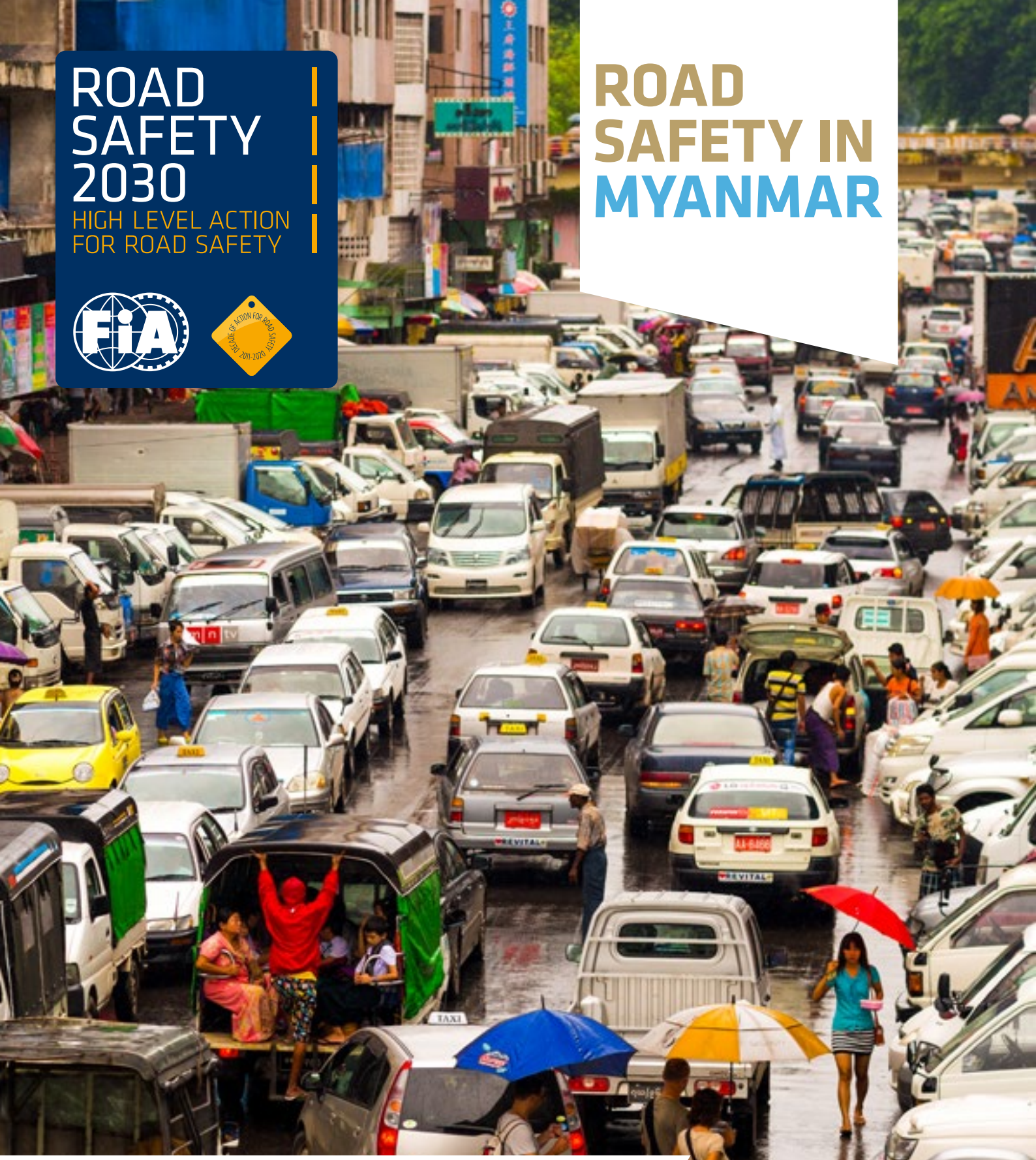
ROAD SAFETY 2030

HIGH LEVEL ACTION FOR ROAD SAFETY

ROAD SAFETY IN MYANMAR



RECOMMENDATIONS OF AN EXPERT MISSION INVITED BY THE GOVERNMENT OF MYANMAR AND SUPPORTED BY THE SUU FOUNDATION

PARIS, APRIL 2017

ACKNOWLEDGMENTS

The members of the Expert Mission (the Panel) thank all professionals that they met during the fact finding mission, that took place during November 2016, and the recommendation's mission, that was held in March 2017. In addition, we thank the support of the Suu Foundation, in particular Michael Marett-Crosby, Alfred Burton and Joseph Fisher from the office of Daw Aung San Suu Kyi. Financial support for this mission was provided by the FIA and Total. In kind contributions were made by the Global Road Safety Partnership, the World Bank Global Road Safety Facility and the Malaysian Institute of Road Safety Research (MIROS). Finally, the support of the FIA Foundation towards the ongoing Work Programme of the FIA High Level Panel for Road Safety is also acknowledged.

DISCLAIMER

The members of the Expert Mission were Fred Wegman (leader), Barry Watson, Shaw Voon Wong, Soames Job and Maria Segui-Gomez. The opinions in this report are those of the Panel members who participated in the mission. The findings, interpretation and conclusions expressed in this paper do not necessarily reflect the views of the institutions, for which they work, or the FIA, or Total.

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EXECUTIVE SUMMARY

Given the rapid motorization that is occurring in Myanmar and the resulting increase in fatalities and injuries, there is an immediate and critical need to address the road safety situation in the country. Only if effective actions are taken, will the number of people killed and injured be reduced, along with the related human, social, and economic costs as well as the burden on the health sector.

Based on the Panels observations, analyses and discussions, a number of issues require urgent attention to address Myanmar's deteriorating road safety situation. The Panel's key recommendations are detailed below.

Enhance the management and delivery of road safety by:

- Further strengthening of the road safety management structure for a more effective delivery of effective road safety interventions by all key-stakeholders;
- Improving road safety data collection methods and analysis capacity;
- Facilitating massive capacity building for all sectors in road safety including increasing international cooperation;
- Carrying out a study on funding and underfunding of road safety interventions in Myanmar, starting from interventions proposed in the Road Safety Action Plan (2014) and recommendations included in this report, and based on that assess the necessity for domestic and catalytic funding.

Based on a Safe System approach, enhance the safety of vehicles, roads and road user behaviour by:

- Eradicating the use of right-hand vehicles on the road by fast-tracking the adoption of relevant import restrictions on both new and used vehicles;
- Establishing a transparent, accountable and traceable Type Approval Process with quick adoption of critical safety UN Regulations on road vehicles and protective equipment;
- Devoting more resources to enhancing the safety quality of new and existing roads and roadsides, through the adoption of improved design, construction, assessment and treatment practices including retro-fitting of safety features;
- Adopting stronger, evidence-based road safety laws and policies (particularly in relation to reducing drink driving and speeding and increasing the use of effective motorcycle helmets, seat belts and child restraints) and ensuring that they are effectively enforced;
- Refocusing road police from traffic control activities to improving road user behaviour using a general deterrence approach;
- Strengthening the management and delivery of post-crash care systems, building on the demonstration projects already underway in the country.

Better aligning road safety objectives with broader transport, health and equity goals by:

- Enhancing the safety of sustainable modes of transport, such as cycling and walking, particularly in major cities;
- Enhancing the safety of public transport and encouraging a shift to its use from less safe modes; and
- Better integrating road safety considerations into land-use planning decisions and investment decisions on road infrastructure.

BACKGROUND TO THE MISSION

Further to an invitation by the government of Myanmar, the FIA High Level Panel for Road Safety committed to sending a road safety mission of international experts to Myanmar in order to assess the current road safety situation and propose measures to reduce road casualties in the country.

This mission was undertaken as a joint initiative of the FIA High Level Panel for Road Safety and the Suu Foundation, with support from the Myanmar Government. The task of this mission was to carry out a scoping study: a study that takes a wide perspective for an assessment of road safety in Myanmar and based on that, coming to recommendations to improve road safety in Myanmar.

The results of the mission could be used to design a road safety strategy and to identify actions and interventions. The results can be used also by those (nationally and internationally, public and private) that have an interest to invest in improving road safety in Myanmar.

The Expert Mission

The Expert Mission was undertaken by a Panel of internationally recognized road safety experts, all of whom have extensive experience working in low- and middle-countries:

- Prof. Fred Wegman, the Netherlands (Mission Leader and Professor Emeritus in Traffic Safety, Delft University of Technology);
- Dr. Maria Segui-Gomez, Spain (FIA Special Consultant on Road Safety, Spain);
- Prof. Shaw Voon Wong, Malaysia (Director General, Malaysian Institute of Road Safety Research MIROS)
- Dr. Barry Watson, Australia (CEO, Global Road Safety Partnership, International Federation of the Red Cross & Red Crescent Societies, Switzerland); and
- For the second Expert Mission, Dr. Soames Job, Australia (Head, Global Road Safety Facility and Global Lead Road Safety, World Bank, Washington, D.C.) joined the Panel.

In addition, the Panel was supported by staff from the Suu Foundation, Michael Marett-Crosby (CEO) and Alfred Burton (Operations Manager), as well as by Joseph Fisher from the Office of Daw Aung San Suu Kyi.

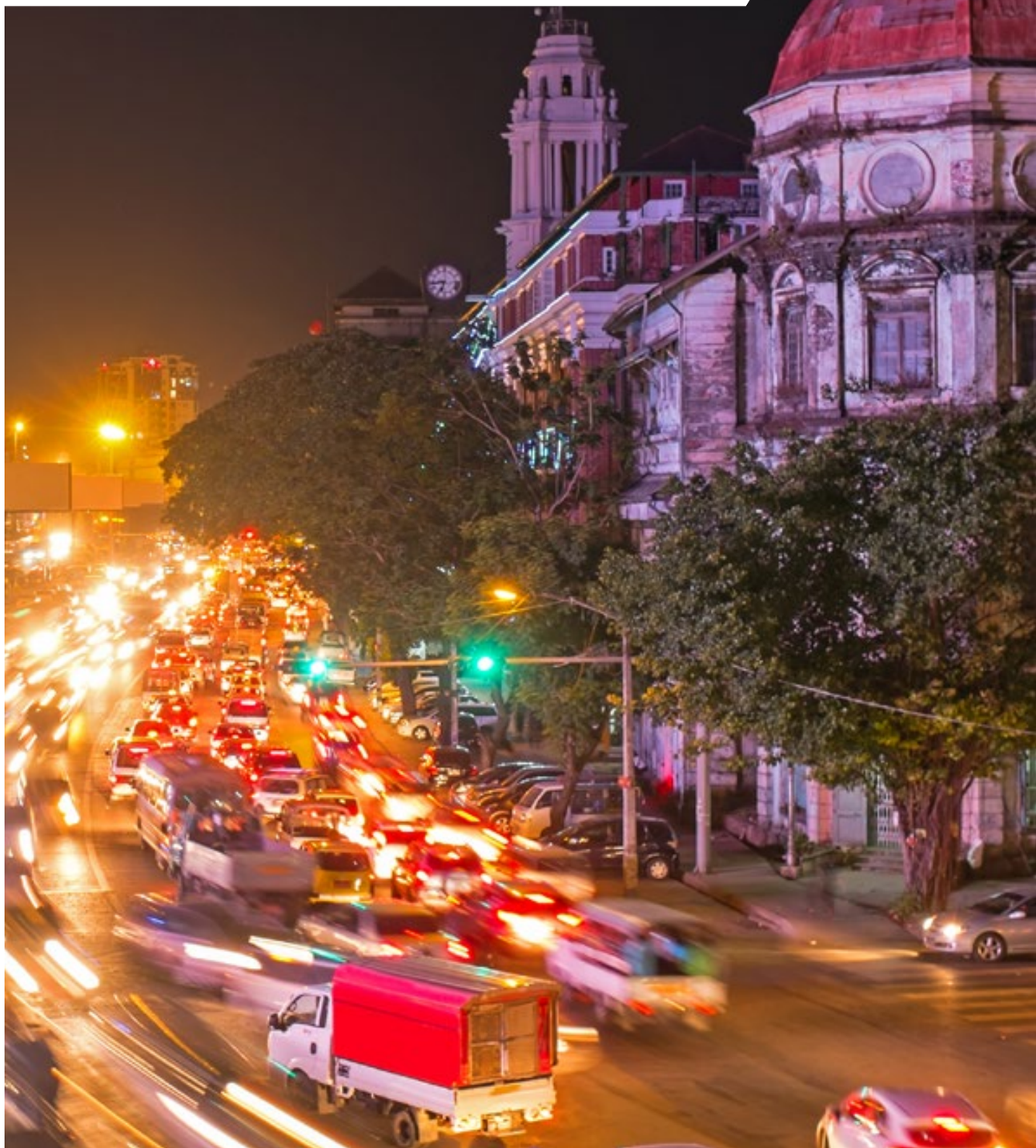
While each of the Panel members is affiliated with a particular organization, it is important to note that they undertook the Mission in their capacity as independent road safety experts. As such, the Mission was undertaken in an independent and evidence-based manner, reflecting the expertise of the Panel members and the various data and other inputs they collected. In this respect, the Panel is very grateful for the assistance they obtained from the Myanmar government and the wide range of organizations that had input into the work of the Panel.

Mission methodology

The Panel used a multi-pronged approach to review the current road safety situation in Myanmar and identify recommendations to improve road safety. Among the activities undertaken as part of the review were:

- Locating and reviewing the road safety data currently available publicly from either Myanmar Government agencies or international agencies (such as the World Health Organization or the Asian Development Bank);
- Requesting more specific road safety data from various Myanmar Government agencies;
- Undertaking a fact-finding visit to Myanmar from 10 –16 November 2016, during which meetings were held with over 20 different stakeholders from government, academic, corporate and civil society organizations;
- Making observations of different road environments (various urban and rural settings, including driving sections of the Expressway, rural roads and the cities of Yangon, Nay Pyi Taw and Mandalay);
- Reviewing various strategies, plans and other documents obtained during the visits;
- Producing a draft report with recommendations that was translated into the national language and circulated among Union, regional and city government representatives ahead of the Panel's second visit to allow time for review and comments on their part;
- Undertaking a second visit in Myanmar from 20 -26 March 2017, to clarify and further develop the Panel's recommendation, which included holding a high level workshop chaired by the Union Minister of Transport and Communications and involving key stakeholders from government;
- Undertaking follow-up consultations with various government officials and representatives from academic and civil society organizations; and
- Producing a final report.

ROAD TRAFFIC SAFETY IN MYANMAR



The road safety situation in Myanmar is deteriorating

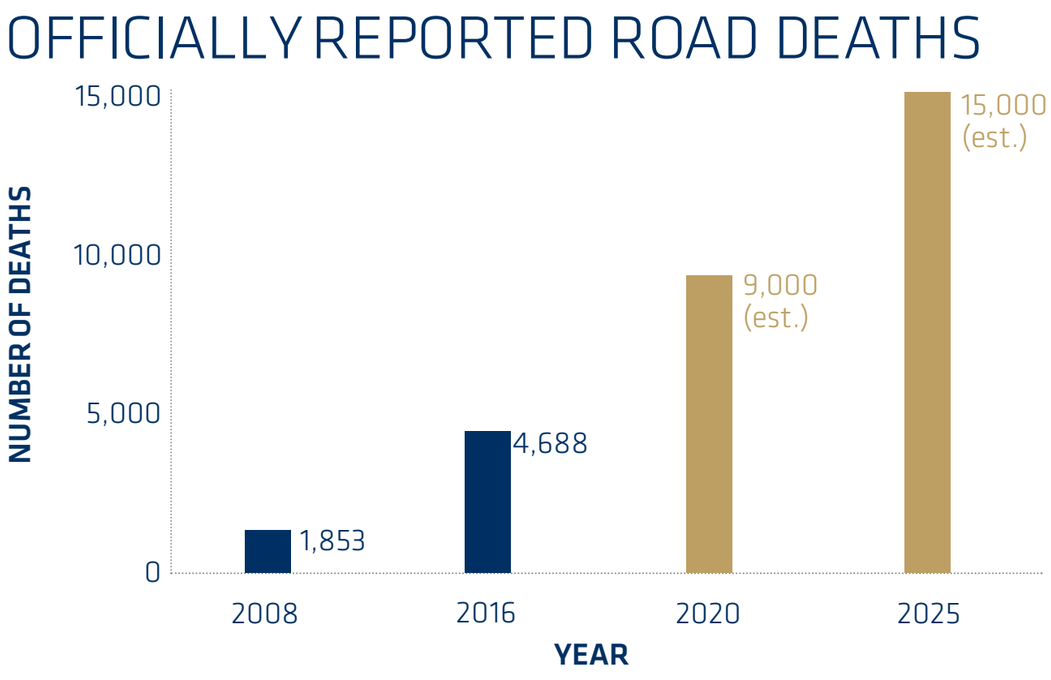
Over recent years, there has been a dramatic increase in the number of road fatalities and injuries in Myanmar. In 2016, there were 4,688 police-reported road fatalities in the country according to the Myanmar Police Force, which was more than double the 1,853 figure reported in 2008. Fatalities are expected to double again by 2020 (ADB, 2016). Similarly, the number of reported road injuries has almost doubled from 12,626 in 2008 to 26,375 in 2016.

In terms of population, the number of people killed on Myanmar roads in 2014 represented 8.4 per 100,000 head of population. By international standards, this fatality rate is not particularly high – especially when compared to many other countries in the immediate region (e.g. Thailand – 36.2, Cambodia - 17.7, Indonesia – 17.6) (WHO, 2015; ADB, 2016). However, for a number of reasons, some doubts have to be expressed here.

Firstly, many of the stakeholders the Panel met with acknowledged that many road crashes, and the resulting fatalities and injuries, are not officially reported in Myanmar due to a variety of reasons. In this regard, the WHO has developed a methodology for estimating the number of road fatalities in countries that takes account of a wide range of factors including potential under-reporting of crashes. Based on this methodology, the WHO estimated that there were actually 10,809 fatalities in Myanmar in 2013 compared to the official figure of 3,612. Based on this estimate, the rate of fatalities per 100,000 population would be 20.3 in Myanmar (WHO, 2015).

The Panel recommends continuing works **to eliminate underreporting in Myanmar,** an integral aspect of a sound data system to monitor road safety progress into the future – and a necessity raised in several other sections of the report. In addition, the Panel recommends **that Myanmar identifies other potential baseline figures for 2016 or 2017 to complement the police reported data. This will be critical** against which to measure progress during the years ahead while the comprehensive data system is developed.

Secondly, a key factor underpinning the rapid increase in road fatalities and injuries in Myanmar is the rapid increase in motorization being experienced by the country. For example, between 2008 and 2014, the number of officially recorded vehicles on Myanmar's roads more than doubled from 2 to 4.6 million (ADB, 2016). If the vehicle fleet continues to expand at this rate, it has been estimated that the number of road fatalities could double by 2020 and triple by 2025 (ADB, 2016). Over and above this, a number of stakeholders suggested to the Panel that there were a large number of unregistered vehicles on Myanmar roads and this problem was increasing.



As is the general case in the ASEAN Region, the riders and passengers of motorized two- and three-wheeled vehicles, bicycle riders and pedestrians represent almost 60% of the road users killed on Myanmar roads (WHO, 2015). While this partly reflects the popularity of these modes of transport, it also highlights the vulnerability of these particular road users to injury due to their unprotected nature.

The available data suggest that the annual costs of road crashes to the Myanmar economy is approximately $800 million, representing 1.5% of the Gross Domestic Product (ADB, 2016). These costs highlight the major economic benefits that can be derived from reducing road crashes. More specifically, it has been estimated that around one-third of the injured patients admitted to hospitals in Myanmar were from road crashes (ADB, 2016). This highlights the ongoing drain that road crashes have on the countries health system, which will be further exacerbated if road crashes continue to climb. These costs highlight that Myanmar's funding of road safety is a sound economic investment which can deliver economic savings, as well as addressing a humanitarian problem.

Current developments in Myanmar and implications for road safety

As noted above, Myanmar is experiencing rapid motorization, which is typically associated with economic growth and increases in population. It is expected that Myanmar's population will grow and that the country will experience a substantial economic growth in the years to come. As a result the number of kilometres travelled on roads will increase, as will traffic volumes, creating the need to expand (and improve) road networks and promote use of safer modes of transport (e.g., railways, buses).

The development of road networks stimulates economic development by reducing costs for transport and by doing so it is expected that expanding and improving road networks and roads will be positive for welfare and wellbeing of populations. From this perspective it is believed that roads and road transportation are drivers for economic and social developments, and reduce poverty.

However, detrimental effects of growing traffic and growing road networks can be observed as well (air pollution, noise pollution, congestion, traffic crashes, etc.) and these effects have negative health and economic effects. Land use policies, transport policies, environmental policies, infrastructure planning, pricing policies and subsidies (for example for public transport), regulations (crashworthiness of vehicles, speed limits, driver education, etc.) could mitigate potential detrimental effects of growing traffic. These policies will affect travel behaviour, route choice, choice of transport mode. For example poor urban public transport operations and high costs of tickets will bring potential consumers of public transport to walk, cycle or buy and use a powered two wheeler. Lack of safe cycle facilities will prevent people from using a bicycling, etc.

Another aspect to take into account is developments of modern technology to make road traffic more efficient, environmentally friendlier and safer. It is not easy to predict how these developments will impact road traffic and road safety in Myanmar. It is fair to say that the influence of Myanmar on the penetration of transport technologies is limited at the moment. However if these technologies become available for low costs, Myanmar might profit from proactively introducing these technologies in appropriate ways. But the Panel believes that it is not realistic to expect that for example autonomous vehicles will hit Myanmar roads soon so it would be unwise not to invest or stop investing in the (safety) quality of Myanmar's road traffic and wait for these vehicles. Current and future road users will benefit in the coming years from road safety investments being made now.

From this it is clear that governmental policies are very much needed to make road traffic safer in Myanmar (reducing mortality rates), understanding that exposure to risk will increase, most probably dramatically, as (motorised) traffic increases. The task ahead in Myanmar is to reduce traffic risks (fatalities and injuries per kilometre travelled) at a faster rate, than the increase of the number of kilometres travelled. For example, if kilometres travelled are increasing by 5% per year, fatality rates (fatalities per kilometre travelled) will have to reduce by more than 5% in order to reach a reduction in the number of people killed: fatality rates times kilometres travelled = fatalities. We know from many countries in the world that even if motorisation and traffic is growing, a reduction of the number of fatalities and serious injuries is possible.

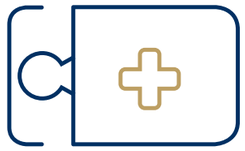
Challenges for road safety management in Myanmar

A wide range of investments, actions, campaigns are available and possible to reduce fatality rates and injury rates. And it is reasonable to state that rate reductions are the result of effective road safety policies and without such policies no positive safety effects are to be expected. Interventions have to be developed and from a wide variety of options the best options have to be chosen. This requires a combination of political will, technical capacity to develop effective and efficient interventions and management to deliver these interventions in a coordinated way.

Technical capacity building is definitely one of the most

1/3 OF PATIENTS

1/3 OF INJURED PATIENTS ADMITTED TO HOSPITALS ARE ESTIMATED TO BE FROM ROAD CRASHES.



#1 KILLER

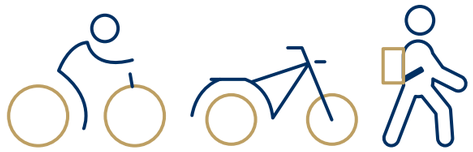
ROAD CRASHES ARE THE NUMBER ONE KILLER OF 15 TO 29 YEAR OLDS.

$800 MILLION

THE ESTIMATED COST BY ADB OF ROAD CRASHES TO THE MYANMAR ECONOMY.

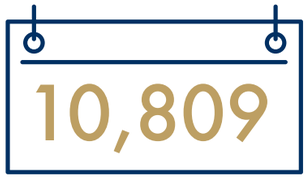
60% OF DEATHS

RIDERS AND PASSENGERS OF MOTORBIKES, BICYCLES AND PEDESTRIANS ACCOUNT FOR ALMOST 60% OF ROAD USERS KILLED IN MYANMAR.



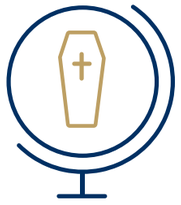
10,809 FATALITIES

ESTIMATED BY WHO IN MYANMAR IN 2013.



90% OF DEATHS

ON THE ROAD ARE ACCOUNTED FOR IN LOW AND MIDDLE INCOME COUNTRIES.



powerful interventions that must be embraced in Myanmar to confront the problems that arise in regards to improving road safety. This empowering intervention has to target in the initial phases Myanmar government and non-government based mid- and high level professionals. The Panel recommends to consider two priorities: one is on **road safety data collection and analyses of patterns** and consequences of road crashes combined with information on risk factors. **Monitoring of progress** is a related key activity to this.

To effectively monitor progress, The Panel recommends that **an integrated data systems approach** be adopted where crash and injury data together with robust measures of crash underreporting that need to be developed, be integrated with driver and vehicle registration data, safety performance indicators, road network data, exposure data, and road safety activity data. As a practical consideration, the Panel recommends to begin the process by strengthening the police crash data reporting system, providing training to police and other officers on this issue, ensuring sufficient software and hardware are available to them, strengthening the other data systems, facilitating data sharing across departments, establish a twinning project with another country to build Myanmar's capacity on data gathering, management and analysis and last, but not least, to engage in Regional observatory developments currently unfolding.

The Panel proposes as a second priority to focus on the quick **adoption of laws, regulations, reforms and other legislative measures** with known effectiveness. Capacity building must be a priority in other professional sectors too (see specific section on this topic), for example traffic police officers responsible for monitoring compliance with the regulations, road development and maintenance technicians who are to seek and implement the daily improvements on the road network, or emergency-related workers assisting nurses and physicians in taking care of injured individuals. A train-the-trainers model can be developed in order to speed up dissemination of relevant knowledge to Myanmar road safety professionals.

Political will to improve road safety is well expressed recently in Myanmar and this political will is a strong basis. But, by definition, improving road safety has to compete with other important issues in Myanmar. Road traffic casualty reduction has to be balanced against other (pressing) challenges in Myanmar. The Panel recommends that **the National Road Safety Council (with representatives from different tiers of government with responsibilities on traffic, roads and road safety) will address how to balance road safety against other relevant issues** (to mention only one: reducing congestion in cities).

The Panel understand that the Council has a coordinating role. Accordingly, the **composition of the Council could be reviewed** in order to incorporate representatives from other (regional and local) government entities (at least some city-based governments) as well as the private sector and the non-government organizations with an interest to invest in safe mobility.

The Panel has been informed about the current Road Safety Action Plan (2014). The main intervention categories (twelve are mentioned) deserve support and the Panel endorses all effective recommendations and urges for the fastest possible implementations. The Panel invites Myanmar authorities to study the Panel's recommendations and to decide how to include these recommendations in upcoming Strategies and Action Plans. The Panel welcomes if the Council agrees upon **concrete (annual or bi-annual) action plans**, and invites members of the Council to **report on the progress made** in implementing concrete actions.

In addition to the existing bodies, there is a **need for a unit that monitors progress and assesses programme implementation, its effectiveness and its efficiency**. The Panel has no view yet where this unit can sit best, but the Panel's view is that this unit should be independently of those who carry responsibilities for policy development and implementation of interventions.

The Panel is aware of the strong emphasis that is laid out in the "World Report on Road Traffic Injury Prevention" (Peden et al., 2004) and in the Global Status Reports (published regularly by the World Health Organization), on one component of road safety management and that is identifying a lead agency to guide the national road traffic safety efforts in a country. It is the first recommendation of the World report. Discussions on how to organise a 'Lead Agency on road safety' took place in many countries in the world in the last decade. And the Panel's view is that not one-size-fits-all model is available. For that reason, the Panel will not deliver a strong view on this, but we recommend the Government of Myanmar to develop **the option of a Lead Agency for Road Safety.**

Global developments in road safety and implications for Myanmar

As road safety has become a serious concern to the world, which takes more than 3500 lives a day, United Nations (UN) General Assembly (GA) resolution 64/2551 of March 2010 has proclaimed 2011 – 2020 the Decade of Action (DOA) for road safety. At present, low- and middle-income countries (LMIC) account for over 90% of total road traffic deaths. It is forecasted that road injury would be the seventh leading cause of death by 2030, and it is already the number one cause of death for

people between 15 and 29. The DOA aims to stabilise the increasing trend of then to further reduce the forecasted global road fatalities by 2020.

In May 2016 the United Nations General Assembly adopted the Resolution A/RES/70/260, where the member states committed to sustainable development in respective countries, the region and the world. This resolution followed on from several earlier resolutions and declarations, such as the Brasilia Declaration (2015) and ASEAN Declarations. A series of Sustainable Development Goals (SDG) were adopted, and road safety is specifically addressed under UN SDG 3 (Ensure healthy lives and promote well-being for all at all ages) and 11 (Make cities and human settlements inclusive, safe, resilient and sustainable) (UN, undated). Under such, a target of halving the number of death and serious injury by 2020 was set, and by 2030 provide access for all especially those in vulnerable situation, to safe, affordable, accessible and sustainable transport systems.

Aligning with UN Decade of Action 2011-2020 numerous strategies have developed at regional and at national levels. The Panel recommends that Myanmar could **study several of these strategies and good practice manuals** in order to identify relevant opportunities applicable to the country. This is an activity next to implementing actions that have been announced in the Road Safety Action Plan (2014). By learning from other countries, Myanmar will speed up positive developments and perform better and make more progress in a shorter period of time than these countries did in the past. But, Myanmar cannot simply copy effective strategies from elsewhere, because they generally need to be tailored to the local context.

For further information the Panel can refer to the Global Status Report on Road Safety, regularly published by the World Health Organization (2015), Annual Reports published by the International Road Traffic Safety Data and Analysis Group (ITF, 2016), and reports from many countries in the world. ASEAN member countries are of no exception. More recently, ASEAN Regional Road Safety Strategy was officially adopted on 6 November 2015 at the 21st ASEAN Transport Ministers Meeting. Subsequently, ASEAN declaration of Road Transport Strategy was adopted by all ten ASEAN Transport Ministers. The strategy raised the challenges amongst all the ASEAN countries and also detailed out the recommendations, respectively. Through the Declaration, ASEAN recognises road safety challenges and shown her commitment in improving road safety to adhere to the UN Decade of Action and Sustainable Development Goals. The ASEAN Regional Road Safety Strategy has detailed out specific aspects that required actions. They are

- Harmonisation of standards, road rules and legislation,
- Capacity building,
- Knowledge development through research and evaluation, and
- Monitoring and reporting progress.

PANEL'S RECOMMENDATIONS FOR INTERVENTIONS

SAFE SYSTEM APPROACH

Important questions to answer are: why serious crashes occur and how to prevent them in the most effective way? When establishing the cause of a crash, the report form filled out by the police is considered an important source of information. However it is valuable to understand that the main function of the police is to ascertain whether rules or regulations have been violated by road users and not so much to establish the full range of factors contributing to the crash. And indeed, a lot of research tells us that, in almost all crashes, human errors and violations can be seen as a prevalent factor in up to 90-95% of the crashes. Practice also teaches us that the police often stick to one cause, while in many cases a combination of circumstances is involved; considering only one single cause is a simplification of reality. As a result while police crash data is an important consideration in developing road safety programmes, other factors also need to be taken into account when determining the best way to prevent and/or to reduce the severity of road crashes.

This leads us to the second question, which deals with how to best prevent crashes. Historically, there has been a tendency in many countries to adopt a 'blame the driver' approach, which leads to an over-reliance on behavioural interventions. In contrast, a more effective approach is to eliminate, or at least reduce risky traffic conditions and make road safety less dependent on how well the road user 'performs'. In the case of a crash, we don't ask who is to blame, but instead we ask "how could this crash have occurred and how to manage crash causes?" This approach fits well with our understanding of the majority of crashes, in which the ordinary behaviour of ordinary people is involved instead of criminal behaviour by a small number of offenders. What we expect from designers and operators is a road traffic system in which conditions are created in such a way that those ordinary road users, who unintentionally commit errors, will not be punished for those errors with serious injury or death. Trying to create safe conditions is a proactive approach aimed at eliminating risky traffic conditions and this is a key element of the Safe System approach.

Almost all international road safety experts recognise the importance of tackling road safety challenges from a Safe System approach. A Safe System does not see deaths and injuries as the inevitable price to pay for (motorised) road transport. The International Transport Forum has recently published an award winning report (ITF, 2016), namely, "Zero Road Deaths and Serious Injuries: Leading a Paradigm Shift to a Safe System", and it consists of the details of the philosophy, the principles, and implementation approach and success stories of Safe System Approach.

The report from the International Transport Forum identifies four principles underpinning Safe System, and they are:

01. People make mistakes that can lead to road crashes.

02. The human body has a limited physical ability to tolerate crash forces before harm occurs.

03. A shared responsibility exists amongst those who design, build, manage and use roads and vehicles and provide post-crash care to prevent crashes resulting in serious injury or death.

04. All parts of the system must be strengthened to multiply their effects; and if one of the part fails, road users are still protected.

Thus the design and operation of the road transport system should guide the road user to safe behaviour and mitigate the consequences of common human errors. The Safe System approach can be applied in all countries of the world because the principles are universal. The World Report on Road Traffic Injury Prevention (Peden et al., 2004) suggests that Safe System interventions should be based on a local analysis of road safety problems.

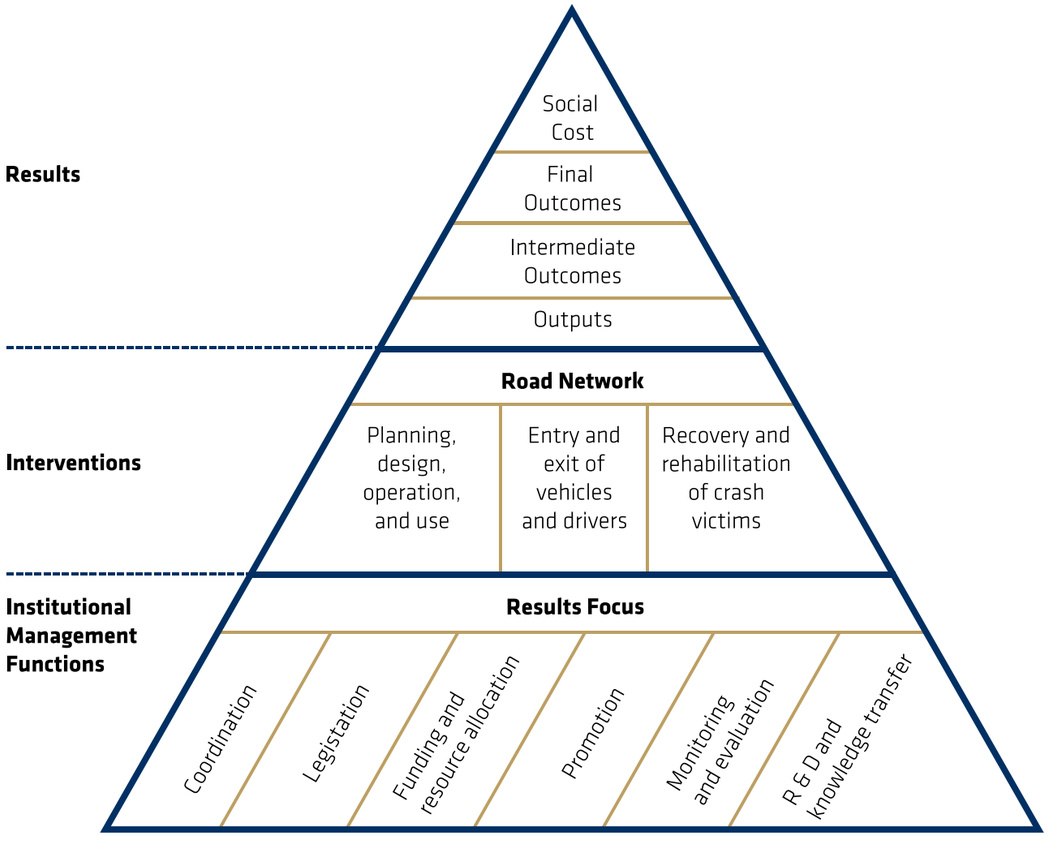
The Panel recommends that Myanmar **adopt the Safe System approach as a starting point for further detailing the road safety strategy and to develop interventions derived from this approach** and, more importantly, fit well in the development stage of Myanmar's road safety developments and in the culture of the country. For example, The Expert Panel also recommends that **a road safety expert** be employed to determine how Myanmar can most effectively adopt Safe System principles in its road safety delivery work.

ROAD SAFETY MANAGEMENT AND CAPACITY BUILDING

The importance of multi-sectorial and multi-disciplinary partnerships has been proven to yield good results. To manage cross-sector and cross-discipline challenges (as is a necessity when trying to improve road safety) the management structure should accommodate three distinct elements: input (policy interventions), process (how to deliver policy interventions) and outputs (results of implemented interventions in terms of less people killed and injured). A widely cited publication presents the state of the art thinking on management and capacity building in road safety (Bliss and Breen, 2009). This thinking is well summarized in the following pyramid:

Coordination concerns the orchestration and alignment of the interventions, and Bliss and Breen suggest addressing four key dimensions:

- horizontally across central government
- vertically from central to regional and local levels of government
- specific delivery partnerships between government, non-government and business at the central, regional and local level
- parliamentary relations at central, regional and local levels



Source: Bliss and Breen, building on the frameworks of lead Transport Safety Authority, 2000: Wegman 2001: Koornstra et al. 2002: Bliss 2004

Figure1. Road Safety management system (Bliss and Breen, 2004)

The Panel had learnt on the creation of the National Road Safety Council (NRSC) to deliver national road safety strategies as well as the designation of the Road Transport Administration Department (RTAD) to form together with the Myanmar Police Force a leadership on road safety management. The NRSC includes a large number of members, mainly coming from national Ministries. Furthermore, a Road Safety Task Force was established recently. The Chair of the Taskforce is the Union Minister for MOTC and it is composed of 12 people. The Director General of the RTAD is the Secretary to the Taskforce, while the Department provides the Secretariat Office. The Taskforce submits monthly reports on road safety activities to the Chair of the National Road Safety Council. This seems to present a robust management structure. However, the Panel has the impression that not all seven management functions (as proposed by Bliss and Breen) are already well covered in the existing management structure: results focus, coordination, legislation, funding and resource allocation, promotion, monitoring and evaluation, R&D and knowledge transfer.

The government-based unit which performs these seven functions is usually referred to as a lead agency which will be the term used in this report (Bliss and Breen, 2004). However, the name used for this body in Myanmar should reflect local protocols.

It is extremely difficult for a Council of people with other roles to manage these functions, which require a complement of full time, dedicated, expert road safety staff. The development of such staff is a key deliverable of capacity building.

Because the Panel supports the management of a strong 'ground layer' as a prerequisite for effective road safety policies, as proposed by Bliss and Breen, the Panel feels the need to advocate for the following recommendations:

- **Development of a Lead Agency for Road Safety** based on analysis of the present road safety management structure and needs in Myanmar using the model as presented by Bliss and Breen. The Lead Agency should work in partnership with the NRSC;
- **Broadening of the NRSC** and include regional and local representatives and non-state government representatives;
- Inviting the NRSC to make transparent **how to reach the quantitative targets set in the Myanmar Road Safety Action Plan** (2014);
- **Strengthening of research capacity and systematic and impartial measurements of progress** in the field of road safety towards the identified outcome targets set by the NRSC, including establishing an independent monitoring body and support for university-based road safety research.

Even though the commitment to reduce road fatalities and injuries among high level officials in Myanmar was clear to the Panel, it is also clear that this commitment has, for synergy reasons, to be aligned with other high level political decisions in the country which will bear an impact on the specific interventions to improve road safety. For example, there needs to be an understanding of energy policy (e.g., fuel dependency), the communications/technology and urban planning policies (i.e., which drives a certain amount mobility needs), or the road traffic vs. other means of transport policies (e.g., air, train) for the country for the decades to come.

These decisions are crucial at this stage because so many changes are occurring around the world in regards to transportation issues (e.g., autonomous driving, internet-based education or health care provision, concerns with the contributions of transport to emissions, fuel consumption, and related health issues). The modal shift to public transport and the management of travel speed are mechanisms for addressing multiple issues including, improving safety, fuel economy, climate change, economic and social inclusion, emissions, and health effects of transport (Sakashita & Job, 2016). Furthermore, so many large investment decisions need to be made by the Myanmar government. **The Panel recommends exploring how to align road safety policies with other important policy fields: energy, environment, climate change, communications/technology, urban planning, health etc.**

The Panel wishes to draw the attention to another international development that might be of interest for Myanmar. An international standard was published to provide guidance on how to operate an effective, performance-driven and sustainable management system in road safety, namely, ISO39001 - International Standard on Road Traffic Safety Management System. The ISO39001 is generic for any organisation from government department to private entity to adopt it. Compliance to the ISO39001 can be further ensured through the well-established and accepted ISO certification. The Panel recommends that the **Myanmar Government considers adopting ISO39001 in relevant departments and agencies** as a longer term future step noting that the recommendations in this report contribute towards that ultimate goal.

Two other issues are of critical importance in the field of road safety management: funding (of road safety interventions) and capacity building. The Panel considers funding to be of such importance that we decided to use a specific section in this report for that topic. The other critical issue is capacity building.

The Panel has the view that a pressing issue under management that needs to be pointed out is the need for **development of a comprehensive capacity building plan** that would allow intermediate-rank officials of all entities involved to fully appreciate the principles underlying road safety interventions, **develop the data systems** necessary to characterize needs and progress, and the appropriateness of the interventions available to choose from.

Throughout this report this issue of capacity building has been raised several times and a lack of capacity seems to be an issue in many areas: management of road safety, data systems, police enforcement, road design, etc. The Panel recommends **Myanmar to increase international cooperation on capacity building and encourages the urgent utilisation of several of the existing training programmes** (for example, those delivered by universities, WHO, iRAP, ASEAN, GRSP, etc.) in a structured manner to reach as many of the national, regional and city-level decision and policy makers as soon as possible.

It is important that capacity-building initiatives are targeted at professionals working across all five of the road safety pillars (Road Safety Management, Safer Roads and Mobility, Safer Vehicles, Safer Road Users, and Post-Crash Response) and informed by the principles of the Safe System Approach. To promote long-term sustainability, a mix of capacity-building strategies are required including:

- Facilitating key personnel to attend international training programmes;
- Developing and delivering dedicated training programmes tailored to the needs of professionals in Myanmar;
- Utilising train-the-trainer methodologies to promote the rapid dissemination of new practices and processes;
- Developing other cost effective approaches for the widespread education of professionals, such as the use of online programmes; and
- Encouraging Myanmar universities to develop and deliver road safety education programmes and provide training opportunities to road safety researchers.

SAFER ROADS

The Safer Road and Mobility pillar stresses the importance of the road authorities and operators to understand recognise and take ownership on their significant role in providing safer road from planning, design, construct to operate the road network. Initiatives are made to ensure all road users are as part of sustainable urban planning, transport demand management and land-use management. Activities were identified for safe operation, maintenance and improvement of existing road infrastructure and network.

As a starting point for recommendations on Making Roads Safe we take a conclusion from the recent ADB-report Myanmar Transport Sector Policy Note: Road Safety, (ADB, 2016), page 2:

"Road infrastructure is generally unsafe. Road alignments are often dangerous, with a general lack of protection for pedestrians and two- or three-wheelers. These hard-to-fix problems are becoming increasingly critical as more powerful four-wheeled vehicles are becoming more prevalent. Safety equipment is used sporadically, and road markings are inadequate. There are no safety guidelines or requirements for road works."

We believe that a key feature for improving traffic safety in Myanmar will be investing in the safety quality of roads, streets, and footpaths in Myanmar. A comprehensive approach is needed to make this effective: good design manuals, good designers, good procedures that include road safety in decision making, good implementation of good designs.

The rationale behind this statement is twofold. First of all, the Panel expects a substantial amount of investments in Myanmar's road infrastructure the coming years as a response to the expected growth in (motorized) mobility. The second reason is that we know from international evidence that infrastructure investments can reduce risks, with casualty crash reductions up to 50 - 75% are possible (transferring a four leg intersection to a well-designed and functioning roundabout for example). A key element of successful road safety delivery through infrastructure is the management of vehicle speeds.

An important decision to be made in Myanmar is that in all road investments, whether it is designing and building a new road and roadsides, or retrofitting an existing road or street, road safety has to be taken into account explicitly. In other words: road safety should be an explicit criterion when making decisions. The Panel suggests not to compromise safety in the interest of transport efficiency or investment costs. The life-cycle of investments will be more than 25 years and not investing properly can be seen as "penny-wise, pound foolish" from a safety perspective.

It is the Panel's view that a comprehensive approach is needed to bring safe designs and safe engineering interventions to effectively reduce risks on the roads and streets in Myanmar. The Panel trusts that this will result in safer networks, but also will eliminate high risk sites. This approach has the potential to make road traffic considerably safer, especially for vulnerable road users (almost 60% of all fatalities and injuries are vulnerable road users). Speed management is a key issue in this approach in case vulnerable road users and motorized vehicles use the same space.

A comprehensive approach includes a variety of steps and actions:

- **Developing modern design guidelines** based on the Safe System principles to be used in urban planning, traffic management, speed management, and road design;
- **Capacity building of planners, designers and decision makers** to use these new design manuals;
- **Creating conditions for translating Safe System thinking into daily practice**, for example by developing schemes based on a functional classification of roads and streets;
- **Develop plans to retrofit existing roads, streets and corridors and carry out some demonstration projects to learn from doing;**
- **Create a research capacity in Myanmar to evaluate safety effects of interventions,** to learn from that and, if needed to adapt designs and bring results back to design manuals;
- **Develop tools for road authorities to include road safety in decision making**, dependent on different life cycle stages of infrastructure. See for example a report published by ITF on Road Infrastructure Safety Management (2015).

The World Report on Road Traffic Injury Prevention (Peden et al., 2004) starts its chapter on Interventions stating that the provision of safe, sustainable and affordable means of travel is a key in the planning and design of road traffic systems. From a safety perspective three recommendations are made which the Panel believes apply perfectly in Myanmar:

- Reducing motor vehicle traffic (by efficient land use, by carrying out safety impact assessments of transport and land use plans, by providing shorter and safer routes and by trip reduction measures);
- Encouraging use of safer modes of travel, more specifically by implementing strategies to increase use of safe public transport;
- Minimizing exposure to high risk-scenarios, for example by preventing vulnerable road users to be exposed to high speed motorized traffic.

The Panel recommends including **a special focus on big cities such as Yangon and Mandalay** in attempts to reduce the number of people killed and injured in road traffic. Land-use planning and investments in (road) investments will impact road safety and through several demonstration projects it is proposed to explore how road safety can be impacted positively. But the Panel also proposes to runs several **demonstration projects in villages,** especially in case a rural road hits a village and fast moving vehicles are meeting with activities of communities in villages.

SAFER VEHICLES

Modern vehicles are much safer than vehicles produced earlier. It is beyond doubts that mandatory vehicle standards contributed to increase the safety performance of motorized vehicles. Focus has been on the improvements for occupants' protection and crashworthiness (passive safety). Crash avoidance technologies (active safety) get more attention these days, also in the interests of protecting vulnerable road users. In recent years, New Car Assessment Programmes (NCAP) contributed to speed up vehicle related safety improvements. Impressive results are reported from high-income countries.

Once a proven safety technology has been matured, there is no reason for it not to be deployed into all vehicles, especially new vehicles, in every part of the world. In an adopted resolution of the General Assembly of the United Nations in 2016, all Member States are invited to adopt policies and measures to implement United Nations vehicle safety regulations (or equivalent national standards) to ensure that all new motor vehicles, meet applicable minimum vehicle regulations for occupant and other road user protection. Policies to stimulate faster scrapping of older vehicles could be used to accelerate the modernization of the vehicle fleet and the Panel recommends to further study this option in Myanmar.

In line with an agreement reached in the ASEAN Consultative Committee on Standards and Quality (ACCSQ) Automotive Product Working Group, the Panel recommends Myanmar to adopt UN Regulations on Road Vehicles, which were developed under the World Forum for the Harmonization of Vehicle Regulations (WP29) of UNECE. Vehicle regulator of respective country may consider adopting the implementation of the 1958 and/or 1998 Agreements under the WP29 of UNECE, which detail out the certification process and mutual recognition of such from signatory countries. Mandating the use and/or fitment of any passive or active safety equipment does not warrant a positive result until the safety performance and specification of such equipment is being regulated and effective enforced.

ASEAN countries have agreed to utilise UN Regulations as the base to form Mutual Recognition Agreement amongst member countries. Nineteen UN Regulations have been put in place for the first phase. Another thirty two UN Regulations have been discussed to be incorporated in a 2nd phase of implementation. The Panel recommends Myanmar **to consider UN Regulations 14 & 16 (on seatbelt), 94 & 95 (on crash protection), and 22 (on helmets for motorized two wheelers) as the start.**

In view of the present situation the Panel **recommends the establishment of a transparent, accountable and traceable Type Approval Process** with quick adoption of critical safety UN Regulations on Road Vehicles through certification process under UNECE WP29 1958 Geneva Agreement. Myanmar can learn from other countries, such as Malaysia, how to implement this.

The Panel recommends **forming a Task Force** that reports directly to the Minister of Transport. The Task Force should initiate the buying in of legislators, and follow-up and follow through the development of legislation framework. Meanwhile, the Task Force should start planning and working with the appropriate authority and ministry to get the implementing agencies ready. Especially to run the function of the Approving Authority and the Competent Authority for Myanmar, with respect to Type Approval of vehicle and its component. Ensure Transparency, Accountability and Traceability are well embedded in the implementation framework from legislation till the implementation agencies.

For Myanmar the development and the use of vehicle standards, the establishment of an effective implementation framework, legislation and appropriate implementation agencies become critical. Ideally, this would consider the broad use of type approval mechanism and the functions of competent authority for both type approvals with UN Regulations and certification of Standards in Myanmar. It is important to note that the number of technical personnel required in the necessary authorities, would be small.

The Panel understands that the Parliament has approved the budget to expand the vehicle inspection capability in Myanmar by supporting the construction of six inspection centers throughout the country. A specific request was made to the Panel seeking advice on the best way to implement Periodic Technical Inspection (PTI) in Myanmar. The main objective of the PTI is to minimize, if not eliminate, the use of any vehicle which is not roadworthy on public roads. At present, the PTI has been carried out by the RTAD, without appropriate objective method and equipment with little supporting system. Thus, the initiative to transform the PTI by the Government of Myanmar is welcomed. The Panel would like to recommend that a comprehensive transformation program for PTI in Myanmar be developed, with a detailed study undertaken into the sustainability of the operations to ensure an appropriate, if not maximized, return of investment to Myanmar. In order to start operating quality PTI nationwide for all vehicles, a huge upfront investment, and substantial operation and maintenance cost need to be covered.

Furthermore, in light of the quality of vehicle maintenance and repair services at present, the Panel recommends the Government of Myanmar **to consider transforming the present Periodic Technical Inspection into a sustainable, transparent and traceable operation.** Public Private Partnership and Private Funded Initiatives with concession contracts could be considered. It is important that objective performance indicators, including service satisfactory level and integrity level of the operation have to be incorporated under the concession, substantiate with effective monitoring and appropriate performance rewards and penalties. To make it viable and bring the best possible benefit in the shortest time, the Panel recommends **that the PTI transformation focus on commercial vehicles in the early phase of implementation,** to yield significant results and returns. Meanwhile, for private vehicles, including both cars and motorcycles, the existing practice is to be continued. They are to be included at the latter stage of the PTI transformation programme.

In relation to the establishment of a transparent, accountable and traceable Type Approval Process with quick adoption of critical safety UN Regulations on road vehicles and protective equipment, the Panel suggests that a phased approach is adopted with early phase and long term phases.

Early Phase of Implementation

In the early implementation phase, as earlier indicated, there needs to be focus on a couple of high priority UN Regulations. All new types of vehicle and related protective equipment shall be type approved by the **Approval Authority**, surveillance by the **Competent Authority** in domestic market as well as random audit on the certification origins and its process for a particular model or product. The competency of all relevant authorities and stakeholders are to be further developed while implementing the Type Approval. The Task Force is recommended to perform quality check and audit to come out recommendations for continual improvement and report back to respective authorities and Minister.

The Task Force is recommended to start looking into possible mechanisms under the established framework to approve newly imported second hand vehicles.

The recommended implementation approach would mainly involve small operation expenditure to the government of Myanmar. It can be easily sustained by imposing appropriate and nominal fees during application for approval and / or small percentage from the collection of road tax. The early implementation stage may take up to 5 years to make the entire process matured and starts yielding positive impact.

Long Term Implementation

Myanmar may consider **becoming signatory member to the UNECE WP29 1958 Agreement**, especially when Myanmar has a significant automotive industry, and expanding exports is a key intention.

The Task Force would no longer be required. The role to periodic audit and assess on the implementation by Approval Authority and Competent Authority can be taken over by Ministry or any other entrusted independent body.

Scientific research is encouraged to study and assess the return of investment by enforcing any other UN Regulations.

SAFER ROAD USER BEHAVIOUR

Evidence from around the world confirms that the most effective way to encourage safer behaviour among road users is to have strong, evidence-based laws in place targeting the main road safety risk factors and for those laws to be effectively enforced by the police.

The key risk factors include those behaviours which are known to either:

- Increase the likelihood of a crash occurring (such as drink driving, speeding, distracted driving); or
- Increase the severity of injury in the event of a crash (such not wearing a helmet, not wearing a seat belt or child restraint).

The enforcement of road laws needs to be evidence-based and data-driven, with an emphasis on approaches demonstrated to deter illegal road user behaviour such as highly visible, random operations. In addition, appropriate penalties and sanctions need to be in place to deter offending among the general population, as well as minimize repeat offending among traffic offenders (Bates et al., 2012).

Given that sanctions such as licence disqualification have been shown to be a very effective deterrent to illegal behaviour (if properly enforced), it is critical to ensure that a comprehensive driver licensing system is in place. Along with a comprehensive vehicle registration system, this will also facilitate the use of automated enforcement methods, such as speed cameras. Lastly, it is important that public education programmes are used to explain to the community the risks associated with certain behaviours and to highlight the enforcement activity being undertaken by the police. This will not only reinforce the deterrent effect of the police enforcement, but hopefully contribute to longer-term improvements in community attitudes and values to safe road use.

Until recently, the scope of the road safety laws in place in Myanmar was limited and the enforcement of these laws was not strong (WHO, 2015). These laws included:

- A national speed limit law featuring maximum speed limits on urban roads (48 km/h) and rural roads (80 km/h);
- A BAC limit of .08 g/dl which applies to all drivers; and
- A law requiring motorcycle riders and their passengers to wear a helmet (although it does not refer to a helmet standard) (WHO, 2015).

More recently, a law requiring the wearing of seat belts (in both front and back seating positions) has been introduced, while other laws are in the process of being enacted, such as requiring motorcycles to be sold with two helmets and banning the use of mobile phones while driving. Advice from the Myanmar Ministry of Transport & Communications indicates that other measures have been put in place to support these laws including the adoption of a two-month education period prior to the enforcement of the seat belt law and the enactment of restrictions on depicting the non-use of seat belts in movies, videos and advertisements.

While these developments are encouraging and supported by the Panel, more needs to be done to both strengthen existing road safety laws (such as lowering the general alcohol limit to 0.05) and introduce new laws targeting key risk factors (such as the requirement for children to be seated in appropriate restraints) .

The data regarding the prevalence of key risk factors in Myanmar is also very limited. For example, no reliable data is available regarding the percentage of road fatalities attributable to alcohol (WHO, 2015). In the case of motorcycle helmet wearing, a 2011 study conducted by Yangon Hospital suggested that around only 50% of riders wore a helmet (WHO, 2015). A more recent 2016 study conducted across eight observation sites confirmed that just over half (51.6%) of riders and passengers wore a helmet. However, helmet wearing varied considerably across the observation sites and was lower among passengers and in rural areas (Siebert et al, 2016).

During the Panel's visits, numerous stakeholders suggested that the enforcement of key road safety risk factors was currently quite limited in Myanmar. This was confirmed by discussions the Panel had with the Myanmar Police, who reported that their efforts were hampered by serious under-staffing and under-resourcing. For example, it was reported that there is currently about one traffic police officer for every 2500 commuters in Yangon. In addition, the police throughout the country have very limited equipment for conducting breath testing and detecting speed offences. These traffic policing challenges are exacerbated, particularly in Yangon, by the widespread use of traffic police to undertake traffic control activities at busy intersections (because automated traffic management systems are not in place). Other factors reducing the effectiveness of road policing efforts include the reportedly high rates of unlicensed driving and the use of unregistered vehicles in different parts of the country. This makes it difficult to utilize automated enforcement strategies and apply penalties such as licence loss and demerit points schemes.

Lastly, there is a need for the Myanmar Government to develop effective driver training and licensing processes to manage the many new drivers and motorcycle riders coming into the system each year. Efforts in this area need to be guided by the available international evidence, because some approaches to driver training (such as

an over-reliance on advanced skills training) have been found to be ineffective, at best, and potentially harmful at worst. In contrast, there is good evidence for the use of graduated driver licensing approaches, particularly for new drivers.

Based on the findings of the Panel, there is an urgent need to:

- **Strengthen existing road laws to make them more comprehensive** (e.g. to include the use of child restraints) and evidence based (such as reducing the BAC limit to .05 for general drivers and .02 for novice drivers);
- **Strengthen road policing efforts** by: i) shifting the focus from traffic management to the enforcement of key risk factors; ii) providing additional resources and equipment for the enforcement of these risk factors; and iii) enhancing the capability of police to use evidence-based and data-driven approaches;
- Strengthen enforcement with a **special focus enforcement on: safety belts, motorcycle crash helmets and drinking and driving**
- **Strengthen the deterrent effect of traffic offence penalties and sanctions** through the adoption of licence disqualification for serious offences, graduated penalties for repeat offending, and a demerit point scheme for less serious offences;
- **Strengthen the integrity of the driver licensing and vehicle registration schemes** to facilitate the better monitoring of drivers and the application of penalties to offenders;
- Reinforce the general deterrent effects of enhanced laws and their enforcement by **conducting periodic, well-designed public education campaigns; and**
- Actively promote through society (including, but not exclusive of children) **widespread educational initiatives** so as to alert the public to the existing risks, the need to protect themselves appropriately to reduce those risks as the rationale for the legislative changes, and how enforcement will be increased to help accelerate behavioural changes (awareness raising and influencing acceptance of road safety interventions).

POST-CRASH RESPONSE

As widely acknowledged, preventing injuries from occurring should be the main objective of a road safety strategy and action plans. But even with the best plan under implementation, it will take some time where crashes will continue to occur (even if in smaller quantities). When all other interventions fail and a crash occurs and there are victims in that crash, attention must be given to prompt and efficient treatment of those victims with the target to both avoiding death as well as to expedite recovery.

No data for Myanmar were made available to the Panel concerning how many of the victims die at the site of a road crash, and the current state of emergency and non-emergency health care. The Panel got the impression of a rather fragmented and under equipped situation (both in equipment and personnel). It is worthy to point out that current life expectancy in Myanmar does not reach 67 years, and road traffic injuries are the sixth leading cause of premature death, which is only to reflect the pressing needs on the health sector.

Any efforts to improve post-crash response in Myanmar are linked to the development of a solid health care provider network to include crash identification, ambulance transport, and emergency, ward and rehabilitation treatments that can reach the whole of the country. It is without saying that prioritization on its development should focus on the areas where most serious crashes occur, which at present time implies metropolitan areas. An ambitious programme can only be developed in accordance to a broader health sector strategic plan of which the Panel only learnt through emergency department experts.

As a general rule, elements from a post-crash care system will include a prompt communication system to inform on the occurrence of the crash (and ideally of some basic characteristics of it), a prompt response to the system allowing for deployment on site of basic care and a transportation means, and the transfer of injured for assessment and treatment in health care facilities – ranging from the acute phase to a rehabilitation phase (WHO, 2006).

Well considered and promising efforts are currently underway (and under evaluation) for the whole health care sector in Myanmar. There is an ongoing study in the Nay Pyi Taw-Yangon expressway to improve trauma care for road crash victims. This study includes a number of ambulances placed equidistant along the road ready to be called in to assist a crash. However, as explained by the emergency medicine experts the Panel met, the problem is large and complex, first in relation to the communications system. Even though they are working towards the implementation of a unique emergency number where to call, during our drive along the Nay Pyi Taw highway we observed other numbers posted, which may be a source of confusion or evidence to the fragmentation of the system.

Second, in relation to the ambulance system we were informed on the difficulties to get sufficiently educated personnel to work on them (either as drivers or basic care takers –hence the justification for an ongoing training programme which is now under piloting.

Finally, even if communication and transportation were solved, the emergency department care situation shows big gaps in the number of emergency wards to assist the Myanmar population, not along the subpopulation afflicted with a car crash requiring trauma and surgery emergency care. In this area, capacity building in fundamental too –both in regards to equipment as well as in personnel. Capacity building that must be integrated into the health care system at large and that requires of some time to develop as the training is more complex than average.

Interestingly, it has only been recently that the law was amended to allow for bystanders' assistance in crashes. This gives a unique opportunity for massive educational campaigns to promote what to do when involved/witness to a crash.

It is important to include transportation-related care in all health care-related provisions that the government may undertake in the planning of the health care sector in the country in the coming years. Benefits to the care of crash victims will undoubtedly benefit other accident victims (e.g., labour-related) and other chronic conditions undergoing emergency situations.

To summarize, for the time being and while broader longer-term health care sector reforms are agreed upon and implemented, the Panel recommendation when it comes to post crash care would relate to:

- **Consolidating of one unique emergency number** where to call into to notify crashes (and possibly other conditions);
- **Educating the Myanmar population on what to do when involved/witness to a crash** to change attitudes with respect to previous prohibition on assistance as well as to consolidate knowledge on what to do;
- **Organising basic training on how to mobilize patients into vehicle for transportation to health care post** – both for novice ambulance drivers as well as to the general population;
- **Identifying crash victims in health surveillance systems** to allow for adequate characterization of number and types of injured.

CITIES AND VILLAGES: CYCLING, PUBLIC TRANSPORT, MOTORCYCLING

The United Nations Sustainable Development Goals (SDGs), which have been adopted in 2016, identified one SDG on cities and communities. Under the title "Make cities and human settlements inclusive, safe, resilient and sustainable" a list of ten targets are agreed upon. One of them deals with transport and includes road safety: "By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons" (UN, undated).

From this perspective it makes sense to address road safety in urban settings from a wider perspective than just road safety. This is even more of relevance in growing cities in which more people move (passenger car, motorcycle, cycle, pedestrian, public transport) and more goods are transported (trucks) while space available for traffic is not growing at the same pace. This will result in congestion and relieving cities from congestion is a high political priority in many cities in the world. However, space for traffic is limited and aspects such as health, the environment and liveability are important criteria when designing solutions. For road safety, managing driving speeds of motorized vehicles is of the utmost priority because vulnerable road users such as pedestrians and cyclists are very frequent users of public space. And speed management is a cornerstone of the Safe System approach (ITF, 2016).

Under "Safer Roads" the Panel recommends to carry out demonstration projects by retro-fitting existing roads. As an example, we propose to carry out projects in villages around speed management of traffic using the (main) road through the village. Physical speed reducing measures (e.g. gateways) and community engagement are key components of such projects. Local data collection can be used to assess the (anticipated positive) road safety effects

The Yangon Chief Minister invited the Panel to become engaged in the process of consolidating the existing transport plans for the city of Yangon into a Yangon City Masterplan and to make sure that road safety is appropriate addressed. The Panel will respond to this request and include answers to their questions regarding safe cycling, public transport and motorized two wheelers.

Cycling

We can easily list many reasons why cycling is good, for individuals and for society and communities, especially in cities and in villages. The advantages are numerous as stated in a report named "Cycling Health and Safety" (ITF, 2013): cyclists don't use fossil energy, cycling is good for health, and improves the liveability of cities. Furthermore cycling improves the transport efficiency. It is also worthwhile to mention that a bicycle offers an affordable way to getting to work or accessing basic living needs.

A clear message from this ITF-report is that policies increasing the number of cyclists should be accompanied by strategies to improve safety, as well as perceived safety. How to do this in Myanmar, and especially in cities such as Yangon and Mandalay, is certainly worthwhile to explore, also because cycling has been a common mode of transport in Myanmar in the past.

Myanmar can certainly learn from experiences elsewhere, for example as illustrated in a handbook named "Cycling-inclusive policy development" (ICE/GTZ, 2009). This practical Handbook gives many examples from all over the world how to promote safe cycling and the Panel believes that it is worthwhile to use this Handbook as a starting point of further studies and demonstration projects in several cities in Myanmar, such as Yangon and Mandalay.

The Panel recommends **all road infrastructure improvements proposed in Myanmar should be developed with a focus on promotion of cycling and walking.**

Public Transport

Public transport (mainly buses, but sometimes also trucks transporting passengers) are a major mode of travel in Myanmar. Affordable public transport ('low fares') is very important for poorer people. Public transport on the roads is delivered by buses, minibuses and (converted) pick-up trucks. They transport high volumes of passengers in Myanmar. When it comes to safety, it is of relevance to distinguish between the safety of passengers and the impact of public transport vehicles when having a crash with other modes, more specifically with vulnerable road users, such as pedestrians. Unfortunately, the Panel has no good data on the safety related problems of public transport, although the Panel observed several very dangerous situations related to public transport when visiting Myanmar.

However, it is known from other countries that the combination of low-quality vehicles, overloaded vehicles, poor driver education, long hours for drivers, reckless driving etc. result in a lot of crashes and sometimes in real catastrophes with many casualties in one crash.

The Panel has the impression that quite a proportion of the road safety problems are related to public transport, but we have no hard figures to support our observations. It is not possible for the Panel at the moment to come

up with proposals for an (integrated) approach to tackle this phenomenon. But the Panel recommends **to carry out further studies and to see how a reform of the sector will contribute to less people killed and injured in road crashes.**

Motorcycling

Road traffic in the two big cities in Myanmar (Yangon and Mandalay) is completely different and this is mainly explained by the fact that motorcycles are not allowed in Yangon and dominate road traffic in Mandalay. The Panel does not have studies at hand to compare the safety performance of both cities, but it is to be expected that fatality and mortality rates will differ.

It is known that motorcyclists run a higher risk per kilometre driven than other transport modes. However, it has to be admitted that this information is coming from countries and cities in which four wheeled-motorized vehicles are dominating, and motorcyclists represent a minority. It is not known which risks of motorcyclists are to be expected if motorcyclists are dominating traffic.

But with the knowledge of today, careful consideration from a road safety perspective should be given to any decision to allow for more kilometres by motorcyclists if they are replacing kilometres by safer modes, such as use of public transport. If Myanmar will experience more kilometres travelled by motorcyclists, it is of the utmost importance to take actions to reduce their risks.

In other words, if the city of Yangon considers a decision to allow motorcyclist to be used in the city, road safety consequences have to be taken into account. The Panel expects that just adding 'risky' kilometres of motorcyclists to an existing road and traffic environment without risk reducing interventions will not be good for road safety. A careful study is needed to estimate how these 'new motorcyclists' travel today. The Panel recommends studying this carefully using different scenario's before making a decision on this. The Panel expects that as a result to allow for motorcyclists it is more likely that more people will be killed and injured than less.

But, it is certainly worthwhile to introduce interventions in Myanmar to reduce fatality and injury risks of motorcyclists. Interventions should be derived from a proper analysis of crashes with motorcyclists but will cover items such as safety quality of motorcycles, use of good quality helmets for all riders and passengers, motorcycle training and minimum age to ride a motorcycle, speed restrictions, context of a considerably safer road environment (e.g., separated lanes, or designated roads) etc. The Panel recommends **developing an integrated plan for motorcycle safety.**

FUNDING OF ROAD SAFETY INTERVENTIONS

The FIA published a report named "Catalytic funding for road safety in the post 2015 period: priorities, resources and impact. Proposal to support the work of the High-Level Panel on Road Safety" (Wegman, 2015). The report addresses the issue of lack of funding for road safety:

"One of the often heard criticisms on the developments in the last couple of years is that road safety is underfunded, and words are not followed by deeds. Providing sufficient resources to improve road safety seems to be an issue in almost all countries, if not in all. Moreover, by definition road safety has to compete with other policy areas for political priority and for sufficient resources. But anecdotal evidence indicates that improving road safety in LMICs is seriously underfunded."

The report continues: "The first responsibility for funding activities and investments to improve road safety lies with LIMC governments. Funding will only become available if these governments take ownership of road safety by recognizing road traffic injuries as a major problem in their society. For governments at all levels (national, regional and local), it is important to understand that we face a road safety crisis and that road hazards, the number of people killed and injured and the related costs can be changed by appropriate (effective/efficient) interventions. This finds support in an often heard slogan: road crashes and injuries are to a large extent predictable and preventable. Predictable, because much knowledge is available about risk (increasing) factors; preventable because much knowledge is also available about how to reduce risks on our roads."

And: "In [Low and Middle Income Countries], funding from international organizations or from the private sector cannot replace funding from governments. However, funding from other parties can make it interesting for governments to commit themselves to improving road safety. This is also called catalytic funding. The word catalytic stems from chemistry: a catalyst (an additional substance) will cause a chemical reaction to occur faster or with less energy. The idea behind catalytic funding is that the provision of (financial) assistance encourages the governments concerned to take action themselves."

The Panel has little insight into the capacity of the Myanmar Government to fund the road safety improvements outlined in this report. So, the Panel has no clear view on the potential problem of "underfunding" in Myanmar. The lack of resources and funding was touched upon incidentally along with some areas of Government noting the need for more funding to undertake road safety interventions. The Panel considers the invitation of a Road Safety Expert Mission to the country, and moreover and even more important, the decision to establish a Road Safety Council, as clear signals that the Myanmar Government takes ownership of road safety as a problem, is willing to invest in interventions to improve road safety and is looking for cooperation with the international community to identify the best investment options.

In addition to Government funding, which is critical, a number of possibilities for the funding of road safety are available for consideration by Government. All options noted below have been applied successfully in various countries, which could be considered as models. Example countries are noted for each possibility. Options include international donors and lenders (many countries have employed Multi-Lateral Development Bank Loans for road safety, including Vietnam, India, China, Nigeria, and Argentina), the private sector and NGOs (such as donations from the National Society for Road Safety in Sweden, and Bloomberg Philanthropies in many countries), public-private partnerships (used for speed camera programs in Australia, and provision of emergency services on toll roads in Brazil), and more innovative approaches which allow for an adoption of user-pays principles. The latter include government policy changes such as dedicating all road user fine revenue to road safety (as in several states of Australia), a small levy added to the cost of the driver's license or registration of each motor vehicle or personalized license plates dedicated to road safety (as in Sweden, Spain, New Zealand), a levy added to the cost of fuel (such as in Australia and Colombia) or road safety funding incorporated into injury insurance (such as in New Zealand, Argentina, and Colombia).

The Panel recommends as a first step **to detail all recommendations made throughout this report, identify the 'owner(s)' of actions and invite these stakeholders to come up concrete proposals how to implement the recommendations.** The Panel has the view that this work can be done in not more than half a year. This half year could be used as well **to explore options for 'catalytic funding'.**

At the end of this period **decisions have to be made concerning which actions or interventions could start immediately (for example capacity building), which investments could be made with available Governmental budgets and which require political decisions for future Governmental budgets.** The Panel is available to support this process.

NEXT STEPS

The Panel has proposed numerous interventions to improve road safety, with a range of implementation time frames, and has offered advice on Government work already underway. The Panel is pleased to learn that all our recommendations outlined in this report were well received by the Government of Myanmar. Accordingly, the focus now needs to be on the development of specific implementation plans to put the recommendations into practice.

To facilitate the implementation of the recommendations, the Panel has prepared a template available in Appendix 1. This is designed to support Government officials to identify tasks and create sequenced plans, with specified lead agents and funding options, which assist in transforming the safety of Myanmar's roads. The Panel recommends consideration of the secretariat of the National Road Safety Council being given a leading role in developing these plans. In addition, the Panel would encourage the Suu Foundation to remain involved in this process by allocating a specific staff member to work with the Government on these tasks.

The Panel will continue to support the Government as it develops these implementation plans.

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APPENDIX 1. TEMPLATE FOR INTERVENTIONS IMPLEMENTATION DEVELOPMENT PLAN

Safe Systems

No specific recommendations, except as a general principle to be adopted

No. I	Recommendations	Lead	Responsible person/unit	Support	Completion date	Funding options	Remarks
Safe System approach							
1	Adopt the Safe System approach						
2	Employ a road safety expert to adopt Safe System principles to Myanmar local conditions						

No. II	Recommendations	Lead	Responsible person/unit	Support	Completion date	Funding options	Remarks
Road Safety Management and capacity building							
1	Strengthening road safety management						
2	Broadening of the NRSC						
3	Develop the option of a Road Safety Lead Agency						
4	Quantitative targets in Road Safety Action Plan and monitoring progress						
5	Adopt a Safe System approach						
6	Align road safety policies with other policy fields						
7	Consider adopting ISO 39001						
8	Develop a comprehensive capacity building plan						
9	Further develop road safety data systems (collection and analysis) incl. underreporting						
10	Strengthen international cooperation						

No. III	Recommendations	Lead	Responsible person/unit	Support	Completion date	Funding options	Remarks
Safer Roads							
1	Better integrating road safety into land use planning and investment decisions on road infrastructure						
2	Devoting more resources to enhance safety quality of new and existing roads						
3	Develop modern design guidelines						
4	Creating conditions for translating Safe System thinking into daily practice						
5	Retrofit existing roads, streets and corridors (demonstration projects)						
6	Develop infrastructure related research capacity						
7	Develop tools for road authorities to include road safety in decision making						
8	Carry out demonstration projects in big cities (Yangon, Mandalay) and in villages						

No. IV	Recommendations	Lead	Responsible person/unit	Support	Completion date	Funding options	Remarks
Safer Vehicles							
1	Establish a transparent, accountable and traceable Type Approval process						
2	Form a Task Force						
3	Adopt UN Regulations on Road Vehicles (WP29)						
4	Start adoption with UN 14&16 (seat belts), 94&95 (crash protection and 22 (crash helmets)						
5	Transform present Periodic Technical Inspection						
6	Eradicate the use of right-hand vehicles on the road						

No. V	Recommendations	Lead	Responsible person/unit	Support	Completion date	Funding options	Remarks
Safer road user behaviour							
1	Strengthening existing road laws (comprehensive and evidence-based)						
2	Strengthen road police efforts						
3	Enforcement on safety belts, crash helmets and drinking and driving						
4	Strengthen deterrent effect of traffic offence penalties and sanctions						
5	Strengthen integrity of driver licensing and vehicle registration						
6	Conduct periodic public education campaigns connected to police enforcement						
7	Undertake widespread educational initiatives (awareness raising and acceptance of road safety measures)						

No. VI	Recommendations	Lead	Responsible person/unit	Support	Completion date	Funding options	Remarks
Post-crash response							
1	Consolidating one, unique emergency number						
2	Education programme for by-standers						
3	Basic training for transport victims to health-care post						
4	Including crash victims in health surveillance systems						

No. VII	Recommendations	Lead	Responsible person/unit	Support	Completion date	Funding options	Remarks
Cities and villages: cycling, public transport and motorcycling							
1	Demonstration projects in cities and villages on promotion of safe cycling and walking						
2	Further studies on reforming the public transport sector						
3	Develop an integral plan for motorcycle safety						

No. VIII	Recommendations	Lead	Responsible person/unit	Support	Completion date	Funding options	Remarks
Funding of road safety interventions							
1	Detail all recommendations and come up with proposals for implementation						
2	Scan funding options: catalytic and domestic funding						
3	Define first year Action Plan						


ROAD
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