

# Delivering Road Safety in Nepal



Leadership Priorities  
and Initiatives to 2030



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and Initiatives to 2030**



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## Acronyms

ADB	Asian Development Bank
DoLI	Department of Local Infrastructure
DoR	Department of Roads
DoTM	Department of Transport Management
DRIVER	Data for Road Incident Visualization, Evaluation and Reporting
FTTEN	Federation of Truck Transport Entrepreneurs Nepal
GoN	Government of Nepal
GRSF	Global Road Safety Facility
iRAP	International Road Assessment Program
LMV	Light Motor Vehicle
LRN	Local Road Network
NASA	Nepal Automobile Association
MoPIT	Ministry of Physical Infrastructure and Transport
NIRTTP	Nepal–India Regional Trade and Transport Project
NRSAP	Nepal Road Safety Action Plan
NRSC	National Road Safety Council
RA–IMS	Road Accident Information Management System
RBN	Roads Board Nepal
RSAP	Road Safety Action Plan
RSSP	Road Safety Support Project
SDG	Sustainable Development Goal
SRN	Strategic Road Network
UN	United Nations
UNECE	United Nations Economic Commission for Europe
WBG	World Bank Group
WHO	World Health Organization

## Executive Summary

Road crash deaths and injuries in Nepal have been on a sharp upward trajectory since the early 2000s. In fiscal year 2017–18, 2,541 road deaths were officially reported in Nepal, which is equivalent to a fatality rate of 8.59 per 100,000 population. In the same period, 4,144 serious injury and several minor injury victims were also officially reported. However, according to World Health Organization data the estimated fatality rate in 2016 was 15.9 per 100,000 population, which is nearly double the official estimate. In 2016, vulnerable road users (pedestrians, cyclists, and motorcyclists) accounted for around 72 percent of all road fatality victims, among the highest levels in the region, with pedestrians accounting for half of these.

Road deaths have a disproportionate impact on the young, working age population. About 40 percent of people killed on Nepal's roads in 2017–18 were less than 26 years old. In 2016, transport injuries were the second leading cause of death among men aged 15–49-years.

A recent World Bank Group (WBG) study of road safety investment in South Asia revealed a crisis that has been exacerbated by the rapid growth in vehicle ownership and diversity of motorized and nonmotorized traffic of varying sizes and speeds, without adequate protection for the most vulnerable. It is clear that as vehicle ownership grows in Nepal, road crashes will continue to steadily climb—unless urgently required measures are implemented.

Nepal has a National Road Safety Strategy and Road Safety Action Plan based on the five pillars of the United Nations Global Plan for the Decade of Action for Road Safety 2011–2020: road safety management; safer roads and mobility; safer vehicles; safer road users; and post-crash response. However, only limited progress has been made on addressing these pillars and consequently Nepal is facing serious road safety challenges.

Improving road safety in Nepal is vital to national health, well-being, and economic growth. As evidenced in analytical work undertaken by the WBG with funding from Bloomberg Philanthropies, sharply reducing the number of crash fatalities and injuries over time would enable countries like Nepal to achieve substantial increases in economic growth and national income, while simultaneously achieving large population welfare gains. This underscores the economic losses associated with inaction.

However, governance challenges impede the mobilization of a systemic, targeted, and sustained road safety program in Nepal. Agencies responsible for road safety are inadequately empowered and resourced. Crash data and network safety performance data weaknesses undermine lead agency capacity to develop a results-focused strategy and ensure its adequate coordination, legislative support, funding and resource allocation, promotion, monitoring and evaluation, and related research and development and

In 2017–18, **2,541** road deaths were officially reported in Nepal, which is equivalent to a fatality rate of **8.59** per **100,000** population

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knowledge transfer. More effective, efficient, and scaled-up initiatives are required to emulate the performance trajectories of high-income countries that define good road safety practice and provide a blueprint for action.

Poor road safety performance in Nepal is a symptom of underinvestment in targeted initiatives. It is estimated that Nepal will require an additional investment of US\$879 million over the coming decade, if it is to achieve the Sustainable Development Goal 3.6 target of a 50 percent reduction in national road crash fatalities. It will take long-term commitment and sustained vision from the Government of Nepal for this investment to be effective and bring road safety performance under control on a sustainable basis. Initiatives taken must be systematic, at scale and properly sequenced, with institutional capacity being strengthened, to ensure successful delivery. Robust vehicle and driver licensing systems will need to be established and accessible by law enforcement agencies and regulatory authorities before the full power of safety compliance regimes can be exercised. Infrastructure safety design skills and tools will require strengthening to ensure the protection of all road users.

Scaled-up road safety investment will contribute to the accumulation of human capital in Nepal, which in turn will contribute to sustainable and inclusive economic growth and overall country wealth. It will also contribute to the achievement of other sustainable mobility goals concerning improved transport productivity, universal accessibility, climate change mitigation and adaptation, and reduced local air and noise pollution.

Road safety initiatives must be inclusive of all road users and roadside communities and places, especially of those users that are most vulnerable and least protected in their road environments. Inclusive road user policies and integrated land use/transport planning and place-making are necessary to ensure urban and rural roads are safe and accessible for all road users in Nepal.

A significant proportion of road crash deaths and injuries in Nepal occur on higher-speed interurban roads, but cities and towns also take a heavy toll. Ensuring the provision of safe facilities for pedestrians, cyclists, and other nonmotorized modes in cities and towns will enable growth in active transport modes and the achievement of related environmental and public health goals.

Positive developments are taking place in Nepal address its mounting road safety challenges. These include inter-ministerial consultation on a new Road Safety Bill which aims to strengthen the role of the National Road Safety Council, to provide it with greater independence and autonomy in delivering its lead agency functions, and a government commitment to strengthening national road safety expertise.

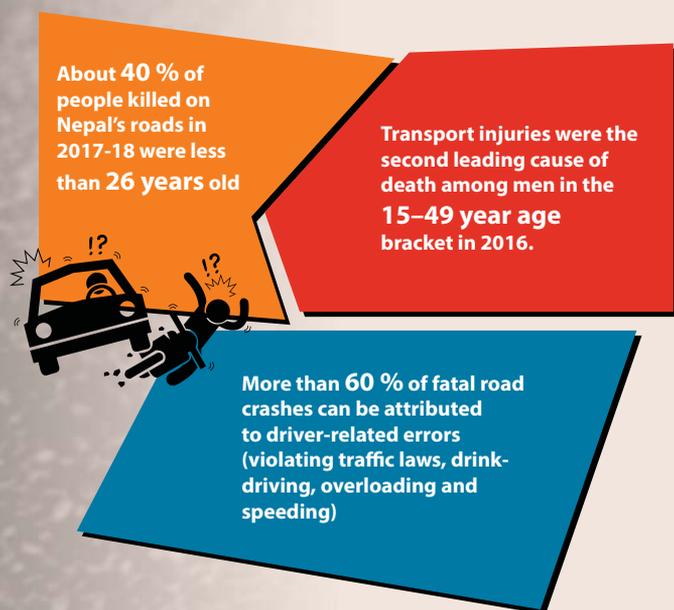
The 3<sup>rd</sup> Global Ministerial Conference on Road Safety, "Achieving Global Goals," in Stockholm, Sweden, on February 19–20, 2020, will set out an overarching platform and agenda for country and regional engagement with global partners over the next decade, including the multilateral development banks, UN agencies, the donor community and the private sector. In recent years, the WBG has been engaged in road safety partnerships in Nepal, coordinated and harmonized with the Asian Development Bank (ADB) and United Nations organizations. Looking ahead, emerging and important institutional reforms in Nepal will present new road safety partnership opportunities.

# 1. Road Safety Challenges in Nepal

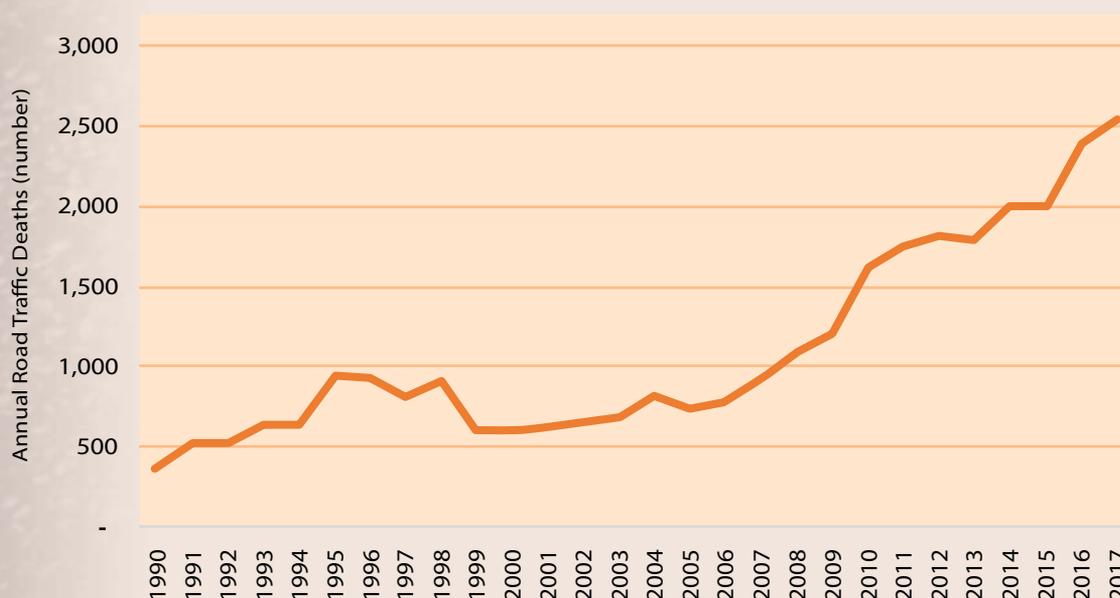
## 1.1 The Magnitude of the Challenge

Road crash fatalities and injuries are growing problem in Nepal and have a detrimental impact on sustainable development. In fiscal year 2017–18, 2,541 road deaths were officially reported in Nepal, which is equivalent to a fatality rate of 8.59 per 100,000 population.

In the same period, 4,144 serious injury and several minor injury victims were also officially reported. A rapid upwards trend in road crash deaths and injuries has been evident since the early 2000s (Figure 1). According to World Health Organization (WHO) data, the estimated fatality rate was 15.9 in 2016, which is nearly double the official estimate. This places Nepal in the low-to-middle range of road fatalities in South Asia.<sup>1</sup> In 2016, vulnerable road users (pedestrians, cyclists, and motorcyclists) accounted for approximately 72 percent of all road fatality victims, among the highest rates in the region, with pedestrians accounting for half of those. These road deaths have a disproportionate impact on young people. About 40 percent of people killed on Nepal’s roads in 2017–18 were less than 26 years old. Transport injuries were the second leading cause of death among men in the 15–49-year age bracket in 2016. According to police data, more than 60 percent of fatal road crashes can be attributed to driver-related errors (violating traffic laws, drink-driving, overloading and speeding) (Thapa 2013). Road crashes in Nepal also have a significant impact through the serious and minor injuries they cause. Given the data gap between the reported fatality figures and the WHO fatalities estimate, the injury burden is likely to be significantly underreported.<sup>2</sup>



**Figure 1. Road Traffic Deaths in Nepal**



Source: Nepal Traffic Police

## 1.2 Addressing the Road Safety Challenge in Nepal

The Government of Nepal (GoN) has a National Road Safety Strategy and Road Safety Action Plan (RSAP, 2013–2020), based on the five UN Global Plan for the Decade of Action for Road Safety 2011–2020 pillars: road safety management; safer roads and mobility; safer vehicles; safer road users; and post-crash response (GoN 2013). The RSAP is yet to be fully implemented. While disaggregated road user fatality risk data for Nepal are unavailable, Global Burden of Disease (GBD) data highlight the hazards faced by pedestrians and vehicle occupants (IHME 2015). A safety overview presented in the RSAP confirms the vulnerability of pedestrians. It also draws attention to the significant number of truck and bus crashes in rural areas, with bus crashes on long-distance routes accounting for 13 percent of fatalities and 31 percent of serious injuries. It also highlights the preponderance of motorcycle crashes in urban areas. Road safety issues in national highways are a major concern. Crash fatalities are alarmingly high, with a reported annual average of 1.3 deaths per kilometer, across seven sections of highway between Kathmandu to Kakarbhitta, over the surveyed period 2014 to 2017. One of the surveyed sections, Kathmandu to Naubise, reported an annual average of 3 deaths per kilometer (WBG 2019a). Available crash data indicates a high proportion of crashes involve trucks and buses.

A recent WBG study of road safety investment in South Asia highlighted a growing road safety crisis given the rapid growth in vehicle ownership and diverse combination of motorized and nonmotorized traffic of mixed masses and speeds, without adequate protection for the most vulnerable. Nepal faces many challenges, differing from those of high-income countries, with unique priorities that must be addressed over the coming decade (WBG 2019a).



## 2. The Global Agenda

### 2.1 Achieving the Sustainable Development Goals

The 3<sup>rd</sup> Global Ministerial Conference on Road Safety, “Achieving Global Goals,” will be held in Stockholm, Sweden, on February 19–20, 2020. Participants will assess progress over the UN Decade of Action for Road Safety (2011–2020) and the global, regional, and country implications for greater road safety gains over the coming decade. A key focus of the conference will be on the integration of road safety with the Sustainable Development Goals (SDGs) to 2030 and the related agenda for action.

SDG Targets 3.6 and 11.2 call for a halving of global road deaths and universal access to safe transport in cities and settlements, respectively (UN 2015). It is already clear that the SDG Target 3.6 date for halving global road deaths by 2020 will not be met as insufficient resources and actions have been mobilized to achieve it. In Stockholm, conference participants will consider extending the target date to 2030 as well as proposed regional fatality and serious injury targets. Recommended priorities for improved road safety over the coming decade will include:

- promoting shifts to more sustainable and safer transport modes;
- improved reporting on sustainability outcomes by businesses and enterprises of all sizes;
- enhanced vehicle safety;
- safer transport for children;
- more stringent safety requirements for vehicles and transport services procurement;
- safe speed management in cities;
- infrastructure safety; and
- potential safety gains from new technologies (Government Offices of Sweden and WHO 2019).

### 2.2 Partnering with the Government of Nepal

Decisions taken at and future directions provided by the 3<sup>rd</sup> Global Ministerial Conference on Road Safety will be of vital importance to countries in South Asia, including Nepal. These decisions and directions will set out an overarching platform and agenda for country and regional engagement with global partners over the next decade, including the multilateral development banks, United Nations (UN) agencies, the donor community and the private sector.

In recent years, the WBG has been productively engaged in road safety partnerships in Nepal that have contributed to strengthening road safety management capacity and improving road safety performance (see Appendix B for a summary of WBG activities). WBG road safety activities have been coordinated and harmonized with those of the ADB and UN organizations, which are also active in Nepal. With the emerging institutional reforms in Nepal there will be new partnership opportunities with the GoN moving forward (see Section 5).

## 3. The Economic Cost of Inaction

### 3.1 The Economic Burden of Road Safety Losses

Improving road safety in Nepal is vital to national health, well-being, and economic growth. As evidenced by analytical work undertaken by the World Bank with funding from Bloomberg Philanthropies, sharply reducing the number of crash fatalities and injuries over time would enable countries like Nepal to achieve increases in economic growth and national income, while leading simultaneously to population welfare gains.

The finding that crash fatalities and injuries have macroeconomic ripple effects gains plausibility from the fact that they predominantly affect young people, with this negative impact also being considerable across the working-age population more broadly. The disproportionate impact of road crash morbidity and mortality on the economically productive segment of the population is likely to depress GDP growth rates. For example, the estimated gains from achieving a 50 percent fatality reduction target in the countries assessed ranged between a 7 percent to 22 percent increase in GDP over the analysis timeframe of 24 years.

The effect on national income is just one part of the story. Estimated population welfare gains from achieving a 50 percent fatality reduction in the countries assessed over this period were equivalent to 6 percent to 32 percent of GDP. This underscores the economic losses associated with inaction for countries that fail to move beyond the status quo (World Bank 2017). World Bank research indicates that human capital accounts for around two-thirds of a country's total wealth, far more than natural capital and produced capital (World Bank 2017). Investment in effective road crash fatality and injury prevention will contribute to the accumulation of human capital in Nepal, which in turn will contribute to sustainable and inclusive economic growth and overall country wealth.

### 3.2 Linkages with Other Sustainable Mobility Goals

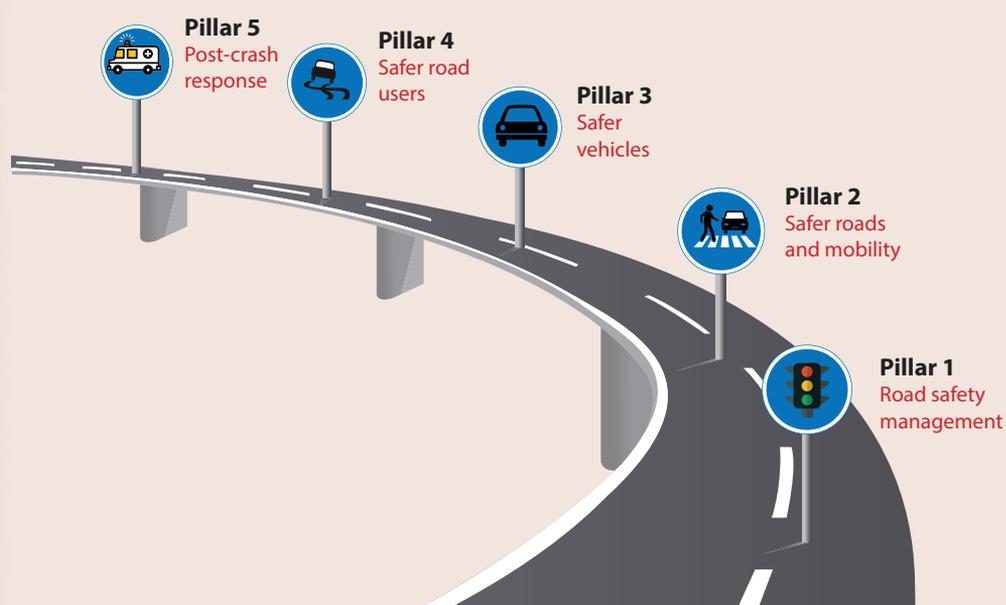
The economic losses associated with inaction are amplified by the co-benefits lost if safety investment is curtailed. Scaled-up road safety investment in Nepal will also contribute to the achievement of other sustainable mobility goals concerning improved transport productivity, universal accessibility, climate change mitigation and adaptation, and reduced local air and noise pollution (Sustainable Mobility for All 2017). Securing these network productivity, accessibility, decarbonization, and public health co-benefits of road safety investment is high on the agenda for cities and national transport corridors, and for the achievement of regional and global trade facilitation and connectivity objectives. These sustainable mobility goals are inextricably interlinked and well-targeted safety investment must negotiate a complex strategic space that delivers on all of them within an integrated policy framework (WBG 2019a).

## 4. Country Progress Across UN Global Plan Pillars

Global good practice road safety programs over the past five decades have convincingly demonstrated that road crash fatalities and injuries can be prevented and their devastating burden substantially avoided. These are compelling reasons to act on this urgent and achievable sustainable development priority.

There is considerable potential for Nepal to improve its road safety performance over the coming decade. Road safety performance in Nepal can be reviewed in terms of progress being made across the five pillars for action specified in the current UN Global Plan for the Decade of Action for Road Safety 2011–2020 (see Appendix A, Table A.3):

- **Pillar 1:** Road safety management
- **Pillar 2:** Safer roads and mobility
- **Pillar 3:** Safer vehicles
- **Pillar 4:** Safer road users
- **Pillar 5:** Post-crash response



The Global Plan’s guiding principles embrace the safe system approach that aims to eliminate crash fatalities and serious injuries with an integrated response across these five safety pillars (WHO 2011). Speed management underpins pillars 2, 3, and 4. In recognition of this, Australasian safe system frameworks included a separate safer speeds pillar to prioritize speed limits and address related issues more holistically.<sup>3</sup> It is now well recognized as good practice that key solutions for managing speed are:

- building or modifying roads which calm traffic;
- requiring car makers to install new technologies to help drivers and vehicles keep to speed limits; and
- establishing and enforcing speed limit laws (WHO 2017).

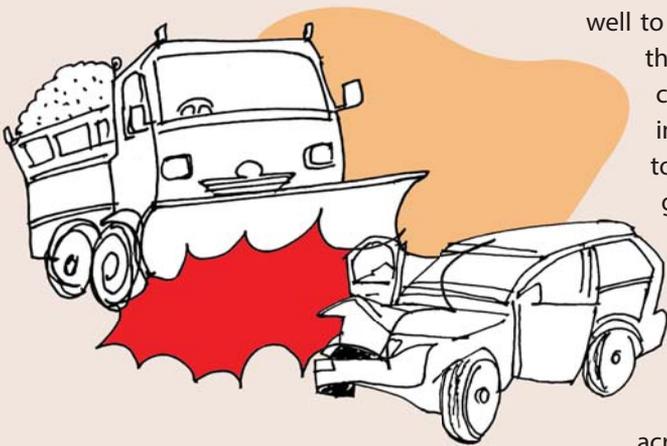
Speed management is a fundamental component of successful road safety strategies because speed is a crucial contributor to all road deaths and injuries. It contributes to the level of body damaging kinetic energy exchanged in a crash, and also contributes to the likelihood of a crash occurring in the first place, either in terms of not being able to stop quickly enough when a dangerous situation arises, or by losing vehicle control. Speed limits, if complied with by road users, can significantly reduce crash fatality and injury losses. A safe speed limit will effectively be determined by:

- the protective qualities of the road network's link and place functions;
- the protective qualities of the vehicles using the road environment; and
- the protective qualities of the safety clothing and helmets used by motorcyclists and cyclists (WBG 2019b).

Scientific evidence on the relationship between vehicle speeds and crash risks is robust. This was confirmed by a recent review of speed limit changes and the wide-scale deployment of automated speed enforcement in 10 case study countries. In the countries studied, increases in mean speeds resulted in a higher number of crashes, fatalities, and injuries and vice versa (International Transport Forum 2018). This evidence applies equally

well to roads throughout Nepal, but it is not necessarily the case that increased speeds will always result in safety losses. On the contrary, adherence to safe road network design principles in Nepal can both improve safety outcomes and contribute to the achievement of other important sustainable mobility goals related to vehicle productivity and environmental performance. Good practice speed management is central to delivering effectively and efficiently on this wider ambition.

These speed management considerations will be addressed in the following assessment of country progress across the respective Global Plan pillars for action. Speed management is a vital road safety priority in Nepal that permeates all policy considerations addressing infrastructure, vehicle, and road user safety issues. Besides seeking to minimize the number of road crashes, crashes must be anticipated, planned for, and accommodated to ensure that their level of violence does not threaten life or long-term health.



## 4.1 Road Safety Management



**Pillar 1** encourages the creation of multisectoral partnerships and the designation of a lead agency with the capacity to develop and direct the delivery of national road safety strategies, plans, and targets. It places an emphasis on ensuring that there is sufficient funding for sustainable implementation and the development of crash data and performance measurement systems to guide the national effort. It also calls for adherence to UN legal instruments and encourages their further development at a regional level.

### Leadership arrangements

In Nepal a National Road Safety Council (NRSC) was established by Cabinet decision under the Ministry of Physical Infrastructure and Transport (MoPIT). It is currently the

coordinating body for the national road safety program. Several technical subcommittees have been established to work under the NRSC, including the Road Safety Development Subcommittee and the Department of Transport Management (DoTM) Subcommittee for Rules and Regulations. The NRSC lacks the legal provision to enforce road safety standards. Other agencies responsible for managing road safety at the federal level include the DoR, the RBN, the Department of Local Infrastructure (DoLI), and the Ministry of Health. However, these agencies are unable to effectively pursue the nation's road safety strategy and action plan given poor interagency coordination, inadequate human resources, and significant funding constraints.

There are several legal instruments that currently cover road safety requirements. These include the Motor Vehicle and Transport Management Act, the Public Roads Act, and the Roads Board Act, which were mostly developed during the 1980s and 1990s when the country was strategically more focused on transport connectivity than road safety. Consequently, the Government of Nepal (GoN) engaged with the WBG in 2015 to implement the Road Safety Support Project (RSSP), and updated Nepal's legal framework and introduced new road safety measures. Specifically, the RSSP revised the Motor Vehicle and Transport Management Act, the Public Roads Act, and Nepal's Transport Policy statement, and drafted a new Road Safety Bill to create a stronger focus on road safety. It also developed a university-based road safety course at the bachelor's and master's level, conducted training of road safety audit trainers, and commenced development of a road crash data management system.

The draft Road Safety Bill clearly analyzes institutional priorities for road safety in Nepal. It formally mandates the functions of the NRSC as an independent autonomous body to coordinate and regulate authorities responsible for improving road safety, plan road safety programs, and monitor and evaluate their performance. It envisions the establishment of a well-resourced secretariat in the Kathmandu Valley, with provision for offices in other provinces. The draft Road Safety Bill is currently going through the process of inter-ministerial consultations. Once this process is completed, it will be submitted to a parliamentary review process where relevant committees will organize meetings and discussions with concerned stakeholders. After this review, the bill will be forwarded to Parliament for approval.

Nepal is undertaking substantial institutional reforms to meet the requirements of a federal government structure as envisaged in its new constitution, which was promulgated in 2015. The constitution empowers a three-tier governance structure consisting of a federal government, seven provincial governments, and 753 local governments. All three levels of government have the constitutional power to enact laws, prepare budgets, and mobilize their own resources. Within this framework, the main responsibility for the planning, procurement, and implementation of large infrastructure projects is at the central level, and in some cases also at the provincial level. At present, there is no dedicated Road Safety Fund at the central level and most of the activities have been carried out under its own internal funding and externally aided projects.

There is now a renewed interest in and momentum on the Nepal Road Safety Act, initially discussed in 2016, that provides for an improved composition, role, and objectives of the NRSC. There is also a commitment to evolve a cadre of road safety experts who can critically assess the country's mobility and safety situation and suggest actions for the Nepal Road Safety Action Plan (NRSAP), the adaptation of this plan to the newly created federal structures at the provincial level, and coordinate road safety activities across the country. These, together with the GoN's commitment to implementing the NRSAP, combined with the newly adopted administrative structure of provinces, presents an opportunity for

the GoN to activate the NRSC to meet its original objectives while adapting to current challenges and any future disruptions that affect mobility in the country.

Two concrete initiatives that seek to improve road safety management and outcomes are currently underway in Nepal with the participation of the WBG and the ADB:

- The WBG, through grant financing from the GRSF, is supporting a combination of activities aimed at providing capacity building and implementation support to the NRSC. This involves undertaking institutional gap analysis for the federal structure of the government and its impact on road safety performance, and developing concrete business plans for the implementation of activities through the NRSC.
- The ADB is supporting the MoPIT to develop strategies for the implementation of a revised NRSAP at the federal level.

### **Crash data recording and management**

Nepal Police records and maintains road crash data in Nepal. These data lack detailed information and are not amenable to insightful crash analysis. Under the Nepal–India Regional Trade and Transport Project (NIRTTP), the GoN recently developed the Road Accident Information Management System (RA–IMS), the first web-based road crash database system in the country, using TRL and DRIVER (Data for Road Incident Visualization, Evaluation and Reporting) software (GRSF 2018). The RA–IMS was officially launched in 2019. It will support collection, reporting, storage, analysis, and dissemination of road crash data for improved planning, preparation, delivery, and monitoring and evaluation of road safety initiatives in Nepal. The DoTM and Nepal Police are working closely together on system implementation and are piloting it at several traffic police stations in Kathmandu and Birgunj.

A proposed Asia-Pacific Road Safety Observatory will provide expert assistance to countries in Asia and the Pacific by facilitating shared crash data collection and analysis practices and promoting the design of effective fatality and injury reduction measures. The WHO, the Global Road Safety Facility (GRSF), the FIA Foundation, and the Government of Japan are providing financial support for this initiative. A high-level regional workshop was held in Singapore in March 2019 to launch this initiative. The WBG, the Federation Internationale de l'Automobile, the A, the International Transport Forum, and government officials from 15 countries in the region, including Nepal, participated in this workshop (WBG et al. 2019a). A second workshop was held in Bangkok in December 2019 to seek continued country support and endorsements for the proposal, with Nepal again being represented in this meeting (WBG et al. 2019b). This initiative has the potential to assist the development of crash data recording and management systems in Bangladesh through regional and global knowledge sharing and transfer of good practice procedures and technologies.

### **International relationships**

In the international context, there are road safety management priorities for Nepal relating to UN road safety conventions in the area of inland transport that are administered by the United Nations Economic Commission for Europe (UNECE). Currently, Nepal has not acceded to seven key UN transport-related conventions and agreements, which are seen as providing the foundation for a harmonized and effective road safety regulatory framework (see Box 1) (UNECE n.d.).

### BOX 1: RECOMMENDED UN CONVENTIONS

- 1968 Vienna Convention on Road Traffic
- 1968 Convention on Road Signs and Signals
- 1958 Agreement concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations
- 1997 Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles
- 1998 Agreement concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts
- 1957 Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)
- 1970 European Agreement concerning the Work of Crews of Vehicles Engaging in International Road Transport (AETR).

## 4.2 Safer Roads and Mobility



**Pillar 2** promotes raising the inherent safety and protective quality of road networks for the benefit of all users, especially the most vulnerable: pedestrians, cyclists, and motorcyclists. It places an emphasis on greater operator and designer accountability for safety performance, enhanced land use, transport system integration, improved infrastructure safety rating and assessment tools, and related capacity building and knowledge transfer.

### Safety design issues

There are numerous safety issues on Nepal's mountain roads, which comprise a substantial portion of the road network, including poor visibility at blind corners, poorly designed shoulders, and lack of climbing lanes (Government of Nepal 2013). High-fatality crashes, defined as those exceeding 30 deaths per crash, can occur on long-distance mountainous roads negotiating steep cliffs with no side-barrier protection. Risks are also high for pedestrians sharing roads with heavy vehicles. Road safety issues are now increasingly being addressed at the road design stage (see Appendix A, Table A.3). However, scientific prioritization of road safety improvements on high-risk roads is limited, as they are routinely widened without assessing safety risks. In urbanized road environments a new design focus is required that more specifically addresses the link and place functions of roads to accommodate not just the demands of their through-traffic priorities, but also those of the places being served by roads. Prevalent community activities in the road environment, as well as traffic flows, must be accounted for with a safe system approach. A human-centered, rather than purely a vehicle-centered focus is required, with a rebalancing of "right-of-place" and "right-of-way" concerns (WBG 2019b).



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The DoR, functioning under the MoPIT, is responsible for the construction and maintenance of Nepal's Strategic Road Network (SRN), which provides the backbone of the National Road Network. The SRN comprises the main national arteries that provide interregional connections and links to regional and district headquarters, international borders, key economic and tourist centers, and major urban roads. Nepal's Local Road Network (LRN), comprising district roads, village or agricultural roads, and non-strategic urban roads, comes under the purview of respective provincial and local governments. The LRN was previously supported by the DoLI, functioning under the Ministry of Federal Affairs and General Administration. These roads were constructed as quickly as possible to provide access to rural and remote areas without fully considering their operability and sustainability over the longer term. The geometry of these roads is poor and only an estimated 40 percent of the network is serviceable. Both the SRN and the LRN would benefit from improved safety design.

The DoR has developed various manuals and concept notes to address safety measures in Nepal (e.g., *Road User Guide*, *Road Safety Audit Manual*, *Safety Barriers*, *Safety at Bridges*, and *Identifying and Treating Accidents Site*). However, most of these are outdated and require substantive updating to address current safety contexts and training support to ensure their implementation. A separate dedicated Road Safety and Traffic Unit has been created within the DoR, but its current focus is limited. Road traffic signs and national road and bridge standards are being addressed, but there is no prioritized investment to upgrade high-risk locations, especially for vulnerable road users, or policies in place to promote safe walking and cycling (see Appendix A, Table A.3).

### **Safety assessment tools**

Formal safety audits are required for new road construction projects in Nepal. Safety inspections are reportedly undertaken on existing roads (see Appendix A, Table A.3). However, road safety audit findings are rarely implemented, except on donor-funded

projects, due to inadequate resources. Regular road safety audit and inspections of new and existing roads are annually budget constrained and hence rare, but the DoR does plan to conduct road safety audits across the SRN. About 5,000 kilometers of roads have been screened, some by the International Road Assessment Program (iRAP), to identify road safety interventions for possible donor support. Focused interventions have been planned for about 300 kilometers of roads.

### 4.3 Safer Vehicles



**Pillar 3** encourages the universal deployment of improved passive and active vehicle safety technologies. It places an emphasis on the adoption of harmonized UN global standards, implementation of consumer-focused new car assessment programs in all regions of the world, and the use of fiscal and other incentives to accelerate consumer and major public and private fleet operator uptake of motor vehicles that offer high levels of road user protection.

#### Vehicle certification

The DoTM is responsible for overall management of transport services in Nepal. It has developed guidelines for vehicle conditions and operations, but has yet to establish any good practice vehicle safety standards for seat belts, child restraints, frontal impacts, side impacts, electronic stability control, pedestrian protection, and motorcycle anti-lock braking systems (see Appendix A, Table A.3). Hence safety is not a focus in vehicle certification procedures, whereas environmental performance is considered. Vehicles entering Nepal should not be more than five years old and have to be within the prescribed 1999–Mass Vehicle Emission (EURO 1 based) Standard (Giri n.d.). This check is performed through the certificate of mass emission norms issued by the exporting country's authorized institution for the manufacturer of that particular unit and is submitted at the Nepalese custom office. Since 2000, Nepal has prohibited the registration or transfer of ownership of 20-year-old vehicles (Jha 2001). A plan was established to replace 100 percent of outdated vehicles by 2013, but this goal was not achieved (UNCRD 2015).

#### Vehicle fitness

The Transportation Management Act 1993 makes it mandatory in Nepal for public and commercial vehicles to be checked every six months and private vehicles once a year to ascertain their road worthiness and emission levels. A green sticker and a renewal of registration is issued based on this check. Microbuses plying on the roads of the Kathmandu Valley and long-distance buses that start their journey from or end their journey in Kathmandu must get clearance from a fitness test center.

The registration of vehicles in Nepal is renewed only after the regular inspection for roadworthiness and the emissions checks have been undertaken. Vehicles that fail to meet national roadworthiness standards are not allowed to run from the same day and are automatically subjected to repair and maintenance. These vehicles can be taken to any repair and maintenance shop and brought back for a recheck. There are numerous workshops throughout Nepal that undertake repair and maintenance work. Very few of these are licensed and registered to operate as workshops and most of their staff lack relevant education and training. Consequently, many vehicles remain in poor and potentially unsafe conditions.

Prior to 2017, all vehicle inspections in Nepal were performed manually without the use of any automated technology. In April 2017, the GoN launched a high-technology Vehicle Fitness Test Centre at Teku, Kathmandu, with the capacity to test 30 big and 30 small vehicles per day. The facility is designed to handle a range of testing functions: automobile brake test, automobile chassis clearance tester, head light tester, horn tester, automobile sideslip tester, automobile suspension tester, and the automobile wheel load tester. The center is also designed to check more than 100 interior and exterior parts of vehicles, including engines, brakes, horns, mudguards, body parts, headlights, springs, side slips, batteries, and seat belts. However, this center is reportedly not fully operational and further work is needed to align with national standards.

New vehicle testing initiatives are evident in Nepal. Under the recent NIRTTP, relevant standards, manuals, and directives have been developed (*Vehicle Maintenance Workshop Standard, Vehicle Fitness Testing Manual, Vehicle Inspection Manual, Vehicle Emission Testing Directives*).

## 4.4 Safer Road Users



**Pillar 4** calls for the development of comprehensive enforcement programs combined with social marketing campaigns to improve road user behavior. It places an emphasis on setting and seeking compliance with evidence-based standards and rules aimed at reducing speeding and drink-driving and increased use of seat belts and helmets. It also promotes enhanced occupational health and safety laws for the safe operation of commercial freight and passenger services and the establishment of graduated driver licensing systems for novice drivers.

### Driver behavior and compliance with safety regulations

Enforcement of unsafe road user behaviors is an immense challenge in Nepal. Police resources are limited and network coverage is low. Nepal has a national helmet law that applies to drivers and passengers. However, there are no legal safety standards for helmets and children are not restricted on motorcycles (see Appendix A, Table A.3). Nepal's seat belt law does not apply to rear seat occupants and there is no national child restraint law. Drunk driving is prohibited by law and strictly enforced, but there are no legal blood alcohol limits for the general driving population or for young or novice drivers and professional and commercial drivers. There are no laws prohibiting drugged driving and the use of mobile phones while driving. While speed limits have been set, speeding is a major problem (see Appendix A, Table A.3).

Heavy vehicle overloading is a big issue across Nepal with consequent road safety issues—50 to 60 percent of two-axle trucks and 75 to 90 percent of multi-axle trucks are overloaded. The extent of overloading varies between 20 to 50 percent and 35 to 100 percent for two-axle and multi-axle trucks, respectively (Government of Nepal 2015). There are four axle load control pads in Nepal (two each at Bhairahawa and Birgunj) to check overloading. Recently, three mobile axle load machines were procured under the NIRTTP. These are being used in Pathalैया, Butwal, and Kathmandu to carry out random checks. The Federation of Truck Transport Entrepreneurs Nepal (FTTEN) is also operating 14 weighbridges on major freight routes for the purpose of controlling and sharing the



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road freight task among the truck owners. However, the number of weighbridges is not adequate to control overloading throughout the country.

Bus safety is also a major issue in Nepal. The bus industry is highly fragmented with intense competition for passengers and commercial pressures to speed between destinations, to increase turnaround times. Overloaded buses are involved in about 70 percent of fatal crashes on highways. Informal para-transit jeeps, three-wheelers, and vans provide the primary public transport services in rural areas. However, these services suffer from low coverage, monopoly behavior of operators, and poor safety standards. This has contributed to the rapid growth in motorcycles in rural areas and in turn increased related road safety risks.

### **Driver licensing and training**

Licenses have to be renewed every five years. In 2017, the DoTM started an initiative to digitize all licenses by issuing smart driver's licenses. These smart cards would enable electronic records of vehicles and vehicle owners and curb duplication of licenses (Xinhuanet 2017). According to Nepalese law, a person must be at least 25 years old and have at minimum a secondary school education to be a truck driver. Two years of experience driving a light motor vehicle (LMV) is also required to obtain a license to drive heavy vehicles. However, there is an increasing trend of drivers being under 20 years of age.

There are about 400 motor driving schools in Nepal. The Nepal Automobile Association (NASA) plans to train staff from about 200 driving schools in coordination with the DoTM. Some regional branches of truck entrepreneurs' associations also conduct safety training and awareness programs for heavy vehicle drivers, especially during the festival season. There is, reportedly, a huge demand-supply gap of heavy vehicle drivers in the country. This is in part due to nature of the work, long driving hours, inadequate refreshment and parking facilities, low pay, and low public perception of the profession.

## 4.5 Post-Crash Care



**Pillar 5** calls for an increased responsiveness to post-crash emergencies and improved delivery of emergency treatment and rehabilitation services for crash victims. It places an emphasis on enhanced hospital trauma care and timely rehabilitation, improved road user insurance schemes to finance rehabilitation services thorough crash investigation and victim compensation processes, and encouragement and incentives for the employment of disabled crash victims.

### Emergency services and trauma care

Emergency services for road crash victims in Nepal are limited and significant benefits could be achieved with their improvement. Less than 25 percent of all persons seriously injured in a road crash are transported by ambulance to an emergency care center or hospital. There is no universal phone number for access to emergency services and no exact division of geographical coverage for their provision. Local traffic police and highway police are generally the first responders to crashes. Hence the average response time for crash attendance by emergency services is dependent upon the proximity of the nearest police post and can range between 15 to 30 minutes in flat sections of highways and feeder roads and from 30 to 60 minutes for hilly and district roads.

## 5. The Way Forward in Nepal

### 5.1 Challenges Being Faced and Government Action

Nepal is facing road safety challenges given the limited progress it is making in terms of addressing the five road safety pillars that underpin the UN Global Plan (see Sections 4.1–4.5). Governance challenges impede the mobilization of a systemic, targeted, and sustained road safety program in Nepal. Agencies responsible for road safety must be empowered with an adequate legal framework and sufficient resources for effective programs. Crash data and network safety performance data weaknesses seriously undermine lead agency capacity to develop a results-focused strategy and ensure its adequate coordination, legislative support, funding and resource allocation, promotion, monitoring and evaluation, and related research and development and knowledge transfer. More effective, efficient, and scaled-up initiatives are required to emulate the performance trajectories of high-income countries that define good road safety practice and provide a blueprint for action.

Positive signs of government action are emerging with the current deliberations on the draft Road Safety Bill and its proposed mandating of the current NRSC as an independent autonomous body to coordinate and regulate authorities responsible for improving road safety in Nepal. If the NRSC can assume the full functions of a good practice lead agency and is implemented with urgency and strong government support it will pave the way for sustained road safety success in Nepal.

The GoN has engaged the WBG and the ADB to provide strategic support to the NRSC for institutional capacity building and technical strengthening in five areas: institutional framework assessment and gap analysis (with a particular focus on the new governmental structure), review and updating of the NRSAP, preparing for operationalization of various legal instruments, developing an organizational and business plan, and dissemination and awareness. Of these tasks, the MoPIT leads the review and updating of the NRSAP to 2020–30 while the ADB leads the development of strategies and an investment plan for implementing the NRSAP at the national level. The WBG will lead the development of recommendations on how to deploy the NRSAP (both the current and the 2020–30 plan, as and when finalized) in the seven provinces of Nepal. In addition, the WBG team will support the MoPIT and the ADB in developing federal road safety strategies and plans.

### 5.2 Indicative Estimate of Investment Requirements

Poor road safety outcomes in Nepal signal a prevailing level of underinvestment in targeted initiatives, with only partial investment in its road safety strategy being reported (see Appendix B, Table A.3). Investment needs are substantial. Nepal will require an estimated additional investment of US\$879 million over the coming decade to achieve the SDG target of a 50 percent reduction in national road crash fatalities (see Box 2).

This estimate is indicative only and assumes that baseline road safety funding in Nepal follows a comparable investment path to that historically taken by high-income countries, with similar benefits being accrued. It also assumes that the additional investment made to improve infrastructure safety and road user safety behaviors will perform as well as the high-income country investments on which they are modelled.

## **BOX 2: ESTIMATION OF NEPAL'S ROAD SAFETY INVESTMENT NEEDS**

The scale of the additional safety investment required to achieve a 50 percent reduction in crash fatalities in Nepal over the coming decade was estimated using analyses undertaken for the UN Road Safety Trust Fund (Bliss 2016; UNECE 2018). These analyses derived from findings of a previous study conducted by the World Bank GRSF (Guria 2008; Guria 2009). The GRSF study assessed the additional investment required to meet the Decade of Action for Road Safety 2011–2020 goal of stabilizing and reducing road crash fatalities by 2020. To prepare business-as-usual projections of country fatalities over a 10-year time frame, the GRSF study used previous World Bank study findings that estimated the relationship between traffic fatalities and economic growth over the latter half of the twentieth century for 156 countries across WBG regions and high-income OECD countries (Kopits and Cropper 2003). Projected traffic fatalities and injuries for each country were then expressed in terms of social costs using estimated values of statistical life and serious injuries (Dahdah and McMahon 2008). Dividing these social costs by good practice benefit-cost ratios for safety engineering and enforcement programs provided estimates of the level of additional investment required to achieve a 50 percent fatality reduction. This was expressed as a percentage of country GDP and provided the foundation for the updated estimate of Nepal's additional road safety investment needs presented in this report (WBG 2019c).

### **5.3 Sequencing of Initiatives and Ensuring Inclusion**

The considerable investment needed to bring road safety performance in Nepal under control on a sustainable basis will require a long-term commitment and sustained vision from the GoN. Program initiatives will require proper sequencing as institutional capacity must first be strengthened to ensure agencies can effectively deliver safety services. For example, effective general deterrence-based road policing services in Nepal will require strong leadership and accountability from the police high command and operational staff. Robust vehicle and driver licensing systems will need to be well established and accessible by law enforcement agencies and regulatory authorities before the full power of safety compliance regimes can be exercised. Similarly, infrastructure safety design skills and tools will require strengthening. Initiatives taken must be systematic and at scale. Capacity for this must be built. Fragmented and partial responses will not suffice. As with other transport sectors, such as aviation, strategic commitment and action are needed to ensure that a systematic approach is in place to manage road safety performance (UNRSTF 2018).

Road safety initiatives must be inclusive of all road users and roadside communities, especially for those users that are most vulnerable and least protected in their road environments. Many road deaths and injuries in Nepal have a severe impact on the poor, including pedestrians, cyclists, and motorcyclists. Children are particularly at risk. Inclusive road user policies and integrated land use/transport planning and place-making are necessary to ensure urban and rural roads are safe and accessible for everyone.

### **5.4 Integrated Sustainable Mobility Priorities**

Road safety initiatives in Nepal must be integrated with other sustainable mobility priorities, as will be highlighted at the 3<sup>rd</sup> Global Ministerial Conference on Road Safety. Securing network productivity, accessibility, decarbonization, and public health co-benefits of road safety investment is vital. Road safety cannot be addressed in isolation from these other desired outcomes without potentially being displaced by them.



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## 5.5 Addressing Interurban and Urban Dimensions

In addressing the recommended road safety priorities for Nepal, consideration must be given to the interurban and urban dimensions of road safety delivery. A significant proportion of national road crash deaths and injuries is incurred on higher-speed interurban roads, but cities and towns also take a heavy toll. SDG Target 11.2 puts the focus on universal access to safe transport in cities. Ensuring the provision of safe facilities for pedestrians, cyclists, and other nonmotorized modes in cities will enable significant growth in active transport modes and the achievement of related environmental and public health goals.

## 5.6 Investment Time Frames

When addressing the identified priorities for Nepal, it is important to recognize the time frames required to achieve the anticipated benefits of different initiatives. Road safety investments mature over the short to long term. Post-crash emergency and trauma services can bring benefits in the short term by enhancing survivability, and in the medium to long term with effective rehabilitation measures. Crash data and analysis systems can be established in the short to medium term and provide an essential key to the targeting, monitoring, and evaluation of safety programs to maximize their effectiveness and efficiency gains. Safety enforcement programs produce immediate and significant benefits in the short term and require investment to be sustained. Infrastructure safety programs take several years to plan and deliver, but then sustain medium to long-term benefits. The benefits of improved vehicle safety standards are realized on a sustainable basis in the longer term once they are prevalent in the national vehicle fleet.

## 5.7 Potential for Shared Regional Initiatives

While the focus of road safety initiatives is at the country level, the importance of regional contexts and country relationships within regions is generally well acknowledged. This is most apparent in transport infrastructure investment programs and regulatory considerations arising within integrated regional trade blocs and related regional and global logistics chains. There is also an increasing recognition that policy initiatives at the regional level, in vehicle and infrastructure safety for instance, can complement and strengthen country road safety strategies and programs. Eight potential shared regional initiatives aligned with the five pillars of the UN Global Plan have been proposed for the South Asia region (WBG 2019b). For example, the proposed regional road safety observatory could assist the development of a crash data recording and management system in Nepal through regional and global knowledge sharing and transfer of good practice procedures and technologies.

## 5.8 Partnership Opportunities

The WBG and its UN partners remain engaged in a productive dialogue with the GoN and its agencies to explore opportunities for future initiatives that can enhance road safety performance throughout Nepal. Decisions taken and directions provided by the 3<sup>rd</sup> Global Ministerial Conference on Road Safety will further guide this dialogue and support the mobilization of resources required to achieve sustainable success. In particular, there will be important opportunities for the multilateral development banks and the global and regional donor community to contribute to the financing and specialist support required for initiatives addressing the five pillars of the UN Global Plan. Nepal faces future road safety challenges, but the benefits of overcoming them are rewarding and far outweigh the cost of the effort needed. Future success will in part be determined by the vitality of the national, regional, and global partnerships that can be created to meet these challenges.

## 5.9 Recommended Actions

While poor quality crash fatality and injury data make it difficult to distinguish between road safety risks in Nepal, road safety solutions can be guided by global good practice. Proposed institutional reforms and scaled-up road safety programs will provide a solid foundation for improved performance over the next decade. Recommended actions, based on the NRSAP, are presented in Table 1.

**Table 1: Recommended Actions**

### Actions

Global Plan Pillars	Immediate to Short Term (2020–22)	Medium Term (2023–26)	Long Term (2027–30)
<b>Road Safety Management</b>	<ul style="list-style-type: none"> <li>Support passage of Road Safety Bill in Parliament to secure legal backing and empowerment for key road safety institutions, strategies and action plans.</li> <li>Strengthen National Road Safety Council with lead agency functions and investment strategy for priority actions under each pillar.</li> <li>Establish institutional framework for safety leadership at the provincial level.</li> <li>Establish legislative mandate to empower provincial governments to make independent road safety investments, particularly in road infrastructure, local enforcement and emergency care.</li> </ul>	<ul style="list-style-type: none"> <li>Review strengthening of NRSC, legislative arrangements for provincial government road safety delivery, road safety fund performance, and NRASP implementation, making improvements where necessary.</li> <li>Fully develop the RA-IMS to provide national, provincial and local access for all partner agencies and stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Establish a national road safety centre of excellence to assist government agencies with their development of road safety projects and conduct of related research, project monitoring and evaluation, and training and capacity building.</li> <li>Undertake ongoing development and upgrading of the RA-IMS.</li> </ul>

Global Plan Pillars	Immediate to Short Term (2020–22)	Medium Term (2023–26)	Long Term (2027–30)
	<ul style="list-style-type: none"> <li>Establish road safety fund with dedicated sources of income to sustainably support full functions of a good practice institutional framework.</li> <li>Update the national strategy and the NRSAP, including long-term performance targets, and secure sustainable funding for implementation.</li> </ul>		
<b>Safer Roads and Mobility</b>	<ul style="list-style-type: none"> <li>Conduct safety risk assessment of the SRN and develop targeted interventions to improve the safety of identified high-risk sections of the network.</li> <li>Update and revise highway construction codes and manuals with adequate inclusion of road safety features and requirements.</li> <li>Develop urban specific road safety standards and manuals.</li> <li>Integrate road asset management system crash data information.</li> <li>Develop road safety design, audit and inspection skills through comprehensive professional training programs.</li> <li>Develop technical capacity of local road construction and maintenance contractors and road agencies to mainstream road safety requirements in contractual agreements.</li> </ul>	<ul style="list-style-type: none"> <li>Increase allocation of maintenance budget to support infrastructure safety requirements.</li> <li>Retrofit safety barriers and traffic-calming measures to ensure the protection of heavy and light vehicle occupants, motorcyclists, pedestrians and non-motorized transport users.</li> <li>Redesign road junctions to ensure the safety of all road users.</li> <li>Establish accreditation and national registry of road safety auditors.</li> <li>Establish weighbridges on all national highways to control overloading of trucks.</li> <li>Implement pilot projects to demonstrate and evaluate innovative infrastructure safety standards and designs.</li> </ul>	<ul style="list-style-type: none"> <li>Develop mechanism for nationwide assessment of the safety conditions of the SRN and LRN, to guide future planning, budgeting and implementation.</li> <li>Reclassify network road types in terms of link and place functions and set safe speed limits.</li> <li>Review and update infrastructure safety standards, designs and manuals, to address new network road type classifications and speed limits.</li> <li>Upgrade road safety design, audit and inspection skills through comprehensive professional training programs.</li> </ul>
<b>Safer Vehicles</b>	<ul style="list-style-type: none"> <li>Review and update vehicle import regulations to meet UN vehicle safety standards.</li> <li>Establish networked data systems, accessible across all provinces, to integrate vehicle registration information with licensing information.</li> <li>Develop heavy vehicle safety standards, including mass transit vehicles.</li> <li>Encourage fleet companies to adopt best practice standards for safe fleet operations and driver management.</li> <li>Introduce safety standards for informal/adapted motorized vehicles and for structural modifications to high-occupancy vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen safety performance standards for light and heavy vehicles.</li> <li>Establish new automated centers for the certification and periodic inspection of vehicle safety and emissions in all major cities and on major routes in all provinces.</li> <li>Review opportunities for regional harmonization of heavy vehicle size and weight regulations.</li> </ul>	<ul style="list-style-type: none"> <li>Implement harmonized regional heavy vehicle size and weight regulations.</li> </ul>

Global Plan Pillars	Immediate to Short Term (2020–22)	Medium Term (2023–26)	Long Term (2027–30)
<b>Safe Road Users</b>	<ul style="list-style-type: none"> <li>Implement proactive road policing programs targeting speeding, drink-driving and comprehensive use of seat belts and helmets, supported by intensive marketing and media campaigns and community partnerships, to control unsafe road user behaviors that result in high crash fatality and injury rates.</li> <li>Modernize the highway police with equipment, vehicles, systems, and professional training.</li> <li>Use camera surveillance and monitoring systems to enforce safe speeds and violation of traffic rules.</li> <li>Implement improvements to road user offence penalty structures.</li> </ul>	<ul style="list-style-type: none"> <li>Review effectiveness and efficiency of road policing programs and opportunities for safer road user behaviors.</li> <li>Include road safety course curricula at different education levels, with an emphasis on the primary education system.</li> <li>Review effectiveness and efficiency of driver licensing system.</li> <li>Review effectiveness and effectiveness of penalty structures for road user offences and its alignment with road safety risks.</li> </ul>	<ul style="list-style-type: none"> <li>Implement driver licensing system improvements.</li> <li>Implement improvements to road user offence penalty structures.</li> </ul>
<b>Post-Crash Care</b>	<ul style="list-style-type: none"> <li>Review trauma care resources and deployment of service vehicles to identify improvements targeting high-risk locations.</li> <li>Develop first responder training programs in communities located in towns and villages along major highways.</li> </ul>	<ul style="list-style-type: none"> <li>Establish toll free telephone service for easy communication.</li> <li>Ensure provision of post-crash services along national highways to improve emergency notification, speed of response of medical personnel, correct diagnosis at the crash scene, stabilization of patients, prompt transport to point of treatment, and extensive rehabilitation support.</li> <li>Establish emergency room-based injury surveillance systems.</li> <li>Establish trauma centers in all provinces and in proximity to national highways.</li> </ul>	<ul style="list-style-type: none"> <li>Support development of integrated linkage of police, hospital and insurance crash fatality and injury data.</li> </ul>

## Appendix A: Regional Road Safety Benchmarks

**Table A.1. Regional Vehicle Fleet Composition**

Vehicles	Country				
	Nepal	Bangladesh	Bhutan	India	Sri Lanka
Vehicles (per 1,000 people)	81	18	109	159	327
Motorized 2 and 3-wheelers (per 1,000 people)	53	12	12	117	232
Percentage of vehicle fleet	66%	69%	11%	73%	71%
Cars and 4-wheeled light vehicles (per 1,000 people)	6.5	3.8	70	29	35
Percentage of vehicle fleet	8%	21%	65%	18.3%	10.7%
Trucks (per 1,000 people)	1.9	1	16	3.4	37
Percentage of vehicle fleet	2.4%	6%	15%	2.1%	11.2%
Buses (per 1,000 people)	1.8	0.4	0.9	1.5	2.5
Percentage of vehicle fleet	2.2%	2.2%	0.8	0.9%	0.8%

Source: WBG 2019a

Note: The data presented are from WHO 2018.

**Table A.2. Regional Road User Fatality Risks**

Fatality Risks	Country				
	Nepal	Bangladesh	Bhutan	India	Sri Lanka
Fatalities per 100,000 people	17.0	13.6	15.1	16.6	17.4
Fatalities per 10,000 vehicles	40.0	102.1	16.7	13.0	7.1
Pedestrian fatalities per 100,000 people	-	4.4	0.5	1.5	5.0
Pedestrian fatalities per 10,000 vehicles	-	32.7	0.5	1.2	2.1
Cyclist fatalities per 100,000 people	-	0.3	0	0.7	1.9
Cyclist fatalities per 10,000 vehicles	-	2.0	0	0.5	0.8
Motorized 2/3-wheeler fatalities per 100,000 people	-	1.5	0.3	5.6	7.1
Motorized 2/3-wheeler fatalities per 10,000 vehicles	-	11.2	0.3	4.4	2.9
Motorized 2/3-wheeler fatalities per 10,000 2/3-wheelers	-	17.5	2.3	6.1	4.2

Fatality Risks	Country				
	Nepal	Bangladesh	Bhutan	India	Sri Lanka
Car & light vehicle driver fatalities per 100,000 people	-	1.8	7.0	1.2	0.4
Car & light vehicle driver fatalities per 10,000 vehicles	-	13.3	7.7	0.9	0.1
Car & light vehicle driver fatalities per 10,000 cars & light vehicles	-	50.6	11.3	3.8	0.9
Car & light vehicle passenger fatalities per 100,000 people	-	3.8	7.4	1.7	0.7
Car & light vehicle passenger fatalities per 10,000 vehicles	-	28.6	8.2	1.3	0.3
Car & light vehicle passenger fatalities per 10,000 cars & light vehicles	-	109.0	12.0	5.4	1.8
Truck driver & passenger fatalities per 100,000 people	-	0.8	-	2.2	0.4
Truck driver & passenger fatalities per 10,000 vehicles	-	6.1	-	1.7	0.1
Truck driver & passenger fatalities per 10,000 trucks	-	90.2	-	66.5	2.2
Bus driver & passenger fatalities per 100,000 people	-	1.1	-	1.2	0.4
Bus driver & passenger fatalities per 10,000 vehicles	-	8.2	-	0.9	0.1
Bus driver & passenger fatalities per 10,000 buses	-	286.6	-	86.7	7.9

Source: WBG 2019a

**Note:** The data presented are derived from WHO 2015 as these provide the most comprehensive picture of country road user risks for global and regional comparative purposes that is currently available. However, related data for Nepal were unavailable for these purposes, as were data for truck and bus driver and passenger risks in Bhutan. "Fatalities per 100,000 people" measure personal, or population, safety and for this reason are the favored indicator for country public health assessments. High rates indicate low levels of personal safety. "Fatalities per 10,000 vehicles" measure traffic safety and provide a rough surrogate measure for fatalities per volume of vehicle travel, given the general unavailability of reliable traffic data. High rates also indicate low levels of traffic safety. "Fatalities per 10,000 vehicles by type" provide a useful measure of traffic safety in terms of the population of vehicles of that type, rather than in terms of the total vehicle fleet.

**Table A.3. Country Road Safety Measures**

UN Global Plan Pillars	Nepal	Bangladesh	Bhutan	India	Sri Lanka
<b>Pillar 1: Road Safety Management</b>					
Designated lead agency	Yes	Yes	Yes	Yes	Yes
Funded in national budget	Yes	No	Yes	Yes	No
National road safety strategy	Yes	Yes	Yes	Yes	Yes
Funding to implement strategy	Partial	Partial	Partial	Partial	Partial
Fatality reduction target	Yes	Yes	Yes	Yes	Yes
<b>Pillar 2: Safer Roads and Mobility</b>					
Audits/star rating required for new road infrastructure	Partial	Partial	Yes	Partial	Partial
Design standards for the safety of pedestrians/cyclists	Partial	Yes	Yes	Yes	Partial
Inspections/star ratings of existing roads	Yes	Yes	Yes	Yes	No
Investments to upgrade high-risk locations	No	Yes	Yes	Yes	Yes
Policies promoting walking and cycling	No	No	Yes	No	Subnational
Policies and investment in urban public transport	Yes	Yes	Yes	Yes	No
<b>Pillar 3: Safer Vehicles</b>					
Seat belt standards	No	No	No	Yes	No
Seat belt anchorage standards	No	No	No	Yes	No
Child restraint standards	No	No	No	No	No
Frontal impact standards	No	No	No	Yes	No
Side impact standards	No	No	No	Yes	No
Electronic stability control standards	No	No	No	No	No
Pedestrian protection standards	No	No	No	Yes	No
Motorcycle anti-lock braking system standards	No	No	No	Yes	No
<b>Pillar 4: Safer Road Users</b>					
National speed limit law	Yes	Yes	Yes	Yes	Yes
Maximum urban speed limit	Yes	Yes	Yes	Yes	Yes
Maximum rural speed limit	Yes	Yes	Yes	Yes	Yes
Maximum motorway speed limit	Yes	Yes	Yes	Yes	Yes
National drink-driving law	Yes	Yes	Yes	Yes	Yes
BAC limit—general population	No	No	Yes	Yes	Yes
BAC limit—young or novice drivers	No	No	Yes	Yes	Yes
BAC limit—professional/commercial drivers	No	No	Yes	Yes	Yes
Random breath testing carried out	Yes	Yes	Yes	Yes	No
National drug driving law	No	Yes	Yes	Yes	Yes

UN Global Plan Pillars	Nepal	Bangladesh	Bhutan	India	Sri Lanka
National motorcycle helmet law	Yes	Yes	Yes	Yes	Yes
Helmet law applies to drivers and passengers	Yes	Yes	Yes	Yes	Yes
Law requires helmet to be fastened	No	No	Yes	Yes	No
Law refers to helmet standard	No	Yes	Yes	Yes	Yes
Child passengers on motorcycles	Not restricted				
National seat belt law	Yes	No	Yes	Yes	Yes
Law applies to front and rear seat occupants	No	No	Yes	Yes	No
National child restraint law	No	No	No	No	No
Restrictions on children sitting in front seat	No	No	No	No	Not restricted
National law on mobile phone use while driving	Yes	No	Yes	Yes	Yes
Law prohibits hand-held mobile phone use	No	No	Yes	Yes	Yes
Law also applies to hands-free mobile phones	No	No	No	Yes	No
<b>Pillar 5: Post-Crash Response</b>					
National emergency care access number	Partial	Partial	Yes	Partial	Partial
Trauma registry	Partial	No	No	Partial	Partial
Formal certification for prehospital providers	No	No	Yes	Yes	No
National assessment of emergency care systems	No	No	No	No	No

**Source:** WBG 2019a.

**Note:** The data presented are from WHO 2018.

## Appendix B:

# WBG Road Safety Engagement in Nepal

WBG support for road safety in Nepal has been significant in recent years, including the following initiatives:

- A Road Safety Management Capacity Review was undertaken in 2010. This recommended an investment strategy which addressed short, medium, and long-term goals. The short-term investment strategy strongly advocated the formation of a lead agency with a secretariat to coordinate actions among all the relevant stakeholders. It further recommended undertaking a road safety inspection of a high-fatality-prone road stretch and identifying low-cost solutions for changes. The medium-term strategy involved reviewing the existing legal framework, formation of a National Road Safety Council, and key interventions in the areas of engineering, enforcement, education, awareness, and health services. The long-term strategy suggested focusing on human skills, institutional capacity, and interagency cooperation. It also recommended that engineering operations not only focused on road safety inspections and treatment of hazardous road locations, but also addressed nonmotorized transport, safe walk to school programs, physical changes in the road environment, and the provision of guardrails between pavements and roads. Road safety education for children was also emphasized.
- A road safety audit was carried out on 736 kilometers of selected road sections of national highways in 2014.
- The Road Safety Support Project was completed in 2017. It supported the drafting of various legal tools and policies related to road safety, which led to the cabinet approval of a National Road Safety Secretariat and a commitment to earmark 10 percent of the road maintenance budget towards improved safety. It also contributed to increased technical capacity of local road departments and contractors; piloted the development of a road crash data management system; and the installation of crash barriers on 70 kilometers of the Strategic Road Network. These activities were supported by the GRSF (US\$250,000 for capacity building and technical assistance) and the UK Department for International Development (US\$5 million for crash barriers).
- The ongoing NIRTTP developed the web-based Nepal RA-IMS (launched in March 2019) and a range of other road safety initiatives, including related to vehicle safety and road safety awareness campaigns.
- Ongoing capacity building and implementation support for the NRSC to contribute to partnership and stakeholder coordination activities and revitalizing of the road safety agenda in Nepal at the central and provincial levels. Recommendations are being developed on: (i) the road safety structure and strategies to be adopted at the central and provincial levels; (ii) activities to be prioritized—along with cost proposals—across the key stakeholders/departments at the federal level; and (iii) an organization and business plan for the NRSC. Capacity building support will include workshops, trainings, and exposure visits for key policy and decision-makers.
- Coordination and harmonization with the ADB technical assistance activities supporting road safety in Nepal .

## References

- Bliss Tony. 2016. "Assessment of Country Road Safety Financing Needs to Achieve SDGs 3.6 & 11.2 and Related Global Grant Funding Requirements." Wellington: Road Safety Management Limited.
- Dahdah, Said and Kate McMahon. 2008. *The True Cost of Road Crashes: Valuing life and the cost of a serious injury*. Basingstoke: International Road Assessment Programme.
- Giri, Anil Shanker. n.d. *Emission Regulations and Environmental Policies in Nepal*. Kathmandu: Ministry of Industry, Commerce and Supplies. <http://www.un.org/esa/gite/iandm/giripaper.pdf>.
- Government of Nepal. 2013. *Nepal Road Safety Action Plan (2013-2020)*. Kathmandu: Ministry of Physical Planning & Transport Management.
- . 2015. *Road Transport Safety and Axle Load Control Study in Nepal, Part B: Axle Load Control, Nepal India Regional Trade and Transport Project*. Kathmandu: Department of Transport Management.
- Government Offices of Sweden and WHO (World Health Organization). 2019. "The Academic Expert Group recommendations for 2<sup>nd</sup> Decade of Action for Road Safety." <https://www.roadsafetysweden.com/about-the-conference/news-on-road-safety-conference/2019/academic-expert-group-recommendations-for-2nd-decade-of-action-for-road-safety/>.
- GRSF (Global Road Safety Facility). 2018. *DRIVER—The Bank's Sustainable Solution for Road Crash Data Management*. Washington, DC: World Bank Group.
- Guria, Jagadish. 2008. "Required Expenditure. Road Safety Improvements in Low and Middle-Income Countries. Report to the World Bank Global Road Safety Facility." Wellington: New Zealand Institute of Economic Research.
- . 2009. "Required Expenditure. Road Safety Improvements in Low and Middle-Income Countries. Report to the World Bank Global Road Safety Facility, Addendum, Revised Estimates of Fatalities and Serious Injuries and Related Costs." Wellington: New Zealand Institute of Economic Research.
- IHME (Institute for Health Metrics and Evaluation). 2015. *GBD Compare*. Seattle, WA: IHME, University of Washington. <http://vizhub.healthdata.org/gbd-compare>.
- International Transport Forum. 2018. *Speed and Crash Risk*. International Traffic Safety Data and Analysis Group, Research Report. Paris: OECD.
- Jha, P.K. 2001. *Transport Sector Technical Inspection System in Nepal*.
- Kopits, E., and M. Cropper. 2003. "Traffic Fatalities and Economic Growth." Policy Research Working Paper Number 3035. Washington, DC: World Bank.
- Sustainable Mobility for All. 2017. *Global Mobility Report 2017: Tracking Sector Performance*. Washington, DC.
- Thapa, Arjun Jung. 2013. "Status Paper on Road Safety in Nepal." Department of Roads, Government of Nepal, Europe-Asia Road Safety Forum, and the 67<sup>th</sup> Session of the Working Party 1 of UNECE, New Delhi.
- UN (United Nations). 2015. "Resolution Adopted by the General Assembly, 70/1 Transforming Our World: The 2030 Agenda for Sustainable Development." New York.
- UNCRD (United Nations Centre for Regional Development). 2015. "National Sustainable Transport Strategy for Nepal (2015-2040)." Background Paper. Kathmandu.

- UNECE (United Nations Economic Commission for Europe). n.d. "United Nations Road Safety Conventions: Contracting Party Status." Geneva.
- . 2018. "Launch of United Nations Road Safety Trust Fund." Press Release. April 12. Geneva: UNECE. <https://www.unece.org/info/media/presscurrent-press-h/transport/2018/launch-of-united-nations-road-safety-trust-fund/doc.html>.
- UNRSTF (United Nations Road Safety Trust Fund). 2018. *Global Framework Plan of Action for Road Safety*. Geneva: UNRSTF. [https://www.unece.org/fileadmin/DAM/Road\\_Safety\\_Trust\\_Fund/Documents/UNRSTF\\_Global\\_Framework\\_Plan\\_of\\_Action\\_21\\_Nov\\_2018.pdf](https://www.unece.org/fileadmin/DAM/Road_Safety_Trust_Fund/Documents/UNRSTF_Global_Framework_Plan_of_Action_21_Nov_2018.pdf).
- WBG (World Bank Group). 2019a. "Investing in Road Safety in South Asia. Priorities in the Eastern Sub-Region: Bangladesh, Bhutan, India and Nepal." Washington, DC: World Bank Group.
- . 2019b. "Road Safety in South Asia: Opportunities for Shared Regional Initiatives." Washington, DC: World Bank Group.
- . 2019c. "Investing in Road Safety in South Asia. Priorities in the Eastern Sub-Region: Bangladesh, Bhutan, India and Nepal." Annex 4. Washington, DC: World Bank Group.
- WBG (World Bank Group), FIA (Fédération Internationale de l'Automobile), ADB (Asian Development Bank), International Transport Forum. 2019a. "Workshop: Towards the Establishment of a Road Safety Observatory in Asia. Minutes of Meeting." Singapore.
- WBG (World Bank Group), FIA (Fédération Internationale de l'Automobile), ADB (Asian Development Bank), International Transport Forum, UNESCAP (United Nations Economic and Social Commission for Asia and the Pacific). 2019b. "Second Workshop: Towards the Establishment of a Road Safety Observatory in Asia. Minutes of Meeting." Bangkok.
- World Bank. 2017. *The High Toll of Traffic Injuries: Unacceptable and Preventable*. Bloomberg Philanthropies and Global Road Safety Facility. Washington, DC: World Bank.
- WHO (World Health Organization). 2011. *Global Plan for the Decade of Action for Road Safety 2011-2020*. Geneva.
- . 2015. *Global Status Report 2015*. Geneva: WHO.
- . 2017. *Save LIVES—A Road Safety Technical Package*. Geneva: WHO.
- . 2018. *Global Status Report 2018*. Geneva: WHO.
- Xinhuanet. 2017. "Nepal to Replace All Paper-Based Driving Licenses with Smart Driving License." Xinhuanet, June 26. [http://www.xinhuanet.com/english/2017-06/26/c\\_136396268.htm](http://www.xinhuanet.com/english/2017-06/26/c_136396268.htm).

## Endnotes

1. The significant variation in statistics of road safety fatalities between official national estimates and those of international studies is noteworthy. In this report, World Health Organization (WHO) data are used as they provide a reasonably consistent coverage of vehicle fleets, road user fatality risks, management arrangements, and legislation. Note that the WHO fatality data are adjusted to account for estimated levels of country underreporting. Care is taken to use this data to get a sense of relative performance rankings, rather than focusing on absolute performance measures.
2. As very conservative rule of thumb, serious road crash injuries in high-income countries are at least 10 times the number of reported fatalities. In this regard, the reported injury losses in Nepal look to be far too low.
3. For example, see South Australia's Road Safety Strategy to 2020, Towards Zero Together, and New Zealand's Road Safety Strategy 2010-2020, Safer Journeys.





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