pedestrian Airbag	✓	×
ESC /ABS	✓	~



Figure 14. Suzuki Mehran 1989 - 2018

To ensure that vehicle safety standards are maintained throughout the life of the vehicles, technical inspection of certain motor vehicles at regular intervals is necessary (11).

The focus should be on inspection of commercial vehicles, including taxis and ride-share vehicles such as Uber. Regular inspections of commercial vehicles by a gualified vehicle inspector are required to improve their compliance with vehicle safety standards. For example, many vehicles, including taxis, operate without installed or properly functioning safety belts for front seat occupants.

3.5 Imported Passenger Cars, Vans and Jeeps





Currently, the Federal Board of Revenue Import of Vehicles, Taxpayer Facilitation Guide (FBR Guide) does not dentify any technical safety or compliance standards for imported cars, vans, and jeeps. There are two main categories of imported cars:

• New luxury vehicles;

• Second hand or used vehicles.

The current high import taxation on new vehicles makes import of the hatchback to mid-sized sedan vehicle category unviable (FBR Guide). Most new imports are in the high-end categories such as full-sized sedans, luxury sedans, sport utility vehicles, and luxury SUVs which generally include high standard safety features. However, these vehicles are a very small percentage of the total market.

For the last 10 years, the government has allowed the import of secondhand vehicles less than five years old into Pakistan under certain import duties. This has led to an increase in the importing of mainly Japanese small used cars into the country. As shown in the table below, a vehicle manufactured in Japan and imported into Pakistan as a used vehicle has a significantly higher safety standard than a new, locally manufactured model by the same manufacturer.

	Japanese used Suzuki Alto 2016	Pak Suzuki New Cultus 2018	Pak Suzuki Mehran Pakistan
Price (appx. USD)	\$11,500	\$12,000	\$7000
Belt pretension	\checkmark	✓	×
Knee Airbag	\checkmark	×	×
Belt Load Limiter	\checkmark	×	×
Side Head Airbag	\checkmark	×	×
Side Chest Airbag	\checkmark	×	×
Side Pelvis Airbag	\checkmark	×	×
Frontal Airbag	✓	×	×
Belt Reminder	\checkmark	\checkmark	×
Pedestrian Airbag	\checkmark	×	×
ESC /ABS	✓	×	×
Collision Warning	\checkmark	×	×
Keyless Entry	✓	×	×
Push Start	✓	×	×

Table 4. Safety equipment in locally manufactured and imported used vehicles

A major concern for previous governments has been to protect the local car manufacturing industry. The 2011 JICA *Project for Automobile Industry Development Policy in the Islamic Republic of Pakistan Main Report,* recommended the banning of used car imports.

Safety can no longer be traded-off for economic growth. The outcome of industry focused studies has been to compromise the safety of vehicle occupants and other road users. At present, consumers cannot buy a locally manufactured vehicle with safety standards equivalent to those in high or even other middle-income countries.

3.6 Buses



No technical standards exist for either locally manufactured or imported buses. Buses are the main mode of inter-urban transport.

Bus manufacturers must be certified by the EDB.

There are two main types of bus manufacturers operating in Pakistan:

- Body making cottage industries which custom build a registered chassis with a bus body. These industries operate without EBD certification.
- Manufacturers which manufacture buses under design license from foreign manufacturers and are licensed by the EDB.

Current practice in Pakistan for the registering authorities responsible for the licensing of motor vehicles is to issue a license for cab and chassis units, which are then built into buses. This enables many manufacturers to avoid any technical standards which regulate the design and manufacturing of bus bodies to go on chassis. As a result, there is no quality control or basic safety equipment in these buses. The lack of safety features and equipment results in numerous multiple fatality crashes occurring new each year in Pakistan.

Figure 15 demonstrates the outcome of unsafe standards which are unenforced. A tanker-bus collision in south Punjab in January 2015 resulted in 50 deaths due to lack of a rear emergency door



Figure 15. 2015 tanker-bus collision in south Punjab

The second category of buses are locally manufactured under foreign manufacturer design license. These companies are licensed by EDB. These are mostly only sold to institutions and government clients. Although these buses have higher quality standards than roadside manufactured buses, they still lack safety features which are standard in best practice countries.



Figure 16. Hino-Pak J08C Bus chassis

A small number of high end new buses are imported into Pakistan. Between 2003 and 2006, the Import Policy Order 2006, issued by the Ministry of Commerce relaxed the import policy on second-hand buses from Japan which then became a viable import option. Many of these buses are now used on intercity services connecting main cities through the national highways and motorways.



Figure 17. Hino-Pak Citiliner Classic



Figure 18. Imported buses in Faisalabad bus terminal

3.7 **Rigid Trucks**



No technical standards exist for locally manufactured rigid trucks which. are the main type of truck operating in Pakistan. They are primarily transporting farm to market produce and the delivery of short haul goods.

If a single vehicle defines transport in Pakistan, it is the Bedford TJ1090 and the truck art on it. Variants of this 1966 model dominate the Pakistani trucking landscape. It is estimated there are between 300,000 to 800,000 of these trucks plying the roads of Pakistan, however only 257,000 were registered in 2015 (19).

In the 1960s, the GoP aimed to standardize the trucking industry so that an industry for locally manufactured spare parts could be developed.

Gandhara Industries Ltd Pakistan began the manufacturing of Bedford TJ1090 midsized trucks under license in 1966. These trucks soon became the standard trucks in Pakistan. A large spare parts industry developed over the years and the trucks also began to be modified according to local needs by roadside retrofitters. Soon, these retrofitters started assembling the trucks themselves using locally manufactured spare parts and eliminated the need for the licensed *Pakistan Bedford*. manufacturer.



Figure 19. Evolution stages of the

The Bedford company closed down in the UK, however, due to a lack of copyright and market regulation, the Bedford truck continued to be produced in Pakistan unlicensed; assembled by local bodybuilding shops using locally made spare parts. Unregulated and ungoverned, these trucks subsequently began to evolve and over decades morphed into trucks which are functionally immensely different from their predecessor.

A sleeper cab evolved on the top as a canopy. High walled variants evolved for farm produce. Three axle variants were developed for coal and the transportation of heavier goods. Larger engines and power steered versions were also developed for mountain use (20).



Figure 20. Side view of Bedford truck

Forward cab type, two and three axle trucks with more modern designs and better engines are now providing some competition for the Bedford truck.



Figure 21. Front view of Bedford truck

Lack of regulation of the vehicle manufacturing industry has been a major hinderance to its development. Overloading is also a major issue. Most countries in the region do not allow more than 9 tons per axle. In contrast, the axle load regime introduced by the National Highway Authority (NHA) within the NHSO, 2000 allows for 12 tonne per axle. It was later 'relaxed' to 15 tonnes per axle although this has not been implemented.

Truck axle and suspension parts are often fabricated without any standards or quality control. On 10th July 2019, the Islamabad High Court ruled against a further suspension of the NHSO 2000 axle load limits. Road safety was a key consideration in this judgement.



Figure 22. Overturned truck due to a broken axle shaft

The retrofitting of old rail bogey axles into truck/trailer axles is also a common practice. This has been a cause of many accidents (21). Vehicle safety laws on the standards for better braking systems are not present and most trucks use outdated S-cam drum brakes which are prone to overheating and failure. The excessive use of vehicle decorative art is a major issue because it restricts the driver's vision around the vehicle. This contributes to increased fatalities of vulnerable road users including motorcyclists and pedestrians.

3.8 Trailers and Heavy Freight Vehicles



No technical standards exist for locally manufactured trailers or heavy vehicles (21). It is common to find car carriers 110 feet/33 metres long on the road. The international maximum limit is about 65 feet/19.81 metres. These cause serious crashes on the road while turning and overtaking.

In 2016, the Government of Punjab *dimension limits* introduced the Provincial Motor Vehicles (Amendment) Act 2016, which included additional fines for unregulated vehicle body building workshops and fines for failing to maintain records of vehicle bodybuilding (22).



Figure 23. Unregulated vehicle dimension limits

Currently, there is a large industry involved in building and modifying heavy vehicles. This includes many roadside manufacturers making modifications that use sub-standard materials and technically flawed practices. For example, many heavy vehicles are built from imported chassis that are declared as scrap and originate from off-road vehicles like dump trucks and concrete mixers. Some chassis are also purchased locally from suppliers including the armed forces. These chassis are then used in the construction of 2 and 3 axle rigid trucks and buses *(23)*.

Typically, many of these trucks and trailers are built with a higher centre of gravity which makes them prone to tipping over (21). The safety issues with heavy vehicle manufacture in Pakistan have long been understood and strategies to regulate this industry have been developed within the EDB *Trucking Policy* (21). An inter-governmental committee has been established to implement the policy.

3.9 Rigid and Articulated Oil Tankers, LPG Carriers



The technical standards for locally manufactured and imported fuel tankers are the most comprehensive of any vehicles class. These comprehensive standards were developed by OGRA in 2009 and were based on, but do not meet the ADR standards. The OGRA RT 2009 Standards address overall configuration, tractor/trailer compliance, engine ratings and design, tank construction, baffle plates, tank safety equipment and safety valves, brakes, weight to power ratio.



The international ADR standards were updated in 2017. The OGRA RT Technical Standards 2009 now require updating to meet the 2017 standard.

Fuel supplies are mainly transported by oil tanker trucks in Pakistan. Oil tankers are manufactured by either roadside manufacturers or in an EDB certified manufacturing facility. Oil tankers are constructed using rigid tankers retrofitted over a factory-built chassis-cab. The prime mover can either be built locally or imported.



Figure 24. Hino-Pak Dutro chassis + cab

The Ahmedpur Sharqia oil tanker crash in 2017 is an example of lack of enforcement of current law. The MoC investigation (24) found the oil tanker shell and baffle plates were not built according to OGRA requirements, which made the tank structure weaker, unstable, and prone to leakages. The tanker did not have a fire engulfment release valve required by the standards which caused the tank to explode. Had these measures been in place, the tanker would not have exploded. The OGRA RT 2009 Standard, is undermined by loopholes in the registration system. Trailers do not require registration. In the case of a rigid tanker truck, the chassis cab can be registered as a standalone unit before the body is built upon it. Thus OGRA, 2009 regulations are unable to be fully enforced.



Figure 25. Overturned tanker non-compliant with OGRA standards
In 1999 the first ADR compliant tanker was manufactured in Pakistan. On its first delivery run outside Karachi, it was deliberately set on fire. However, since the vehicle had ADR required safety systems in place including the fire engulfment release valve, the 25,000 litres of petrol inside the vehicle did not ignite despite the outer vehicle being on fire.

Many multi-national oil marketing companies, such as Shell are fully compliant. However, the biggest oil transport company, the Governmentowned Pakistan State Oil, which has 55% of the market share in oil transportation by road is not fully compliant. The OGRA regulations have been strongly opposed, including through use of strike action by tanker truck unions.

Only three manufacturers in the country are registered with EDB as tank body and tank semi-trailer manufacturers. Only one company, AutoCom Pakistan uses a design which is in compliance with OGRA standards for its 48KL Design. This design was verified by an independent third-party assessor as required by Ministry of Industries. Apart from that, transporters and their multinational clients rely on manufacturer claims of compliance with the OGRA RT 2009 standard.

In recent years, the demand for liquefied petroleum gas (LPG) as an alternative to petrol and compressed natural gas has increased. OGRA allows only accredited tanker manufacturers to construct LPG tankers.

Nearly all LPG tankers on the road are non-compliant with safety standards due to a lack of enforcement. These LPG tanks are also used to transport other potentially lethal chemicals such as Anhydrous Ammonia. Like the Ahmedpur Sharqia tragedy, a major disaster involving this type of transport is a real possibility.



Figure 26. The first ADR compliant tanker manufactured in Pakistan in 1999.

3.10 On-Road Farm Machinery



No technical standards exist for locally manufactured or imported tractors which are one of the most frequently misused modes of transport in Pakistan *(25)*.

Although classified as farm vehicles, they travel on public roads as transport vehicles towing trailers known as 'tractor trailers', including within large cities such as Islamabad, Rawalpindi, Lahore, and Peshawar. No technical standards exist for these vehicles. They do not have the most basic safety devices such as braking systems or rear lights. They are not required to be registered and as a result their use on a public road is unregulated (25).

Tractor trailers are used for carrying goods such as crops and construction equipment and are frequently overloaded.



Figure 27. Farm tractor used on public roads



Figure 28. Vehicle carrying high volume goods

4. THE VEHICLE LICENCING SYSTEM

4.1 Vehicle Registration

The Pakistan Motor Vehicle Ordinance 1965 mandates the initial and on-going registration of all motor vehicles except tractors and tractor trailers in all provinces and federal territories. A vehicle number (license) plate is issued as part of the initial registration. Standards for license plates exist, however non-standard license plates are common because lack of enforcement and current penalties for non-compliant plates do not deter offending.

According to the Ministry of Industries and Production Trucking Policy Working Group, no protocols have been established to enable inter-provincial access or sharing of registration data recorded by provincial and territory Excise and Taxation Departments (E&TD). There is no harmonisation of vehicle registration systems. This has led to multiple issues, including incomplete vehicle data records and multiple registrations of the same vehicle chassis number and lack of support for police enforcement.

4.2 Objectives of Vehicle Licencing and Registration

A good practice vehicle licencing and registration system aims to ensure that only vehicles which meet mandatory minimum safety standards operate on public roads, thereby reducing fatalities and serious injuries. Vehicle registration systems also have a secondary benefit of enabling vehicle owners, operators and drivers to be identified which is fundamental to traffic law enforcement. A third benefit of vehicle registration is that it enables a system of capital formation by allowing the identification of a vehicle owner and thus enabling him/her to secure a loan against the vehicle asset. This is an important factor in enable vehicle fleet to be updated.

In good practice jurisdictions national and regional (for example across the EU) vehicle registration systems are harmonized in terms of data fields, documentation and procedures to ensure minimum safety standards and enhance enforcement of these standards.

Following the 18th Constitutional Amendment, since July 2011 responsibility for vehicle registration has been devolved to provincial and federal territory governments. Chapter 2 of the Motor Vehicle Rules of 1969 made under the Motor Vehicle Ordinance 1965. Section 3, Federal Excise Act of 2005, requires that all motor vehicles (except tractors, and trailer units of the articulated trucks and tractor trailer) with an engine capacity above 50cc be registered.

The current process for vehicle registration consists of:

- 1. Proof of compliance with applicable technical standards:
 - o Manufacturer's datasheet [for locally manufactured vehicles]
 - o Customs Clearance [imported vehicles]
 - o PSQCA Compliance certificate [two and three-wheelers]
- 2. Periodic technical inspection at a motor vehicle fitness facility [for commercial and public service vehicles only]
- 3. Registration
- 4. Insurance

4.3 Role of Vehicle Periodic Inspection

In good practice jurisdictions, a periodic technical inspection regime for certain classes and categories of motor vehicles aims to ensure that safety standards are maintained throughout the life of the vehicle and that all vehicles operating on the road network meet mandatory minimum safety standards. The objective is to reduce fatalities and serious injuries (11).

A vehicle periodic technical inspection regime must be evidence based. That is, the safety benefits must be clearly demonstrable and balanced against the economic cost of effectively implementing the regime. Overregulation results in inconsistent application of regulation and inconsistent compliance with regulation which results in disrespect for all legal obligations and can unintentionally enable corrupt practice. As importantly, to the extent to which is complied with, it is a misallocation of government resources which should be applied to government priority areas.

Most countries, including Pakistan, do not require private vehicles to undergo regular periodic inspection by a qualified vehicle examiner as there is no proven safety benefit. However, many require a private vehicle to undergo periodic technical inspection at certain points such as transfer of ownership, in order to protect consumers, or when the vehicle reaches a certain age, for example annual inspection of vehicles ≥10 years from date of manufacture.

There is no evidence of safety benefits to support motorcycle periodic inspection. The feasibility of a consumer protection policy which mandates a technical inspection as a requirement for transfer of motorcycle ownership should be carefully weighed against the cost of such as scheme. Governments should determine whether resources can more appropriately be used to fund other government priorities.

In most countries, including Pakistan, the focus of governments is on the safety of commercial vehicles, including trucks, buses and coaches, taxis and increasingly, ride-share vehicles such as Uber. For these vehicles, regular inspections by a qualified vehicle inspector are required to ensure safety standards are maintained throughout the life of the vehicle.

The absence of fitness inspections results in basic safety equipment required by law, such as seatbelts failing to operate properly. Faulty seatbelts are rare in countries which fully implement WP.29 standards.

Lack of properly functioning seatbelts in commercial vehicles place vehicle occupants at risk. It is essential that they are tested as part of ongoing periodic fitness inspections which are mandatory for taxis and could be extended to ride-share vehicles such as Uber.



Figure 29. Sub-standard seatbelts

4.4 Vehicle Regulatory Agency Functions

The current regulatory regime for vehicle safety is complex. This arises from the following factors:

- Multiple federal ministries and their divisions regulate vehicles, including design standards, load and dimension limits. This is in contrast with the system in countries where one or two authorities manage standards for LTV, HTV and PSV vehicles.
- Some vehicles are imported, creating the need for customs clearance.
- Some vehicles are manufactured locally, with EBD Manufacturing Facility Certification.
- Registration is undertaken by Excise and Taxation Control Departments. This is in contrast with the system in countries where a road authority is allocated the registration function.
- The registration of vehicles takes place at a provincial level, consistently with devolution of powers.
- The PSQCA is responsible for technical standards setting only for two and three-wheeled vehicles.
- The EDB regulates automotive manufacturing facilities which construct truck, oil tankers and locally manufactured vans, buses, tractors and three-wheeled vehicles. It is not responsible for enforcement of standards in trailer manufacturers operating in the unorganized sector.
- The OGRA sets technical design standards for vehicles, containers and equipment used to transport over 5,000 litres of petroleum products.
- The National Highway Authority within the federal Ministry of Communications is responsible for setting and regulating vehicle axle load and dimension limits for trucks and tankers only.

In all provinces and federal territories, Excise & Taxation Departments manage vehicle registration and, in the case of commercial vehicles, a periodic vehicle inspection regime.

No agency is responsible for setting and regulating technical design standards for roadside manufactured or imported, used public passenger buses. There is no regulation of axle load and dimension limits for buses or inter-city coaches.

Figure 30 summarizes the functions of relevant agencies.

Further detail on vehicle regulation agencies and their functions is set out in Annex 1 to these Guidelines.



Figure 30. Functions of relevant agencies

4.5 Summary of Key Issues with the Regulatory and Legal Framework

In the context of existing regulatory and legal framework regarding vehicle registration, key issues have been identified as follows.

Box 2: Key issues for vehicle licencing

- 1. The safety standards of domestically manufactured vehicles in Pakistan can most effectively be improved through the mandatory requirement for manufactueres to meet WP.29 standards.
- 2. The safe transport of all dangerious goods by road can best be improved through ADR implementation.
- 3. Oil tankers, two-wheelers and three-wheelers are the only three categories of vehicles with technical design standards. No technical standards exist for any other vehicle type.
- 4. The technical standards for oil tankers are not a prerequisite for registrations, resulting in a non-compliance with these standards.
- 5. Only OGRA and ADR compliant oil and CNG tankers should be registered.
- 6. The OGRA RT 2009 standard must be both implemented and updated to reflect ADR 2017.

- 7. Farm tractors are classified as agricultural vehicles; and are not currently required to be registered. However, these farm tractors are fitted with a trailer (tractor trailers) and used as trucks on public roads. Tractors used on public roads should be registered for use as farm vehicles. The model Road Safety Act should prohibit their use as goods transport vehicles on designated public roads or within designated city limits.
- 8. Buses have no technical design standards, or dimensional constraints. In addition, there are no axle load limits or front to rear axle load ratio.
- 9. Vehicle registration practices should ban the current practice of registering and licensing a truck chassis and subsequently building a bus body or fitting a tank to this chassis. All trucks and buses manufactured in Pakistan should only be issued a vehicle license if they comply with all current requirements including a manufacturers compliance certificate and the recently implemented Vehicle Dimensional Rules 2017.
- 10. Only the prime mover in articulated vehicles is required to be registered. The trailers do not have an independent registration system. This has resulted in an undocumented, unsafe, untaxed and unregulated trailer and tanker building industry, bypassing all checks and balances.
- 11. Vehicle fitness inspections are required for private car/motorbike initial registration and this is consistent with good practice jurisdictions. Ongoing inspection should not be required.
- 12. Periodic vehicle fitness inspections should continue to focus on commercial transport vehicles (passenger and goods) and this is in line with good practice jurisdictions.

5. VEHICLE LICENCING REQUIREMENTS

For a vehicle to be licensed to travel on a public road the following requirements must be complied with:

5.1 Manufacture and Import Standards

The vehicle must be compliant with recommended vehicle safety standards for imported and locally manufactured vehicles as outlined in Section 6 of these Guidelines.

5.2 Registration System

The registration procedure shall be carried out according to the requirements in Section 7 of these Guidelines.

5.3 Periodic Technical Inspections

All commercial transport vehicles (goods and passenger) must be inspected periodically at an approved vehicle inspection facility. This inspection shall be carried out according to the requirements as specified in Section 8 of these Guidelines.

5.4 Compulsory Third Party Insurance

The vehicle must have third party insurance cover from an approved insurance provider for the period of registration as outlined in Section 9 of these Guidelines.



Figure 31. UNECE WP.29 Guidebook

6. MANUFACTURE AND IMPORT STANDARDS

6.1 Standards for New and Imported Vehicles

International best practice for vehicle safety involves the adoption of WP.29 GTRs and to make this a requirement for registration of locally manufactured and imported vehicles (26). In view of the importance of vehicle safety, the UNECE has developed a comprehensive guidebook to support countries to join the WP.29 Forum and fully implement these global standards.

In Pakistan, a licensing authority may register a vehicle if it has been certified as complying with the relevant provisions of the Pakistan vehicle safety standards regulations. Currently this means that new and imported vehicles must comply with the requirements of the Motor Vehicles Ordinance 1965, Motor Vehicle Regulations 1969, NHSO 2000 Section 32, and SRO 656. In addition, vehicles transporting petroleum products must comply with OGRA Road Transport 2009 ADR-based standards (*14*).

Determination of Initial Compliance with Vehicles Safety Standards Regulations

Certification of compliance with the relevant vehicle safety standards and regulations is evidenced by certification by the licensed³ vehicle manufacturer. This certification must be verified by inspection of the vehicle by the registration authority or by inspection and certification at an approved vehicle technical inspections facility. To improve safety, a vehicle legistration certificate should not be issued for a cab and chassis part-built vehicle.

Determination of Continuing Compliance with Vehicles Safety Standards Regulations

Determination of continuing compliance with vehicle safety standard regulations may be achieved through periodic technical inspection, random on-road inspections or by inspections when the vehicle is altered or modified. The registration authority may require the vehicle owner to present the vehicle for inspection. A Certification of Fitness is to be provided when standards are met.

The registration authority must record the serial number and date of issue of any Certificate of Inspection of the vehicle. The Register may also record the latest date of the next required inspection, where required.

Current Legislation: Motor Vehicle Ordinance 1965 Section 37, Motor Vehicle Regulations 1969, NHSO 2000 Section 32, SRO 656 is the current legislation for regulating the standard of vehicle manufacture In Pakistan. In addition, vehicles transporting petroleum products must comply with OGRA Road Transport 2009 ADR-based standards.

Recommendation: It is recommended that Pakistan becomes a full member of WP.29 and adopts its vehicle safety regulations as a requirement for new and imported vehicle registration *(26)*. New legislation is also required to replace SRO 656 for the licensing of motor vehicle manufacturers to include WP.29 vehicle safety standards. In addition, new legislation for the licensing of vehicle manufacturers should include provision for the licensing of specialist motor vehicle manufacturers provided they are compliant with the WP.29 standards. Legislation is required to mandate that part-built vehicles are prohibited from being registered.

³ A vehicle manufacturer that is approved by EDB as compliant with the requirements of SRO 656.

A *WP.29 Implementation Committee for the Adoption of Vehicle Safety Standards* should be established consisting of members from all government regulators, and tasked to implement WP.29 standards and meet the deadlines set by the GOP for both new models and all vehicles. The Committee should consult with stakeholders such as vehicle manufacturers, technical and research institutes and road safety non-government organisations (NGOs) as required. Work groups can be formed to implement specific regulations for certain vehicle classes.

The UN GTRs are generic in that they apply to all types of vehicles, including passenger cars, vans, trucks, coaches, buses, powered two wheelers, agricultural vehicles, and non-road mobile machines (which include mobile cranes, railcars, locomotives, and inland waterway vessels. Many GTRs address a single vehicle component or technology such as air bags, lighting systems, conspicuity and braking systems. For example, the seatbelts (R16) and seatbelt anchorages (R14) standards apply to buses and trucks as well as to light vehicles.

Sections 6.2 and 6.3 set out minimum key standards for trucks and buses.

6.2 Minimum Standards for Truck Design and Approval

The UN minimum safety standards listed below for the design and approval of trucks should be adopted by Pakistan and implemented.

- 1. Minimum standards for mass and loading, including National Highways and Motorways (Dimensions of Goods Transport Vehicles) Rules 2017. Special Resolution No. 1 Concerning common definitions of vehicle categories, masses and dimensions. S.R. 1)⁴.
- 2. Basic standards for construction and layout of the cab body, R61 (External projections)⁵.
- 3. Glazing material, UN GTR No. 6 Safety glazing materials for motor vehicles and motor vehicle equipment⁶.
- Drivers work area. R35 (Arrangement of foot controls)⁷, R39 (Speedometer equipment)⁸, R46 (Rear-view mirrors)⁹, R79 (Steering effort)¹⁰.
- 5. Seating and seating anchorages. R17 (Seats, seat anchorages, head restraints)¹¹.
- 6. Seatbelts and anchorages including R16 (Seatbelts)¹² and R14 (Anchorages)¹³.
- 7. Braking systems, R13 Heavy Vehicle Braking (Trucks and Buses)¹⁴.

⁴ Special Resolution No. 1 Concerning common definitions of vehicle categories, masses and dimensions. S.R. 1 https://www.unece.org/fileadmin/DAM/trans/doc/2005/wp29/TRANS-WP29-1045e.pdf

⁵ R61 Commercial vehicles regarding external projections forward of the cab rear panel. https://www.unece.org/fileadmin/DAM/trans/main/ wp29/wp29regs/r061e.pdf

⁶ UN GTR No. 6 - Safety glazing materials for motor vehicles and motor vehicle equipment (ECE/TRANS/180/Add.6) https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29wgs/wp29gen/wp29registry/ECE-TRANS-180a6e.pdf

⁷ R35 Arrangement of foot controls https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/r035r1e_1.pdf

⁸ R39 Speedometer https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2018/R039r2e.pdf

⁹ R46 Devices for indirect vision https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2016/R046r6e.pdf

¹⁰ Regulation 79.01 Steering effort https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2018/R079r4e.pdf

¹¹ UN Regulation No. 17 - Rev.5 - Strength of seats, their anchorages and head restraint, https://www.unece.org/fileadmin/DAM/trans/main/ wp29/wp29regs/2015/R017r5e.pdf

¹² UN Regulation No. 16 Safety-belts https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2018/R016r9e.pdf

¹³ UN Regulation No. 14 - Rev.5 - Safety-belt anchorages https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/R014r5e.pdf

¹⁴ R13 Heavy Vehicle Braking (Trucks and Buses) https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/r013r6e.pdf

- 8. Tyres, Global Technical Regulation No. 16 (Tyres)¹⁵ Regulation No. 54 (Tyres for commercial vehicles and their trailers)¹⁶.
- 9. Lighting and light signalling, R48.03 (Installation of lighting and light-signaling devices)¹⁷.

6.3 Minimum Standards for Bus Design and Approval

The UN minimum safety standards listed below for the design and approval of buses should be adopted by Pakistan and implemented.

- 1. Minimum standards for mass and loading, including Special Resolution No. 1 Concerning common definitions of vehicle categories, masses and dimensions. (S.R. 1)¹⁸.
- 2. Basic standards for construction and layout of the bus body, including R107 (General construction of buses and coaches)¹⁹ and R61 (External projections)²⁰.
- 3. Standards for basic safety features seatbelts and anchorages, seating and seating anchorages. Including R16 (Seatbelts)²¹ and R14 (Anchorages)²², R17 (Seats, seat anchorages, head restraints)²³ R80 (Strength of seats and their anchorages (buses)²⁴.
- 4. Minimum number and dimensions of exits and emergency exits, R107 (General construction of buses and coaches)²⁵.
- Window frames, their locations, dimensions and designs, glazing materials. UN GTR No.
 6 Safety glazing materials for motor vehicles and motor vehicle equipment²⁶.
- Drivers work area including foot controls, and steering. R35 (Arrangement of foot controls)²⁷, R39 speedometer equipment²⁸, R46 (Rear-view mirrors)²⁹, R79 (Steering effort)³⁰.
- 7. Methodology for the calculation of the standing and seating capacity for the passengers.
- 8. Provisions for the persons with disabilities R107 General construction of buses and coaches³¹.
- 9. Stability and strength of superstructure evaluations of the bus body structure, seat

21 R16 Safety-belts https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2018/R016r9e.pdf

24 R80 Strength of seats and their anchorages(buses) https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/R080r1e.pdf

¹⁵ UN GTR No. 16 Global Technical Regulation No. 16 (Tyres) https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29wgs/wp29gen/ wp29registry/ECE-TRANS-180a16e.pdf

¹⁶ Regulation No. 54 Tyres for commercial vehicles and their trailers https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2013/ R054r3e.pdf

¹⁷ Regulation No. 48 Installation of lighting and light-signalling devices https://www.unece.org/fileadmin/DAM/trans/main/wp29/ wp29regs/2015/R048r12e.pdf

¹⁸ Special Resolution No. 1 Concerning common definitions of vehicle categories, masses and dimensions. S.R. 1 https://www.unece.org/ fileadmin/DAM/trans/doc/2005/wp29/TRANS-WP29-1045e.pdf

¹⁹ R107 General construction buses and coaches https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2015/R107r6e_01.pdf

²⁰ R61 Commercial vehicles regarding external projections forward of the cab rear panel. https://www.unece.org/fileadmin/DAM/trans/main/ wp29/wp29regs/r061e.pdf

²² R14 - Rev.5 - Safety-belt anchorages https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/R014r5e.pdf

²³ R17 - Rev.5 - Strength of seats, their anchorages and head restraint, https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2015/ R017r5e.pdf

R107 General construction buses and coaches https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2015/R107r6e_01.pdf
 UN GTR No. 6 - Safety glazing materials for motor vehicles and motor vehicle equipment (ECE/TRANS/180/Add.6) https://www.unece.org/

fileadmin/DAM/trans/main/wp29/wp29wgs/wp29gen/wp29registry/ECE-TRANS-180a6e.pdf

²⁷ R35 Arrangement of foot controls https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/r035r1e_1.pdf

²⁸ R39 Speedometer https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2018/R039r2e.pdf

²⁹ R46 Devices for indirect vision https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2016/R046r6e.pdf

³⁰ Regulation 79.01 Steering effort https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2018/R079r4e.pdf

³¹ R107 General construction buses and coaches https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2015/R107r6e_01.pdf

anchorages, including the roll over test for the full body. R66 Strength of superstructure for large passenger vehicles³², R80 Strength of seats and their anchorages (buses)³³.

- 10. Braking systems, R13 Heavy Vehicle Braking (Trucks and Buses)³⁴.
- 11. Tyres, Global Technical Regulation No. 16 (Tyres)³⁵, R54 Tyres for commercial vehicles and their trailers³⁶.
- 12. Lighting and light signalling, R48.03 Installation of lighting and light-signalling devices³⁷.

Figure 32 below illustrates the comprehensive technical standards regulatory regime for trucks in India.





Rules for *bus body design and approval* should be developed which set minimum standards including those for mass and loading, minimum number and dimensions of exits and emergency exits. It also should have basic standards for construction and layout of the bus body, strength of superstructure, and standards for basic safety features seatbelts and anchorages, seating and seating anchorages. The ARAI (2017) Code of Practice for Bus Body Design and Approval: Automotive Research Association of India https://araiindia.com/hmr/Control/AIS/862018102226AMAIS_052_ Rev.1.pdf. provides a good model.

Similarly, Rules for *truck body design and approval* should be developed which set minimum standards including basic safety standards for mass and loading, strength of superstructure, seatbelts and anchorages, and seating and seating anchorages. The ARAI(2008) Code of Practice for Construction and Approval of Truck Cabs, Truck Bodies and Trailers: Automotive Research Association of India https://araiindia.com/hmr/Control/AIS/PUB_3~22~2010~9~57~24~AM~A IS-093.pdf_provides a good model.

³² R66 Uniform Technical Prescriptions Concerning the Approval of Large Passenger Vehicles with regard to the strength of their Superstructure https://www.unece.org/fileadmin/DAM/trans/doc/2009/wp29grsg/GRSG-96-04e.doc

³³ R80 Strength of seats and anchorages(buses) https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/R080r1e.pdf

³⁴ R13 Heavy Vehicle Braking (Trucks and Buses) https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/r013r6e.pdf

³⁵ UN GTR No. 16 Global Technical Regulation No. 16 (Tyres) https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29wgs/wp29gen/ wp29registry/ECE-TRANS-180a16e.pdf

³⁶ Regulation No. 54 Tyres for commercial vehicles and their trailers https://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2013/ R054r3e.pdf

³⁷ Regulation No. 48 Installation of lighting and light-signalling devices https://www.unece.org/fileadmin/DAM/trans/main/wp29/ wp29regs/2015/R048r12e.pdf

7. RECOMMENDED REFORMS TO VEHICLE LICENCING

7.1 A Data-based System

The process for vehicle registration should be simple and speedy in most cases. This approach is compatible with the function of ETD as the registration authority. The ETDs in Punjab, KPK, Sindh, and Islamabad have established a computer-based Motor Transport Management Information Systems (MTMIS) system for recording and storing vehicle registration data and other information. In AJK and Baluchistan ETDs have developed similar computer-based systems. These are steps towards establishment of a harmonised national system in which registration information is recorded in a common format and is accessible by approved stakeholders.

7.2 Vehicle Information

The current information required for vehicle registration is outlined in Form F (as per Section 25(1) of MVO 1965). In addition, some vehicle registration authorities are incorporating the national identity card number (CNIC) as proof of address within the registration process.

7.3 Compliance with the Standards for Registration

The proposed Road Safety Act will provide the necessary regulatory structure for unifying and simplifying vehicle safety standards. The Standards for Registration (SFR) will incorporate the requirements for vehicle construction into a single set of requirements, drawing on and referencing relevant technical documents as appropriate. Under this new legislation it should be a requirement that all vehicles have a VIN: a VIN should be applied to a vehicle only if it conforms with the Standards for Registration. Similarly, periodic inspections of commercial vehicles should confirm on-going compliance with the SFR.

7.4 Verification

Although the VIN plate should be sufficient in most cases, the need for verification will remain. Presently, registration authorities may require verification of all information provided by the vehicle owner prior to registration of a vehicle. The authority may request the vehicle to be produced for inspection either before the registration authority or its delegated authority. In addition, other registration requirements are to be verified by the authority.

Currently, many vehicles undergo extensive modification. To prevent this, a physical inspection of any vehicle used on public roads may be necessary. The registration authority should have powers to physically inspect vehicles prior to registration, or after, in order to verify the details in Form F provided by the vehicle owner.

Current Legislation: Motor Vehicle Ordinance 1965, Section 27 (1), and Schedule 1, Form F.

The regulations for the production of vehicle at the time of registration is as follows:

MVO 1965, Section 27 Production of vehicle at the time of registration. *The registering authority* may, before proceeding to register a motor vehicle, require the person applying for registration of the vehicle to produce the vehicle either before itself or such authority as Government may,

by order appoint for this purpose in order that the registering authority may satisfy itself that the particulars contained in the application are true and that the vehicle complies with the requirements of Chapter VI and the rules made thereunder.

Recommendation: It is recommended that in order to verify the particulars provided on Form F (Form F, Application for the Registration of a Motor Vehicle, MVO 1965, Schedule 1, Forms) all authorities mandate the following:

- 1. Recording of VIN following its mandatory introduction as recommended in these Guidelines (see Section 6.4).
- 2. Verification by the registration authority of all details in the information provided by the vehicle owner including the CNIC of the vehicle owner (e.g. verification online, by phone or fax).
- 3. Inspection of each vehicle, details of the description of vehicle type and key identification details including engine number and chassis number are required to be verified at the time of registration in order to verify the particulars contained in the application for a vehicle license.
- 4. Verification of the third-party insurance certificate.

7.5 Province of Registration

The registration authority should not register a vehicle unless it is satisfied that the vehicle's garage address (principal depot or base of operations) is in the jurisdiction in which it is to be registered. This provision is designed to ensure that registration revenue is retained by the jurisdiction in which the vehicle is principally based, and to assist with on-road enforcement.

Current Legislation: Motor Vehicle Ordinance 1965, Section 25 (1) states that:

Registration how to be made.– (1) An application by or on behalf of the owner of a motor vehicle for registration shall be in Form F as set forth in the First Schedule, shall contain the information required by that Form, and shall be accompanied by the prescribed fee.

Recommendation: Registration authorities should verify the vehicle's garage address.

7.6 Vehicle Identification

The international good practice standard for identifying vehicles is the Vehicle Identification Number (VIN) system. Globally, the Vehicle Identification Number (VIN) is the primary identifier for vehicles constructed since 1st January 1989 and must be recorded for those vehicles.

Pre-1989 vehicles are identified by means of their chassis number. The engine number of a vehicle is also recorded as part of the identification data.

VINs must conform to two standards set by the International Standards Organisation:

- 1. ISO 3779 2009³⁸ Road vehicles -- Vehicle identification number (VIN) -- Content and structure
- 2. ISO3780:2009³⁹ Road vehicles -- World manufacturer identifier (WMI) code

³⁸ ISO 3779: 2009 Road vehicles -- Vehicle identification number (VIN) -- Content and structure. International Standards Organisation.

³⁹ ISO 3780:2009 Road vehicles -- World manufacturer identifier (WMI) code. International Standards Organisation.

7.7 National Standard License Plates

Nationally standard license plates - in terms of size and design - are an essential component of an effective and harmonised vehicle registration system. A standard license plate is issued by the authority when all the requirements for vehicle registration are completed. The license plates currently issued by these authorities are compliant with international standards. Examples of the current standard for license plates are as follows:





Figure 33. Standard license plates

However, non-standard license plates are widespread and they pose a significant enforcement problem as they are not visible to number plate recognition technology being implemented in Pakistan. Currently it is less expensive for the vehicle owner to purchase a locally manufactured non-standard license plate, than to purchase the standard license plate issued by the registration authority. The main method of enforcement is confiscation of license plates without issuing an infringement notice or fine. This results in the vehicle owner simply purchasing another non-compliant license plate. Since non-compliant number plates cannot be detected by vehicle recognition technology they seriously undermine enforcement.

Current Legislation: Motor Vehicle Ordinance 1965 Section 25, NHSO 2000 Section 20(3). There is no mention of the level of fines for non-compliance with the current license plate requirements.

Recommendation: New legislation to upgrade license plate specifications and increase penalties for non-standard license plates to a level which achieves close to 100% compliance.

7.8 Registration Label (RFID)

It is recommended that the Licensing Authority issue an RFID registration label to the vehicle owner when initial registration, re-registration or renewal of registration is granted or where any of the vehicle's details are varied.

The registration label must include the following information:

- Registration Number
- Make
- Model or Body Type
- VIN (or Chassis or Engine Number if no VIN)
- Expiry Date
- Condition Code(s) (if any)
- Gross Vehicle Mass
- Gross Combination Mass
- Vehicle Charging Category

Current Legislation: Motor Vehicle Rules 1969 Section 32, NHSO 2000 Chapter III. There is no mention of requirements for a registration label to be required as part of the motor vehicle licensing process.

Recommendation: New legislation should be introduced to require an RFID label to be used as part of the vehicle licensing process. The information contained in the RFID registration label to be made available to enforcement agencies throughout Pakistan.

7.9 Access to Vehicle Registration Information

Each provincial or territory ETD currently manages a vehicle registration and licensing computerbased system that is not compatible with systems in other provinces or territories. There is an urgent need for registration authorities to share information, with enforcement agencies and other prescribed entities. However, protections are also needed, consistent with the EU Information Privacy Principles.

The Rules developed to support the implementation of a new Act should specify conditions applying to the use of registration information. Prescribed entities should be as set out in the following table:

Police	Police forces should have 24-hour electronic access to registration and licensing information for the purposes of enforcing road transport and traffic laws. Personal information should only be used for the general purposes of law enforcement.
Lawyers and General Insurers	Information should be made available to legal practitioners and general insurers provided that each request:Is on official letterhead.
	• Carries an undertaking to use the information solely for the purpose of commencing or conducting legal proceedings in respect of a motor vehicle crash.
	The information released should be confined to name and address (or address for service of notices, where appropriate).
Employers	Licence status information (licence suspended, cancelled, or expired) may be made available to the employer with sufficient information to reasonably ensure drivers are appropriately licensed whilst safeguarding the rights of the driver against non-consensual release of confidential information.
Research Establishments	Information may be made available to research establishments such as universities for the purpose of road transport research. Such release is subject to the research establishment entering into an agreement with the registration authority to protect the confidentiality of the information provided and guaranteeing that any material published will not allow the identification of individuals.

Recommendation: Legislative Rules which identify prescribed entities and specify conditions applying to information provision should be developed and implemented.

8. PERIODIC TECHNICAL INSPECTIONS

Current regulations regarding vehicle fitness certification are complex and many are outdated. There is no requirement for periodic inspection of vehicles generally. However, periodic inspections are required for "transport vehicles" under both the MVO and the NHSO. There is no clarity about the frequency of the inspection. Under section 39 (2) of the MVO the vehicle must be inspected every "three years unless a shorter period, not in any case being less than six months, is specified in the certificate". This is subject to a proviso that the period is six months for vehicles referred to in section 60(1)(a) – however this appears to be an incorrect cross-reference.

The NHSO 2000 also requires a transport vehicle to have a certificate of fitness, which remains effective for one year unless a shorter period, not being in any case less than six months, is specified. A certificate of fitness confirms that the vehicle complies with the requirements set out in MVO Chapter 6 and NHSO Chapter 4 as well as Rules 150 to 230 of MVR 1969.

Box 3: Government of Punjab VICS Initiative

The Punjab government has formed a public private partnership with Systech International (a subsidiary of Opus Group, Opus Produx AB, Sweden) to provide a comprehensive, state-of-the-art vehicle inspection and certification system called the *Punjab Vehicle Inspection and Certification System* (VICS) applied to commercial vehicles which are required to be inspected and re-certified every 6 months. The inspection regime is based on international guidelines and standards. Opus Inspections is a member of the International Motor Vehicle Inspection Committee (CITA). The inspections focus on the following key elements: vehicle identification, braking test, suspension test, visibility, brake, reverse, indicator lamps and reflectors, headlight intensity test, axles, wheels, tyres and suspension, undercarriage tests, chassis, seat belt and fire extinguisher, emissions and sound according to ECE/TRANS/WP.29/2009 (*27*).

The initial strategy is to increase the number of legally compliant commercial vehicles by encouraging all commercial vehicle owners to obtain a certificate of fitness. Testing is carried using modern testing equipment that is regularly re-calibrated in-house. The testing equipment is also audited by a specialist from the Punjab Transport Department. Recently the test fail rate has been reported as 31% for all vehicle types (28).

One innovative feature of this system is a distinctive green and white windscreen sticker, with embedded RFID tag for efficient vehicle identification and fraud reduction. Inspectors were initially trained in-house by Opus Inspections own internationally qualified vehicle inspections professionals. New inspectors are trained by experienced staff, with on the job training and supervision.

Two VICS facilities are currently operational in Lahore and an additional seven stations have begun operation across regional Punjab. A total of 39 facilities are planned. Opus is also developing mobile testing facilities.



Figure 34. VICS inspection facility in Lahore

Commercial truck and inter-urban buses travel across Pakistan and consistent minimum standards and requirements for periodic technical inspections, based on the international best practise requirements should apply. These standards should be based on those developed by the International Motor Vehicle Inspection Committee (CITA) for UNECE World Forum for Harmonization of Vehicle Regulations (WP.29), ECE/TRANS/WP.29/2009 (*27*) attached in Annex 2. Certificates of fitness for commercial vehicles should continue to be valid for a period of six months.

The inspection shall cover at least the items listed below, provided that these are related to the obligatory equipment of the vehicle being tested.

- 1. Identification of the vehicle
- 2. Braking equipment
- 3. Steering
- 4. Visibility
- 5. Lighting equipment and parts of electric system
- 6. Axles, wheels, tyres, suspension
- 7. Chassis and chassis attachments
- 8. Other equipment -seatbelt operation
- 9. Additional inspections of vehicles for the commercial carriage of passengers

Current Legislation: Currently, a certificate of fitness confirms that the vehicle complies with the requirements set out in MVO Chapter 6 and NHSO Chapter 4, as well as Rules 150 to 230 of MVR 1969. This legislation does not specify the requirements for conducting a periodic technical inspection. Details of the inspection requirement require updating and revision: for example there is no mention of specific requirements for the testing of seat belts in this legislation.

Recommendations: Retain the requirement for periodic inspection of commercial vehicles. The requirements and procedures for the inspection, as well as the intervals, to be set out in Rules to be made under the RSA. Secondly, develop a timetable for the introduction of a new standard for inspection based on the international standard (27) for periodic technical inspections: ECE/TRANS/WP.29/2009.

8.1 Training and Accreditation of Inspectors

It is recommended that motor vehicle inspectors hold the following qualifications:

- Qualified motor vehicle mechanic with a minimum of three years experience postqualification.
- Completes three months training at a recognised inspection facility.
- Where available, completes a Transport Department approved technical course on motor vehicle inspections.

8.2 Requirements for Inspection Facility Equipment

Minimum requirements for motor vehicle inspection facilities equipment are as follows:

- Brake Roller Tester
- Head Light Tester
- Inspection Toolkit (for vehicle inspection and fitness certification purposes)
- Comprehensive Engine Analyzer (Petrol & Diesel)
- Gas, emissions & general tests (for vehicle inspection and fitness certification purposes)
- Sound Meter
- CNG Leakage Tester
- Smoke Meter (CO) for road checking
- Inspection pits/lifts
- Wheel alignment testing equipment
- Computer, printer

8.3 Auditing of Inspection Facilities

It is recommended that inspection facilities are regularly audited by an independent designated authority.

Currently, there is provision within existing legislation for licensing of automobile workshops for the issue of vehicle fitness certificates. These licenses are granted by the Transport Authority (MVR 1969 35-A). It is also recommended that inspection facilities are regularly audited by independent designated authorities. The criteria should follow international standards in vehicle inspections including the guidelines for conducting periodic technical inspections provided in Annex 2.

Current Legislation: Both MVR 1969 and NHSO 2000 include provisions for the licensing of automobile workshops to issue vehicle fitness certificates.

Motor Vehicles Rules 1969 Section 35(1)(b) Provided that the Regional Transport Authority may authorize any licensed Automobile Workshop to perform the functions of a Motor Vehicles Examiner.

NHSO 2000, Section 38 Power to make rules: (2)(f)The authorizing of workshops of the authorized dealers to issue certificates of fitness in respect of vehicles handled by them, the licensing of such workshops, their inspection, the terms and conditions and the period for which, and the authorities by whom, the license may be granted and renewed and the fees to be paid for grant and renewal of the licenses.

Recommendation: New legislation that includes the requirement that inspection facilities comply with ECE/TRANS/WP.29/2009/13, the WP.29 standard for periodic technical inspections. In addition, legal provisions are required for the minimum qualifications of the auditors of vehicle inspection facilities.

9. MOTOR VEHICLE INSURANCE

It is estimated that only 25% of all vehicles in Pakistan are insured (29). Motor vehicle insurance has a vital role to play in increasing road safety. Insurance enables drivers to afford safer vehicles. Moreover, insurance companies can encourage the use of safer vehicles through offering lower premiums for vehicles with the latest safety equipment. For example, crash avoidance systems can help reduce crashes which would help reduce insurance claims and also contribute creating a safer community (7).

It has been reported that insurance cover for third party transport contractors was not being provided because the operators were unable to comply with the legal requirements for insurance. This is one of the largest groups of goods transport providers (21).

Global best practice is to mandate minimum insurance requirements and for insurance certificates to be verified at the time of registration.

Insurance schemes in Pakistan can be divided into following categories:

- Private and Commercial Vehicle Comprehensive Insurance
- Private and Commercial Vehicle Third Party Motor Vehicle Insurance
- Private and Commercial Vehicle Act Only Liability Insurance
- Accidental Death Cover for Salaried Driver
- Personal Accident Benefit Cover for Passengers

A key requirement recommended for developing countries is that all drivers should be covered by a Third-Party Insurance Scheme (11). This is essential in middle-income countries such as Pakistan, where a large prcentage of those injured in road crashes are travelling on vulnerable two and three-wheeled vehicles or are passengers in public transport vehicles (30).

Currently, insurance for third party cover for motor vehicles is provided under the Motor Vehicles Act, 1939. In addition, there is provision for no fault accident compensation in NHSO 2000 Section 41, which stipulates that in order to travel on the national highway network, a motor vehicle is required have no fault accident compensation insurance cover issued by an authorised insurance company. Compliance with this legislation is estimated at between three and five percent of vehicles. This is low even when compared to other developing countries. Ad hoc evidence suggests that one of the main factors contributing to this low compliance rate is that many companies offer fake insurance cover at much lower rates.

9.1 Third Party Insurance Requirements

A vehicle must have approved Third Party Personal Injury Insurance (TPMVI) cover to be registered.

Any vehicle used on the road network in Pakistan is required to be covered by a TPMVI scheme. No fault accident compensation insurance is also required by any vehicle using the national highway network (NHSO 2000, Chapter V, 41(i)). No fault accident insurance ensures that a person injured as a result of the use of a motor vehicle can access a fund from which medical and other approved costs can be paid.

Evidence of no fault accident insurance cover provided by a registered insurance company for the entire vehicle licensing period is required before the vehicle may be registered. The following information must be recorded on the motor vehicle register.

- Serial number of the insurance policy.
- Start date and expiry date of the current policy.
- Name of the registered insurance provider.

Current Legislation: Motor Vehicles Act 1939 Chapter VIII Section 94, NHSO 2000 Chapter V, Section 41(i). This legislation includes provisions for the requirement for vehicles to have third party insurance cover. Penalties for non-compliance need updating and including in new legislation as the fine for driving uninsured is only 500 rupees (Motor Vehicles Act 1939 Chapter VIII Section 94).

Recommendation: The model Road Safety Act should empower registration authorities to verify third-party insurance cover by contacting the registered insurance provider. Current provisions for compensation under no fault accident insurance scheme should also be reviewed. In addition, fines for non-compliance should be substantially increased.

10. COMMERCIAL VEHICLES

10.1 Commercial Vehicle Owners and Operators

Commercial vehicle owners and operators have a responsibility to ensure that the commercial vehicles they own or manage fully comply with all vehicle safety regulations and are operated safely.

An employer or operator should take all reasonable steps to ensure company vehicles are safe and should not require staff to drive under conditions that are unsafe or likely to create an unsafe environment, such as driver fatigue. These groups also play an important role in developing a safe driving culture among their commercial drivers. Companies with large vehicle fleets should be required to appoint fleet safety managers.

Freight and logistics companies should give priority to safety features when selecting new vehicles, including:

- Where NCAP vehicle ratings are available, only buying and/or hiring vehicles that rate four or more stars on the NCAP (New Car Assessment Program) tests.
- Choosing vehicles with ESC (Electronic Stability Control), ABS brakes, front, and side airbags
- Buying and/or hiring vehicles that are light coloured.
- Fitting all vehicles with a first aid kit, fire extinguisher, reflective vest, torch, and emergency triangle.

10.2 Shared Responsibility

Currently in Pakistan, regulation and enforcement of transport compliance largely focuses on the driver and to a lesser extent on the owner. Fines for non compliance are low, or example the fine for driving a transport vehicle not covered by a fitness certificate is between 500 and 1000 rupees (NHSO 2000, Schedule 10). There appear to be two reasons for this:

- Failure to review and update penalty levels: The proposed model Road Safety Act presents an opportunity for this to now occur.
- For many offences, liability is imposed on the driver of the vehicle. Drivers often have limited financial resources. For commercial offences, those who make critical decisions obtain financial benefit without liability risk.

Drivers and owners may be at risk of exploitation by logistics and freight companies who can encourage non-compliance with current regulations including axle weight limits, carriage of dangerous goods, and vehicle safety standards through paying low freight rates.

In many jurisdictions, chain of responsibility legislation which includes provisions for making all parties in the supply chain liable for their actions or inactions has been implemented to improve commercial vehicle safety. The parties in the supply chain include:

- Employers
- Prime Contractor
- Vehicle driver
- Loader and unloader of the vehicle
- Consignor of any goods
- Consignee of any goods

Current Legislation: MVO 1965 and NHSO 2000 legislation currently holds the only the vehicle owner and the vehicle driver responsible for compliance with vehicle safety standards and operation.

Recommendation: The model Road Safety Act should include shared responsibility ("chain of responsibility") provisions to impose liability on parties in the supply chain who have contributed to the offence – in particular offences relating to overloading, over-dimension and driver fatigue offences. There should be increased penalties for non-compliance with vehicle safety requirements.

10.3 Axle Load and Passenger Load Limits

Increased regulation of axle load limits and passenger load limits are required to ensure the safety of passengers and all road users. Currently, widespread industry non-compliance with freight load and passenger limits and lack of effective enforcement result in frequent major road transport disasters such as the 2014 Khairpur bus crash.

Overloading of heavy commercial vehicles causes significant damage to the local and national road network of Pakistan (31). It is estimated that 30-40% of heavy vehicles are overloaded (21).

Key factors contributing to the high frequency of over-loaded vehicles are:

- Lack of commitment to axle load enforcement by previous governments.
- Low levels of fines.
- Illegal modifications extending the load capacity of vehicles (21).
- Lack of weigh stations or weighing equipment and systems to detect overloaded vehicles and apprehend the driver and owner/operator.
- Low tariffs which are based on volume not weight.
- Lack of responsibility from other parties in the supply chain.

Current axle load limit regulations require updating to bring them into line with international standards. Protocols for implementing axle load control and current penalties for vehicles exceeding the axle load limits should be reviewed. In addition, chain of responsibility legislation that increases the liability of all parties in the supply chain to violations of axle load regulations can be a powerful tool to improve compliance.

Current Legislation: MVO 1965 Sections 76, 77 and 107, NHSO 2000 Section 43. S.R.O.900(I)/2009 and National Highways and Motorways (Dimensions of Goods Transport Vehicles) Rules, 2017.

Recommendation: Develop new axle load limit legislation to complement the recently introduced National Highways and Motorways (Dimensions of Goods Transport Vehicles) Rules, 2017. This should be supported by shared responsibility ("chain of responsibility") legislation that includes specific responsibilities for the loading of transport vehicles. Fines for the overloading of transport vehicles should be increased

10.4 Carriage of Dangerous Goods (ADR)

The international standard for the regulation of the carriage of dangerous goods by road is the 2009 ADR (Carriage of Dangerous Goods by Road).



Figure 35. UN 2030 Global Road Safety Performance Target 2

In Pakistan, transportation of petroleum products is dealt with in standards under OGRA Road Transport 2009 which is based on, but which does not meet ADR 2009. There is no law and consequently no regulation of the carriage of dangerous goods other than petroleum. It is important that safety standards for the transport of other dangerous goods are also regulated.

National legislation for the safe transport of dangerous goods should reference the current ADR Agreement. This ddresses general participant duties, the practical safe transport of dangerous goods, competent authorities, powers of enforcement, offences, and penalties.

Current Legislation: OGRA Technical Standards for the Petroleum Industry (Road Transport Vehicles, Containers and Equipment used for the Transportation of Petroleum Products) made under Section 42 of Oil and Gas Regulatory Authority Ordinance, 2002 (Ordinance XVII of 2002), requires fuel transport tankers to comply with ADR 2009 standards.

Recommendations:

- 1, Update OGRA (Road Transport) Technical Standards legislation to fully comply with ADR 2017 (32).
- 2 The proposed Road Safety Act should reference ADR 2017 standards as the minimum requirement for the transport of all dangerous goods in Pakistan.
- 3. The proposed Road Safety Act should prohibit registration of part-built truck and chassis units.
- 6. The proposed Road Safety Act should specify the minimum period for transport documentation to be held on record.

11. IMPLEMENTATION OF THESE GUIDELINES

The implementation of the *National Guidelines for Vehicle Licensing* is complex, involving the consensus agreement of multiple authorities. However, the development of the proposed Model Road Safety Act will provide a context for this to occur.

For these guidelines to be implemented effectively, cooperation agreements with all provincial and federal territory registration authorities is needed. Implementation of these guidelines will be assisted by the introduction of the recommended changes to legislation.

The formation of a WP.29 Implementation Committee is also required to facilitate the process of implementing the UNECE WP.29 regulations for vehicle manufacture.

Initially, the focus of activity should be on implementing recommendations which relate to manufacturing standards for private cars and motorcycles and enhancing registration standards for commercial vehicles.

A pilot project that focuses on applying the vehicle registration guidelines to high risk commercial vehicles (such as fuel tankers and intercity buses) could provide the evidence and experience to progressively extend the recommendations in these Guidelines across Pakistan.

The key actions to improve vehicle safety and reduce deaths and serious injuries which result from road traffic crashes are:

- 1. GoP to fully accede to WP.29 and identify a commencement date (on or before 1st January 2029) for all vehicles manufactured or imported into Pakistan to fully comply with WP.29 regulations.
- 2. GoP to constitute a *WP.29 Implementation Committee for the Adoption of Vehicle Safety Standards* to ensure that on or before 1st January 2029, all cars manufactured in, or imported into Pakistan meet the UN eight minimum safety standards.
- 3. GoP to fully implement ADR Agreement for carriage of dangerious goods by road.
- 4. GoP to constitute an *ADR Implementation Committee* to fully implement the ADR Agreement over the next decade.
- 5. MoC NRSS as lead agency for the new Road Safety Act to consult with government regulators to ensure Guidelines recommendations are addressed within the development of national model road safety law.
- 6. MoC, NRSS as lead agency to lead the development of national and provincial Road Safety Action Plans which include actions and milestones to progressively deliver the reforms set out in the Guidelines and monitor their delivery.
- 7. MoC as lead agency for the new Road Safety Act to gain consensus agreements for sharing vehicle registration information between registration authorities and enforcement agencies.
- 8. MoC NRSS as lead agency for the delivery of the *National Road Safety Strategy, 2018-2030* and its National Action Plans, to gain consensus agreements by registration authorities to fully implement the recommendations set out in these Guidelines by 1st January, 2030.

- 9. Commence implementation of the Guidelines as a Pilot Project: Facilitate the adoption of the Guidelines for high risk vehicles: Fuel Tankers and Intercity Buses.
- 10. Conduct workshops to build the capacity of key stakeholder agencies and facilitate national harmonization of registration systems, standards, processes and protocols.
- 11. Facilitate the adoption of national standards for motorcycle helmets, including those based on UN Reg. No.22 and future national standards.
- 12. Develop national minimum guidelines for periodic technical inspections.
- 13. Establish requirements and standards for approved training providers and training courses for vehicle inspectors/examiners.

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ANNEX 1: VEHICLE REGULATION AGENCIES

The following tables lists the multiple agenices involved in vehicle regulation and their roles. It highlights the complexity of current vehicle regulation systems and gaps in vehicle standards, registration and enforcement.⁴⁰

Table 5. Current Regulations for each vehicle class

Vehicle Regulation	Vehicle Registration	Periodic Fitness Inspection	Technical Design Standards	Manufacturing Facility Accreditation	Axle Load Control	Vehicle Dimensions Control	Oil Tanker Technical Design Standards
Locally Manufactured Motorcycles	VEHICLE REGISTRATION DEPARTMENTS		PSQCA	EDB			
Imported Motorcycles	CONSTRUCTION CONST		PSQCA				
Locally Manufactured Rickshaws & Quingchees	CONSTRUCTION CONST	CONSTRUCTION	PSQCA	EDB			
Roadside Retrofitted Quingchees	CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION DEPARTMENTS	CONSTRUCTION	PSQCA				

⁴⁰ Different fees apply for filers and non-filers of tax returns.

Vehicle Regulation	Vehicle Registration	Periodic Fitness Inspection	Technical Design Standards	Manufacturing Facility Accreditation	Axle Load Control	Vehicle Dimensions Control	Oil Tanker Technical Design Standards
Tractors				EDB			
Used Imported Cars and Jeeps	CONTRACTOR						
Locally Manufactured Cars and Jeeps	CONTRACTOR						
New Imported Cars and Jeeps	CONTRACTOR						
Locally Manufactured Vans	CONTRACTOR	Constanting Consta		EDB			
Roadside Manufactured Bus	CAR CAR CAR CAR CAR CAR CAR CAR CAR CAR	Constanting Consta					
Imported Used Buses	CONTRACTOR						

Guidelines for Vehicle Licencing

Vehicle Regulation	Vehicle Registration	Periodic Fitness Inspection	Technical Design Standards	Manufacturing Facility Accreditation	Axle Load Control	Vehicle Dimensions Control	Oil Tanker Technical Design Standards
Locally Manufactued Buses	Vencle registration Defenditions	CONCENTRAL OFFICE		EDB			
Imported New Buses	VENCIE REGISTRATION DEPARTMENTS	CONCENTRAL					
Roadside Built Oil Tanker	VENCLE REGISTRATION DEPARTMENTS	CONCENTRAL			ADCR		C D D D D D D D D D D D D D D D D D D D
Factory Built Tanker	Venicas Regarding	CONTROL OFICE		EDB	ADCR		
Articulated Tanker with Locally Made Trailer	CHASSS B CAB CAB CAB CAB CAB CAB CAB CAB CAB C	CONTROLOGIES		EDB	ADCR		
Roadside Manufactured Truck Body	Venice Registration Departments	Contractions of the contraction			ADCR		
Semi-trailer with Locally Made Trailer					ADCR		

ANNEX 2: ADDITIONAL DETAIL OF THE FUNCTIONS OF RELEVANT AGENCIES

The following table sets out additional detail of current laws, standards, and their respective organizations

Excise & Taxation Departments The Excise and Taxation Department (ETD) of each provincial and territory government is responsible for vehicle registration and assign a unique registration number to each vehicle. Vehicle owners are required to renew their vehicle registration and pay an annual prescribed 'token tax' fee (either as a 'tax filer' or a 'non-tax filer') for each category of vehicle as follows:



VEHICLE REGISTRATION EXCISE & TAXATION DEPARTMENTS

Provincial Subject Table 6. Vehicle Licensing Tax

}		Islamabad		Punjab	КРК		Sindh
	Engine Capacity	Tax Filer	Non-Tax Filer41	All	Tax Filer	Non-Tax Filer	All
	Up to 800 cc	800	1200	1800	1000	1000	1000
	1001 cc to 1199 cc	1500	4000	1800	1800	3600	1500
	1200 cc to 1300 cc	1750	5000	1800	2000	4000	1500
	1301 cc to 1500 cc	2500	7,500	6000	3000	6000	3000
	1501 cc to 1600 cc	3750	12,000	9000	4500	9000	3000
	1601 cc to 2000 cc	4500	15,000	9000	6000	12000	3200
	Above 2000 cc	10,000	30,000	12000	12000	24000	5000

Enforcement: Random inspection by District Traffic Police and NH&MP.

Motor Vehicle Fitness Certification Office







VEHICLE REGISTRATION EXCISE & TAXATION DEPARTMENTS Chapter 6 of the Motor Vehicle Rules (MVR) of 1969 established motor Vehicle Fitness Certification Offices (MVFCO) within Provincial Ministries of Transport which are responsible for certification for all vehicles used as public service vehicles such as taxis, vans, motorcycle rickshaws, buses and trucks. MVFCO offices are established in all 143 Provincial Districts and are responsible for periodic inspection of public service vehicles. Periodic fitness inspections include inspection of brakes, lights, suspension, reversing, horns, silencers, mirrors, dangerous projections, noise, safety glass, windshield wipers, tyres, emissions, speedometer, overall dimensions, turning radius and seating. Punjab has recently introduced Vehicle Inspection and Certification System (VICS).

Costs: In Punjab the inspection fee for an initial registration fee of Rs.1080 per transport vehicle and Rs.720 for rickshaws. Ongoing inspections are required every 6 months to obtain a fitness certificate for license renewal. In Punjab, this inspection fee is currently Rs.540 per transport vehicle and Rs.450 for rickshaws.

Provincial Subject Enforcement: Random inspection by District Traffic Police and NH&MP.

⁴¹ Different fees apply for filers and non-filers of tax returns.

Pakistan Standards and Quality Control Authority (PSQCA) The Pakistan Standards and Quality Control Authority (PSQCA) was established by the Pakistan Standards and Quality Control Act VI of 1996. PSQCA is established within the Federal Ministry of Science and Technology as the agency responsible for technical design standards. Has developed standards for 2-wheeled and 3-wheeled vehicles. These technical design standards address braking system, load bearing capacity, marking, and labelling, parking stability (2 wheeler only), maximum speed, mandatory components to be loaded on chassis and carriage, vehicle exhaust and noise.



Costs: PSQCA charges 0.2% of the ex-factory product cost for compliance verification for every locally manufactured new 2 and 3-wheeler. Random inspection for Rs. 10,000 per batch of imported two and three wheeled vehicles to be passed at customs post.

Scope: PSQCA has developed standards only for powered 2 and 3 wheelers. Standards for trailers have also been developed but they are not mandatory. Standards for vehicle tyres and rims have also been developed.

Enforcement: PSQCA certificate of the manufacturer is a pre-requisite for vehicle registration by the ETD.

Offices: Karachi (Head Office), Lahore, Islamabad, Peshawar.

Engineering Development Board The Assembly and Manufacturing of Vehicles, SRO 656 (Amendment). Customs Act of 1969. The Engineering Development Board (EDB) is established within the Federal Ministry of Industries and Production and regulates the manufacturing facilities of automotive manufacturers in Pakistan. EDB awards manufacturer licenses to accredited companies by inspecting their facilities.



Costs: Fees collected from manufacturing facilities.

Scope: All vehicles manufactured within Pakistan and requiring registration by the ETD are required to have EDB accreditation. But this does not cover trailer manufacturers in the unorganized sector. In addition, most roadside trailer manufacturers of trailers, body builders which build buses and trucks on bought chassis and roadside builders who convert motorbikes to qingqis do not need an EDB license. A few high-end trailer manufacturers have an EDB accreditation.

Enforcement: EDB License of the manufacturer is a pre-requisite for vehicle registration by the ETD.

NHA



The National Highway and Safety Ordinance (NHSO) 2000 6th Schedule, 13th Schedule provides for the setting of maximum permissible weights. The National Highways and Motorways (Dimensions of Goods Transport Vehicles) Rules 2017, 13th Schedule, sets maximum permissible dimensions for each type of goods transport vehicle. The National Highway Authority (NHA) within the MoC is responsible for prescribing the maximum permissible weight for each type of goods transport vehicle used on the national highways of Pakistan.

Costs: Fine collection of violating vehicles according to the 13th schedule NHSO 2000.

Enforcement: Through weigh bridges on national highways by NM&MP.

NHA load and Dimensional Rules

This legislation prescribes the load and dimension limits for each type of goods transport vehicle on national highways of Pakistan.

Costs: Fine collection of violating vehicles according to the 13th Schedule NHSO2000.



Enforcement: NH&MP.

Scope: All goods transport vehicles.

Organizational Order: NHA and NH&MP falls under the Federal Ministry of Communication.

Offices: Islamabad (Head Office), 200 + Beat offices all over Pakistan

Legal Provisions: National Highway and Safety Ordinance 2000.

OGRA 2009 -
TechnicalSection 42 of Oil and Gas Regulatory Authority Ordinance, 2002 (Ordinance XVII
of 2002) OGRA Technical Standards for the Petroleum Industry (Road Transport
Vehicles, Containers and Equipment used for the Transportation of Petroleum
Products)Petroleum
IndustryProducts



OGRA is established within the Federal Ministry of Petroleum. The OGRA Technical Design Standard deals with the technical design specifications of vehicles containers and equipment used in the transportation of petroleum products.

Costs: No special compliance cost, or enforcement.

Enforcement: OGRA mandates its licensee oil marketing companies to comply with OGRA RT standards for all its products.

Scope: All road vehicles carrying petroleum products over 5000 litres.

The following table provides additional assessment of the implementation of the regulatory framework.

Table 7. Assessment of vehicle regulations and implementation

	Law	Enforcement	lssues
	Fair	Marginal	
Excise & Taxation Office	All motor vehicles are required to be registered, except trailers for articulated vehicles and farm tractors. There are ambiguities in the law e.g. the period a vehicle can travel on the road network while bearing 'Applied for Registration'	Vehicle registration compliance levels vary across Pakistan. In cities and in rural Punjab most vehicles are registered. Elsewhere, the percentage of registered vehicles is lower. In parts of KPK, FATA and Gilgit Baltistan, a very low proportion of vehicles	A lack of integration and harmonisation of Provin- cial ETO vehicle registra- tion systems.
Provincial Subject	plates.	are registered.	
	Very Poor	Very Poor	
Motor Vehicle Fitness Certification Office	 MVR 1969 is not relevant to current standards and does not address major technical safety features related to modern cars such as airbags seat belts ABS ESC child restraint fixtures head restraints crumple zones conspicuity defogger safety steering wheel 	Applies to commercial and public transport vehicles. MVFCO offices do not have adequate testing facilities or equipment. The fitness certificate system is functioning more as a revenue collection system for the provincial governments. A more advanced vehicle testing program, Vehicle Inspection and Certification System (VICS) has been initiated	Periodic Technical Inspections only required for commercial and public service vehicles. No inspection requirements for private vehicles including cars and motorcycles.
Subject		in Punjab and Sindh. However, the VICS requires an updated legal framework.	
	Law	Enforcement	Key Issues
--	--	--	--
	Very Poor	Marginal	
}			
Pakistan Standards & Quality Control Authority	PSQCA applies standards for 2 & 3-wheeled vehicles only. These standards were set by a nominated committee of PSQCA dominated by representatives of these vehicle manufacturers. The current low standards are easy for manufacturers to comply with.	There is no testing facility or technical expertise with PSQCA. Like the Motor Vehicle Fitness Examiners Office, PSQCA functions more as a revenue collection department rather than as a quality control and standards authority.	Include road safety and vehicle safety experts in PSQCA nominated committees. Collaboration between PSQCA and National Highway Authority must be increased.
	Marginal	Poor	
Engineering Development Board EDB Board	EDB, in exercise of power conferred under SRO 656- 2006, has developed local standards for accrediting manufacturing plants. These laws are stringent and are suited for large- scale auto manufacturing model. Three auto companies manufacture a limited variety of vehicles that do not meet UN technical standards.	These standards are enforced well for vehicles that require to be registered, including passenger cars, vans and factory-built trucks. Does not cover trailer manufacturers of articulated vehicles. Does not include the trailers of articulated vehicles. Does not cover aftermarket body building plants of buses and trucks who build on pre- registered chassis.	Provisions must be provided to allow small manufacturers to enter market without establishing complete manufacturing unit. Preference should be given to manufacturers which specialize in after- market vehicle safety devices.

Axle LoadThe limit of 12.5 tonnes per axle has been relaxed to 15Overloading is common.The current relaxed load regime is too lenient.		Very Poor	Marginal	
National Highway Authoritytonnes per axle under the relaxed load regime. This limit is higher than the limit imposed in neighbouring countries. For example, 9.5 tonnes per axle in China.out at operational weigh stations on the national network. On provincial highways, there is no enforcement of load limits. Fines range from 1000- 5000 rupees ⁴² insufficient deterrent to overloading practices (NHSO 2000 The Twelfth Schedule) The increased income from overloading offsets the courted to the overloading offsets the	Axle Load Limit National Highway Authority	The limit of 12.5 tonnes per axle has been relaxed to 15 tonnes per axle under the relaxed load regime. This limit is higher than the limit imposed in neighbouring countries. For example, 9.5 tonnes per axle in China. This results in damage to roads and safety hazards due to the overloading of vehicles.	Overloading is common. Enforcement is carried out at operational weigh stations on the national network. On provincial highways, there is no enforcement of load limits. Fines range from 1000- 5000 rupees ⁴² insufficient deterrent to overloading practices (NHSO 2000 The Twelfth Schedule) The increased income from overloading offsets the cost of fines	The current relaxed load regime is too lenient. Low fines to the driver and vehicle owner encourage non-compliance. No system of compliance for the shipper or receiver of freight. no chain of responsibility requirements.

⁴² NHSO2000 The Twelfth Schedule, Standard Penalties- Moving Violations.

Law	Enforcement	Key Issues
Good	Very Poor	
 These technical standards for the regulations of Road Transport Vehicles, Containers and Equipment Used for the Transportation of Petroleum are based on the international ADR standards of 2009 (14). They should be updated by adopting ADR 2017 and removing technical errors in the laws such as: Maximum Baffle Curvature (OGRA-2009-Chapter 4, Section 24, Clause 12) Meter to foot conversion (Chapter 2, Section 9) 	Since the 2017 OGRA standards have been increasingly enforced. However, only one manufacturer has a third- party ADCR 206 certificate of compliance.	Poor compliance due to low enforcement of standards. No repercussions for non- compliance by shipping company or client/ product receiver. Current financial incentives for transporting product in OGRA and ADR compliant oil tankers. Currently, there is no difference in fare for transporting a 48KL compliant tanker or a larger 60 KL non-compliant tanker
(Chapter 3, Section 8, Clause 2)		
Very Good	None	
New laws in 2017 which address the geometric dimensions of vehicles made are consistent with both international and regional best practice.	No enforcement of the 2017 regulation.	On-road enforcement of new regulations Enforcement of vehicle manufacturing facilities.
	Law Good These technical standards for the regulations of Road Transport Vehicles, Containers and Equipment Used for the Transportation of Petroleum are based on the international ADR standards of 2009 (14). They should be updated by adopting ADR 2017 and removing technical errors in the laws such as: Maximum Baffle Curvature (OGRA-2009- Chapter 4, Section 24, Clause 12) Meter to foot conversion (Chapter 3, Section 8, Clause 2) Very Good New laws in 2017 which address the geometric dimensions of vehicles made are consistent with both international and regional best practice.	LawEnforcementGoodVery PoorThese technical standards for the regulations of Road Transport Vehicles, Containers and Equipment Used for the Transportation of Petroleum are based on the international ADR standards of 2009 (14). They should be updated by adopting ADR 2017 and removing technical errors in the laws such as:Since the 2017 OGRA standards of 2009 (14). They should be updated by adopting ADR 2017 and removing technical errors in the laws such as:• Maximum Baffle Curvature (OGRA-2009- Chapter 4, Section 24, Clause 12)None• Meter to foot conversion (Chapter 3, Section 8, Clause 2)NoneNew laws in 2017 which address the geometric dimensions of vehicles made are consistent with both international and regional best practice.No enforcement of the 2017 regulation.

ANNEX 3: GLOBAL BEST PRACTICE REQUIREMENT FOR PERIODIC TECHNICAL INSPECTIONS

These requirements for periodic technical inspections are based on the international best practice requirements developed by the International Motor Vehicle Inspection Committee (CITA) for ECE/ TRANS/WP.29/2009/135.⁴³

1 DEFINITIONS

For the purpose of this Rule,

1.1 "Agreement" means the 1997 Vienna Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles and the

Reciprocal Recognition of such Inspections;

- 1.2 "Technical Inspection Certificate" means a certificate about the first registration after manufacture and the periodical technical inspections of wheeled vehicles in compliance with the provisions of Article 1 and Appendix 2 of the Agreement (see paragraph 2.1. above);
- 1.3 "Periodical Technical Inspection" means a periodical administrative uniform procedure by which the authorized technical inspection centers responsible for conducting the inspection tests declare, after carrying out the required verifications, that the wheeled vehicle submitted conforms to the requirements of this Rule;
- "Wheeled vehicle" means motor vehicles of categories M₂, M₃, N₂ and N₃ and trailers of categories O₃ and O₄, as specified in Consolidated Resolution on the Construction of Vehicles (RE.3) (TRANS/WP.29/78/Rev.1, as amended), used in international transport [whose permissible maximum mass exceeds 3,500 kg, except those used for the carriage of passengers and having not more than eight seats in addition to the driver's seat];
- 1.5 "Verification" means the proof of compliance with the requirements set out in the annex to this Rule through tests and checks carried out using techniques and equipment currently available, and without the use of tools to dismantle or remove any part of the vehicle;
- 1.6 "1958 Geneva Agreement" means the Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be fitted and/or used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals granted on the basis of these Prescriptions, done at Geneva on 20 March 1958 and amended as of 16 October 1995;
- 1.7 "Regulation" means a Regulation annexed to the 1958 Geneva Agreement.
- 1.8 "Inappropriate repair or modification" means a repair or modification that adversely affects the road safety of the vehicle.

⁴³ UNECE (2009). PROPOSAL FOR DRAFT RULE No. 2 On Uniform Provisions For Periodical Technical Inspections Of Wheeled Vehicles With Regard To Their Roadworthiness. WP29, UNECE. http://www.unece.org/fileadmin/DAM/trans/doc/2009/wp29/ECE-TRANS-WP29-2009-135e.pdf

2 PERIODICITY OF TECHNICAL INSPECTIONS

Vehicle Categories	Maximum Inspection Intervals	
All transport vehicles	One year after the first registration (or if the vehicle is not required to be registered, date of first use) and annually thereafter	

3 TECHNICAL INSPECTION

Vehicles to which these provisions apply must undergo a periodic technical inspection in accordance with the annex hereafter.

Following verification, the International Technical Inspection Certificate shall confirm the compliance with at least the provisions of this annex.

4 INSPECTION REQUIREMENTS

The inspection shall cover at least the items listed below, provided that these are related to the obligatory equipment of the vehicle being tested in the implementing State concerned.

- 4.1 Identification of the vehicle;
- 4.2 Braking equipment;
- 4.3 Steering;
- 4.4 Visibility;
- 4.5 Lighting equipment and parts of electric system;
- 4.6 Axles, wheels, tyres, suspension;
- 4.7 Chassis and chassis attachments;
- 4.8 Other equipment;
- 4.9 Additional inspections of vehicles for the commercial carriage of passengers.

5 METHODS OF INSPECTION

The method of inspection set out in the annex shall be the minimum requirement. Where a method of inspection is given as visual, it means that in addition to looking at the items, the inspector can also handle them, evaluate noise, etc.

6 MAIN REASONS FOR REJECTION AND ASSESSMENT OF DEFECTS

Recommendations for the main reasons for rejection and the assessment of defects are also given in the annex. The three criteria for assessment of defects are defined as follows.

- 6.1 "Minor defects" (MiD) are technical defects that have no significant effect on the safety of the vehicle and other minor non-compliances. The vehicle does not have to be reexamined as it can reasonably be expected that the detected defects will be rectified without delay.
- 6.2 "Major defects" (MaD) are defects that may prejudice the safety of the vehicle and/or put other road users at risk and other more significant non-compliances. Further use of the vehicle on the road without repair of the detected defects is not allowed although it still may be driven to a place for repair and afterwards to a specified location for the repair to be checked.
- 6.3 "Dangerous defects" (DD) are defects that constitute a direct and immediate risk to road safety such that the vehicle should not be used on the road under any circumstances.
- 6.4 A vehicle having defects falling into more than one defect group should be classified according to the most serious defect. A vehicle showing several defects of the same group can be classified in the next more serious group if their combined effect makes the vehicle more dangerous.

MINIMUM INSPECTION REQUIREMENTS

The inspection shall cover at least the items listed below.

Mandatory		Recommendation				
ltem	Method		Main Reasons for Rejection	Defect Assessmen		ment
				MiD	MaD	DD
0. IDENTIFICATION OF TH	EVEHICLE					
0.1. Registration number plates (if needed by requirements. <u>1</u> /)	Visual inspection.	(a) (b) (c)	Number plate(s) missing or so insecure/fixed that it is (they are) likely to fall off. Inscription missing or illegible. Not in accordance with vehicle documents or records.	X	X X X	
0.2. Vehicle identification chassis/ serial number	Visual inspection.	(a) (b) (c)	Missing or cannot be found. Incomplete, illegible. Not in accordance with vehicle documents or records.		X X X	
1. BRAKING EQUIPMENT		h		J		
1.1. Mechanical conditio	n and operation	~~~~~			~~~~~~	~~~~~
1.1.1. Service brake pedal/hand lever pivot	Visual inspection of the components while the braking system is operated. <i>Note</i> : Vehicles with power assisted braking systems should be inspected with the engine switched off.	(a) (b)	Pivot too tight. Excessive wear or play.		X X	
1.1.2. Pedal/ hand lever condition and travel of the brake operating device	Visual inspection of the components while the braking system is operated <i>Note:</i> Vehicles with power assisted braking systems should be inspected with the engine switched off.	(a) (b) (c)	Excessive or insufficient reserve travel. Brake control not releasing correctly. Anti-slip provision on brake pedal missing, loose or worn smooth.	X X	X X	

Mandatory		Recommendation			
ltem	Method	Main Reasons for Rejection	Defec	t Assess	ment
			MiD	MaD	DD
1.1.3. Vacuum pump or compressor and reservoirs	Visual inspection of the components at normal working pressure. Check time required for vacuum or air pressure to reach safe working value and function of warning device, multi- circuit protection valve and pressure relief valve.	 (a) Insufficient pressure/vacuum to give assistance for at least two brake applications after the warning device has operated (or gauge shows an unsafe reading). (b) Time taken to build up air pressure/vacuum to safe working value not in accordance with the requirements. 44/ (c) Multi-circuit protection valve or pressure relief valve not working. (d) Air leak causing a noticeable drop in pressure or audible air leaks. (e) External damage likely to affect the function of the braking system. 		X X X X X	X
1.1.4. Low pressure warning gauge or indicator	Functional check.	Malfunctioning or defective gauge or indicator.	Х	Х	
1.1.5. Hand operated brake control valve	Visual inspection of the components while the braking system is operated.	 (a) Control cracked, damaged or excessively worn. (b) Control insecure on valve or valve insecure. (c) Loose connections or leaks in system. (d) Unsatisfactory operation. 		X X X X X	
1.1.6. Parking brake activator, lever control, parking brake ratchet	Visual inspection of the components while the braking system is operated.	 (a) Ratchet not holding correctly. (b) Excessive wear at lever pivot or in ratchet mechanism. (c) Excessive movement of lever indicating incorrect adjustment. (d) Activator missing, damaged or inoperative 	X	X X X X X	
1.1.7. Braking valves (foot valves, unloaders, governors)	Visual inspection of the components while the braking system is operated.	 (a) Valve damaged or excessive air leak. (b) Excessive oil discharge from compressor. (c) Valve insecure or inadequately mounted. (d) Hydraulic fluid discharge or leak. 	X	X X X X	X X

^{44 / &#}x27;requirements' are laid down by type-approval requirements at the date of first registration or first entry into service as well as retrofitting obligations or national legislation.

Mandatory		Recommendation			
ltem	Method	Main Reasons for Rejection	Defeo	t Assess	ment
			MiD	MaD	DD
1.1.8. Couplings for trailer brakes (electrical & pneumatic)	Disconnect and reconnect braking system coupling between towing vehicle and trailer.	 (a) Tap or self sealing valve defective. (b) Tap or valve insecure or inadequately mounted. (c) Excessive leaks. (d) Not functioning correctly 	X X	X X X X	X X
1.1.9. Energy storage reservoir pressure tank	Visual inspection.	 (a) Tank damaged, corroded or leaking. (b) Drain device inoperative. (c) Tank insecure or inadequately mounted. 	X X	X X X	
1.1.10. Brake servo units, master cylinder (hydraulic systems)	Visual inspection of the components while the braking system is operated.	 (a) Defective or ineffective servo unit. (b) Master cylinder defective or leaking. (c) Master cylinder insecure. (d) Insufficient brake fluid. (e) Master cylinder reservoir cap missing. (f) Brake fluid warning light illuminated or defective. (g) Incorrect functioning of brake fluid level warning device. 	X X X X	X X X X	X X
1.1.11. Rigid brake pipes	Visual inspection of the components while the braking system is operated.	 (a) Eminent risk of failure or fracture. (b) Pipes or connections leaking. (c) Pipes damaged or excessively corroded. (d) Pipes misplaced. 	X	X X X X	X X X
1.1.12. Flexible brake hoses	Visual inspection of the components while the braking system is operated.	 (a) Eminent risk of failure or fracture. (b) Hoses damaged, chafing, twisted or too short. (c) Hoses or connections leaking. (d) Hoses bulging under pressure. (e) Hoses porous. 	Х	X X X X X X	X X X X
1.1.13. Brake linings and pads	Visual inspection.	 (a) Lining or pad excessively worn. (b) Lining or pad contaminated (oil, grease etc.). (c) Lining or pad missing 		X X	X X X
1.1.14. Brake drums, brake discs	Visual inspection.	 (a) Drum or disc excessively worn, excessively scored, cracked, insecure or fractured. (b) Drum or disc contaminated (oil, grease, etc.) 		X	Х
		(c) Drum or disc missing. (d) Back plate insecure.		Х	Х

Mandatory		Recommendation			
ltem	Method	Main Reasons for Rejection	Defect Assessmer		ment
			MiD	MaD	DD
1.1.15. Brake cables, rods, levers, linkages	Visual inspection of the components while the braking system is operated.	 (a) Cable damaged or knotted. (b) Component excessively worn or corroded. (c) Cable, rod or joint insecure. (d) Cable guide defective. (e) Restriction to free movement of the braking system. (f) Abnormal movement of the levers/ linkage indicating maladjustment or excessive wear. 		X X X X X X	X X
1.1.16. Brake actuators (including spring brakes or hydraulic cylinders)	Visual inspection of the components while the braking system is operated.	 (a) Actuator cracked or damaged. (b) Actuator leaking. (c) Actuator insecure or inadequately mounted. (d) Actuator excessively corroded (e) Insufficient or excessive travel of operating piston or diaphragm mechanism. (f) Dust cover missing or excessively damaged. 	X	X X X X X	X X X X X
1.1.17. Load sensing valve	Visual inspection of the components while the braking system is operated.	 (a) Defective linkage. (b) Linkage incorrectly adjusted. (c) Valve seized or inoperative. (d) Valve missing. (e) Missing data plate. (f) Data illegible or not in accordance with requirements. 1/ 	X X	X X X	X X
1.1.18. Slack adjusters and indicators	Visual inspection.	 (a) Adjuster damaged, seized or having abnormal movement, excessive wear or incorrect adjustment. (b) Adjuster defective. (c) Incorrectly installed or replaced. 		X X X X	
1.1.19. Endurance braking system (where fitted or required)	Visual inspection.	(a) Insecure connectors or mountings.(b) System obviously defective or missing.	Х	X X	
1.1.20. Automatic operation of trailer brakes	Disconnect brake coupling between towing vehicle and trailer.	Trailer brake does not apply automatically when coupling disconnected.			Х

Mandatory		Recommendation			
ltem	Method	Main Reasons for Rejection	Defec	t Assess	ment
			MiD	MaD	DD
1.1.21. Complete braking system	Visual inspection.	 (a) Other system devices (e.g. anti-freeze pump, air dryer, etc.) damaged externally or excessively corroded in a way that adversely affects the braking system. (b) Leakage of air or anti-freeze. (c) Any component insecure or inadequately mounted. (d) Inappropriate repair or modification to any component. 	X	X X X X	X X
1.1.22. Test connections (where fitted or required) 1.2. Service braking perfe	Visual inspection.	(a) Missing. (b) Damaged, unusable or leaking.	X	X X	
1.2.1. Performance	During a test on a static brake testing machine or, if impossible, during a road test apply the brakes progressively up to maximum effort.	 (a) Inadequate braking effort on one or more wheels. (b) Braking effort from any wheel is less than 70% of maximum effort recorded from the other wheel on the same axle. Or in the case of testing on the road, the vehicle deviates excessively from a straight line and comes out of a corridor 3 m wide. (c) No gradual variation in brake effort (grabbing). (d) Abnormal lag in brake operation of any wheel. (e) Excessive fluctuation of brake force during each complete wheel revolution. 		X X X X X	X X

Mandatory		Recommendation			
ltem	Method	Main Reasons for Rejection Defect A		t Assess	ment
			MiD	MaD	DD
1.2.2. Efficiency	Test with a static brake testing machine or, if one cannot be used for technical reasons, by a road test using a decelerometer. Vehicles or a trailer has to be inspected following the standards given by ISO 21069, or according to the requirements or equivalent methods. Laden vehicle braking system performance should be assessed by testing the vehicle laden, or by evaluation using a method based on extrapolation or by some other acceptable means. Note: The efficiency of overrun brakes can be fully tested on a static brake testing machine by use of a special device or partially tested by applying the parking brake.	Does not give at least the minimum figure laid down in requirements. 1/		X	Х
1.3. Secondary (emerger	ncy) braking performance and	d efficiency (if met by separate system)			
1.3.1. Performance	If the secondary braking system is separate from the service braking system, use the method specified in 1.2.1.	 (a) Inadequate braking effort on one or more wheels. (b) Braking effort from any wheel is less than 70% of maximum effort recorded from another wheel on the same axle 		X X	X X
		 specified. Or in the case of testing on the road, the vehicle deviates excessively from a straight line comes out of a corridor 3 m wide . (c) No gradual variation in brake effort (grabbing). 		Х	Х

Mandatory		Recommendation				
ltem	Method	Main Reasons for Rejection	Defeo	Defect Assessment		
			MiD	MaD	DD	
1.3.2. Efficiency	If the secondary braking system is separate from the service braking system, use the method specified in 1.2.2.	Braking effort less than 50% of the service brake performance defined in section 1.2.2 in relation to the maximum authorized mass or, in the case of semi-trailers, to the sum of the authorized axel loads.		Х	Х	
1.4. Parking braking per	1.4. Parking braking performance and efficiency					
1.4.1. Performance	Apply the brake during a test on a static brake testing machine and/or during a road test with a decelerometer.	Brake inoperative on one side or in the case of testing on the road, the vehicle deviates excessively from a straight line.		Х	Х	
1.4.2. Efficiency	Test with a static brake testing machine or by a road test using either an indicating or recording decelerometer or with the vehicle on a slope of known gradient. Goods vehicles should, if possible, be tested laden.	Does not give at least for all vehicles a braking ratio of 18% in relation to the maximum authorized mass, or, for motor vehicles, of 12% in relation to the maximum authorized combination mass of the vehicle, whichever is the greater.		X	Х	
1.5. Endurance braking system performance	Visual inspection and, where possible, test whether the system functions.	(a) No gradual variation of efficiency (not applicable to exhaust brake systems).(b) System not functioning.		X X		
1.6. Anti-lock braking system (ABS)	Visual inspection and inspection of warning device.	 (a) Warning device malfunctioning. (b) Warning device shows system malfunction. (c) Wheel speed sensors missing or damaged. (d) Wirings damaged. (e) Other components missing or damaged. 		X X X X X		
1.7. Electronic brake system (EBS)	Visual inspection of warning device.	(a) Warning device malfunctioning.(b) Warning device shows system malfunction.		X X		

Mandatory		Recommendation			
ltem	Method	Main Reasons for Rejection	Defec	t Assess	ment
			MiD	MaD	DD
2. STEERING					
2.1. Mechanical conditio	n				
2.1.1. Steering gear condition	With the vehicle over a pit or on a hoist and with the road wheels off the ground or on turn tables, rotate the steering wheel from lock to lock. Visual inspection of the operation of the steering gear.	 (a) Roughness in operation of gear. (b) Sector shaft twisted or splines worn. (c) Excessive wear in sector shaft. (d) Excessive movement of sector shaft. (e) Leaking. 	х	X X X X X	X X X
2.1.2. Steering gear casing attachment	With vehicle on a pit or hoist and the weight of the vehicle road wheels on the ground, rotate steering / handle bar wheel clock-wise and anticlockwise or using a specially adapted wheel play detector. Visual inspection of the attachment of gear casing to chassis.	 (a) Steering gear casing not properly attached. (b) Elongated fixing holes in chassis. (c) Missing or fractured fixing bolts. (d) Steering gear casing fractured. 		X X X X	X X X X
2.1.3. Steering linkage condition	With the vehicle over a pit or on a hoist and with the road wheel on ground, rock steering wheel clockwise and anti-clockwise or using a specially adapted wheel play detector. Visual inspection of steering components for wear, fractures and security.	 (a) Relative movement between components which should be fixed. (b) Excessive wear at joints. (c) Fractures or deformation of any component. (d) Absence of locking devices. (e) Misalignment of components (e.g. track rod or drag link). (f) Inappropriate repair or modification. (g) Dust cover missing, damaged or severely deteriorated. 	Х	X X X X X X X	X X X
2.1.4. Steering linkage operation	With the vehicle over a pit or on a hoist and with the road wheels on ground and the engine running (power steering), rotate steering wheel from lock to lock. Visual inspection of movement of linkages.	 (a) Moving steering linkage fouling a fixed part of chassis. (b) Steering stops not operating or missing. 		X X	

Mandatory		Recommendation				
ltem	Method	Main Reasons for Rejection	Defec	t Assess	ment	
			MiD	MaD	DD	
2.1.5. Power steering	Check steering system for leaks and hydraulic fluid reservoir level (if visible). With the road wheels on ground and with the engine running, check that the power steering system is operating.	 (a) Fluid leak. (b) Insufficient fluid. (c) Mechanism not working. (d) Mechanism fractured or insecure. (e) Misalignment or fouling of components (f) Inappropriate repair or modification. (g) Cables/hoses damaged, excessively corroded. 	Х	X X X X X X X	X X X X X X	
2.2. Steering wheel and o	column					
2.2.1. Steering wheel condition	With the road wheels on the ground, rock steering wheel from side to side at right angles to column and apply slight downward and upward pressure. Visual inspection of play.	 (h) Relative movement between steering wheel and column indicating looseness. (i) Absence of retaining device on steering wheel hub. (j) Fracture or looseness of steering wheel hub, rim or spokes. 		X X X	X X	
2.2.2. Steering column	With the vehicle over a pit or on a hoist and the mass of the vehicle on the ground, push and pull the steering wheel in line with column, push steering wheel in various directions at right angles to the column. Visual inspection of play, and condition of flexible couplings or universal joints.	 (k) Excessive movement of centre of steering wheel up or down. (l) Excessive movement of top of column radially from axis of column. (m) Deteriorated flexible coupling. (n) Attachment defective. (o) Inappropriate repair or modification. 	[]	X X [] X X	[] X X	

Mandatory		Recommendation				
Item	Method	Main Reasons for Rejection	Defec	t Assess	ment	
			MiD	MaD	DD	
2.3. Steering play	With the vehicle over a pit or on a hoist, the mass of the vehicle on the road-wheels, the engine running for vehicles with power steering and with the road wheels in the straight-ahead position, lightly turn the steering wheel clockwise and anticlockwise as far as possible without moving the road wheels. Visual inspection of free movement.	Free play in steering excessive (for example movement of a point on the rim exceeding one fifth of the diameter of the steering wheel or not in accordance with the requirements. ^{1/}		X	Х	
2.4. Wheel alignment (X) 11 ⁴⁵ /	Check alignment of steered wheels with suitable equipment.	Alignment not in accordance with vehicle manufacturer's data or requirements. <u>1</u> /	Х	Х		
2.5. Trailer steered axle turntable	Visual inspection or using a specially adapted wheel play detector.	(p) Component damaged or cracked.(q) Excessive play.(r) Attachment defective.		X X X	X X X	
3. VISIBILITY			J			
3.1. Field of vision	Visual inspection from driving seat.	Obstruction within driver's field of view that materially affects his view in front or to the sides.	X	Х		
3.2. Condition of glass	Visual inspection.	 (a) Cracked or discoloured glass or transparent panel (if permitted). (b) Glass or transparent panel (including reflecting or tinted film) that does not comply with specifications in the requirements. 1/ (c) Glass or transparent panel in unacceptable condition. 	X	X X X	X	
3.3. Rear-view mirrors or devices	Visual inspection.	 (a) Mirror or device missing or not fitted according to the requirements. 1/ (b) Mirror or device inoperative, damaged, loose or insecure. 	X	X X		

^{45 / &#}x27;(X)' Identifies items which are related to the condition of the vehicle and its suitability for use on the road but which are not considered essential in a periodic inspection.

Mandatory		atory	Recommendation				
	ltem	Method	Main Reasons for Rejection	Defeo	t Assess	sment	
				MiD	MaD	DD	
3.4. W wi	indscreen ipers	Visual inspection and by operation.	 (a) Wipers not operating or missing. (b) Wiper blade missing or obviously defective. 	X	X X		
3.5. W wa	'indscreen ashers	Visual inspection and by operation.	Washers not operating adequately.	Х	Х		
3.6. De (X)	emisting system) <u>2</u> /	Visual inspection and by operation.	System inoperative or obviously defective.	Х			
4. LAMPS,	, REFLECTORS AND	ELECTRICAL EQUIPMENT		h	h	h	
4.1. He	eadlamps					~~~~~	
4.	1.1. Condition and operation	Visual inspection and by operation.	 (a) Defective or missing light / light source. (b) Defective or missing projection system (reflector and lens). (c) Lamp not securely attached. 	X X	X X X		
4	1.2. Alignment	Determine the horizontal aim of each headlamp on dipped beam using a headlamp aiming device or a screen.	Aim of a headlamp not within limits laid down in the requirements. <u>1</u> /		X		
4	1.3. Switching	Visual inspection and by operation.	 (a) Switch does not operate in accordance with the requirements. 1/ (Number of headlamps illuminated at the same time) (b) Function of control device impaired. 	X	X X		
4	1.4. Compliance with equirements 1/ (X) 2/	Visual inspection and by operation.	 (a) Lamp, emitted colour, position or intensity not in accordance with the requirements. 1/ (b) Products on lens or light source which obviously reduce light intensity or change emitted colour. (c) Light source and lamp not compatible 	X X	X X X		
4.	1.5. Levelling devices (where mandatory) (X) 2/	Visual inspection and by operation if possible.	(a) Device not operating.(b) Manual device cannot be operated from driver's seat.		X X		

	Mand	atory	Recommendation					
li	tem	Method		Main Reasons for Rejection	ion Defect Assessme			
					MiD	MaD	DD	
4.1.6	 Headlamp cleaning device (where mandatory) (X) 2/ 	Visual inspection and by operation if possible.	De	evice not operating.	X	X		
4.2. Fror	t and rear posit	on lamps, side marker lamps	s and	end outline marker lamps				
4.2.1	Condition and operation	Visual inspection and by operation.	(a) (b) (c)	Defective light source. Defective lens. Lamp not securely attached.	X	X X X		
4.2.2	. Switching	Visual inspection and by operation.	(a)	Switch does not operate in accordance with the requirements. <u>1</u> / Function of control device impaired.	X	X X		
4.2.3	Compliance with requirements. <u>1</u> /	Visual inspection and by operation.	(a)	Lamp, emitted colour, position or intensity not in accordance with the requirements. 1/ Products on lens or light source which reduce light intensity or change emitted colour.	X X	X X		
4.3. Stop	Lamps		h		£	4		
4.3.1	Condition and operation	Visual inspection and by operation.	(a) (b) (c)	Defective light source. Defective lens. Lamp not securely attached.	X X X	X X X	X	
4.3.2	2. Switching	Visual inspection and by operation.	(a)	Switch does not operate in accordance with the requirements. 1/ Function of control device impaired.	X	X X	Х	
4.3.3	Compliance with requirements. 1/	Visual inspection and by operation.	(a)	Lamp, emitted colour, position or intensity not in accordance with the requirements. <u>1</u> /	X	Х		
4.4. Dire	ction indicator a	nd hazard warning lamps						
4.4.1	Condition and operation	Visual inspection and by operation.	(a) (b) (c)	Defective light source. Defective lens. Lamp not securely attached	X X X	X X X		

Mandatory		Recommendation	Recommendation					
ltem	Method	Main Reasons for Rejection	Defec	ct Assess	ment			
			MiD	MaD	DD			
4.4.2. Switch	ing Visual inspection and operation.	by (a) Switch does not operate in accordance with the requirements. 1/	X	Х				
4.4.3. Compli with require <u>1</u> /	ance Visual inspection and operation. ments.	by Lamp, emitted colour, position or intensity not in accordance with the requirements. <u>1</u> /	X	Х				
4.4.4. Flashir freque	ng Visual inspection and ncy operation.	by Rate of flashing not in accordance with the requirements. <u>1</u> /	Х	Х				
4.5. Front and rea	ar fog lamps							
4.5.1. Condit and operat	ion Visual inspection and operation.	by (a) Defective light source. (b) Defective lens. (c) Lamp not securely attached.	X X X	X X X				
4.5.2. Alignm (X) 2/	nent By operation and usi a headlamp aiming device.	g (a) Front fog lamp out of horizontal alignment when the light pattern has cut-off line.	X	X				
4.5.3. Switch	ing Visual inspection and operation.	by (a) Switch does not operate in accordance with the requirements. 1/	X	X				
4.5.4. Compli with require 1/	ance Visual inspection and operation. ments.	 by (a) Lamp, emitted colour, position or intensity not in accordance with the requirements. 1/ (b) System does not operate in accordance with the requirements. 1/ 	X	×				
4.C. Deversing lar			}	}				
4.6. Reversing lar	nps			[
4.6.1. Condit and operat	ion Visual inspection and operation.	by (a) Defective light source.(b) Defective lens.(c) Lamp not securely attached.	X X X	x				
4.6.2. Compli with require 1/	ance Visual inspection and operation.	 by (a) Lamp, emitted colour, position or intensity not in accordance with the requirements. 1/ (b) System does not operate in accordance with the requirements. 1/ 	X X	X X				
4.6.3. Switchi	ng Visual inspection and operation.	by Switch does not operate in accordance with the requirements. 1/	X	X				

Mandatory		Recommendation				
Item	Method	Main Reasons for Rejection	Defec	t Assess	ment	
			MiD	MaD	DD	
4.7. Rear registratio	n plate lamp					
4.7.1. Conditio and operatio	Visual inspection and by operation.	(a) Lamp throwing direct light to the rear.(b) Defective light source.(c) Lamp not securely attached.	X X X	X X X		
4.7.2. Complian with requireme 1/	ce Visual inspection and by operation.	System does not operate in accordance with the requirements. <u>1</u> /	Х			
4.8. Retro-reflectors	, conspicuity (retro reflecting) ma	rkings and rear marker plates				
4.8.1. Conditio	Visual inspection.	 (a) Reflecting equipment defective or damaged. (b) Reflector not securely attached 	X	X		
4.8.2. Compliar with equireme 1/	visual inspection.	 (a) Device, reflected colour or position not in accordance with the requirements. 1/ 	X	Χ		
4.9. Tell-tales manc	atory for lighting equipment	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	£	h	h	
4.9.1. Conditio and operatio	Visual inspection and by operation.	Not operating.	X	Х		
4.9.2. Complian with requireme 1/	visual inspection and by operation.	Not in accordance with the requirements. $1/$	X			
4.10. Electrica connecti between towing vehicle a trailer or semitrail	Visual inspection: if possible examine the electrical continuity of the connection.	 (a) Fixed components not securely attached. (b) Damaged or deteriorated insulation. (c) Trailer or towing vehicle electrical connections not functioning correctly. 	X X	X X X	X	
4.11. Electrica wiring	Visual inspection with vehicle over a pit or on a hoist, including inside the engine compartment in some cases.	 (a) Wiring insecure or not adequately secured. (b) Wiring deteriorated (c) Damaged or deteriorated insulation. 	X X X	X X X X	X X X X	

Mandatory		Recommendation				
ltem	Method	Main Reasons for Rejection	Defeo	t Assess	ment	
			MiD	MaD	DD	
4.12. Non obligatory lamps and retro- reflectors (X) 2/	Visual inspection and by operation.	 (a) A lamp/retro-reflector fitted not in accordance with the requirements. 1/ (b) Lamp operation not in accordance with the requirements. 1/ (c) Lamp/retro-reflector not securely attached. 	X X X	X X X		
4.13. Battery	Visual inspection.	 (a) Insecure. (b) Leaking. (c) Defective switch (if required). (d) Defective fuses (if required). (e) inappropriate ventilation (if required) 	X X	X X X X X		
5. AXLES, WHEELS, TYRES A	ND SUSPENSION					
5.1. Axles			~~~~~~	~~~~~~	~~~~~	
5.1.1. Axles	Visual inspection with vehicle over a pit or on a hoist. Wheel play detectors may be used and are recommended for vehicles over 3.5 tonnes gross vehicle mass (GVM).	 (a) Axle fractured or deformed. (b) Insecure fixing to vehicle. (c) Inappropriate repair or modification. 		X X	X X X	
5.1.2. Stub axles	Visual inspection with vehicle over a pit or on a hoist. Use of wheel play detectors is recommended. Apply a vertical or lateral force to each wheel and note the amount of movement between the axle beam and stub axle.	 (a) Stub axle fractured. (b) Excessive wear in the swivel pin and/ or bushes. (c) Excessive movement between stub axle and axle beam. (d) Stub axle pin loose in axle. 		X X X	X X X X	

Mandatory		Recommendation				
ltem	Method		Main Reasons for Rejection	Defeo	t Assess	ment
				MiD	MaD	DD
5.1.3. Wheel bearings	Visual inspection with the vehicle over a pit or on a hoist. Wheel play detectors may be used and are recommended for vehicles over 3.5 tonnes GVM. Rock the wheel or apply a lateral force to each wheel and note the amount of upward movement of the wheel relative to the stub axle.	(a) (b)	Excessive play in a wheel bearing. Wheel bearing too tight, jammed.		XXX	X X
5.2. Wheels and tyres		h		L	L	
5.2.1. Road wheel hub	Visual inspection.	(a) (b)	Any wheel nuts or studs missing or loose. Hub worn or damaged.		X X	X X
5.2.2. Wheels	Visual inspection of both sides of each wheel with vehicle over a pit or on a hoist.	(a) (b) (c) (d)	Any fracture or welding defect. Tyre retaining rings not properly fitted. Wheel badly distorted or worn. Wheel size or type not in accordance with the requirements 1/ and effecting road safety.		X X X	X X X
5.2.3. Tyres	Visual inspection of the entire tyre by either rotating the road wheel with it off the ground and the vehicle over a pit or on a hoist, or by rolling the vehicle backwards and forwards over a pit.	(a) (b) (c) (d) (e) (f) (g) (h)	Tyre size, load capacity, approval mark or speed rating not in accordance with the requirements 1/ and effecting road safety. Tyres on same axle or on twin wheels of different sizes. Tyres on same axle of different construction (radial / cross-ply). Any serious damage or cut to tyre. Tyre tread depth not in accordance with the requirements. 1/ Tyre rubbing against other components. Re-grooved tyres not in accordance with requirements. 1/ Air pressure monitoring system malfunctioning or obviously inoperative.	X X	X X X X X X X	X X X X X

Mandatory		Recommendation				
ltem	Method	Main Reasons for Rejection	Defec	t Assess	ment	
			MiD	MaD	DD	
5.3. Suspension system						
5.3.1. Springs and stabilizer	Visual inspection with vehicle over a pit or on a hoist. The use of wheel play detectors is recommended.	 (a) Insecure attachment of springs to chassis or axle. (b) A damaged or fractured spring component. (c) Spring missing. (d) Inappropriate repair or modification. 		X X X X	X X X X X	
5.3.2. Shock absorbers	Visual inspection with vehicle over a pit or on a hoist or using special equipment, if available.	(a) Insecure attachment of shockabsorbers to chassis or axle.(b) Damaged shock absorber.	X	X X		
5.3.2.1. Efficiency testing of damping (X) 2/	Use special equipment and compare left / right differences and/or absolute values given by manufacturers .	(a) Significant difference between left and right.(b) Given minimum values not reached.		X X		
5.3.3. Torque tubes, radius arms, wishbones and suspension arms	Visual inspection with vehicle over a pit or on a hoist. Wheel play detectors may be used and are recommended for vehicles over 3.5 tonnes GVM.	 (a) Insecure attachment of component to chassis or axle. (b) A damaged, fractured or excessively corroded component. (c) Inappropriate repair or modification. 		X X X	X X X	
5.3.4. Suspension joints	Visual inspection with vehicle over a pit or on a hoist. Wheel play detectors may be used and are recommended for vehicles over 3.5 tonnes GVM.	(a) Excessive wear in swivel pin and/or bushes or at suspension joints.(b) Dust cover missing or severely deteriorated.	X	X X	X	
5.3.5. Air suspension	Visual inspection.	 (a) System inoperable. (b) Any component damaged, modified or deteriorated in a way that would adversely affect the functioning of the system. (c) Audible system leakage. 		X X	X X	

Mandatory		Recommendation				
ltem	Method	Main Reasons for Rejection	Defec	t Assess	ment	
			MiD	MaD	DD	
6. CHASSIS AND CHASSIS AT	TACHMENTS					
6.1. Chassis or frame and	d attachments			~~~~~~		
6.1.1. General condition	Visual inspection with vehicle over a pit or on	(a) Fracture or deformation of any side or cross member.		Х	Х	
	a hoist.	 (b) Insecurity of strengthening plates or fastenings. 		Х	Х	
		(c) Excessive corrosion which affects the rigidity of the assembly.		Х	Х	
6.1.2. Exhaust	Visual inspection with	(a) Insecure or leaking exhaust system.		Х		
pipes and silencers	vehicle over a pit or on a hoist.	(b) Fumes entering cab or passengers compartment.		Х	Х	
6.1.3. Fuel tank	Visual inspection with	(a) Insecure tank or pipes.		Х	Х	
and pipes (including	vehicle over a pit or on a hoist, use of leak	(b) Leaking fuel or missing or ineffective filler cap.		Х	Х	
heating fuel tank and	detecting devices in case of LPG/CNG systems.	(c) Damaged or chafed pipes.(d) Fuel stopcock (if required) not	Х	X X		
pipes)		operating correctly.			v	
		 Fire fisk due to Leaking fuel Fuel tank or exhaust improperly shielded 		~	~	
		(f) LPG/CNG system not in accordance				
		with requirements 1/.		X	Χ	
6.1.4. Bumpers, lateral	Visual inspection.	(a) Looseness or damage likely to cause injury.		Х	Х	
protection and rear underrun devices		(b) Device obviously not in compliance with the requirements. 1/	Х	Х		
6.1.5. Spare wheel carrier (if fitted)	Visual inspection.	 (a) Carrier not in proper condition. (b) Carrier fractured or insecure. (c) A spare wheel not securely fixed in carrier and likely to fall off. 	Х	X X	Х	

Mandatory		Recommendation				
ltem	Method	Main Reasons for Rejection	Defec	t Assess	ment	
			MiD	MaD	DD	
6.1.6. Coupling mechanisms and towing equipment	Visual inspection for wear and correct operation with special attention to any safety device fitted and / or use of measuring gauge.	 (a) Component damaged, defective or cracked. (b) Excessive wear in a component. (c) Attachment defective. (d) Any safety device missing or not operating correctly. (e) Any indicator not working. (f) Inappropriate repair or modification. 		X X X X X X	X X X X	
6.1.7. Transmission	Visual inspection.	 (a) Loose or missing securing bolts. (b) Excessive wear in transmission shaft bearings. (c) Excessive wear in universal joints. (d) Deteriorated flexible couplings. (e) A damaged or bent shaft. (f) Bearing housing fractured or insecure. (g) Dust cover missing or severely deteriorated. (h) Illegal power-train modification. 	X	X X X X X X X X	X X X X X	
6.1.8. Engine mountings	Visual inspection not necessarily on a pit or hoist.	Deteriorated, loose or fractured mountings.		X	Х	
6.1.9 Engine performance	Visual inspection.	(a) Control unit illegal modified.(b) Illegal engine and/or power-train modification.		X X		
6.2. Cab and bodywork						
6.2.1. Condition	Visual inspection.	 (a) A loose or damaged panel or part likely to cause injury. (b) Insecure body pillar. (c) Permitting entry of engine or exhaust fumes. (d) Inappropriate repair or modification. 		X X X X	X X X X	
6.2.2. Mounting	Visual inspection over a pit or on a hoist.	 (a) Body or cab insecure. (b) Body/cab obviously not located squarely on chassis. (c) Insecure or missing fixing of body/cab to chassis or cross members. (d) Excessive corrosion at fixing points on integral bodies. 		X X X X	X X X X	

Mand	latory	Recommendation				
Item	Method	Main Reasons for Rejection	Defeo	t Assess	ment	
	h	L	MiD	MaD	DD	
6.2.3. Doors and door catches	Visual inspection.	 (a) A door will not open or close properly. (b) A door likely to open inadvertently or one that will not remain closed. (c) Door, hinges, catches, pillar, missing, loose or deteriorated. 	X	X X X	Х	
6.2.4. Floor	Visual inspection over a pit or on a hoist.	Floor insecure or badly deteriorated		Х	Х	
6.2.5. Driver's seat	Visual inspection.	 (a) A loose seat or seat with defective structure. (b) Adjustment mechanism not functioning correctly. 		X X	X X	
6.2.6. Other seats	Visual inspection.	 (a) Seats in defective condition or insecure. (b) Seats fitted not in accordance with requirements. 1/ 	×	X X		
6.2.7. Driving controls	Visual inspection and by operation.	Any control necessary for the safe operation of the vehicle not functioning correctly.		Х	Х	
6.2.8. Cab steps	Visual inspection.	(a) Step or step ring insecure.(b) Step or ring in a condition likely to cause injury to users.	X	X X		
6.2.9. Other interior and exterior fittings and equipment	Visual inspection.	 (a) Attachment of other fitting or equipment defective. (b) Other fitting or equipment not in accordance with the requirements. 1/ (c) Leaking hydraulic equipment. 	X X	X X X X		
6.2.10. Mudguards (wings), spray suppression devices	Visual inspection.	 (a) Missing, loose or badly corroded. (b) Insufficient clearance to road wheel. (c) Not in accordance with the requirements. 1/ 	X X X X	X X X X		
7. OTHER EQUIPMENT	k		·	4		
7.1. Safety belts/buckles	and restraint systems		~~~~~	~~~~~~		
7.1.1. Security of safety belts/ buckles mounting	Visual inspection.	(a) Anchorage point badly deteriorated.(b) Anchorage loose.		X X	X X	

Mandatory		Recommendation				
ltem	Method	Main Reasons for Rejection	Defect Assessmen			
			MiD	MaD	DD	
7.1.2. Condition of safety- belts/ buckles.	Visual inspection and by operation.	 (a) Mandatory safety-belt missing or not fitted. (b) Safety-belt damaged. (c) Safety-belt not in accordance with the requirements. 2/ (d) Safety-belt buckle damaged or not functioning correctly. (e) Safety-belt retractor damaged or not functioning correctly. 	X X	X X X X X		
7.1.3. Safety belt load limiter	Visual inspection.	Load limiter missing or not suitable for vehicle.		Х		
7.1.4. Safety belt pretensioners	Visual inspection.	Pre-tensioner missing or not suitable for vehicle.		Х		
7.2. Fire extinguisher (X) 2/	Visual inspection.	(a) Missing. (b) Not in accordance with the regulations.1/	X	X X		
7.3. Locks and antitheft device	Visual inspection and by operation.	 (a) Device not functioning to prevent vehicle being driven. (b) Defective or inadvertently locking or blocking 	Х	X	Х	
7.4. Warning triangle (if required)(X) 2/	Visual inspection.	Missing or incomplete. Not in accordance with the requirements. <u>1</u> /				
7.5. First aid kit. (if required)(X) <u>2</u> /	Visual inspection.	Missing, incomplete or not in accordance with the requirements. <u>1</u> /				
7.6. Wheel chocks (wedges) (if required) (X) 2/	Visual inspection.	ing or not in good condition.	X	Х		
7.7. Audible warning device	Visual inspection and by operation.	 (a) Not working. (b) Control insecure. (c) Not in accordance with the requirements. 1/ 	X X X	X X		
7.8. Speedometer	Visual inspection or by operation during road test or by electronically means.	 (a) Not fitted in accordance with the (b) requirements. 1/ Not operational. (c) Not capable of being illuminated. 	X X X	X X X		

Mandatory		Recommendation				
ltem	Method	Main Reasons for Rejection	Defect Assessme		ment	
			MiD	MaD	DD	
7.9. Tachograph (if fitted/required)	Visual inspection.	 (a) Not fitted in accordance with the requirements. 1/ (b) Not operational. (c) Defective or missing seals. (d) Calibration plaque missing, illegible or out of date. (e) Obvious tampering or manipulation. (f) Size of tyres not compatible with calibration parameters 	Х	X X X X X X		
7.10. Speed limitation device (if fitted/ required)	Visual inspection and by operation if equipment available.	 (a) Not fitted in accordance with the requirements. 1/ (b) Obviously not operational. (c) Incorrect set speed (if checked). (d) Defective or missing seals. (e) Calibration plaque missing, illegible or out of date. (f) Size of tyres not compatible with calibration parameters. 	X	X X X X X X		
7.11. Odometer if available (X) 2/	Visual inspection.	(a) Obviously manipulated (fraud). (b) Obviously inoperative.	X X	X X		
8. SUPPLEMENTRY TESTS F	OR PASSENGER CARRYING VE	EHICLES M2, M3	~~~~~~	l		
8.1. Doors			~~~~~			
8.1.1. Entrance and exit doors	Visual inspection and by operation.	 (a) Defective operation. (b) Deteriorated condition. (c) Defective emergency control. (d) Remote control of doors or warning devices defective. (e) Not in accordance with the requirements. 1/ 	X X	X X X X X		
8.1.2. Emergency exits	Visual inspection and by operation (where appropriate).	 (a) Defective operation. (b) Emergency exits signs missing or illegible. (c) Missing hammer to break glass. (d) Not in accordance with requirements. 1/ 	X X	X X X X		

Mandatory		Recommendation						
	lte	m	Method		Main Reasons for Rejection	Defect Assessm		ment
				L		MiD	MaD	DD
	8.2.	Demisting	Visual inspection and by	(a)	Not operating correctly.	Х	X	
difd defrosting system (X) <u>2</u> /	operation.	(b)	Emission of toxic or exhaust gases into driver's or passenger compartment.		Х	Х		
				(C)	Defective defrosting (if compulsory).	}	X	
	8.3.	Ventilation	Visual inspection and by	(a)	Defective operation	Х	X	v
		& neating system (X) <u>2</u> /	operation.	(b)	Emission of toxic or exhaust gases into driver's or passenger compartment			
8.4.	Seats							
	8.4.1	.4.1 Passenger seats	Visual inspection.	(a)	Seats in defective condition or insecure.	Х	X	
	(including seats for accompanying		(b)	Folding seats (if allowed) not working automatically.	Х	Х		
	personnel)	personnel)		(c)	Not in accordance with the requirements. <u>1</u> /	Х	Х	
	8.4.2.	Driver's seat (additional	Visual inspection.	(a)	Defective special devices such as antiglare shield or anti-dazzle screen	Х	X	
		requirements)		(b)	Protection for driver insecure or not in accordance with requirements. <u>1</u> /	Х	X	
8.5.	Interio and d device	or lighting estination es (X) 2/	Visual inspection and by operation.	Device defective or not in accordance with requirements. <u>1</u> /		X	X	
8.6.	8.6. Gangways,	ways,	Visual inspection.	(a)	Insecure floor.		Х	Х
standing areas		(b)	Defective rails or grab handles.	X	X			
				(c)	Not in accordance with the requirements. <u>1</u> /			
8.7.	Stairs and steps	Visual inspection and by operation (where appropriate).	(a)	Deteriorated or damaged condition.	Х	Х	Х	
			(b)	Retractable steps not operating correctly.		X		
				(c)	Not in accordance with requirements. <u>1</u> /	X	X	
8.8.	Passe comm syster	nger nunication n (X) <u>2</u> /	Visual inspection and by operation.	Def	ective system.	Х	Х	

Mand	atory	Recommendation				
ltem	Method	Main Reasons for Rejection	Defect Assessme			
			MiD	MaD	DD	
8.9. Notices (X) <u>2</u> /	Visual inspection.	(a) Missing, erroneous or illegible notice.	Х	X		
		(b) Not in accordance with requirements. <u>1</u> /	X	Х		
8.10. Requirements regard	ding the transport of children	L.				
8.10.1.Doors	Visual inspection.	Protection of doors not in accordance with the requirements [⊥] regarding this form of transport.	X	Х		
8.10.2. Signalling and special equipment	Visual inspection.	Signalling or special equipment absent or not in accordance with requirements. <u>1</u> /	X	Х		
8.11. Requirements regard	ding the transport of disabled	d persons. (X) 2/				
8.11.1. Doors, ramps	Visual inspection and by	Defective operation.	Х	Х		
and lifts	operation.	Deteriorated condition.	Х	Х		
		Defective control(s).	Х	Х		
		Defective warning device(s).	Х	X X		
		Not in accordance with the requirements. <u>1</u> /	Х	Х		
8.11.2. Wheelchair	Visual inspection and by	Defective operation.	Х	Х		
fixings	operation if appropriate.	Deteriorated condition.	Х	Х		
		Defective control(s).	Х	Х		
		Not in accordance with the requirements. $\underline{1}/$	Х	Х		
8.11.3. Signalling and special equipment	Visual inspection.	Signalling or special equipment absent or not in accordance with requirements. <u>1/</u>	Х	Х		
8.12. Other special equipr	ment (X) 2/		·	£	·	
8.12.1. Installations for food	Visual inspection.	(a) Installation not in accordance with the requirements. $\underline{1}/$	Х	Х		
preparation		(b) Installation damaged to such an extent that it would be dangerous to use it.		Х		
8.12.2. Sanitary installation	Visual inspection.	Installation not in accordance with the requirements. <u>1</u> /	Х	X		
8.12.3. Other devices (e.g. audio-visual systems)	Visual inspection.	Not in accordance with the requirements. $\underline{1}/$	X	X		