ROAD SAFETY IN ASEAN: INTRODUCING A REGIONAL APPROACH

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ABSTRACT

In many Asian-Pacific and countries attempts have been made to improve road safety through external aid funded projects but these often have been less successful than initial expectations and the problem continues to get worse. This paper outlines the preliminary findings and achievements of a regional approach which recently has been applied to an Asian Development Bank (ADB) project in the 10 countries that are members of the Association of Southeast Asian Nations (ASEAN).[1] These countries between them now count 75,000 deaths and over 4.7 million persons disabled or injured each year in road crashes. Such crashes now cost over $15 billion (2.2 per cent of annual ASEAN GDP) per year. This undoubtedly inhibits the economic and social development of the region. The ADB regional approach outlined in this paper appears to show considerable promise and there is already evidence that the institutional capacity and willingness of the countries concerned to coordinate activities and collaborate in addressing their road safety problems have been enhanced significantly as a result of the project. This regional project has already resulted in some significant achievements and the expected implementation of country-specific action plans and regional initiatives developed will help to reduce deaths and injuries in ASEAN countries.

Keywords: Road safety, ASEAN, accident cost, regional approach in safety improvement.

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[1] *ASEAN comprises Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.*

I. BACKGROUND TO THE ASEAN REGION AND THE ADB-ASEAN REGIONAL PROJECT

The ASEAN countries comprise a region of immense contrasts with motorization levels ranging from some of the least motorized countries in the world at 9.5 vehicles per 1,000 persons to highly motorized countries with 683 vehicles per 1,000 persons. It contains one of the world's smallest national populations at 0.36 million and also one of the largest populations at 234 million. The urbanization of populations ranges from a low of 20 per cent to as high as 100 per cent. Despite the fact that motorcycles are an important part of the traffic fleet in many of the ASEAN countries their proportion ranges from as low as 3 per cent to as high as 95 per cent of the fleet. The ASEAN member countries also include some of the poorest and some of the wealthiest countries in the world. Annual GDP per capita per year ranges from US$ 128 to US$ 23,000. The region therefore covers the whole spectrum of development ranging from very poor underdeveloped countries to those that are as wealthy and as fully developed as any in the world.

Despite these huge contrasts there are also a number of similarities among subgroups of countries. Motorcycles are a major component of the traffic fleet and a problem almost everywhere. In the past, vulnerable road users have not been well catered for in any of the countries and several countries exhibit similar high accident occurrence and road safety problems over holiday periods such as New Year celebrations. Accident data are generally very poor and incomplete and even where available, are often not being used effectively to improve road safety. Most importantly, in the past there has been inadequate awareness among decision makers about the true scale and costs of the problem.

Such contrasts and common features both offer opportunities for ASEAN countries. Contrasts and the spectrum of development allow scope for the sharing of experiences from more developed neighbours that have faced and overcome similar problems. Similarities allow the pooling of resources and efforts for the development of solutions to common problems such as motorcyclist and vulnerable road user safety.

This ADB-ASEAN project was undertaken at the request of the ASEAN Ministers of Transport who had become concerned with the rapid growth of the problem. It was aimed at quantifying the scale and characteristics of the problem, assisting the individual ASEAN member countries and the region to develop appropriate road safety strategies and action plans, developing

a safety research capability in each country and commencing the establishment of an Internet based ASEAN Safety Network (ASNet) to enable safety professionals across ASEAN to collaborate and discuss/share best practices.

II. THE GROWING ROAD SAFETY PROBLEM GLOBALLY AND IN ASEAN

Road crashes are a growing worldwide problem and now result in over 1 million deaths and over 23 million injuries per year, with about 85 per cent of these deaths now occurring in developing countries. The problem is particularly urgent in the Asian and Pacific region as it already contributes 44 per cent of global reported road deaths although currently it accounts for only about 14 per cent of the world's motorized vehicle fleet.[2]

The economic development of the ASEAN countries, in particular, has spurred a rapid growth in the level of motorization and has resulted in a significant deterioration of the road safety situation across the ASEAN region. In the year 2003 it is estimated that, in ASEAN alone, there were 75,000 road deaths and over 4.7 million injuries, many resulting in permanent disablement or serious injury. Huge economic losses are now being incurred annually in the ASEAN countries as a direct result of road crashes and the most recent research suggests that annual losses across the region are now in excess of US$ 15 billion per year, about 2.2 per cent of the annual GDP of the ASEAN region. This inhibits economic and social development and can contribute to the perpetuation of poverty.

Table 4, which appears at the end of this article, provides background information on GDP, human and vehicle population, road safety and estimated annual losses from road accidents in 10 ASEAN member countries.

III. RECENT TRENDS AND STATISTICS

Before discussing recent trends in casualty statistics across the ASEAN region, it is necessary to understand the linkage between motorization and road safety and the "influencing factors" that, as we know from worldwide experience, can result in a deterioration of road safety. With few exceptions, most countries in the ASEAN region are still at the lower end of the motorization S-curve and in many cases are only now starting to enter the phase of rapid

[2] *G. Jacobs, A. Aeron-Thomas and A. Astrop, 2000. Estimating Global Road Fatalities, TRL Report 445 (Crowthorne, Transport Research Laboratory).*

motorization. Motorcycles, already the major part of the traffic stream in several countries, are increasing even more rapidly than the general vehicle population because of the influx of cheaper Chinese models onto the market. Motorcycles now constitute the largest proportion of the vehicle fleet in several countries (see figure 1) and their proportion of the vehicle fleet may be even higher in some countries than is shown, because in some cases there is large-scale under-registration of motorcycles. For example, a recent multi-agency motorcycle registration campaign in Myanmar resulted in an additional 465,783 motorcycles being identified, which almost doubled the previously registered vehicle fleet from 479,275 to 945,058. Hence the 36.9 per cent of fleet shown in figure 1 for Myanmar based on an analysis of the official government statistics should really be about 68 per cent. Thus, motorcycles constitute over 65 per cent of the fleet in 6 of the 10 ASEAN countries.

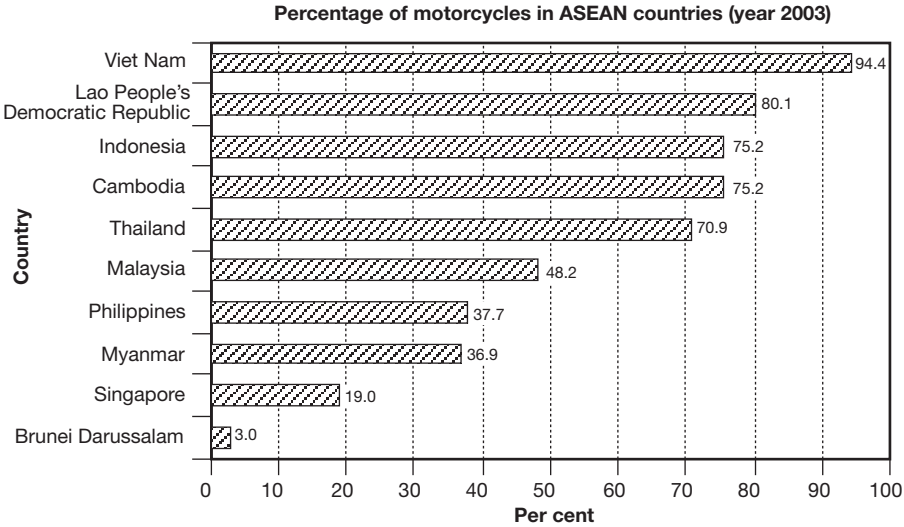

Figure 1. Percentage of motorcycles in the vehicle fleets in ASEAN countries

International experience indicates that with populations, vehicles, GDP and motorcycles (the key influencing factors affecting safety) all increasing in ASEAN member countries (see figure 2), the number of reported deaths would also be expected to increase in parallel with such underlying trends.

Despite this, as indicated in figure 3, the police-reported road accident deaths and injuries appeared to be decreasing in a number of countries and in a few others there were erratic fluctuations and inexplicable large reductions in

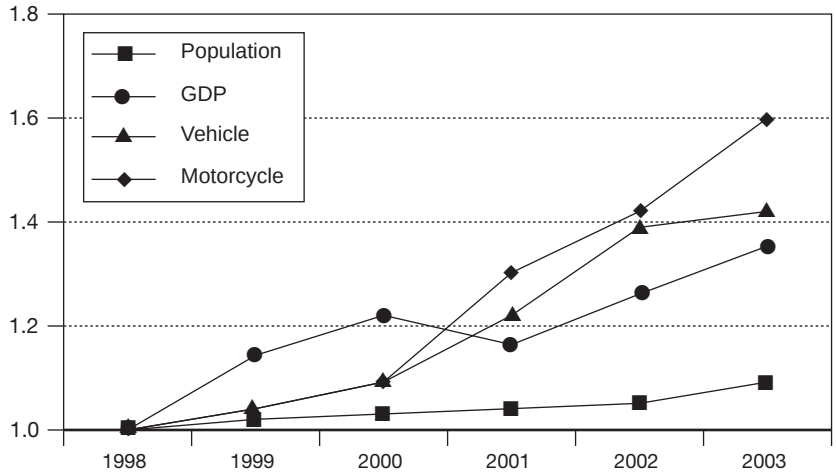

Figure 2. Recent trends in population, vehicle registrations and GDP growth (1998-2003)

deaths and injuries over unrealistically short periods. International experience indicates that these are highly improbable without major new safety initiatives having been implemented or major disruptions, such as war or natural disasters, having occurred. These apparent downwards trends in the Philippines, Indonesia and several other countries concerned are much more likely to be due to incomplete reporting than to genuine year-on-year reductions in traffic deaths.

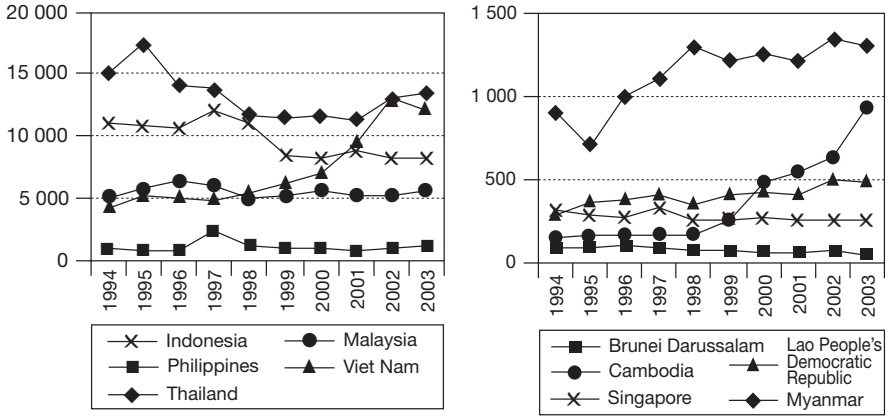

Figure 3. Police-reported road traffic deaths: trends in ASEAN countries

It was clear from country studies that police reporting of casualty data was incomplete and in the case of injuries often very incomplete in most of the countries concerned, as only a very small proportion of injuries appear to be reported to the police. Under the ADB-ASEAN road safety project, local consultants/researchers compared police and, where available, hospital, health ministry or other data to try to estimate more accurately the "actual" number of deaths and injuries occurring in each country. In a few countries, police-reported deaths were found to be very significantly underestimated but in most countries the number of deaths reported seemed to be reasonably accurate. However, in the case of injuries there were often very significant discrepancies between the numbers reported by the police and by those receiving medical treatment in hospital or in Ministry of Health records. Table 1 shows the estimated degree of underreporting across the region.

Table 1. Reported and estimated casualties in ASEAN countries (2003)

Country	Police-reported		Estimated*	
	Deaths	**Injuries**	**Deaths**	**Injuries**
Brunei Darussalam	28	645	28	1 273
Cambodia	824	6 329	1 017	20 340
Indonesia	8 761	13 941	30 464	2 550 000
Lao People's Democratic Republic	415	6 231	581	18 690
Malaysia	6 282	46 420	6 282	46 420
Myanmar	1 308	9 299	1 308	45 780
Philippines	995	6 790	9 000	493 970
Singapore	211	7 975	211	9 072
Thailand	13 116	69 313	13 116	1 529 034
Viet Nam	11 319	20 400	13 186	30 999
Total ASEAN	**43 259**	**187 343**	**75 193**	**4 745 578**

* Based on local research, health statistics, sample surveys (where available) or international experience.

Once more accurate estimates of road accident casualties were derived, it was possible to estimate the annual economic losses resulting from road accidents in each country and for the ASEAN region as a whole. Local consultants, usually academics from leading universities or research institutes in each country, were recruited to carry out an accident costing exercise for each country so that the true costs of the problem could be made known to the senior decision makers in each country. Various methodologies exist for cost

estimation and it was recommended that countries use the gross output approach as this is deemed to be the most appropriate for application in developing countries. This method tends to give lower valuations than the other methodologies available so the estimates of losses made in each country are, if anything, conservative and actual losses may well be higher than those calculated. With the exception of Malaysia, which already uses the more complex willingness to pay methodology, all countries used the gross output method for calculating their annual economic losses. The results of those costing exercises are shown in table 2.

Table 2. Estimated annual economic losses from road accidents

Country	Annual economic losses from road accidents	
	US$ million	Percentage of annual GDP
Brunei Darussalam	65	1.00
Cambodia	116	3.21
Indonesia	6 032	2.91
Lao People's Democratic Republic	47	2.70
Malaysia	2 400	2.40
Myanmar	200	3.00
Philippines	1 900	2.60
Singapore	457	0.50
Thailand	3 000	2.10
Viet Nam	885	2.45
Total ASEAN	**15 102**	**2.23**

The local consultancy/research on accident statistics and accident costing, although by no means exhaustive, has provided a reasonable first assessment of the present levels of underreporting of deaths and injuries and provided an initial estimate of annual economic losses being sustained in each country. Conservative methods of calculation and estimation have been deliberately selected to ensure that the minimum levels of human and economic losses occurring are reflected. These initial estimates will be updated and refined as more data become available and there will be periodic updates of the costing exercise in future years. However, the current estimates provide some appreciation of the true scale and costs of the problem in the ASEAN region.

Each year over 75,000 persons are killed and over 4.7 million are injured in road accidents, some so severely that they will be disabled for the rest of their lives. Assuming each of those injured or killed has, for example, five family members or dependents reliant upon his/her earnings, this means that apart from the victims themselves there could be an additional 25 million persons in ASEAN countries being directly affected by or suffering economic hardship annually as a direct result of road accidents. These road accidents result in annual losses of over US$ 15 billion each year (about 2.2 per cent of total annual ASEAN GDP) and are now undoubtedly inhibiting the economic and social development of the region.

In the last five years over 314,000 persons have died and over 20 million have been injured in the ASEAN region. Unless urgent action is taken, a further 385,000 will die and a further 24 million will be injured or crippled in the next five years, costing countries over US$ 88 billion in property damage, medical costs and lost productivity. No region, especially one that is still developing, can afford to sustain such recurring human and economic losses. Efforts must be made to address this problem urgently and aggressively if it is to be brought under control.

IV. TARGETS AND POTENTIAL SAVINGS

Vehicle fleets, particularly motorcycles, driver licence holders, population, economy and other factors that generate the conditions, that can lead to a deterioration of road safety are all growing in ASEAN countries and contributing to the growth of the problem. The resulting carnage on the roads needs to be addressed.

The Governments of ASEAN member countries need to recognize the huge economic and social costs that are incurred annually in their countries from those killed, crippled or injured in road accidents. The urgency of the problem needs to be brought to the attention of the most senior decision makers so that adequate resources can be applied to address this critical problem. It must be recognized at the highest levels that this situation has now reached “catastrophe” levels and that stern measures need to be implemented to achieve safety benefits. It is important to recognize that reducing road crashes will not be easy in a traffic environment with a high traffic growth (typically 10 per cent or more) and high proportions of motorcycle (up to 95 per cent in some countries), increasing affluence, increasing speeds owing to more powerful vehicles and good road facilities, and under-resourced traffic policing functions.

Although it may not be possible to drastically reduce deaths and injuries in such conditions immediately, it should be possible to slow down the growth, stabilize it and then gradually turn the trends into a downward direction. The present rate of increase in deaths was calculated from historical data and an estimate made of the likely deaths year by year that could be expected for the "business as usual" situation in each country, i.e. existing activities continuing as at present with no special or additional effort being made to improve road safety. An estimate was then made of the likely reduction in the growth rate that might be achievable through specific safety interventions, such as an increase in the wearing of safety helmets, introduction of safety audits, and improvement of hazardous locations. The annual deaths likely in future years with a reduced growth rate were calculated and the difference between that and in annual deaths from the "business as usual" case gave the potential "saved" lives for each year. The accumulative total for a number of years then provided the potential savings in lives through implementation of the country national road safety action plans.

This exercise was undertaken for each country during preparation of the draft national action plan and target reductions were agreed with the implementing agencies for inclusion in the individual action plans. These target reductions are shown in table 3. As most of the ASEAN countries are still in the rapid growth phase of the motorization curve, road accident deaths are likely to continue their upward trends for the present. The realistic aim of most of the individual country-specific action plans is to reduce the anticipated rate of increases in deaths and injuries over the period 2005-2010 and to thereby "save" a specified number of lives which would otherwise be lost.

Table 3 shows the estimated "saved lives" if the individual country-specific action plans are implemented effectively. It can be seen that nearly 42,000 lives could be saved across the ASEAN region if the national action plans supported by the regional strategy are implemented as designed.

It is recognized that for every life saved there will also be a much larger number of injuries and accidents saved but at present it is not possible to estimate precisely how many that might be. However, if for the moment we assume the same ratio between deaths and injuries in each country as determined by local researchers examining underreporting in the current project, there could be a total of about 69 serious and slight injuries for each death in the ASEAN region. Indicative estimates of potential casualty savings are given country by country in table 3. In addition, there will be savings from the reduced incidence of damage-only accidents.

Table 3. Target reductions in deaths and injuries via individual country action plans

Country	Potential lives to be saved via country plans	Potential injuries to be saved via country plans	Potential economic savings (US$ billions)
Brunei Darussalam	45	2 025	
Cambodia	1 800	36 000	
Indonesia	12 000	996 000	
Lao People's Democratic Republic	919	29 408	
Malaysia	3 000	21 900	
Myanmar	940	32 000	
Philippines	3 000	258 000	
Singapore	100	4 300	
Thailand	13 000	1 508 000	
Viet Nam	7 000	16 100	
Total ASEAN	**41 804**	**2 903 733**	**10.56**

The potential casualty savings constitute about 12 per cent of the total deaths and injuries expected to occur over the period. Therefore, it is not unreasonable to assume that the economic savings could be about 12 per cent of the potential economic losses expected to occur over that period. The potential savings from the successful implementation of the actions plans is 12 per cent of US$ 88 billion, i.e. about US$ 10.56 billion.

The casualty reductions which are thought to be achievable in ASEAN countries are as shown below and the individual country action plans, if implemented as agreed, should deliver these savings over the period covered by these action plans. These targets will act as benchmarks for monitoring the casualty reduction success aspects of the individual country-specific plans and individual country contributions towards the regional targets.

The likelihood of the individual country targets being achieved will be significantly enhanced if the proposed regional action plan and regional initiatives are implemented as designed. The regional plan has been carefully designed to harmonize with and supplement and reinforce the individual country plans.

The individual country action plans and the regional plan will be reviewed periodically and the targets reassessed to ensure that they remain realistic and feasible. In most countries, targets agreed have included raising the percentage of helmet wearing among motorcyclists. This is a low-cost measure that can be applied by all countries and easily monitored. It will have a very significant impact on the number of injured or killed in those countries with a large proportion of motorcycles in the vehicle fleet.

The overall action plan in terms of both institutional strengthening of road safety activities and the delivery of improved safety in terms of casualty reductions will be monitored by the ASEAN secretariat with assistance from the ADB-ASEAN Road Safety Project team. This will assist countries to implement their individual action plans more effectively and enable the ASEAN secretariat to report on the overall regional progress at regular intervals.

The first phase of this project is nearing completion and has been successful in all of its major aims. The main achievements to date are as follows:

(a) **Country reports** available for each of the 10 ASEAN member countries recording the key agencies involved and their responsibilities in road safety and providing an overview of the road safety situation, characteristics and trends in each country (prepared by local consultants/researchers).

(b) **Costing reports** available for each of the 10 ASEAN member countries providing estimates of underreporting of accident data, placing a monetary valuation on economic losses arising from deaths and injuries and estimating annual losses to the national economy (prepared by local consultants/researchers).

(c) **Local researchers in 10 countries** with the confidence, knowledge and ability to repeat and update such research reports independently in future years.

(d) **Ten multisector national road safety action plans,** one for each country developed, in most cases, through national workshops with the assistance of 90-100 safety professionals from key agencies with road safety responsibilities and with the involvement of the private sector and NGOs. These plans focus on the improvement of safety for vulnerable road users, especially pedestrians and motorcyclists, who form the vast majority of deaths and injuries in the ASEAN region.

(e) **First annual regional road safety workshop,** where 130 participants from Governments, the private sector and NGOs, shared their

knowledge, experience and best practices and helped develop a regional road safety strategy and action plan covering all 10 countries.

(f) **ASEAN regional road safety strategy and action plan** for regional activities and initiatives to support and complement the country activities, which are being implemented through national action plans.

(g) **Development and establishment of an Internet-based ASEAN Safety Network (ASNet),** a distance learning communications/collaboration and knowledge database system specially designed to assist ASEAN road safety professionals who will implement national road safety action plans.

(h) **Introduction to and basic Internet/ASNet training of over 200 safety professionals,** about 20 per country, on how to use ASNet for the exchange of information, collaboration, virtual meetings and as a knowledge database to help them implement their national safety action plans.

(i) **Designation/training of ASNet country focal points,** one in each country, to register and train others in how to use ASNet and to be an in-country source of information/advice on safety issues for the country.

(j) **Designation/training of an ASNet regional focal point** at the Asian Institute of Technology in Bangkok, which subsequently can be developed to coordinate the activities of country ASNet focal points.

(k) **Phnom Phen Ministerial Declaration on ASEAN Road Safety,** endorsed and adopted by ASEAN senior transport officials and ASEAN Transport Ministers at their meeting in November 2004.

As a result of the success of the first phase, the ASEAN Transport Ministers have requested that a second phase be prepared. This will be designed to build on the successes of the first phase and to develop further the technical and institutional capacity of the countries to address their safety problems more effectively. The second phase will be specifically designed to support and complement the in-country activities being undertaken under the national action plans and to develop local expertise/knowledge and appropriate systems to assist countries in achieving the effective implementation of their action plans.

V. CONCLUSIONS AND LESSONS LEARNED

The regional approach implemented on this project was designed to first identify the impediments preventing effective action in each country and then assist the individual Governments to overcome them. In the processs, a number of useful lessons were learned as follows:

(a) Fact-finding visits to each country for discussions with key agencies were crucial in ensuring a better understanding of current local resources and the most important impediments preventing effective action in each country.

(b) Most of the countries had the same three or four major impediments, therefore a common approach to address these could be devised.

(c) The private sector and NGOs were not only willing to participate as partners on such a road safety programme, but were also willing to help finance/support some of the activities.

(d) The use of local academics to carry out estimates of the scale and costs of the problem in each country and document the key agencies involved in each country provided a cost-effective way to gather such information. However, detailed guidelines and heavy periodic technical support is needed to ensure quality assurance in terms of the reliability, accuracy, consistency and timeliness of reports.

(e) The use of local academics and researchers, apart from providing local estimates of the scale, nature and costs of the problem, enabled the systematic development of local expertise as a future potential resource for updates and further research for Governments.

(f) For maximum effectiveness, national workshops to develop effective implementable multisector action plans in each country should be held for no less than three days and ideally four or five days so as not to jeopardize the quality of the action plan.

(g) Ideally, each sector should have had several sector-specific pre-workshop meetings to discuss and agree priorities in the sector so that a consistent view emerges from each sector at the national action plan preparation workshop.

(h) A common approach can be used as long as the solutions in the individual local action plan are tailored to the precise needs of the country.

(i) The adoption of a common structure for all national action plans facilitates the monitoring of the whole region but can still allow regrouping of sectors to reflect country-specific reporting needs.

(j) The local ownership, relevance and practicality of an action plan can be significantly enhanced by involving the leading safety professionals from the Government, the private sector and NGOs that have responsibility for, or interest in, road safety.

(k) Political commitment and financial support can be stimulated by repeatedly raising awareness of the huge human and economic losses needlessly being incurred year after year and by using the media to highlight the problem.

(l) Countries generally want to take action but often have been impeded by the absence of an adequate multisector action plan and the commitment of leaders. Now that both of these have been addressed, it is likely that action plans will be implemented.

(m) Appropriate performance management training and systems must be introduced to ensure effective implementation.

(n) Governments, the private sector and NGOs can and should all participate in the implementation of individual national road safety action plans.

It is clear that there are many direct benefits of taking a regional approach. In many countries, the problem not only has similar characteristics and causes that can be addressed more cost-effectively through such an approach, but national rivalries can also be mobilized productively to move countries forward further than they might otherwise be prepared or able to do. The fact that other ASEAN countries were carrying out some activities or moving ahead has spurred those lagging behind to push harder for progress.

The first phase of the project has been generally accepted as being very successful and the second phase is now under preparation. If it too is as successful, it will bring about real improvements in road safety and reduced risk for ASEAN countries.

The regional approach has many merits and is transferable to other subregions in the Asian and Pacific region, either to groups of countries or to the larger countries, for example, China and India, where the individual provinces or states within such countries could be systematically assisted and mobilized to take action in the same way that the ASEAN countries have been under this project.

Table 4. Background on road safety and related statistics

Country	Year	GDP (US$ millions)	Population (thousands)	Registered motor vehicles	Percentage of motorcycles	Vehicles/ 1,000 population	Police-reported		Estimated*		Annual losses	
							Deaths	Injuries	Deaths	Injuries	US$ millions	Percentage of annual GDP
Brunei Darussalam	2003	6 500	358	244 727	3.0	684	28	645	28	1 273	65	1.00
Cambodia	2003	4 000	13 487	447 428	75.2	33	824	6 329	1 017	20 340	116	3.21
Indonesia	2003	208 000	234 893	24 995 000	75.2	106	8 761	13 941	30 464	2 550 000	6 032	2.91
Lao People's Democratic Republic	2003	2 000	5 921	278 384	80.1	47	415	6 231	581	18 693	47.3	2.70
Malaysia	2003	102 000	23 092	12 868 930	48.2	557	6 282	46 420	6 282	46 420	2 400	2.40
Myanmar**	2003	5 445	42 510	945 058	68.0	11	1 308	9 299	1 308	45 780	200	3.00
Philippines	2003	80 400	84 620	4 292 000	37.7	51	995	6 793	9 000	493 970	1 900	2.60
Singapore	2003	91 400	4 608	711 043	19.0	154	211	7 975	211	9 072	457	0.50
Thailand	2003	136 400	64 265	25 100 000	70.9	391	13 116	69 313	13 116	1 529 034	3 000	2.10
Viet Nam	2003	38 000	81 624	12 054 000	94.4	148	11 319	20 400	13 186	30 999	885	2.45
Total		674 145	555 378	81 924 645	69.7	147	43 259	187 343	75 193	4 745 578	15 102	2.23

* Estimated after making adjustments where information was available from health statistics, surveys or international experience. Where data remain unchanged from police-reported data, it does not necessarily indicate that police data are complete, but that it has not yet been possible to make a correction.

** Surveys completed after the consultancy report identified an additional 465,783 unregistered motorcycles, which almost doubled the registered vehicle fleet from 479,275 to 945,058 and increased motorcycle percentage from 36.9 to 68.0 per cent.