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ROAD SAFETY MANAGEMENT – A COMPARATIVE ANALYSIS OF LEADING EUROPEAN COUNTRIES AND SOUTH EAST ASIAN COUNTRIES

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KEYWORDS:

Road safety Management, targets, strategies, fatality reduction

ABSTRACT

In this study it is aimed to compare Road Safety and related factors in the 10 South East Asian Countries Bhutan, India, Indonesia, Nepal, Thailand and Timor-Leste Bangladesh, Maldives, Myanmar and Sri Lanka with those of the 10 successful European countries, Austria, Finland, France, Iceland, Israel, France, Norway, Spain, Sweden, Switzerland, which have managed to reduce the risk levels ie fatality rate per 1,00, 000 population to less than 6. The Comparative Study demonstrates the applicability and possibility of transfer of the successful measures / aspects of Road Safety from European countries to SEA countries for formulating actions to produce fatality reductions in SEA countries.

INTRODUCTION

Road crashes kill about 1.3 million people worldwide every year and severely injure an estimated 50 million. Out of ten lives lost in traffic, nine are lost in low- and middle- income countries. RTIs are increasing at an alarming rate in countries of the South East Asian Region. The South-East Asia Region has been going through significant demographic, social, economic and epidemiological transition in the last two decades. The Region, with 11 Member States has 5% of the total land area and nearly 26% of the global population. There is an imminent need for strategic research to focus on the five pillars of road safety in the Region as specified in the decadal action plans. Research should focus on better understanding on the contribution of roads, vehicles and human behaviour along with post-crash elements.

For safer mobility that aims at reducing crash risks, a scientifically-based road safety management approach is required. This approach requires a clear understanding based on multidisciplinary research that unravels the complexities of traffic environment. Road safety management needs to be systematic and scientific, based on a critical understanding of barriers and challenges in each country.

NEED OF THE STUDY

As per World Health Organisation, Road safety research in SEA Region is piecemeal, fragmented, not continuous and disconnected. The current status of research does not provide answers to the problem and requires innovative approaches and solutions in each country. There is no national road safety research agenda in any Member State of the Region. There is a severe shortage of dedicated road safety research institutions, trained human resources, funding and training programmes, despite the increasing number of deaths and injuries on the roads. Collaborative mechanisms to translate research into policies and action programmes are very poor and decisions made are unscientific and ad hoc in nature.

The current safety level in South East Asian Countries is far below the level of the best-performing European countries. Therefore, it should be instructive to compare factors affecting road safety in South East Asian Countries and the best-performing European countries. This type of benchmarking can be beneficial as it can reveal differences at several relevant levels. Without hard facts about the scale of the problem, the exposure to crash risks and the effectiveness of policies the problems cannot be addressed at the core.

OBJECTIVES OF THE STUDY

(1) To compare the Road Safety and Other related measures of 10 selected European Countries with those of South East Asian Countries.

(2) To identify the beneficial aspects of the strategies, measures, operational practices and underlying concepts of Road Safety Measures of selected European countries.

(3) To study the applicability and possibility of transfer of the successful measures and aspects of Road Safety from European countries to SEA countries for formulating actions to produce causality reductions in SEA countries.

REVIEW OF LITERATURE

ROAD SAFETY ANNUAL REPORT 2018 presents that in 2015 and 2016; the trend of reduction of fatalities slowed down and even reversed in some countries. For 2017, a decrease in the number of road deaths was reported by 20 of 29-member countries of the International Road Traffic Data and Analysis Group (IRTAD). The United Nations Sustainable Development Goals (SDGs) set out a 50% reduction target for road deaths by 2020 compare to 2010. While five IRTAD member countries have made good progress in reducing fatalities by more than one-third since 2010 (which is about the average reduction required to halve fatalities by 2020), the majority of countries are not achieving what is needed. Indicative numbers from low- and middle-income observer countries in IRTAD suggests that in some of those countries the number of road deaths has increased. Generally, the road safety situation in low- and middle-income countries, where 90% of global road deaths occur, is much less understood than in IRTAD member countries and it is likely that road deaths in these regions are underreported, as reflected by the estimations of the WHO global status report Benchmarked against 2010 results.

ROAD SAFETY ANNUAL REPORT 2017 points out that the positive trend over the last few years of reduced road fatalities did not continue in 2015 and 2016. The 31 IRTAD member countries for which data are consistently available registered a 3.3% increase in road fatalities in 2015 compared to 2014. Thirteen countries form a group of relatively well-performing countries with mortality rates per 100 000 inhabitants of five or less. Three of these had in 2015, a mortality rate of three or less. Road safety for an ageing population is a growing concern in nearly all countries. Older people are the world's fastest-growing age group, and the share of people aged 60 or above is expected to reach 21% of the world population by 2050, up from 9% in 1994. At the same time, senior citizens have become more mobile than in the past and therefore more exposed to traffic risk. This creates significant challenges for road safety. While the number of road deaths declined by 6.5% overall between 2010 and 2015 across IRTAD countries, that of senior citizens killed in crashes increased by 3.4%.

ADVANCING ROAD SAFETY IN INDIA BY NIMHANS REPORT 2017 presents that 'Defective roads' accounted for 1.45% of accidents in the year 2015 as per official reports, but independent research findings indicate this to be significantly higher. India RAP studies, undertaken on nearly 10,444 kilometres of roads, indicated that most Indian roads do not meet the even three-star ratings of safety standards. Recognition and treatment of accident hot spots— black spots— has been widely debated, and 786 black spots have been identified on National Highways for prioritized management by MORTH in 2016. The future of road safety in India largely depends upon the design of Indian roads that integrate safety amidst mobility for all categories of road users.

ROAD SAFETY MANAGEMENT REPORT 2016 put forward that fatal and long-term injury in road accidents is a largely predictable and avoidable problem, which is amenable to rational analysis and remedy. Substantial reductions in road deaths and serious injuries have been achieved against the background of increased motorisation through a focus on achieving specific results, applying system-wide, evidence-based measures, underpinned by effective organisational management. Road safety is a shared responsibility at international, national, regional, and local levels. It involves government, civil society and businesses. Achieving road safety results is a multi- disciplinary activity and requires the good and best practice input of a wide range of jurisdictions of public and private sector agencies and organisations. This substantial scope and related challenge require meaningful institutional leadership, collaboration and capacity within Government and engagement with key partners in the business sector and civil society to achieve country goal. Achieving road safety results requires long-term ownership, leadership and political will by government and the top management of organisations in business and civil society.

REPORT ON ZERO DEATHS AND SERIOUS INJURIES - leading a paradigm shift to safe system (ITF2016) presents that the conventional approach to road safety identifies next steps based on incremental improvement on current practice. A Safe System flips this approach on its head. By working backwards from the vision of eliminating road fatalities and serious injuries, a Safe System opens up new perspectives with respect to effective instruments that reduce the number of road crashes resulting in serious trauma, which are (i) Provide strong, sustained leadership for the paradigm shift to a Safe System (ii) Establish shared responsibility for road safety (iii) Apply a results-focussed way of working among road safety stakeholders (iv) Leverage all parts of a Safe System for greater overall effect so that if one part fails the other parts will still prevent serious harm (v) Build Safe System capacity in low and middle-income countries to improve road safety in rapidly motorising parts of the world

GLOBAL SAFETY REPORT 2015 points out those low-income and middle-income countries have the highest burden and road traffic death rates. Most (91%) of the world's fatalities on the roads occur in low-income and middle-income countries, which have only 48% of the world's registered vehicles. Approximately 62% of reported road traffic deaths occur in 10 countries which in order of magnitude are India, China, the United States, the Russia Federation, Brazil, Iran, Mexico, Indonesia, South Africa, and Egypt and account for 56% of the world's population. From a public health perspective and for the purpose of making comparisons, the use of rates per 100 000 population is a more useful measure of the size of a problem than absolute numbers and is also useful for assessing performance over time and for giving an indication of risk. As well as accounting for the higher absolute burden of road traffic deaths, fatality rates relative to population area are also highest in low-income and middle-income countries. The 10 countries with lowest modelled road traffic fatality rates are almost all high-income countries, where rates vary between 3.4 and 5.4 deaths per 100 000 population. Netherlands, Sweden and United Kingdom for instance, may be top performers globally with regard to road safety. In most low-income and middle-income countries, the majority of road users are vulnerable road users – pedestrians, cyclists, and those using motorized two or three wheelers

RESEARCH FRAMEWORK FOR ROAD SAFETY IN THE SOUTH-EAST ASIA REGION REPORT 2015 presents that Road Traffic Injuries (RTI) are a leading cause of death, hospitalization, disability and socioeconomic loss in countries of the South-East Asia Region. It is estimated that road traffic crashes accounted for 334 815 deaths in the Region during

2010. Deaths are only the tip of the iceberg as hospitalizations are 30–50 times more than deaths. A majority of those killed and injured are men in the 5–44 years age group, pedestrians, two-wheeler riders and pillion riders as well as cyclists. The current situation in many countries needs to be strengthened with sustainable, cost effective and scientific policies. The five pillars, safe roads, safe vehicles, people, post-crash care and efficient management needs to be implemented in all Member States. The estimated road traffic death rate in the Region is 18.5 per 100 000 population. The rate is higher in middle-(19.5) than low-income countries (12.7).

REPORT ON ROAD SAFETY STRATEGY 2013-2020 IN IRELAND 2013 presents that Road Safety Strategy is one of the key challenges to prevent complacency and continues to progress the building of a national road safety culture. In addition, the European Union has adopted a target of halving the number of road deaths in the European Union by 2020, starting from 2010. The European Union's strategy focuses in particular on reducing the number of serious injuries and on protecting vulnerable road users. Some of the issues that reflect the priorities set at EU level and the views arising from the public consultation and the consultations with the primary stakeholders, including Government departments and agencies are (a) Awareness on Work related vehicle safety by organizations to implement stringent road safety policies (b) Updating of Medical Fitness to Drive (c) Road side testing of drivers for Drug Driving (d) Awareness to drivers on Fatigue & sleepiness (e) Enforcement on Distraction due to use of Mobile Phones (f) Encouraging Cyclists for cleaner environment and less congestion (g) Awareness campaigns to Children about the legal requirements for use of seat belts on all school buses (h) Encouraging Older Road Users to drive in a safe manner (i) Awareness raising campaigns to Motorcyclists to use of personal protection equipment (j) Best possible Emergency Response and Care (k) Data Analysis and Evaluation for effective road safety management (l) Post-collision Investigation mechanism to prevent repeat of occurrence.

REPORT ON STRENGTHENING ROAD SAFETY REGULATIONS: WHO 2013 points out that the road safety regulations that contribute to reduction of fatalities are (i) Lowering speed limits to reduce the risks for crashes and fatalities and also the severity of injuries and the number of fatalities (ii) Implementing laws on drink–driving should set the threshold blood alcohol concentration at d" 0.02 gm/dl for young or novice drivers and at d" 0.05 gm/dl for the general population (iii) Enforcement and other regulatory mechanisms regarding use of motor cycle helmets (iv) Enforcement on use of seat-belts (v) Implementation of National Laws on Child restraint.

INFORMATIONAL REPORT ON METHODS AND PRACTICES FOR SETTING SPEED LIMITS -US FEDERAL HIGHWAY ADMINISTRATION 2012, points out that the engineering community has four main roles in speed enforcement: (a) Communicate with those responsible for enforcement during the setting of speed limits; (b) Provide data to enforcement officials so that they may effectively deploy enforcement resources; (c) Provide and maintain automated speed enforcement (ASE) equipment and technologies (where allowed); and (d) Integrate features in the road design to facilitate speed enforcement (i.e., laybys and median openings that assist enforcement personnel)..

Speed enforcement is essentially a crash countermeasure and therefore benefits from a proper understanding of the persons, place, time, and conditions that foster speeding. Automated speed enforcement uses equipment to monitor speeds and photograph offenders to produce citations that are mailed to the registered owner of the vehicle.

NATIONAL ROAD SAFTY STRATEGY 2011-2020 (AUSTRALIAN TRANSPORT COUNCIL REPORT 2011) put forward that road safety strategy is complemented by National strategies and activities that are addressing specific areas of road safety which include: (a) Coordinating strong road safety partnerships effectively across all sectors - government, industry, business and community. (b) Legislation, regulation and standards will be needed to support some new directions to improve the safety net. (c) Sufficient resources will be required to meet these targets, from government, industry and the community. (d) Willingness of individual community members and organisations to support the changes that are needed to improve the safety of the road transport system. (e) The primary measure of success of this strategy will be the actual reduction in the number of serious casualties on the roads. (f) Monitor National Road Safety progress, report on performance in implementing agreed actions, and periodically review the key elements of the strategy. (g) Continued research and development effort are required to ensure that road safety risk factors, and the most effective safety measures are understood by road safety professionals and the wider community.

TOWARDS ZERO AMBITIOUS ROAD SAFETY TARGETS AND THE SAFE SYSTEM APPROACH REPORT 2008 presents that Road safety performance levels particularly, in countries with lower levels of road safety performance, can be improved in the short term by implementing a battery of proven measures. (a) Enforcement of existing speed limits can provide immediate safety benefits, perhaps more quickly than any other single safety measure. (b) Highly visible enforcement using random breath testing is needed to enforce blood-alcohol limits that should not exceed 0.5gm/l for the general population. (c) Legislation with firm police enforcement backed by intensive mass-media programmes and penalties to improve seatbelt wearing. (d) Targeted road improvements that identify and treat the highest crash locations with specific treatments such as audible edge-lining, shoulder sealing, clearing of roadside vegetation and the construction of passing lanes. (e) Electronic Stability Control systems represent a major recent advance in road safety, with collision avoidance and lane departure warning systems. (f) Graduated licensing schemes in tandem with extended training during the learner period have been effective in reducing deaths among young drivers. These proven interventions will continue to be effective only if they are implemented with a sufficient level of intensity and are carefully matched to the individual circumstances of each country.

REPORT ON SPEED MANAGEMENT WHO 2008 presents that the tools available to influence speed are (i) Speed zoning and speed limits (ii) Changing behaviour – regulating and enforcing speed (iii) Changing behaviour – public education (iv) Engineering treatments (v) Use of speed-limiting technology and intelligent speed adaptation (vi) Speed management by employers.

YOUTH AND ROAD SAFETY REPORT 2007 put forward that Children and young people under the age of 25 years account for over 30% of those killed and injured in road traffic crashes. From a young age, males are more likely to be involved in road traffic crashes than young females. Among drivers, young males under the age of 25 years are almost three times as likely to be killed as their female counterparts. The influencing factors are (a) **Child developmental factors -** Young children do not understand or react to complex traffic situations in the same way as adults (b) **Youth-related risk taking -** Young children may inadvertently take risks because they lack appropriate skills to do otherwise, older children and adolescents may indeed have the skills but may actively seek out risk. (c) **Peer influence -**Peer pressure can mean that young people are more likely to behave in a risky manner on the road, both as novice drivers or riders, and as pedestrians.

SAFETY ON ROADS WHAT 'S THE VISION: OECD REPORT 2002 point out that the "Best Practices" that are identified to facilitate the development of effective road safety policies in low and middle income countries are (i) Development of Road safety visions, targets and plans (ii) Development of Road safety plans and programs to involve all relevant stake holders (iii) Road safety measures directed at human behaviour, vehicles, roads and environment (iv) Organisational roles coupled with co-ordination across all stakeholders at all stages of road safety planning and implementation is fundamental to realizing road safety outcomes (v) Data needs and evaluation are essential ingredients to the development of effective road safety policy and measures (vi) Development of a vision and the setting of targets (vii National co-ordination of road safety strategies involving all stakeholders (infrastructure providers, vehicle, road-user groups, police, emergency response).

COMPARATIVE STUDY AND FINDINGS

The Road Safety Policies of the selected European countries have been developed over several decades and have been based on the realization of a target for reduction of fatalities and serious injuries in a defined future period.

The various road safety aspects and other related factors of the selected European countries and South East Asian countries are compared as below:

(I) INSTITUTIONAL FRAME WORK:

(i) Lead Agency, Funding in National Budget and National Road Safety Strategy:-

(A) European Countries

All 10 countries have a lead agency for implementation of National Road Safety Strategy with the required funding in National Budget.

All European Countries have either a partial or full funding in the National Budget for implementation of the Road Safety Strategy.

(B) South East Asian (SEA) Countries

All 10 countries have a lead agency. Only 8 Countries have National Road Safety Strategy with 6 countries having a dedicated funding in National Budget. Bangladesh, Maldives, Myanmar and Sri Lanka so far do not have funding mechanism in their National Budget.

However, the funding in case of Majority of SEA Countries is only either partial or no funding.

Dedicated allocation of funds will contribute to the better infrastructure development required for effective implementation of Road Safety strategy.

(ii) Fatality reduction Target:

The details of fatality reduction target in European countries and SEA Countries are as below:

(A) European Countries:

Country	Target		Country	Target
Austria	50% (2011-2020)		Netherlands	= 140 fatalities by 2020 (2010-2020)
Finland	= 136 fatalities by 2020 (2010-2020)		Norway	Deaths and seriously injured = 500 within 2024 (2014-2023)
France	50% (2020)		Spain	‹3.7 per 100000 population (2011-2020)
Iceland	5% combined fatality and serious injury (2011-2022)		Sweden	50% (2007-2020)
Israel	30% (2010-2020)		Switzerland	No

Source: European Country profiles and the Global Status Report on Road Safety 2015

Looking at the long-term development goals since 2010, the number of road fatalities has decreased in all the selected European countries. The strongest decreases were observed by Norway (35.1% upto 2016), Switzerland (33.9% upto 2016), Denmark (30% upto 2015), Sweden (30% upto 2015).

B. SEA Countries:

Country	Target		Country	Target
Bangladesh	50% (2011-2020)		Nepal	35% (2013-2020)
Bhutan	Less than 10 deaths per 10,000 vehicles (2011-2020)		Myanmar	50% (2011-2015)
India	No		Sri Lanka	No
Indonesia	50% (2020)		Thailand	Less than 10deaths per 1,00,000 population (2010-2020)
Maldives	No		Timor- Leste	No

Source: Road Safety in the South East Asia Region 2015

Not much of a considerable progress has been made by the SEA countries in reduction of fatalities. 8 out of 10 countries show an increasing trend since 2010 except 2 countries (Bhutan, India) which achieved a marginal decrease in fatalities.

(II) SAFER ROADS AND MOBILITY:

(A) European Countries:

Country	Policy for Formal Audits required for construction of new road projects	Policy for Regular Inspections of existing road infrastructure	Policy to promote walking and cycling	Policy to encourage investment in public transport
Austria	Yes	Yes	Yes	Yes
Finland	Yes	Yes	Yes	Yes
France	Yes	Yes	Yes	Yes
Iceland	Yes	Yes	Yes	Yes
Israel	Yes	Yes	Yes	Yes
Netherlands	Yes	Yes	Yes	Yes
Norway	Yes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes
Switzerland	Yes	Yes	Yes	Yes

Source: European Country profiles and the Global Status Report on Road Safety 2015

All the selected European countries have the policies of conducting formal audit required for new road construction projects, regular inspection of existing road infrastructure, promoting walking and cycling and encouraging investment in public transport.

B. SEA Countries:

Country	Policy for Formal Audits required for construction of new road projects	Policy for Regular Inspections of existing road infrastructure	Policy to promote walking and cycling	Policy to encourage investment in public transport
Bangladesh	Yes	Yes	No	Yes
Bhutan	No	No	Yes	Yes
India	Yes	No	Yes	Yes
Indonesia	Yes	Yes	Yes	Yes
Maldives	No	No	No	Substantial
Nepal	Yes	No	No	No
Myanmar	Yes	Yes	No	Yes
Sri Lanka	No	No	No	No
Thailand	No	No	No	Yes
Timor- Leste	Yes	Yes	No	No

Source: Road Safety in the South East Asia Region 2015

6 out of 10 countries have the policy of conducting formal audit for new construction projects. 4 countries have the policy of inspection of existing road infrastructure. 3 countries have the policy of promoting walking and cycling. 6 countries have the policy of encouraging investment in public transport.

Many of the SEA countries are yet to progress in connection with the compliance of all the 4 policies of Safer Roads & Mobility.

(III) SAFER VEHICLES:

Vehicles safety standards is one of the 6 strategies of the save lives road safety package synthesized by World Health Organization to significantly reduce the road traffic fatalities and injuries.

Safe vehicles play a critical role in averting crashes and reducing the likelihood of serious injury. The **World Forum for Harmonization of Vehicle Regulations** sets safety standards for Motor vehicles. Vehicles that meet the requirements of these standards are less likely to be involved in road traffic crashes and in the event of crash, are less likely to cause serious injury.

The following are basic minimum standards for vehicle manufacturing and assembly:

(1) Frontal and side impact protection (FSIP) to ensure that the cars withstand a frontal or a side impact crash when test at specific speeds.
(2) Electronic Stability Control (ESC) prevents skidding and loss of control when a driver over or under takes.
(3) Pedestrian Prediction (PP) reduces the severity of impact through soften bumpers and modification to the front end of vehicle.

(A) European Countries:

Country	FSIP	ESC	PP		Country	FSIP	ESC	PP
Austria	Yes	Yes	Yes		Netherlands	Yes	Yes	Yes
Finland	Yes	Yes	Yes		Norway	Yes	Yes	Yes
France	Yes	Yes	Yes		Spain	Yes	Yes	Yes
Iceland	Yes	Yes	Yes		Sweden	Yes	Yes	Yes
Israel	Yes	No	No		Switzerland	Yes	Yes	Yes

Source: European Country profiles and the Global Status Report on Road Safety 2015

All the selected European Countries meet the minimum standards for vehicle manufacturing and assembly, (frontal and side impact protection, electronic stability control, pedestrian protection) except Israel which does not made the standard for Electronic stability control and pedestrian protection.

B. SEA Countries:

Country	FSIP	ESC	PP		Country	FSIP	ESC	PP
Bangladesh	No	No	No		Nepal	No	No	No
Bhutan	No	No	No		Myanmar	No	No	No
India	No	No	No		Sri Lanka	No	No	No
Indonesia	No	No	No		Thailand	No	No	Yes
Maldives	No	No	No		Timor- Leste	No	No	No

Source: Road Safety in the South East Asia Region 2015

On the contrary, none of the SEA countries meet the minimum standards for vehicle manufacture. Only one country, Thailand meet the pedestrian protection standards. Making car safer does not only benefit Car occupants but is also important for avoiding crashes and mitigating the consequences of crashes that involve vulnerable road users. Vehicle safety features are very crucial to minimize the amount of energy transferred to the people in road crashes.

(IV) POST CRASH CARE:

(i) Emergency Room injury surveillance system (ERISS):

Injury Surveillance is a public health activity, which includes gathering information on individual cases as a continuous activity with inbuilt feedback mechanism. Surveillance generates data that helps in understanding the magnitude of the problem and characteristics, changing trends, population at risk, general risk factors and the impact of the road safety intersection.

(A) European Countries:

Country	ERISS	EATN		Country	ERISS	EATN
Austria	Yes	Yes		Netherlands	Yes	Yes
Finland	Yes	Yes		Norway	Yes	Yes
France	Yes	Yes		Spain	No	Yes
Iceland	Yes	Yes		Sweden	Yes	Yes
Israel	Yes	Yes		Switzerland	No	Yes

Source: European Country profiles and the Global Status Report on Road Safety 2015

8 out of 10 selected European Countries have the provision of Injury Surveillance System. All the selected European Countries have Emergency access telephone numbers.

(A) SEA Countries:

Country	ERISS	EATN		Country	ERISS	EATN
Bangladesh	No	No		Nepal	No	No
Bhutan	No	Yes		Myanmar	No	Yes
India	No	MN*		Sri Lanka	No	Yes
Indonesia	No	MN*		Thailand	Yes	Yes
Maldives	Yes	Yes		Timor-Leste	Yes	Yes

Source: Road Safety in the South East Asia Region 2015. MN - Multiple-numbers*

Only 3 out of 10 SEA Countries have an injury surveillance system, whereas 7 SEA countries have unique Emergency Access Telephone numbers, made available to the road users.

The most efficient way to activate an Emergency response is through an Universal Centralized access number with a central dispatch system as against different access numbers at different locations.

(V) RATE OF TRAFFIC FATALITIES PER 1 LAKH POPULATION:

(A) European Countries:

Country	Rate of fatalities		Country	Rate of fatalities
Austria	5.4		Netherlands	3.4
Finland	4.8		Norway	3.8
France	5.1		Spain	3.7
Iceland	4.6		Sweden	2.8
Israel	3.6		Switzerland	3.3

Source: European Country profiles and the Global Status Report on Road Safety 2015

The average rate of fatalities per 1,00,000 population in the selected European countries is 4.05.

B. SEA Countries:

Country	Rate of fatalities		Country	Rate of fatalities
Bangladesh	13.6		Nepal	17.0
Bhutan	15.1		Myanmar	20.3
India	16.6		Sri Lanka	17.4
Indonesia	15.3		Thailand	36.2
Maldives	3.5		Timor-Leste	16.6

Source: Road Safety in the South East Asia Region 2015

The average of South East Asian Countries is 17 fatalities per 1,00,000 population which is almost more than 4 times the average of the selected European countries. There is a considerable variation in fatality rates within the SEA region, ranging from 3.5 per 1,00,000 in Maldives to 36.2 per 1,00,000 in Thailand. The prevailing rate of fatalities per 1 lakh population in SEA countries is a clear indication that the progress regarding the implementation of Road Safety measures is too low and all the countries of the Region need to accelerate the pace at which they implement effective road safety measures.

(VI) SAFER ROAD USERS:

(i) National Speed Limit Law:

All European Countries and SEA Countries have National Speed Limit Law in force.

(A) European Countries:

Country	Max Urban Speed Limit (in kmph)	Rural Speed Limit (in kmph)	Max. Motorway Speed Limit (in kmph)	Power to Local Authorities to modify Limits	Enforcement rating of Implementation of Speed Limits
Austria	50	100	130	Yes	7
Finland	50	80	120	Yes	8
France	50	90	130	Yes	9
Iceland	50	90	100	No	6
Israel	50	80	110	No	7
Netherlands	50	80	130	No	7
Norway	50	80	100	Yes	8
Spain	50	90	120	Yes	7
Sweden	50	110	120	Yes	6
Switzerland	50	80	120	No	7

Source: European Country profiles and the Global Status Report on Road Safety 2015

B. SEA Countries:

Country	Max Urban Speed Limit (in kmph)	Rural Speed Limit (in kmph)	Max. Motorway Speed Limit (in kmph)	Power to Local Authorities to modify Limits	Enforcement rating of Implementation of Speed Limits
Bangladesh	No	112	No	No	3
Bhutan	30	50	50	Yes	5
India	No	No	120	Yes	3
Indonesia	70	100	No	Yes	5
Maldives	30	30	No	No	6
Nepal	80	80	No	No	7
Myanmar	48	80	No	Yes	5
Sri Lanka	50	70	No	No	4
Thailand	80	90	120	No	3
Timor-Leste	50	90	120	No	5

Source: Road Safety in the South East Asia Region 2015

(a) Max Urban Speed Limits:

All the 10 selected European countries have the Urban Speed Limits of 50kmph in line with the International Best practice.

However, only 5 countries of 10 SEA countries set maximum urban speed limits of less than or equal to 50kmph as per International Standards.

(b) Max. Rural Speed Limits:

The Rural speed limit in all the European countries range from 80kmph to 110kpmh. The range of Rural speed limits in SEA countries varies from 70kmph to 112kmph.

(c)Max. Motorway Speed Limits:

The max. Motorway speed limits in European countries vary from 100kmph to 130kmph. Only 4 out of SEA countries have specified maximum motorway speed limits ranging from 50kmph to 120kmph. There are no specified speed limits in 6 SEA countries.

(d)Power to Local Authorities to Modify Speed Limits:

In 6 out of 10 selected European countries, local Authorities have power to modify the speed limits.

Only 4 out of 10 SEA countries authorize local authorities to modify speed limits.

(e)Enforcement:

All the selected 10 European countries except Iceland have a good speed enforcement rating of 7 and above, with Finland, Norway having a rating of 8 and France having a rating of 9. 8 out of 10 SEA countries have a speed enforcement rating of less than or equal to 5, with Maldives and Nepal having a rating of 6 and 7 respectively. Thus, the enforcement rating in SEA countries is weak when compared to European countries. Rigorous enforcement of speed limits is essential to make them truly effective. Without ongoing and visible enforcement of speed limit legislation, the potential impact of speed legislation to save lives in all SEA countries remains unattended. Road Safety Laws improve road user's behaviour and can be an effective tool in reducing road traffic crashes, injuries and deaths. Positive changes to road user behaviour happen when road safety legislation is supported by strong and sustained enforcement and when the public is aware of the reasons behind the laws and the consequences of non-compliances. It is also important that local authorities not only have legal authority to reduce mentioned limits, but also manage local speeds according to a particular road situation and in conjunction with other traffic calming or speed management policies.

(ii) National Drink Driving Law:

All European Countries and SEA Countries have National Speed Limit Law in force, except Maldives in SEA region.

(A) European Countries:

Country	Blood Alcohol Concentration Limit for general population (in gm/dl)	Blood Alcohol Concentration Limit for young or novice drivers (in gm/dl)	Enforcement rating of Drink Driving Law
Austria	< 0.05	< 0.01	8
Finland	< 0.05	< 0.05	9
France	<0.05	<0.05	8
Iceland	< 0.05	< 0.05	5
Israel	=0.05	=0.01	8
Netherlands	=0.05	<0.02	7
Norway	=0.02	<0.02	7
Spain	=0.05	=0.03	8
Sweden	0.02	0.02	8
Switzerland	< 0.05	<0.01	6

Source: European Country profiles and the Global Status Report on Road Safety 2015

B.SEA Countries:

Country	Blood Alcohol Concentration Limit for general population (in gm/dl)	Blood Alcohol Concentration Limit for young or novice drivers (in gm/dl)	Enforcement rating of Drink Driving Law
Bangladesh	No	No	2
Bhutan	= 0.08	0.00	5
India	= 0.03	= 0.03	4
Indonesia	No	No	5
Maldives	No	No	No
Nepal	No	No	9
Myanmar	= 0.08	= 0.08	No
Sri Lanka	= 0.08	= 0.08	6
Thailand	= 0.05	= 0.05	6
Timor- Leste	= 0.05	= 0.05	4

Source: Road Safety in the South East Asia Region 2015

(a) BAC Limits for General Population:

The BAC limits in all of the 10 European countries is d 0.05gm/dl with limits specified as d 0.02gm/dl in Norway and Sweden.

In SEA countries, 4 out of 10 do not have any specified BAC limits. The other 6 countries have BAC limits varying from as low as 0.03gm/dl to as high as 0.08gm/dl.

(b) BAC limits for Novice Drivers:

The BAC limits for Novice Drivers in 10 European countries vary from 0.01gm/dl to 0.05gm/dl. However, 4 out of 10 SEA countries do not specify any limit for young or novice drivers. The BAC limits in 5 countries vary from 0.03gm/dl to 0.08gm/dl. Only one country, Bhutan has Zero tolerance limit for Young or Novice Drivers.

(c) Enforcement:

All the selected European countries except Switzerland have a good enforcement rating of 7 and above. On the contrary, 7 out of 10 SEA countries have an enforcement rating varying from as low as 2 to 6. 2 countries do not have any enforcement rating. Only Nepal has a good rating of 9. The present enforcement rating of SEA countries except Nepal is very weak when compared to European countries. Drink-Driving increases the chance of road traffic crash, as well as the likelihood that death or serious injury will result. Drinking and Driving is also associated with other high-risk road behaviour such as speeding or not using seat belts. Drinking – Driving legislation, accompanied by visible, rigorous and rapid enforcement following enactment is an effective measure in reducing alcohol related crashes. Laws that establish lower BAC limits for young and novice drivers can lead to reduction in the crashes involving young people.

(iii) National Motor Cycle Helmet Law:

All European Countries and SEA Countries have National Motor Cycle Helmet Law in force, except Maldives in SEA region.

(A) European Countries:

Country	Law applies to drivers and passengers	Law requires Helmet to be fastened	Law refers to Helmet Standards	Enforcement rating of Motor Cycle Helmet Law
Austria	Yes	No	Yes	9
Finland	Yes	No	No	9
France	Yes	Yes	Yes	9
Iceland	Yes	No	No	9
Israel	Yes	Yes	Yes	9
Netherlands	Yes	Yes	No	7
Norway	Yes	No	Yes	10
Spain	Yes	No	Yes	9
Sweden	Yes	Yes	Yes	8
Switzerland	Yes	No	Yes	9

Source: European Country profiles and the Global Status Report on Road Safety 2015

B. SEA Countries:

Country	Law applies to drivers and passengers	Law requires Helmet to be fastened	Law refers to Helmet Standards	Enforcement rating of Motor Cycle Helmet Law
Bangladesh	Yes	No	Yes	4
Bhutan	Yes	Yes	Yes	10
India	Yes	No	Yes	4
Indonesia	Yes	No	Yes	8
Maldives	No	No	No	7
Nepal	Yes	No	No	9
Myanmar	Yes	Yes	No	5
Sri Lanka	Yes	No	Yes	7
Thailand	Yes	Yes	Yes	6
Timor-Leste	Yes	Yes	Yes	6

Source: Road Safety in the South East Asia Region 2015

(a) Law applies to Driver and passengers:

All the 10 selected European countries have law applied to drivers and passengers. 9 out of 10 SEA countries have law applied to drivers and passengers. Maldives do not have any applicable law.

(b) Law requires Helmet to be fastened:

Only 4 of the 10 selected European countries have law requiring helmets to be fastened. 4 out of 10 SEA countries have compliance to this Law.

(c) Law refer to Helmet Standards:

7 out of the 10 selected European countries have law referring to Helmet standards. 7 out of 10 SEA countries have compliance to law referring to Helmet standards. 3 out of 10 European countries (France, Israel, Sweden) met all the 3 criteria in line with best practice. Similarly, 3 SEA countries (Bhutan, Thailand and Timor-Leste) meet all the 3 criteria in line with the best practise.

(d) Enforcement:

All the 10 selected European countries have a good enforcement rating of more than 7. Norway has an excellent rating of 10 with 7 other countries having a rating of 9. 5 SEA countries (Bhutan, Indonesia, Maldives, Nepal, Sri Lanka) have a good enforcement rating of 7 or more with Bhutan having a rating of 10. Motor cyclists are at an increased risk because they are unprotected and often share the traffic space with fast moving cars, buses and trucks. Lack of physical protection make them more vulnerable. Wearing a motor cycle helmet can reduce the risk of death by 40% and the risk of severe injury by approximately 70%.

Effective enforcement of motor cycle helmet laws can increase helmet wearing rates and thereby reduce head injuries. The effectiveness of National Helmet Legislation in reducing injuries also depend on the quality of helmet worn.

(iv) National Seat- Belt Law:

(A) European Countries:

Country	Law applies to front and rear seat occupants	Enforcement rating of Seat-Belt Law
Austria	Yes	6
Finland	Yes	8
France	Yes	9
Iceland	Yes	6
Israel	Yes	8
Netherlands	Yes	7
Norway	Yes	8
Spain	Yes	9
Sweden	Yes	8
Switzerland	Yes	8

Source: European Country profiles and the Global Status Report on Road Safety 2015

B.SEA Countries:

Country	Law applies to front and rear seat occupants	Enforcement rating of Seat-Belt Law
Bangladesh	No	---
Bhutan	Yes	3
India	Yes	4
Indonesia	No	8
Maldives	No	4
Nepal	No	5
Myanmar	No	--
Sri Lanka	No	8
Thailand	No	6
Timor-Leste	Yes	2

Source: Road Safety in the South East Asia Region 2015

All the 10 selected European Countries have National Seat Belt Law in force and also the law applicable to front and rear seat occupants. 8 out of 10 SEA countries have National Seat Belt Law in force. 2 countries (Bangladesh, Myanmar) do not have the law in force. Only 3 SEA countries (Bhutan, India, Timor-Leste) have the law applicable to both front and rear seat occupants.

Enforcement:

All the selected European countries except Austria and Iceland have a good enforcement rating of 7 and more, with France and Spain having a rating of 9. Only 2 SEA countries (Indonesia and Sri Lanka) have a good enforcement rating of more than 7. The prevailing enforcement rating in 8 SEA countries is considered as weak when compared to the selected European countries. Research shows that wearing seat belt reduces the risk of fatality among the drivers and front seat occupants by 45-50% and upto 25% among rear seat occupants. Seat Belt legislation when combined with strong and sustained enforcement is an effective mechanism for increasing seat belt wearing rates.

(v) National Child Restraint Law:

(A) European Countries:

All the 10 selected European countries have National Child Restraint Law in force.

Country	Restrictions on children sitting in front seat	Child restraint law based on Age/ Height / Weight (A/H/W)	Enforcement rating of Child restraint Law
Austria	No	A / H / W	8
Finland	No	A / H	9
France	Yes	W / H	8
Iceland	No	A / H / W	9
Israel	Yes	A / H/ W	8
Netherlands	Yes	A / H	7
Norway	Yes	A / H	6
Spain	Yes	A / H / W	8
Sweden	No	A / H	7
Switzerland	No	A / H	7

Source: European Country profiles and the Global Status Report on Road Safety 2015

(B) SEA Countries:

9 out of 10 SEA countries do not have any specified National Child Restraint Law. Only, Timor-Leste has the Law in force with enforcement rating of 2.

Enforcement:

All European countries except Norway have a good enforcement rating with 7 or more with Finland and Iceland having a rating of 9. Children in appropriate restraint are significantly less likely to be killed or injured than unrestrained children and are also less likely to be killed or injured than children using Adult Seat Belts. Furthermore, young children are safe sitting in the rear seat than in the front seat.

(vi) National Law on Mobile Phone use while driving:

(A) European Countries:

Country	Law prohibits Hand-held mobile phone use	Law also applies to Hand-free mobile phone use
Austria	Yes	No
Finland	Yes	No
France	Yes	No
Iceland	Yes	No
Israel	Yes	No
Netherlands	Yes	No
Norway	Yes	No
Spain	Yes	No
Sweden	No	No
Switzerland	Yes	No

Source: European Country profiles and the Global Status Report on Road Safety 2015

All the 10 European countries have the National Law on Mobile phone use while Driving, in force and none of the countries have the law applicable to hand-free mobile phone use.

B. SEA Countries:

Country	Law prohibits Hand-held mobile phone use	Law also applies to Hand-free mobile phone use
Bangladesh	No	No
Bhutan	Yes	No
India	Yes	Yes
Indonesia	No	No
Maldives	Yes	No
Nepal	--	--
Myanmar	--	--
Sri Lanka	Yes	No
Thailand	Yes	No
Timor-Leste	Yes	No

Source: Road Safety in the South East Asia Region 2015

6 out of 10 SEA countries have the law in force. 4 countries, Bangladesh, Indonesia, Nepal and Myanmar do not have the law in force. Use of mobile phone is considered as a serious distraction while driving. Driver distraction is thought to play a role in 20 to 30% of all road collisions. A real road safety concern in the recent times is the mobile phone usage, whether hand held or hands free. Enforcement coupled with Technology prohibiting the use of mobile phone while driving is to be encouraged on priority in all SEA countries.

(vii) Vulnerable Road Users:- (Pedestrian cyclists, 2 wheeler riders)

(A) European Countries:

Country	Pedestrians (%)	Cyclists (%)	Motorized 2-wheelers (%)	Total Vulnerable road users (%)
Austria	18	11	22	51
Finland	13	8	11	32
France	14	5	24	43
Iceland	7	0	6	13
Israel	33	5	14	52
Netherlands	10	32	13	55
Norway	10	5	13	28
Spain	23	4	21	48
Sweden	16	5	17	38
Switzerland	26	6	20	52

Source: European Country profiles and the Global Status Report on Road Safety 2015

In the European countries the proportion of vulnerable road users involved in the Road fatalities varies from 13% to 55%. The overall proportion of vulnerable road users is around 41% in the selected European countries.

B. SEA Countries:

Country	Pedestrians (%)	Cyclists (%)	Motorized 2-wheelers (%)	Total Vulnerable road users (%)
Bangladesh	32	2	11	45
Bhutan	3	0	2	5
India	9	4	34	47
Indonesia	21	2	36	59
Maldives	33	17	17	67
Nepal	NA	NA	NA	NA
Myanmar	26	9	23	58
Sri Lanka	29	11	41	81
Thailand	8	2	73	83
Timor-Leste	NA	NA	NA	NA

Source: Road Safety in the South East Asia Region 2015

The vulnerable road users involved in the Road fatalities in SEA countries vary from 45% in Bangladesh as high as 83% in Thailand. The average proposition of vulnerable road users makes up 50% of all Road Traffic deaths. However, so far none of the SEA countries have any policy to separate vulnerable road users from high speed traffic. As such the pedestrian and cyclists share the road with high speed vehicles forcing them to negotiate dangerous situation and fast-moving traffic.

In SEA Countries there is an increasing number of two-wheeler vehicles, two-wheeler occupants who are at a great risk of road injuries. With greater availability, massive advertisement and increase in purchasing power of people, these vehicles are often family vehicles in South East Asia. A key strategy suggested for SEA countries for achieving a safe traffic system for pedestrian and cyclists is to separate these different kinds of road use, duly eliminating conflicts between high speed and vulnerable road users. Building separate cycle lanes and separating the high proportion of motor cyclists from the fast-moving traffic will be a better measure to reduce the vulnerable road user fatalities.

SUGGESTIONS

- SEA Countries are far behind the selected European countries in terms of the Institutional Frame work, National Reduction targets, Strategies and their achievements, enforcement of safety laws, fatality reduction rates, ensuring safe roads system, etc., in connection with the effective implementation of road safety.
- Thus, strong political commitment in SEA Countries is of paramount importance for driving the Agenda of Road Safety amidst rapid motorization and increased mobility. Effective communication by the leaders of the countries shall be a valuable contribution to the vision of Road Safety, in creating a sense that Road Safety must improve and also bring different stake holders together and also keeping them together to achieve the change process.
- Road Traffic injuries kill more than 3,00,000 people each year in SEA countries and these deaths account for 25% of global total of road traffic deaths. Deaths are only the tip of Iceberg as hospitalization are 30 to 50 times more than the deaths. 50% of the road fatalities in SEA countries occur among the vulnerable road users i.e., pedestrian, cyclists and motor cyclists.
- Unless the needs of these users are adequately addressed with key strategies to separate these users from the fast-moving traffic, the desired reduction of fatalities cannot be attained.
- Lack of adequate enforcement is undermining the potential of existing road safety laws to reduce road traffic injuries and deaths. Much progress needs to be made in promulgating and enforcing laws based on best practices that relate to key behavior risk factors that are essential to bring about change in various aspects of excessive speed, drunk driving, helmet usage, wearing seat belts, child restraints, mobile phone usage during driving.
- Road Safety Management is a critical component that needs to be strengthened with sustainable, cost-effective and scientific policies with proper vision, direction, management, coordination, finding, intervention, advocacy, monitoring and evaluation.
- The five pillars of Safe Roads, Safe Vehicles, Safe Users, Post-crash care and Effective Management needs be strengthened and implemented through road research, prioritizing road safety as a public health problem and providing long term vision for development of Road Safety.
- Road Safety research is required from Health, Transport, Road Engineering, Police and other Stake holders for Education, Engineering, Enforcement and Emergency care. Research should also focus on better understanding on the contribution of Roads, vehicles and human behavior along with post-crash elements.
- Ensuring safe Road Infrastructure by conducting Road Safety Audits on both new and existing roads assessing the safety on the roads to meet all the needs of all the road users.
- Proper and adequate post-crash care can contribute to mitigation of the consequences of the road traffic crashes and injuries. Access to post crash care as well as quality of care administered at health facilities can bring about a major impact on the outcomes.

CONCLUSIONS

With the growing burden of Road fatalities in the South-East Asia Region, there is a need to develop strong policies and programmes in the Region that are evidence-based, culture-specific and cost-effective. Strong research inputs are required to support National leaders, policy makers and programme managers to develop evidence-based and data driven policies, programmes and interventions. All the countermeasures developed in European countries may be not applicable to the South-East Asia Region because of the differences in basic education on road safety, traffic environments, motorization patterns, social culture, enforcement behaviours and prevailing economic circumstances. Thus, it is necessary to carry out country-specific research to identify counter measures that are more applicable to individual countries. At the same time, lessons learnt from European countries will be very helpful in understanding the pathways and the process for reducing road crashes.

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