



## TECHNICAL NOTE

# Mainstreaming Road Safety

The views expressed in this paper are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank or its Board of Governors or the governments they represent. This paper has been prepared by the transport team of the Energy, Transport and Water Division of the Regional and Sustainable Development Department (RSDD) of the Asian Development Bank, consisting of Eunkyung Kwon, principal transport specialist, and James Leather, transport specialist, with the assistance of Alan Ross, staff consultant, and Arlene Chavez, national officer, RSDD. The authors thank colleagues at ADB for providing helpful comments on earlier drafts of this paper. Special thanks go to Charles Melhuish, former lead transport sector specialist, for initiating this study.

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**ABBREVIATIONS**

ADB	–	Asian Development Bank
ASEAN	–	Association of Southeast Asian Nations
ASNet	–	Association of Southeast Asian Nations Safety Network
DMC	–	developing member country
ESCAP	–	Economic and Social Commission for Asia and the Pacific
PRC	–	People's Republic of China
TA	–	technical assistance
UN	–	United Nations
WHO	–	World Health Organization

**NOTE**

In this volume, "\$" refers to US dollars.

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## ABSTRACT

Road accidents are a growing problem worldwide, resulting in over 1.2 million deaths and as many as 50.0 million injuries per year. The problem is particularly acute in Asian Development Bank (ADB) developing member countries (DMCs): studies show that 44% of global road deaths happen in the Asia and Pacific region even though it is home to only 16% of the world's motorized vehicle fleet.

While industrialized countries have systematically reduced the incidence and severity of road accidents through coordinated multisector remedial programs, problems continue to grow in the developing world, attributable to (i) the high proportion of two- and three-wheeled vehicles; (ii) traffic mix and road usage; (iii) high population density and number of pedestrians; (iv) underdeveloped infrastructure and institutions; and (v) rapid motorization.

Studies made under an ADB-supported regional technical assistance show that road deaths and injuries are grossly underreported in official police statistics in many countries. Revised estimates indicate roughly 500,000 people die and 30 million are injured annually in road accidents in the region and losses amount to \$80 billion each year. The huge economic losses from road accidents are unsustainable and undoubtedly hampering economic development.

This technical note explores ways by which road safety could be put in the mainstream of ADB activities.

## I. INTRODUCTION

1. Road accidents are a growing problem worldwide, resulting in over 1.2 million deaths and as many as 50.0 million injuries per year. About 85% of the fatalities occur in developing countries. The problem is particularly urgent in Asian Development Bank's (ADB) developing member countries (DMCs): 44% of global road deaths happen in the Asia and Pacific region even though it is home to only 16% of the world's motorized vehicle fleet.<sup>1</sup>

2. Although ADB has made several attempts to address this problem, its efforts have generally been insufficient and intermittent and thus have not had a significant or sustained impact. Huge economic losses from road accidents are incurred annually in the region, stunting economic and social progress. Road accidents also reflect the inability of road and enforcement agencies and the community to properly use roads and transport systems.

3. Road safety is, therefore, a key issue for the economic and social development of DMCs, and this paper explores ways by which it could be mainstreamed into ADB activities.

## II. ISSUES ON REGIONAL ROAD SAFETY

4. The World Health Organization (WHO) forecasts that death and disability from road accidents will become a major health concern by 2020 (Box 1).<sup>2</sup> While the industrialized countries have systematically reduced the incidence and severity of road accidents through coordinated multisector remedial programs, the developing countries have been unable to keep the problem from escalating.<sup>3</sup>

5. The problem is particularly acute in Asia because of (i) the high proportion of two- and three-wheeled vehicles<sup>4</sup>; (ii) traffic mix and road usage; (iii) high population density and number of pedestrians; (iv) underdeveloped infrastructure and institutions; and (v) rapid motorization. Most of the recent vehicle growth is in motorcycles, further exacerbating an already dangerous traffic environment (e.g., in 2001, the number of motorcycles in Viet Nam increased by 29% and road deaths by 37%).

6. The Commission for Global Road Safety recently recommended that all development banks and donors that support road projects in developing countries include in the project cost a minimum of 10% for road safety. The report was distributed to the heads of the Group of Eight (G8) governments before their meeting in July 2006. In line with the Millennium Development

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<sup>1</sup> Jacobs, G., A. Aeron-Thomas, and A. Astrop. 2000. Estimating Global Road Fatalities. *Transport Research Laboratory (TLR) Report 445*. United Kingdom: Crowthorne.

<sup>2</sup> World Health Organization (WHO). 1999. *World Health Report 1999—Making a Difference*. Geneva.

<sup>3</sup> The severity and urgency of road safety is evidenced by a recent United Nations (UN) decision to integrate road safety into its policies on sustainable development, and a resolution that initiated global action by (i) releasing a WHO and World Bank report; (ii) appointing WHO to coordinate health-related activities; (iii) dedicating the 2004 World Health Day to this concern and to the first global road safety week in April 2007; (iv) increasing the attention and resources of other major development banks by assigning the World Bank to establish the Global Road Safety Partnership; (v) appointing a full-time road safety specialist to develop road safety activities within its lending programs, along with other international organizations and private sector partners, the partnership is establishing a special global road safety fund to address this problem; and (vi) calling member states, donors, and development organizations to stimulate a new level of commitment and an urgent response to improve road safety.

<sup>4</sup> In the Association of Southeast Asian Nations (ASEAN), two- and three-wheel vehicles comprise 75% of the total number of vehicles in Cambodia, 73% in Indonesia, 79% in the Lao People's Democratic Republic, 51% in Malaysia, and 95% in Viet Nam.

Goals, road deaths and injuries must be minimized through safe road designs and effective engineering, enforcement, and education.

### **Box 1: Road Accidents as a Health Issue for ADB Developing Member Countries**

Road accidents that occur in low- or middle-income countries comprise 85% of the estimated 1.2 million global road deaths, 90% of disability-adjusted life years lost due to accidents, and 96% of child deaths worldwide.

In 2002, road accidents became the ninth most problematic case in global health services and medical resources, and is projected to be the third by 2020. Since road accidents are decreasing in developed countries, most of the increase will happen in the developing countries, which have inadequate medical resources and health systems. Unless urgent remedial action is taken, 25% of national health budgets in the Asia and Pacific region (which has the highest incidence of road accidents) will be spent on road accident victims.

7. Studies made under ADB's regional technical assistance (TA)<sup>5</sup> show that road deaths and injuries are grossly underreported in official police statistics in many countries.<sup>6</sup> Revised regional estimates put yearly road deaths at roughly 500,000 and injuries, 30 million. Collectively, DMCs lose over \$80 billion annually—far more than the assistance they receive from all development institutions combined, including ADB and the World Bank.

8. Road accidents harm low-income groups—mostly pedestrians and bicycle and motorcycle riders, who are often the victims. These accidents contribute significantly to poverty<sup>7</sup> (Box 2) and have adverse social impacts on families.<sup>8</sup> Using a conservative estimate of five people per household (four dependents plus the victim), over 150 million people a year in the region are directly affected by road accidents. Apart from causing human suffering and social costs, road accidents strain the limited health resources of DMCs, as the foreign exchange reserves of many countries are drained by the importation of spare vehicle parts, replacement vehicles, drugs, and medicines.

9. Young adults are most frequently involved in road accidents—the age group that is the most economically active and has strong potential to contribute to economic development (Box 3).

10. Estimating road accident casualties in DMCs is fraught with difficulties, as safety-related data are not easily accessible in all countries and the available data are not always accurate. Further revisions have to be made to allow for different definitions and degrees of underreporting. The resulting estimates are in Appendix 1. The data were submitted by individual countries and grouped into regions, so that the countries and subregions with the greatest number of deaths and injuries could be identified more easily.

<sup>5</sup> ADB. 2002. *Technical Assistance for Road Safety in the Association of Southeast Asian Nations*. Manila.

<sup>6</sup> This is supported by research conducted in other parts of Asia. In Bangladesh, studies put the actual number of deaths at about 4 times the figure reflected in official statistics, and the number of serious injuries, almost 75 times. In Bangalore, India, police reported only 10 injuries for every death, yet the Indian National Planning Commission has estimated that, for every road death, 15 people are hospitalized and 70 suffer minor injuries. Overall, in the 10 ASEAN countries where in-depth estimates have been made, the injury-to-death ratio averaged 63:1.

<sup>7</sup> Ghee C., D. Silcock, A. Astrop, and G.D. Jacobs. 1997. *Socio Economic Aspects of Road Accidents in Developing Countries*. *TRL Report 247*. United Kingdom: Crowthorne.

<sup>8</sup> Aeron-Thomas A., G. Jacobs, B. Sexton, G. Gururaj, and F. Rahman. 2004. *The Involvement and Impact of Road Crashes on the Poor: Bangladesh and India Case Studies*. *TRL. PPR 010*. United Kingdom: Crowthorne.

### **Box 2: Road Accidentuating and Increasing Poverty**

Recent household surveys and studies, involving more than 73,000 households in Bangladesh and nearly 20,000 households in Bangalore, India, reveal that the poor are particularly at risk from road accidents. Most of those killed or injured were vulnerable road users (pedestrians and riders of two- or three-wheeled vehicles), who have few financial resources to use in times of emergency or income loss.

Many of the road accident victims in Bangladesh were young adults who were the main income providers and often had elderly and young dependents. A large chunk of household income was lost when the main income earners were killed: 62% and 42% among urban and rural poor in Bangladesh and 59% and 75% in Bangalore, India.

Even if only one person were involved in a road accident, the financial impact would be felt by the entire household (four people per average household). Hospitalization, medical, and funeral expenses are heavy burdens, especially since the victim and, sometimes, the caregiver (another household member) are unable to work. In Bangladesh, the urban poor spent the equivalent of around 3 months' household income on funeral services; rural households with a seriously injured member paid 4 months' worth of household income on medical attention.

Since the poor have less job security, only 55% of those seriously injured were able to return to their previous jobs. Apart from losing an average of 2 months' productivity while recovering (including the caregiver's time), many victims lost around 57 days more in looking for new jobs. To cope with a 4-month loss of income, families often got into heavy debt—66% of poor households in Bangladesh and Bangalore—so that 33% of the families had to sell an asset to raise funds while others had to take on extra work (33% in Bangladesh and 25% in Bangalore). One member had to give up work or study to care for the victim in Bangalore, where 89% and 71% of urban and rural households are poor. Less than 1% of households received compensation from insurance.

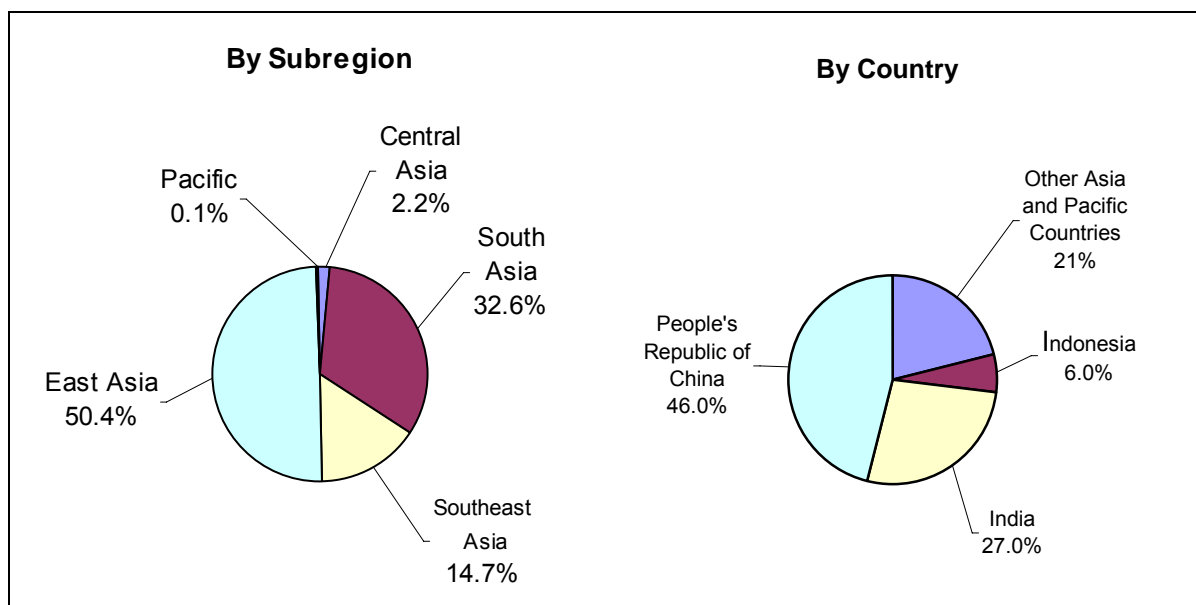
Over 70% of the poor families suffered a decrease in household income after a member was killed or seriously injured; 70% consumed less food because of the drop in income. About 71% and 53% of the urban and rural poor households in Bangalore, and 33% and 49% in Bangladesh had not been poor before the fatal accidents.

### **Box 3: Road Accidents—An Economic Problem**

Local research conducted in each of the 10 Association of Southeast Asian Nations (ASEAN) members under ADB's regional technical assistance program showed that annual losses were as high as 3.2% of gross domestic product (GDP), on the average. As a whole, ASEAN has been losing 2.2% of its GDP. If a similar rate (say 2% of GDP) were to be applied to the Asia and Pacific region, the magnitude of losses would be \$80 billion each year. Such huge recurring losses (exceeding total development assistance received annually from ADB, the World Bank, and all bilateral development partners) are unsustainable and undoubtedly hamper economic development.

11. Although road safety problems affect all countries in the region and result in economic losses, casualties are not spread evenly. About 97% of the deaths and injuries caused by road accidents occur in East, South, and Southeast Asia, which have the biggest national populations, high urban populations, extensive road network facilities, a large volume of vehicles, and heightened economic activity (Figure).

**Figure: Share of Total Road Accident Deaths in the Asia and Pacific Region**



12. Road accident fatalities in the People's Republic of China (PRC), Indonesia, and India account for nearly 80% of the regional total. Many road safety problems in DMCs are institutional: the lack of interdepartmental coordination, road safety strategy, funding, resources, and inadequate engineering, enforcement, and education measures. Efforts to help DMCs handle their country-specific road safety problems, audits, and related activities should, therefore, be incorporated wherever possible into road or transport projects to significantly reduce casualties.

13. During the early stages of project processing, regional and country-specific initiatives and action plans should be designed to develop the ability to address road safety issues. Assistance may be needed until local capacities become strong enough to undertake certain functions. The following section reviews current ADB operations and activities in road safety and identifies areas that need improvement.

### III. ADB ROAD SAFETY OPERATIONS

14. ADB has a long history of addressing road safety issues in helping its DMCs, but sustainability was wanting. Although ADB has undertaken innovative studies (e.g., *ADB Road Safety Guidelines*), which have added to road safety know-how, the follow-up on its other efforts has rarely been enough to bring them to their maximum potential. Recommendations of earlier studies to enhance safety have often not been implemented.<sup>9</sup>

15. ADB projects with road safety components have been increasing in recent years. In 1970–1999, ADB included road safety initiatives in only 30 projects in 15 DMCs. Since 1999, however, 50 projects have had road safety components (Appendix 2). The amounts spent on road safety are difficult to quantify as they were not always explicitly recorded or listed separately from other general traffic engineering costs within road project budgets. However, in

<sup>9</sup> ADB. 2001. *Technical Assistance Performance Audit Report on Selected Technical Assistance in Road Safety*. Manila.



most cases, the amounts allocated for road safety were small and rarely exceeded 1–2% of the total project cost.

16. In 1990–2004, in addition to loan projects with road safety components, ADB approved 32 TA projects with road safety components in 15 DMCs, as well as two regional TA studies. The total expenditure on road safety TA projects to date is \$10.25 million, of which \$1.15 million went to the regional TA projects (Appendix 3). These amounts are minimal in proportion to ADB's annual lending program and the scale of economic and human losses sustained by DMCs every year.

17. The rising interest in road safety and growing number of TA projects and projects with road safety components prompted ADB's Operations Evaluation Department (OED) to conduct a TA performance audit in January 2001. The report analyzed ADB's interventions in road safety by selecting sample TA projects and making an in-depth review of their reports and documentation. OED surveyed ADB staff members and DMCs to assess the impacts and sustainability of the major TA outputs. The economic losses from road accidents reached 2–4% of many DMCs' gross domestic products. Projects funded by multilateral development institutions did not invest sufficiently in road safety. In earlier ADB projects, road safety activities amounted to less than 1% of total project cost. Safety audits were not systematically undertaken after the completion of road designs and before commissioning of road projects because of a lack of awareness of their importance. The main findings of the audit report are summarized in Box 4.

18. The OED survey identified a number of important recommendations and action plans for which no action had been taken in earlier road safety TA projects (Box 5). In most cases, the country did not establish effective mechanisms or adequate financial and technical resources to sustain road safety activities. Consequently, the funds invested in the individual road safety

**Box 4: Findings of the Operations Evaluation Department's Technical Assistance Performance Audit Report on Road Safety (January 2001)**

The Operations Evaluation Department's (OED) technical assistance (TA) performance audit revealed that road safety has not been accorded the priority it deserves by developing member countries (DMCs) and in earlier ADB-funded projects. DMCs should strive to reduce accidents by identifying accident black spots and, more important, instituting measures such as safety audits and education to help prevent accidents.

OED consulted extensively with ADB project staff members; DMC officials; and representatives of other funding agencies (Japan Bank for International Cooperation, Japan International Cooperation Agency, and World Bank), and came up with several recommendations for improving road safety in ongoing and future ADB projects. The most important are the following:

- (i) ADB should actively encourage regional and local road safety activities in all DMCs involving the private sector and nongovernment organizations.
- (ii) ADB's *Road Safety Guidelines for the Asian and Pacific Region* should be widely adopted in all ongoing and future ADB road projects. All TA and loan projects in the roads sector should require a road safety audit expert who will conduct a safety audit of designs and construction work.

ADB should formulate stand-alone advisory, operational, and regional technical assistance, and help DMCs improve their capacities and implementing programs safety audits, safety education campaigns, accident analysis, and engineering improvements at black spots.

studies will not generate returns unless remedial measures are taken to implement the action plans.

19. To achieve maximum impact in its activities, ADB approved several projects addressing road safety problems in DMCs. Road safety audit guidelines<sup>10</sup> have been drawn up and published so that senior DMC officials will know how to include road safety audits in road projects.

20. In the PRC, ADB has given the Ministry of Public Security, the lead road safety agency, an advisory TA<sup>11</sup> to address the country's road safety constraints. The TA developed a focused, inter-agency, and multidimensional program in 2002—the National Road Safety Reform Program. To date, the program has identified the major obstacles to road safety, the role of each agency, and included 10 key components. The first to benefit from the TA was a traffic police department in the region, an activity that was deemed highly successful. The Government is committed to implement the program, which includes (i) the establishment of the national inter-agency road safety committee in September 2003, with a membership base of 17 key ministries, to enhance coordination and optimize the use of resources; and (ii) the introduction of the comprehensive road and traffic safety law in May 2004. In 2005, ADB provided the ministry with another TA to strengthen local capacity and implement the program. The TA aimed to improve the safety and efficiency of road transport operations and strengthen traffic law enforcement, which will benefit low-income groups and increase the economic benefits from road network investments.

#### **Box 5: Operations Evaluation Department 's Technical Assistance Performance Audit Report**

The following are recommendations for road safety technical assistance projects not yet implemented:

- (i) ADB is not actively performing as a clearing house for the exchange of information and knowledge on road safety.
- (ii) The training of safety professionals and their networking activities are not included in road safety components.
- (iii) Appointing a road safety coordinator in ADB has not been formalized.
- (iv) A road safety technical library or resource center for storing road safety information and materials has not yet been provided.
- (v) Reviewing and assessing road safety projects for each developing member country (DMC) have not yet systematically organized, although they are already being done as needed on a case-to-case basis.
- (vi) The sharing of country road safety reviews with multilateral organizations has to be started.
- (vii) A standard statistics table on road safety is not yet included in project appraisal reports.
- (viii) Management's policy statement on the importance of road safety and its inclusion in all ADB road projects has not yet been instituted.
- (ix) National road safety seminars must be held in all DMCs.
- (x) Key people in each country must be trained in road safety.
- (xi) A 3-year action plan has yet to be implemented.

<sup>10</sup> ADB. 2003. *Road Safety Audit for Road Projects: An Operational Tool Kit*. Manila.

<sup>11</sup> ADB. 1999. *Technical Assistance to the People's Republic of China for Capacity Building in Traffic Safety, Planning, and Management*. Manila.

21. ADB has provided a regional TA (footnote 6) to help the 10 Association of Southeast Asian Nations (ASEAN) countries tackle their worsening road safety problems. The project adopted an innovative approach: a series of national and regional workshops to develop road safety plans for each country in tandem with an ASEAN regional strategy and action plan. Local researchers were hired to quantify the scale and costs of the problem in each country. Political backing was cemented when all the ASEAN transport ministers collectively committed to address their road safety problems more effectively and aggressively. They pledged to adopt a multidisciplinary partnership approach involving the government, private sector, and nongovernment organizations. The Internet-based ASEAN Safety Network (ASNet) was established to enable road safety professionals to interact and collaborate across borders.

22. ADB needs to take remedial steps to strengthen its capacity if it wants to assist the DMCs in the road safety sector. ADB must, therefore, understand the major issues and take them into account when formulating its strategy and assessing its potential role (Box 6).

<b>Box 6: Extent and Urgency of the Road Safety Problem in the Asia and Pacific Region</b>	
<b>Estimated Deaths</b>	500,000 per year
<b>Estimated Injuries</b>	30 million per year, with many victims crippled or disabled for life, burdening their families and their country's health resources
<b>Estimated Number of People Affected</b>	150 million per year (assuming four dependents in a household), who suffer financial hardship because of loss of income
<b>Estimated Economic Losses</b>	\$80 billion per year (2% of total regional gross domestic product)

#### **IV. THE EXIGENCY OF ROAD SAFETY**

23. Awareness of the developing world's road safety issues is increasing. International agencies, private sector organizations, and nongovernment organizations have offered to collaborate and pool available resources to tackle the problem. ADB has been a key player in these efforts and must come up with a strategy to help its DMCs mainstream road safety.

##### **A. Country Commitment and Awareness**

24. The lack of government commitment in allocating adequate resources for road safety has been a large stumbling block. Different countries exhibit varying degrees of readiness or willingness to implement safety components in road projects. ADB must find ways to convince the DMCs' senior decision makers to attach a higher priority to road safety.

##### **B. Enabling Environments**

25. The problem is exacerbated by the inability to get things moving until after certain preliminary activities have been undertaken and an enabling environment for road safety has been established. An enabling environment allows all relevant sectors to help improve road safety. In a country without an enabling environment, activities remain sporadic, ad hoc, and difficult to sustain. Enabling environments must exist within the general framework used by the regional participants.

## **1. In Developing Member Countries**

26. Governments must be informed of the high economic and social impacts of not giving road safety due attention. They must learn to view expenditures on road safety as investments that generate high returns if enough technical and financial resources are allocated. If local resources are insufficient, DMCs can seek external financial support, which is readily available from development banks and bilateral aid agencies. However, financial assistance should merely be seed money, just to get things started. Countries must invest in the long-term improvement of road safety.

27. Governments need to adopt a multidisciplinary approach by establishing a lead department, whose staff will be responsible for coordinating and directing all efforts to improve road safety. A high-level interministerial committee or similar body with adequate financial and technical support, for example, can ensure that all key organizations—public, private, and community—help upgrade road safety.

28. Police and health data should be thoroughly analyzed by researchers to capture the scale and characteristics of the problem so that countermeasures can be devised.

29. Each country needs to designate a research institute or university to take the lead in (i) researching road safety issues, (ii) supporting the development of policies and strategies, and (iii) exchanging road safety information and good practices with other countries.

## **2. Within ADB**

30. ADB's Management must formally recognize road safety problems as urgent economic, health, and social issues affecting DMCs. Internal publicity should make this clear, noting that these problems perpetuate or even increase poverty. Road safety issues should be strongly highlighted in ADB's annual report and other progress reports on the economic and social development of DMCs.

31. ADB could come up with a policy identifying road safety as a priority area, with mandatory road safety audits in all road and transport projects. The policy would thus reaffirm ADB's commitment to road safety and set targets for improvements in member countries over the next decade. All design or supervising consultants could include 3–4 person-months in their projects within which specialists would check road safety design, signs, and marking arrangements before opening a road for public use. Consultants could be required to submit road accident statistics (taken from local highway agencies or the police) for each kilometer or section of the project road before improvement. Project completion and evaluation reports could include comparative road casualty data on the same kilometers or sections, to check whether or not the number of road casualties has increased after the improvements.

32. The allocation of human and technical resources should be streamlined to encourage the staff responsible for designing and incorporating road safety components into ADB projects. The staff must be updated and trained on road safety issues, and provided with tutorials, guidance, and examples of the best ways to incorporate road safety interventions in their projects.

33. Every ADB road or transport country report could include a one-page appendix containing a table of basic statistics and information on road safety in a standard format. The table would contain the number of reported accidents, deaths, and injuries per year so that

databases could be established for DMCs. Copies of the appendixes could be placed in the ADB road safety library or resource center.

34. ADB resident missions and offices should ask each client government to supply some basic road safety statistics, such as the number of deaths and injuries resulting from road accidents, number and type of vehicles, and total population over the last 5–10 years (Appendix 4). An ADB consultant on each road or transport project could be asked to collect and collate the information provided by the government offices. The basic data for each DMC should be updated annually.

### **3. Throughout the Region**

35. From experience, the quickest and most effective way to get the cooperation of a large number of countries is to work within a subregional grouping, thereby harnessing existing cooperative mechanisms and networks. Suggested actions include the following:

- (i) Key development partners and agencies should have a clearer understanding of road safety problems, recognizing the urgent need to create a systematic program for comprehensive regional action plans and strategies. Strong political and financial support is needed from the major development partners, funding institutions, and government institutions in the region. Efforts should be made to establish a regional fund.
- (ii) Consolidated efforts in sharing experiences and knowledge on approaches and countermeasures should be identified and replicated. ASNet should be promoted and expanded to facilitate the sharing of technical expertise and information, including the training of local road safety specialists and encouraging cooperation among safety professionals.
- (iii) A common database on road safety in the region should be compiled and made accessible to all. An embryonic regional accident database has already been established at the United Nations (UN) Economic and Social Commission for Asia and the Pacific (ESCAP) and will later be available to all aid agencies and countries in the region.
- (iv) Regular meetings of the main development partners (ADB, UN ESCAP, WHO, World Bank) and bilateral agencies should be held (about every 3 years) to discuss the progress and priorities in developing a broad road safety strategy so that all efforts are well coordinated and duplication is avoided. This should include more frequent (annual) meetings of a nominated steering committee to oversee and coordinate the development and implementation of regional initiatives within an agreed overall strategy.
- (v) Identify, designate, and develop several universities as centers of excellence in each region, where local professionals can be sent for special training and practical experience on road safety issues.

### **C. Harnessing the Potential of Road Safety Professionals**

36. In developed countries, professionals have ready access to information through associations, libraries, magazines, and technical bookshops. The opposite is true for

professionals in developing countries, who often work in remote areas and have limited access to reliable sources of information. At times, they may even have difficulty making payments in foreign currency.

37. A lot of the information available in developed countries has current and direct relevance and could easily be modified and applied to the developing world. However, although the basic principles, ideas, and methods of analysis are often adaptable to developing countries, the solutions may vary. In any case, the best way to tap the full potential of professionals working in the developing world is to improve their access to information.

38. ADB has made an important contribution to assisting road safety professionals in its DMCs—*Road Safety Guidelines for the Asian and Pacific Region*, which has been widely disseminated. Two other documents, the complementary *Guidelines on Road Safety Action Plans and Programmes* of the UN ESCAP and *Towards Safer Roads in Developing Countries—A Guide for Planners and Engineers* of the Department for International Development of the United Kingdom, offer sound advice for countries that are trying to solve road safety problems. There are many other materials, such as the Norwegian road safety handbook, that can be useful references for DMCs. ADB should encourage professional organizations such as government institutions, the Global Road Safety Partnership (GRSP), the Permanent International Association of Road Congress, research establishments, and the Road Engineering Association of Asia and Australasia to share the knowledge contained in their manuals and guidelines, and produce versions for local distribution to the professionals who may need them.

39. Where no suitable information exists, ADB should collaborate with other development partners and commission the preparation of documents or databases. ADB's involvement in the launching of the Department for International Development-initiated global Transport Knowledge Partnership database, establishment of the ASNet, and creation of a road safety database are excellent examples of knowledge made accessible to road safety experts in DMCs.

#### **D. Boosting Development-Partner Investment**

40. In recent years, with the UN at the forefront, the international community's awareness of road safety problems has been increasing, as has its willingness to provide the resources to tackle the issues. ADB and the other major funding agencies that are active in the region have begun to include road safety components in their road and transport projects.

#### **E. Priorities at the Regional Level**

41. Road safety requirements vary according to a country's level of motorization and economic and social development. However, for interventions to be successful, a workable enabling environment must exist within ADB, the region, and all DMCs.

42. Eventually, most of the activities and initiatives will have to be implemented at the regional and country levels if the problem is to be addressed systematically:

- (i) ADB could take the lead in bringing together all major government, private sector, and community players to draft a strategic 10-year program that will tackle road safety problems. The program, to be implemented as 5-year strategies and 3-year rolling action plans, should develop and enhance DMCs' capabilities.

- (ii) Donors, development banks, and international institutions must be encouraged to support the 10-year program and develop mechanisms for it during the first 5 years. The program should be designed to support and complement five regional road safety initiatives.
- (iii) National action plans and a 5-year strategy and action plan for each region will identify potential regional centers of excellence for developing local road safety professionals. At the same time, the creation of ASNets will open the doors to pertinent global databases and also become a conduit through which road safety professionals can share their expertise, good practices, and research.
- (iv) Although development-partner funding will be required during the first 5 years to initiate some activities, teach basic skills, and establish effective mechanisms, external funding should be phased out within the second 5-year strategy. Local institutions, organizations, and national governments should gradually take over, so that by the end of the 10th year, all activities will locally funded.

## **F. Estimating Road Casualties and Injuries in Developing Member Countries**

43. Data on road safety in DMCs were gathered from disparate and contrasting sources. Some data, such as gross domestic product and population, were culled directly from ADB, UN ESCAP, and World Bank databases. Other information, such as the number of motorized vehicles and length of roads, had to be gleaned from the International Road Federation, various national and international websites, and other reports. Inconsistencies, discrepancies, and even glaring errors were common. The basic information compiled should be refined later, when better sources of data become available.

44. Varying definitions for road accident deaths (e.g., whether they occurred within 7 days, 30 days, etc.) would require corrections of as much as 30% to reported figures. However, exact definitions of road accident deaths are not known or available in most DMCs. Worse, what definitions are available are often not applied uniformly to all parts of a country, thus skewing the correcting factors for international comparisons. Given the data deficiencies and absence of information on definitions, a more pragmatic approach was therefore adopted.

45. Worldwide research has shown that many vehicular accidents are not reported to the police in many countries, particularly in developing countries. Even health statistics are often incomplete, as some victims are unable to afford medical treatment for their injuries. Thus, house-to-house survey tallies are often higher than the numbers in health and other statistics.<sup>12</sup> In some countries, even deaths are underreported.<sup>13</sup> Consequently, the actual totals for deaths and injuries resulting from road accidents are often significantly higher than police statistics.

46. In-depth research in the 10 ASEAN countries indicated road accident deaths were underreported by 70% and road accident injuries (serious and slight) by as much as 20 times. For every road accident death, there were about 63 road accident injuries. The level of underreporting, especially of injuries, is even higher in many other Asian countries.<sup>14</sup> Thus, it

<sup>12</sup> An example would be the recent United Nations Children's Fund (UNICEF) household surveys in Viet Nam and several other Asian countries, which have revealed the underreporting of road accident casualties and injuries.

<sup>13</sup> In Bangladesh, it was found that for every road death reported to the police, there were about 4 actual deaths and 75 serious injuries; in the Philippines, 10 unreported deaths; and in Indonesia, 4 deaths.

<sup>14</sup> In India, for every road death, 15 people were hospitalized because of injuries and 70 slight injuries.

was considered reasonable to use the averages derived from ASEAN data (i.e., 1.70 estimated deaths for every death reported to the police and 63.11 estimated injuries for every estimated death).

47. Although these estimates do not wholly compensate for the differing definitions of road accident deaths in different countries or police-reported deaths, it improves overall assessment of the size of the problem based on hospital and/or medical statistics, which tend to be more consistent in terms of definitions of deaths and ratios and between deaths and injuries.

## **V. RECOMMENDATIONS AND CONCLUSIONS**

48. Road safety and rising accident rates are becoming vital concerns for DMCs. While developed nations have managed to minimize road accidents, rapid motorization has compounded developing countries' problems. Therefore, it is imperative that DMCs across the region improve their traffic conditions if they are to achieve accident rates as low as in developed nations. Some salient points in the region's road accident statistics:

- (i) Every year, around 510,000 die and 32 million are injured in road accidents across the region.
- (ii) The economic losses resulting from road accidents amount to about \$80 billion annually, equivalent to 2% of the regional gross domestic product.
- (iii) Over 97% of road accident deaths in the Asia and Pacific region happen in East, South, and Southeast Asia.
- (iv) Almost 80% of road accident deaths in the region happen in the PRC, India, and Indonesia.

### **A. Recommendations**

49. Wide-ranging technical and institutional road safety problems face DMCs. These issues need to be addressed under an integrated program, which includes engineering, education, enforcement, emergency, and evaluation. The public sector and private enterprises must work together toward a common goal, with full support from civil society, to ensure that the road safety program is effective and sustainable.

50. In dealing with road safety problems, ADB and its DMCs must do the following:

- (i) Launch awareness campaigns to ensure that the full impacts and costs of road safety are understood, allowing wide stakeholder participation in the process.
- (ii) Create an enabling environment within each country to implement the road safety programs and promote comprehensive, effective, and sustainable action.
- (iii) Enhance the capacity of traffic police to better handle the components of road safety under its responsibility.
- (iv) Educate drivers and impose strict vehicle-testing regimes.



- (v) Make emergency services and rescue assistance available to traffic accident victims and improve the coordination between police, fire, ambulance services, hospitals, and road administrations.
- (vi) Create an accident database with consistent definitions of accident types, impacts, and costs.
- (vii) Monitor the performance of road safety action plans and programs and assess the social, economic, and financial implications of road accidents.

## **B. Conclusions**

51. Road safety has a big impact on the economic and social development of DMCs. Safety problems are intensifying because motorization is increasing, and policies and field action lack coherence and coordination.

52. Road safety components with an effective monitoring mechanism must be incorporated in projects to bring the safety records of DMCs closer to those of developed countries.

## ESTIMATED CASUALTIES AND REPORTED ROAD SAFETY STATISTICS

Statistics from year 2003 except as indicated													
DMC	Year	Population			GDP (\$)	Motorized Vehicles <sup>a</sup>		Road (km)		Reported Road Accident Casualties		Estimated Road Accident Casualties	
		Total (millions)	Urban (%)	Annual Growth (%)	Total (millions)	Total	Motorcycles (%)	Total	Paved (%)	Killed	Injured <sup>b</sup>	Killed	Injured <sup>b</sup>
<b>A. East Asia</b>													
China, People's Rep. of	2003	1,292.3	27.4	0.6	1,409,852	57,140,804	58.05	1,351,691 <sup>c</sup>	22.40	109,381 <sup>d</sup>	562,074	237,042 <sup>e</sup>	14,959,721
Hong Kong, China	2003	6.8	99.9	0.2	158,596	572,929	5.77	1,831 <sup>c</sup>	100.00	217 <sup>c</sup>	19,422	371 <sup>e</sup>	23,418
Korea, Rep. of	2003	47.9	73.8	0.6	605,331	16,949,441	21.50	86,990 <sup>c</sup>	74.50	8,097 <sup>f</sup>	386,539	13,846 <sup>e</sup>	873,813
Mongolia	2003	2.5	57.0	1.2	1,188	129,280	19.70	49,250 <sup>d</sup>	3.65	415 <sup>d</sup>	4,987	710 <sup>e</sup>	44,786
Taipei, China	2003	22.6	55.3	0.4	332,521	18,054,955	66.37	37,299 <sup>d</sup>	97.00	2,861 <sup>d</sup>	109,493	4,892 <sup>e</sup>	308,754
Subtotal (A)		1,372.1			2,507,488	92,847,409	52.62	1,527,061	26.68	120,971	1,082,515	256,861	16,210,491
<b>B. Southeast Asia</b>													
Cambodia	2003	13.8	12.6	2.4	4,299	447,428	75.20	12,323 <sup>f</sup>	16.20	824	6,329	1,017	20,340
Indonesia	2003	215.0	30.6	1.4	208,311	24,995,000	72.01	342,700 <sup>c</sup>	46.30	8,761	13,941	30,464	2,550,000
Lao PDR	2003	5.7	15.4	2.8	2,036	278,384	81.00	21,716 <sup>c</sup>	44.50	415	6,231	581	18,690
Malaysia	2003	25.0	49.8	2.1	103,161	12,868,930	48.17	71,814 <sup>g</sup>	55.93	6,282	46,420	6,282	46,420
Myanmar	2003	53.2	24.8	2.0	6,700 <sup>h</sup>	467,350	36.92	0	0.00	1,308	9,299	1,308	45,780
Philippines	2003	81.1	48.8	2.0	80,574	4,292,000	37.67	202,124 <sup>d</sup>	21.00	995	6,793	9,000	493,970
Singapore	2003	4.2	100.0	0.3	91,342	711,043	18.95	3,130 <sup>d</sup>	100.00	211	7,975	211	9,072
Thailand	2003	64.0	31.9	0.8	143,163	25,100,000	70.91	57,403 <sup>f</sup>	98.50	13,116	69,313	13,116	1,529,034
Viet Nam	2003	80.9	25.7	1.5	39,157	12,054,000	95.00	93,300 <sup>c</sup>	25.10	11,853	20,694	13,186	30,999
Subtotal (B)		542.9			678,743	81,214,135	68.87	804,510	41.77	43,765	186,995	75,165	4,744,305
<b>C. South Asia</b>													
Afghanistan	2003	22.2	23.3	1.9	21,000	0	0.00	4 <sup>c</sup>	13.30	-	-	1,609	101,544
Bangladesh	2003	134.6	24.2	1.3	51,897 <sup>f</sup>	737,000	44.00	207,486 <sup>c</sup>	9.53	3,289	3,828	5,624 <sup>e</sup>	354,943
Bhutan	2003	0.7	8.5	2.5	645	13,887	60.27	4,007 <sup>d</sup>	0.60	5 <sup>i</sup>	9 <sup>g</sup>	9 <sup>i</sup>	540
India	2003	1,073.0	28.3	1.7	598,966	58,863,000 <sup>a</sup>	70.00	2,456,647 <sup>c</sup>	57.80	80,000 <sup>g</sup>	382,700	136,800 <sup>e</sup>	8,633,448
Maldives	2003	0.2	28.8	1.6	696	0	0.00	10 <sup>c</sup>	0.00	-	-	10	631
Nepal	2003	24.2	15.0	2.2	5,835	329,856 <sup>g</sup>	60.00	13,223 <sup>c</sup>	30.80	941 <sup>i</sup>	1,434	1,609 <sup>i</sup>	101,551
Pakistan	2003	147.7	34.0	1.9	68,815	2,738,810	56.41	257,683 <sup>f</sup>	59.00	10,000 <sup>d</sup>	150,000	17,100 <sup>e</sup>	1,079,181
Sri Lanka	2003	19.3	21.0	1.3	18,514	1,719,572	53.70	11,650 <sup>d</sup>	95.00	2,029 <sup>d</sup>	16,654	3,470 <sup>e</sup>	218,966
Subtotal (C)		1,421.9			766,368	63,665,862	68.92	2,950,710	54.46	96,264	554,625	166,230	10,490,803
<b>D. Central Asia</b>													
Azerbaijan	2003	8.2	64.4	0.8	7,124	465,897	1.77	28,030 <sup>d</sup>	92.40	642 <sup>d</sup>	2,486	1,098 <sup>e</sup>	69,283
Kazakhstan	2003	14.9	55.8	0.3	29,744	1,409,065	5.74	82,980 <sup>d</sup>	93.90	2,217 <sup>e</sup>	14,358	3,791 <sup>e</sup>	239,254
Kyrgyz Republic	2003	5.0	33.9	0.9	1,737	200,999	6.11	18,500 <sup>c</sup>	91.10	725 <sup>d</sup>	3,561	1,240 <sup>e</sup>	78,241
Tajikistan	2003	6.5	24.7	0.9	1,303	0	0.00	27,767 <sup>f</sup>	0.00	406 <sup>f</sup>	1,498	694 <sup>e</sup>	43,815
Turkmenistan	2003	6.1	45.3	5.7	6,010	0	0.00	24,000 <sup>c</sup>	81.20	484 <sup>i</sup>	2,310	828 <sup>i</sup>	52,232
Uzbekistan	2003	25.4	36.6	1.2	9,949	0	0.00	81,600 <sup>c</sup>	87.30	2,032 <sup>i</sup>	11,978	3,475 <sup>i</sup>	219,290
Subtotal (D)		66.1			55,867	2,075,961	4.88	262,877	80.42	6,506	36,191	11,125	702,115

<b>E Pacific DMCs</b>													
Cook Islands	2003	0.01840	70.2	0.0	-	-	-	0	0.00	-	-	-	-
Fiji Islands	2003	0.83160	51.7	0.7	2,251	-	-	3,440 <sup>c</sup>	49.20	78 5	733	133 3	8,418
Kiribati	2003	0.08880	47.3	1.6	58	-	-	670 <sup>c</sup>	0.00	14 3	132	24 3	1,511
Marshall Islands	2003	0.05880	66.3	3.9	106	-	-	0	0.00	2 4	-	3 4	216
Micronesia, Fed. States of	2003	0.10780	29.3	0.3	241	-	-	240 <sup>c</sup>	17.50	2 4	-	3 4	216
Nauru	2003	0.01280	100.0	1.9	60 <sup>d</sup>	-	-	30 <sup>e</sup>	80.00	2 4	-	3 4	216
Palau	2003	0.02040	68.6	2.3	132	-	-	61	67.00	2 4	-	3 4	216
Papua New Guinea	2003	5.62000	13.2	1.8	3,395	-	-	19,600 <sup>c</sup>	3.50	290 3	2,533	496 3	31,296
Samoa	2003	0.17930	22.3	0.9	323	-	-	790 <sup>c</sup>	42.00	10 3	122	17 3	1,079
Solomon Islands	2003	0.50420	16.5	2.9	257	-	-	1,360 <sup>c</sup>	2.50	6	51	10 i	684
Timor-Leste	2003	0.76800	7.6	3.9	314	-	-	0	0.00	2 4	-	3 3	216
Tonga	2003	0.10100	33.4	0.4	163	-	-	680 <sup>c</sup>	27.00	6 3	65	10 3	648
Tuvalu	2003	0.01100	55.2	1.3	14 <sup>e</sup>	-	-	8 <sup>c</sup>	0.00	0 3	1	0 3	0
Vanuatu	2003	0.20770	22.0	2.7	283	-	-	1,070 <sup>c</sup>	23.90	2 4	-	3 4	216
Subtotal (E)		<b>8.5</b>			<b>7,597</b>	<b>0</b>		<b>27,949</b>	<b>11.77</b>	<b>416</b>	<b>3,637</b>	<b>711</b>	<b>44,930</b>
<b>Total</b>		<b>3,412</b>			<b>4,016,063</b>	<b>239,803,367</b>		<b>5,594,103</b>		<b>267,922</b>	<b>1,863,963</b>	<b>510,093</b>	<b>32,192,645</b>

— = no data available or calculated, % = percentage, \$ = US dollars.

ADB = Asian Development Bank, DMC = developing member country, GDP = gross domestic product, IRF = International Road Federation, km = kilometer, Lao PDR = Lao People's Democratic Republic.

<sup>a</sup> Motorized vehicle data from 2002, except for Southeast Asia, which is from 2003.

<sup>b</sup> Estimated data for both slight and serious injuries.

<sup>c</sup> Data taken from 1999 IRF datasheets.

<sup>d</sup> Data taken from 2002 IRF datasheets and ADB.

<sup>e</sup> Estimated figure assuming same ratio of underreporting as found in ASEAN regional study (in People's Republic of China additional allowance included for deaths at roadworks and railway crossroads)

<sup>f</sup> Data taken from 2000 IRF datasheets, except for GDP.

<sup>g</sup> Data taken from 2001 IRF datasheets or ADB, except for GDP

<sup>h</sup> GDP calculated on the basis of kyats 470 per US\$.

<sup>i</sup> Latest available data was over 10 years.

<sup>j</sup> Actual data from 2002.

Sources: Population data taken from ADB *2004 Key Indicators*. Southeast Asia GDP data taken from ADB. Pacific DMCs data taken from UN Economic and Social Commission for Asia and the Pacific. East Asia, South Asia, and Central Asia data taken from World Bank. Road km data taken from the International Road Federation (IRF).

**ADB PROJECTS WITH ROAD SAFETY COMPONENTS OR ROAD SAFETY TECHNICAL ASSISTANCE**  
(1999–2006)

<b>Project Name/ Loan No.</b>	<b>Approval Date</b>	<b>Project Description</b>	<b>Total Project Cost (\$ million)</b>	<b>Road Safety Component Description</b>	<b>Total ADB Financing (\$ million)</b>	<b>Remarks</b>
<b>Central and West Asia</b> AZE: East-West Highway Improvement (L2205/2206; TA4374)	8 Dec 2005	The project includes (i) reconstruction of 127 km of a two-lane paved road, (ii) improvement of local roads, (iii) support for road sector reform through institutional strengthening, and (iv) cross-border facilitation at the border with Georgia at Red Bridge.	93.2	The road safety component includes improvement of domestic legislation and regulations on road safety, development of road accident monitoring, reporting, and information systems, and assistance in identifying accident black spots, and capacity building.	3.0	Amount refers to ADB financing for consulting services and equipment under the institutional strengthening component.
REG: Almaty-Bishkek Regional Road Rehabilitation Project (L1774/1775, TA3530/3531)	31 Oct 2000	The project will help the governments of Kazakhstan and Kyrgyz Republic rehabilitate the Almaty–Bishkek road, removing physical and nonphysical cross-border barriers, improving coordination and management of road safety, and introducing a road maintenance system.	119.1	The attached advisory TA project will help implement the cross-border agreement and road safety initiatives in both countries including review of legislation on safe driving, safety audits, safety education, vehicle safety standards, road safety research, and emergency assistance to accident victims.	196.0 204.0	Kazakhstan road safety component  Kyrgyz road safety component (Includes consultancy, printing of guidelines and other logistical items)
KGZ: Southern Transport Corridor Road Rehabilitation Project (L2106)	23 Nov 2004	The project includes improvement of 124 km of the Osh–Gulcha–Sopu Korgon road, consulting services and procurement of maintenance equipment.	43.4	Civil works to improve road safety on Taldyk Pass and construction of a roadside station at Sopu Korgon.	0.50	Estimated contract value for Taldyk Pass civil works package
TAJ: Dushanbe-Kyrgyz Border Road Rehabilitation Project I (L2050)	15 Dec 2003	The project comprises improvement of about 140 km of two-lane highway; improvement of 77 km of rural roads; and procurement of maintenance equipment and consulting services for construction supervision,	23.6	Work activities with impacts on road safety include installation of safety facilities on the mountainous section, improvement of road surfaces, and replacement of five deteriorated bridges on the rural roads. Consulting services	15.0	Amount represents foreign exchange cost of civil works, maintenance equipment, and entire cost of consulting services.  Consultancy inputs: about 1 person-month out of total 44

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		monitoring and evaluation, and implementation of road safety measures.		support conduct of road safety audit and advice on enforcement measures.		person-months of international consultant inputs, plus support from domestic consultants.
<b>East Asia</b> PRC: Southern Yunnan Road Development Project (L1691)	24 Jun 1999	The project comprises construction of toll expressway between Yuanjiang and Moehl, upgrading of feeder roads to poor communities, and developing institutions.	770.3	The project scope includes procurement of equipment for traffic engineering and monitoring, toll collection, quality control, road maintenance and safety, tunnel ventilation, and monitoring.	25.8  2.0	Amount refers to equipment component.  Amount refers to foreign exchange cost of consultancy and training component.
PRC: Shanxi Road Development Project (L1701)	30 Sep 1991	The project will improve access of industrial and agricultural enterprises to markets; improve access of rural population to market opportunities, social services, and employment; help attract investments; and reduce congestion and accidents on existing roads.	726.1	Includes a package of traffic monitoring equipment, and weigh bridges will be installed to reduce slow moving overloaded trucks.  An international consultant will be recruited to undertake road safety audit and to advise on final safety improvements of expressway.	39.6  1.5	Amount refers to entire cost of equipment component.  Amount includes entire foreign exchange cost of consulting and training services.
PRC: Shaanxi Roads Development (L1838)	30 Aug 2001	The project involves construction of an expressway, improvement of local roads, and consulting services and training.	757.0	Road safety component includes procurement of equipment and consultancy services.	24.7	Amount refers to ADB financing for equipment and consulting services.
PRC: Guangxi Roads Development (L1851)	30 Oct 2001	The project includes constructing an expressway and highway across flat-to-hilly terrain, improving local roads servicing poor villages; and providing consulting services and training.	455.2	Road safety component includes procurement of equipment and consultancy services.	12.3	Amount refers to ADB financing for equipment and consulting services.
PRC: Ningxia Roads Development Project (L2004)	11 Sep 2003	The project involves construction of an expressway, improvement of local roads, and procurement of equipment for road maintenance, toll collection, surveillance, vehicle weigh stations, and road safety.	611.8	Road safety audits conducted during the design stage and before the expressway opens. Specific traffic safety features include axle weigh stations and weigh bridges, reinforced road signage, emergency parking space in long tunnels, improved	250.0	Amount represents 41% of total project cost.  Consultancy inputs: about 2 person-months out of total 55 person-months for international consultants.

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
				pavement marks, lane for slow-moving vehicles, emergency communication system, and staff training and capacity building.		
PRC: Western Yunnan Roads Development Project (L2014)	28 Oct 2003	The project comprises the construction of a 77 km four-lane access-controlled expressway, upgrading 294 km of county and township roads, and procuring equipment for maintenance, toll collection, surveillance and communications, vehicle weighing stations, road safety, office administration, land acquisition and resettlement, and consulting services for construction supervision and road safety audits.	582.0	Road safety audits conducted during the design stage and before the expressway opens. The project will promote road safety by providing axle weighing stations, reinforced road signage, emergency parking space in long tunnels, speed bumps, lanes for slow-moving vehicles, escape ramps, emergency communication system, and staff training and capacity building.	218.1	Amount represents foreign cost of expressway civil works, including equipment and associated facilities, and local road maintenance equipment and consulting services and capacity building.
PRC: Southern Sichuan Roads Development Project (L1918)	20 Sep 2002	The project involves construction of an expressway, improving local roads servicing poor countries and townships, and providing consulting services and training.	1,019.0	Procurement of road safety equipment and consulting services for road safety audits, review of road safety action plans, and training for staff.	15.0 2.3	Amount refers to total equipment component. Amount refers to total foreign exchange cost of consultancy component.
PRC: Xian Urban Transport (L2024)	27 Nov 2003	The project comprises constructing a 71 km ring road; upgrading and constructing 16 km of connector roads; improving five areas of urban transport, procuring equipment; and acquiring land and consulting services for construction supervision, monitoring, and capacity building.	762.0	The urban transport improvement component comprises expansion of traffic signal system and road safety audit program; development of road safety strategy, vehicle emission control, and urban transport planning; and development of action plan for improving public transport.	45.4	Amount represents cost of urban transport improvement, equipment, and consulting and training services.
PRC: Shanxi Road Development II Project (L1967)	12 Dec 2002	The project will construct a new expressway and bridge over the Yellow River, improve local roads servicing poor counties and	326.8	Consulting services and procurement of equipment for communication and monitoring system, lighting devices,	5.5 1.5	Amount refers to total equipment component Amount refers to total foreign exchange cost of consultancy

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		townships, and provide consulting services and training.		maintenance equipment, load testing, and road safety.		component. About 2 person-months for road safety out of 38 person-months of international consultants.
PRC: Hunan Roads Development Project (L2089)	9 Sep 2004	The project comprises constructing four-lane access-controlled toll expressway, upgrading local roads, procuring equipment for road maintenance and safety, toll collection, surveillance, etc., and providing consulting services for construction supervision, safety audits, monitoring and evaluation, and capacity building.	778.0	Development of road safety action plan, road safety audit, black-spot improvement, and traffic law enforcement. A road safety specialist will be engaged to help develop a comprehensive road safety strategy.	10.5	Amount refers to total equipment component, and total foreign exchange cost of consultancy services.
PRC: Guangxi Roads Development II Project (L2094)	21 Oct 2004	The project involves (i) construction 188 km of a four-lane access-controlled toll expressway, connecting roads, interchanges, toll stations, traffic control centers, roadside stations, and asset management and maintenance centers; (ii) upgrade of intercountry and village roads; (iii) procurement of equipment for asset management and maintenance, expressway toll collection, safety, and vehicle-weighting stations; (iv) addressing land acquisition and resettlement issues; and (v) consulting services and capacity building.	726.0	The project includes a road safety and traffic enforcement component which will take into account the requirements set out in the new national road safety law which became effective in May 2004. This includes road safety audit and black spot and maintenance plans, traffic enforcement, emergency and health care services, education for road users, and awareness and publicity materials.	10.5	Amount represents ADB financing for equipment component.
PRC: Central Sichuan Roads Development (L2181)	22 Sep 2005	The project will construct an expressway across mountainous terrain, improve local roads, and provide consulting services and training to enhance capacity at local communications bureau, construction quality, road safety,	2.1	Procurement of road safety equipment and consulting services to support road safety audit.	82.3	Amount refers to ADB financing for consulting services component.

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		and project monitoring and evaluation.				
PRC: Hunan Roads Development III (L2219)	15 Dec 2005	The project will construct a 64 km expressway, upgrade 129 km of local roads, and provide consulting services and training to enhance quality of construction, maintenance management system, intelligent transport system, road safety and project monitoring and evaluation.	519.5	Enhanced electronic enforcement and monitoring, up-to-date information to travelers, assistance in emergencies, improved traffic management, procurement of road safety equipment.	7.6	Amount represents 4% of ADB loan.
PRC: Heilongjiang Roads Network Development (L2247)	26 Jul 2006	The project comprises (i) a main highway component—upgrading or constructing five sections totaling 428 km of class-III highways or unclassified roads to two-lane class-II or -I highways, (ii) a rural link road component to strengthen the integrated network in the project area; (iii) local maintenance; and (iv) equipment, consulting services, capacity development, and land acquisition and resettlement.	524.6	Consulting services for development and implementation of road safety action plan, accident monitoring system.	0.6	Amount refers to allocation for rural road safety component.  Consultancy inputs: about 20 person-months of domestic consulting services.
MON: Regional Road Development Project (L2087)	22 Jul 2004	The project will develop the remaining section of Mongolia's north-south road transport corridor between Choyr and the border with the PRC in Zamyn-Uud.	78.1	Road safety component comprises (i) installation of road safety features, (ii) road safety audit of the detailed design of the project, (iii) distribution of pamphlets and posters on road safety to raise public awareness, (iv) procurement of patrol vehicles and two-way communication radios, and (v) traffic police training.	0.4	Amount represents road safety component.
PRC: Gansu Roads Development Project (L2125)	13 Dec 2004	The project comprises construction of a four-lane toll expressway, upgrading local roads, procurement of equipment	882.0	Road safety component includes procurement of equipment and consultancy services.	9.0	Amount refers to ADB financing for equipment, consulting services, and training.



Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		for road maintenance, toll collection, surveillance, tunnel operations, road safety, etc., and consulting services for construction supervision, road safety audit, monitoring and evaluation, and capacity building.				
<b>South Asia</b> BAN: Southwest Road Network Development Project (L1708-BAN)	16 Nov 1999	The project will improve and construct about 166 km of roads and construct a 450-meter bridge over the Arial Khan River. The project will also undertake road safety civil works at selected black spots.	214.5	The project will address road safety issues through improved road design and construction, and public awareness campaigns, and institutional support to the National Road Safety Council for the implementation of its National Road Safety Action Plan. The Road Design and Safety Circle will be established to supervise development of road design and safety codes.	2.0	Represents foreign exchange and local currency cost of road safety civil works.  Consultancy inputs: about 30 person-months, out of 300 person-months.
BAN: Road Network Improvement and Maintenance Project (L1920)	10 Oct 2002	The project will reconstruct 47 km of regional roads and 127 km of feeder roads, support periodic maintenance of 400 km of roads, support routine maintenance, and improve black spots and conduct education campaigns for road safety, and provide consulting services for project management and construction supervision.	122.9	Civil works at selected accident-prone areas, conduct of safety audits along with detailed design to comply with safety requirements and consulting services for the development of black spot improvement plan.	0.6  6.2	Cost of black spot improvements.  Represents total cost of consultancy services. About 3 person-months international (out of 163 person-months) and 6 person-months domestic consultants (out of 745 person-months).
BAN: Road Network Improvement and Maintenance Project II (L2021)	20 Nov 2003	The project will help the government implement sector and institutional reforms, and improve regional and district roads.	187.1	The road safety component involves road safety audits, installation of deviation boards, widening of pavement sections of main roads, providing off-road facilities for pedestrians, and providing adequate reflective warning signs.	1.6	Cost of road safety component.

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
BHU: Road Improvement (L1763)	23 Oct 2000	The project will undertake improvements on the East-West Highway, including resurfacing, construction of line drainage, and slope protection works.	12.8	Consulting services include component to assist the Department of Roads in strengthening its capacity in road safety measures.	1.1	Represents cost of consulting services component, about 4 person-months of international consultant inputs.
BHU: Road Network Project (L2187; TA 4658)	30 Sep 2005	The project will strengthen part of the Trongsa–Gelephu national highway and construct feeder roads.	34.1	The attached advisory TA will help build the capacity for road safety audit and road asset management. Safety awareness campaign will be conducted for communities along selected feeder roads.	0.3	Represents total TA cost.
IND: Surat-Manor Tollway Project (L1747)	27 Jul 2000	The project involves construction of two lanes and pavement strengthening of the existing two lanes of the national highway in the states of Gujarat and Maharashtra.	280.0	Safety elements included in civil works.	180.0	Amount refers to total ADB financing for civil works and consulting services.
IND: Western Transport Corridor Project (L1839; TA3724)	20 Sep 2001	The project will finance upgrading of the existing two-lane single carriageway to a four-lane divided highway on the Tumkur–Haveri section of about 259 km on part of National Highway 4 in the state of Karnataka.	378.0	Investment component includes incorporating specific design features on road construction. Capacity building component includes carrying out of road safety audit.		Does not include cost of TA.
IND: East-West Corridor Project (L1944)	26 Nov 2002	The project has three components: investment (rehabilitation and widening of two highways); private sector participation (preparation of build-operate-transfer package for identified sections); and strengthening capacity of the National Highways Authority of India.	575.8	Various road safety features incorporated in civil works. Advisory services to develop a mechanism for a regular highway patrol system and emergency medical services and a highway police system.	320.0	Amount refers to total ADB financing for civil works and consulting services.

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
IND: Rural Roads Sector I (L2018)	20 Nov 2003	Under the sector loan modality, the project will finance the construction of 11,000 km of rural roads.	571.0	Consulting services to support development of road safety audit and development of community-based approaches to road safety.		
IND: National Highway Corridor Sector I Project (L2029)	4 Dec 2003	The project's main element is to rehabilitate and widen priority sections of the East-West Corridor.	760.0	Consulting services to assist in designing the road safety zone concept and establishing operational arrangements for enforcement and emergency medical service. Procurement of road safety equipment and systems.	0.5  11.8	15 person-months for international consultant inputs  Cost of domestic equipment component.
IND: Chhattisgarh State Roads Development Sector Project (L2050)	15 Dec 2003	Under the sector lending modality, the project will improve about 1,700 km of state roads. Consulting services will be provided to assist in construction supervision, as well as to support adoption and implementation of the community road safety program, development of road safety plans and a road accident database, and conduct of road safety audit for all subprojects.	285.7	Road safety measures include conduct of road safety audits; development of road safety plans that involve education, enforcement, driver training, and vehicle mechanical standards; and development of a road accident database.	0.4  0.3	Cost of road safety equipment component.  Cost of road safety consultants.
IND: Madhya Pradesh State Roads Sector Development Program (L1958/1959; TA4013)	5 Dec 2002	The project will support Madhya Pradesh's state road sector reform and rehabilitate the fast deteriorating state road network. It includes TA for institutional strengthening and capacity building of Madhya Pradesh state road sector.	30.0 (policy)  261.2 (investment)	The program component supports implementation of road safety action programs.  Procurement of various equipment and consultancy services.	3.0	Adjustment cost for road safety program under the program loan component.
IND: National Highway Sector II Project (L2154)	21 Dec 2004	The project is the fifth in a series of interventions under the National Highways Development Program. The project supports the last stage of institutional strengthening program and	670.6	Road safety component includes provision of consulting services, procurement of road safety equipment, and establishment of motor driver training institute.	5.1	Amount represents ADB financing for road safety equipment and consulting services component.

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		financing the upgrading of the north-south corridor, including implementing a road safety.				
NEP: Road Network Development Project (L1876)	13 Dec 2001	The project will maintain about 140 km of the East–West Highway, improve 165 km of roads to an all-weather paved surface, construct a district headquarters access road, and improve 10 km of a cross-border access road.	69.5	Road safety civil works conducted at selected accident-prone areas or black spots, and axle-load measurement done along the roads and selected cross-border locations. Training and public awareness on road safety improvement conducted, and information campaign on heavy vehicle management for enforcement agencies carried out.	0.4	Cost of road safety civil works at selected accident-prone areas or black spots and axle-load measurement along the project roads; includes training and awareness programs.
NEP: Subregional Transport Facilitation Project (L2097)	4 Nov 2004	The project is part of ADB's SASEC program to support subregional cooperation. Components include construction and upgrade of inland clearance depot access road, automation system of customs cargo clearance and management, institutional building.	20.0	Road safety design measures, training and public awareness campaign on road safety	668.6	Represents total ADB financing for consulting services component.
PAK: Road Sector Development Program (L1891/1892/1893)	19 Dec 2001	The program comprises a national policy reform program, and the investment component comprises a provincial sector development project (PSDP).	150.0 (policy)	The policy framework includes support for adoption of a comprehensive approach to road safety, including public awareness and stockholder consultation.  Investment component includes safety elements in civil works and provision of consulting services.	150.0	Represents total ADB financing for the PSDP.
PAK: Punjab Road Development Sector (L1928)	31 Oct 2002	The project follows a sector approach for the following three components: (i) institutional	222.1	Institutional development component will strengthen Communications and Works	3.0	Represents cost of axle-load control component and road safety pilot accident reporting

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		development of Communications and Works Department and the districts, (ii) rehabilitation of provincial highways, and (iii) rehabilitation of rural access roads on the secondary network.		Department and capacity for road maintenance and road safety functions, including training and provision for information technology. The provincial highways component to incorporate road safety design features and install a pilot accident-reporting center. Rural access roads component includes road safety design audit and provision of consulting services for design and construction supervision.		center.
PAK: National Highway Development Sector Investment Program Multitranche Financing Facility (L2210)	13 Dec 2005	The program is designed to improve transport efficiency by (i) facilitating adoption of a national transport policy, (ii) strengthening National Highway Authority performance in managing the national highway network, (iii) improving road safety and road maintenance and road maintenance funding.	2,308.3	Institution- and capacity-building component includes support for road safety management.	770.0	Refers to total multitranche financing facility amount.
SRI: Road Sector Development Project (L1986; TA4074/4075)	19 Dec 2002	The project is the first in the series of interventions supporting the first stage of the reform program and financing improvement of local roads. The reform program component will establish the transfer of national road provision to the private sector in stages and strengthen capacity of Road Development Authority. The investment component will improve about 980 km of provincial roads.	92.5	The reform component includes procurement of various equipment and provision of training.	1.3	Does not include TA cost.

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
SRI: National Highways Sector Project (L2217; TA4726)	15 Dec 2005	The project will upgrade about 270 km of national highways. A pilot performance-based maintenance program in 4–6 executive engineer divisions will be developed and contracted out to local private contractors.	208.0	Road safety audits are built into the engineering designs.	150.0	Represents total ADB financing for institutional policy support, civil works, and consultants.
PAK: Balochistan Road Development Sector Project (L2019)	20 Nov 2003	The project is the third intervention adopted under the programmatic approach. The project has four main components: (i) provincial institutional development; (ii) provincial access, comprising rehabilitation and construction of about 1,100 km provincial roads; (iii) a cross-border development supporting improved trade facilitation; and (iv) a national highway comprising rehabilitation and construction of 247 km of national highways.	267.3	Road safety audits to be conducted as part of updating existing design, preparation of road safety action plan, procurement of equipment and consulting services to strengthen institutional capacity for road maintenance and road safety functions.	3.1	Foreign exchange cost of equipment and consulting services under the provincial institutional development component.
PAK: North-West Frontier Province Road Development Sector and Subregional Connectivity Project (L2103/2104)	18 Nov 2004	The project will improve (i) the provincial road network in North-West Frontier Province, (ii) build capacity of road agencies, and (iii) enhance subregional connectivity.	301.2	Consulting services, equipment and capacity building for the establishment of road accident data systems, road safety audits, improvement of black spot improvements, road safety education and campaigns, emergency care to road accident victims, and road safety research.	5.0	Amount represents total ADB financing for road safety component.
SRI: Southern Transport Development Project (L1711)	25 Nov 1999	Southern highway component includes construction of the first two-lane carriageway of what will ultimately be a four-lane high-capacity limited access express highway. Road safety component includes consultancy services,	295.9	Implementing a detailed road safety action plan. Activities include strengthening road safety institutions, road safety audit, driver and training program; improving vehicle safety standards, vehicle registration	2.6 3.4 2.1	Civil works Consultants Equipment

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		minor civil works, and supply of equipment.		and administration; strengthening the traffic police; establishing highway patrol units, emergency rescue services, traffic education in schools, black spot improvement program, accident data system, and traffic laws and regulations; and monitoring road safety activities, traffic training center, and information campaigns and public awareness.		
<b>Southeast Asia</b> CAM: Primary Roads Restoration Project (L1697; TA3257)	21 Sep 1999	The project will restore important sections of Cambodia's primary road network, and address several sector issues including (i) facilitation of efficient transport services, (ii) promotion of balanced regional development, and (iii) development of institutional capacity.	88.1	The project scope includes procurement of vehicle monitoring and laboratory equipment for, roadside furniture for traffic control and safety.	3.2	Represents cost of equipment component.
INO: Road Rehabilitation Sector Project (L1798)	11 Dec 2000	Sector loan to support the government's program of road and bridge rehabilitation works in 15 provinces of Java, Kalimantan, Sulawesi, and Sumatra in 2001–2004.	250.0	The project scope includes civil works for road betterment to improve safety. The road sector policies component includes consulting services to assist in monitoring progress of action plan for implementation of road traffic policies, including road safety and road planning and management. Funds will be allocated to provide guardrails, signs, materials with reflectors, and minor civil works for high-accident locations.	8.1	ADB financing for road sector policies and capacity building in road components.
INO: Road Rehabilitation II (L2184)	29 Sep 2005	The project will rehabilitate 1,266 km of deteriorated road links and replace 21 bridges on the Trans-	215.8	Road safety awareness campaigns, improvement of accident-prone areas.	4.1	Amount refers to total ADB financing for component on road sector policies.

Project Name/ Loan No.	Approval Date	Project Description	Total Project Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		Sumatra Central and Eastern corridors and Trans-Kalimantan Highway.				
GMS: Cambodia Road Improvement Project (L1945)	26 Nov 2002	The project will rehabilitate national roads and reconstruct about 45 bridges to complete the missing link in the GMS regional highway, establish direct highway connection between Thailand and Siem Reap and Angkor Wat, and provide access to large rural areas.	77.5	Safety improvement measures included as part of civil works component.	50.0	Amount refers to total ADB financing for the project.
LAO: Rural Access Roads Project (L1795; TA3557)	07 Dec 2000	The project will improve about 220 km of national and provincial roads and about 100 km of feeder roads.	37.5	The environmental analysis under the TA touches on measures to ensure safety and prevent encroachments, vehicle emissions, etc.)	-	As part of consultants' terms of reference
LAO: Roads for Rural Development Project (L2085)	28 Jun 2004	The project will rehabilitate about 292 km of selected roads to remote rural regions, provide funding for road maintenance, execute a project for road safety, and provide a study of tariffs and policies for transport services.	39.2	Implementation of national road safety action plan, establishment of a national road safety council, development of funding partnerships with private sector, road safety awareness and education, establishment of road accident database, demonstration projects on identification, analysis and elimination of accident black spots, development of capabilities in emergency services and incident response, provision of enforcement equipment, driver training, and vehicle inspection.	-	The cost of consulting services for the road safety program is financed by the Nordic Development Fund.
VIE: Central Regional Transport Networks Improvement Sector	11 Nov 2005	The project includes improvement of provincial and district road networks and an institutional development component to assist	94.5	The institutional development component includes support for development of road safety program in the central provinces.	-	The institutional development component is financed by the Nordic Development Fund.



<b>Project Name/ Loan No.</b>	<b>Approval Date</b>	<b>Project Description</b>	<b>Total Project Cost (\$ million)</b>	<b>Road Safety Component Description</b>	<b>Total ADB Financing (\$ million)</b>	<b>Remarks</b>
Project (L2195)		the provincial departments of transport to carry out core road management activities.				
<b>Pacific</b> PNG: Road Maintenance and Upgrading Sector Project (L1709)	16 Nov 1999	Sector loan to improve critical road links, establish sustainable and effective road maintenance operation in the region, and improve sector management.	114.7	Consultancy advice in formulating a policy to control axle loads, enforce design standards, and reinforce law enforcement.	7.8	Represents entire foreign exchange cost of consultancy services for support to implementation and strengthening of Highlands Region Maintenance Group. Total of about 375 person-months of consultancy inputs for this component.

**ADB TECHNICAL ASSISTANCE WITH ROAD SAFETY COMPONENT**  
(1990–2005)

<b>Project Name/ Loan No.</b>	<b>Approval Date</b>	<b>Project Description</b>	<b>Technical Assistance Type</b>	<b>Total Technical Assistance Cost (\$ million)</b>	<b>Road Safety Component Description</b>	<b>Total ADB Financing (\$ million)</b>	<b>Remarks</b>
<b>Central and West Asia</b> AZE: Preparing the Southern Road Corridor Improvement Project (TA4684)	3 Nov 2005	The project includes improvement of a section of the 243 km Alyat–Astara road, developing cross-border facility at Astara, providing access to poor communities along the road, building institutional capacity of the Road Transport Service Department, and addressing the road sector policy issues.	PP	0.88	Consultancy inputs include review of road safety issues and recommending better ways of coordination among responsible agencies.	0.70	Cost of consulting services
AZE: Transport Sector Development Strategy (TA4582)	28 Apr 2005	The TA aims to improve transport sector performance by assessing in detail all modes of transport, and identifying strategic priorities and resources for sector development and operational needs for the medium term.	AD	0.44	Consultancy inputs include review of issues affecting the transport sector, among others, design standards, overloading and safety.	0.24	Cost of consulting services
KGZ: Preparing the Dushanbe-Kyrgyz Border Road Rehabilitation Project Phase II (TA4382)	31 Aug 2004	The TA will help the Government prepare the Dushanbe-Kyrgyz Border Road Rehabilitation Project phase II, including furthering the progress of institutional development and policy reforms in the road subsector.	PP	0.50	Consultancy inputs include reviewing the status of road safety and recommending measures to improve road safety.	0.40	Cost of consulting services

Project Name/ Loan No.	Approval Date	Project Description	Technical Assistance Type	Total Technical Assistance Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
UZB: Transport Sector Strategy (TA4659)	3 Oct 2005	The TA will help prepare a transport sector strategy for Uzbekistan.	AO	0.77	Consultancy inputs include review of issues affecting the transport sector, among others, design standards, overloading and safety.	0.52	Cost of consulting services
<b>East Asia</b> PRC: Preparation of a Road Safety Program (TA2177)	29 Sep 1994	The TA will formulate for Heilongjiang province a comprehensive highway safety program.	AO	0.80	About 17 person-months of consultancy inputs for development of institutional capacity, including analysis of human resources and training needs, identification of legal framework, assessment of accident database, and enforcement of vehicle and driving standards and regulations. About 20 person-months of overseas training of staff concerned with road safety will be provided under the TA.	0.50	Cost of consulting services
PRC: Capacity Building in Traffic Safety, Planning and Management (TA3341)	14 Dec 1999	The TA will enhance nationwide capacity in traffic safety planning and management by applying the concepts developed in the regional guidelines developed under ADB RETA 5620.	AO	0.90	About 22 person-months of consultancy inputs to review current traffic legislation and prosecution patterns, review of existing traffic management systems and prepare an action plan to introduce new technologies for traffic and road safety management. The TA will	0.41	Cost of consulting services

Project Name/ Loan No.	Approval Date	Project Description	Technical Assistance Type	Total Technical Assistance Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
					provide training for staff in urban planning and management, driver training and testing, vehicle registration and safety standards, emergency response and contingency planning, and accident analysis systems.		
PRC: Preparing the Xi'an Urban Transport Project (TA3907)	27 Aug 2002	The TA will help the Government prepare an urban transport project in Xian.	PP	0.95	Total 41 person-months of international and domestic consultancy inputs for preparation of feasibility study, including review of road safety practice, road safety audit, data collection systems, accident trends, and accident causes.	0.62	Cost of consulting services
PRC: Preparing the Central Sichuan Roads Development Project (TA4274)	18 Dec 2003	The TA will update the feasibility study and review road sector issues.	PP	0.88	Total 17 person-months of international and 23 person-months of domestic consulting services to review all technical aspects and engineering designs, including review of road safety monitoring system and design of road safety component.	0.60	Entire cost of ADB financing
PRC: Poverty Impact of Area-Wide Road Networks (TA4322)	26 Mar 2004	The TA will help prepare a road network strategy that promotes, in an integrated manner, expressways and local roads to meet communities' needs	AO	1.40	Consulting services for preparation of user manual and guidelines, and design standards that takes road safety into account.	0.60	Cost of consulting services

Project Name/ Loan No.	Approval Date	Project Description	Technical Assistance Type	Total Technical Assistance Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		and support economic growth.					
PRC: Policy Reform in Road Transport (TA4351)	24 Jun 2004	The TA will prepare a road transport reform action plan and help implement the action plan.	AO	0.63	About 10 person-months of international and 18 person-months of domestic consulting services to assist in review of road transport policies and regulations for traffic movement, speed limit, rights and duties of pedestrians, rules for cyclists, road signs, signals, traffic accident reporting systems, and penalty provisions.	0.36	Entire cost of ADB financing
PRC: Preparing the Master Plan for Road Network Improvement Project (TA4371)	6 Aug 2004	The TA will develop a road development program for efficient and effective road rehabilitation for the next 5–10 years, and prepare a high priority road improvement project for follow-on investment.	PP	2.36	Feasibility study component includes international and domestic consultancy inputs for conduct of road safety audit, and identification of road safety issues.	1.0	Entire cost of feasibility study component
PRC: Preparing the Hunan Roads Development III Project (TA4384)	2 Sep 2004	The TA will help in refining the feasibility study for an integrated roads development project.	PP	0.63	Consultancy inputs include review of safety measures for the proposed tunnels, and if necessary, suggest and information system and safety operation system.	0.40	Cost of consulting services
PRC: Preparing the Heilongjiang Road Network Development Project (TA4592)	3 Jun 2005	The TA will help prepare a road network development project.	PP	0.63	Consultancy inputs include review of road sector issues in key areas such as road safety, vehicle emissions, local	0.42	Cost of consulting services

Project Name/ Loan No.	Approval Date	Project Description	Technical Assistance Type	Total Technical Assistance Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
					road maintenance, and others.		
PRC: Preparing the Western Roads Development Project (TA4639)	30 Aug 2005	The TA will help upgrade feasibility studies for the ensuing project.	PP	1.0	Consultancy inputs include review of road sector issues in key areas such as road safety, vehicle emissions, and design standards.	0.65	Cost of consulting services
MON: Preparing the Third Roads Development Project (TA3990)	15 Nov 2002	The TA involves a comprehensive study of the feasibility of constructing a paved road of about 430 kilometers from Choir to the PRC border.	PP	0.71	Total 48 person-months of international and domestic consultancy inputs for preparation of feasibility study, including assessment of operational traffic safety measures and review of existing road conditions to assess their effects on vehicle operating costs and accidents.	0.60	Cost of consulting services
<b>South Asia</b> BAN: Preparing the Padma Multipurpose Bridge Project (TA4652)	22 Sep 2005	The TA will review the engineering aspects of the preliminary study and design prepared by the JICA feasibility study.	PP	0.80	Consultancy inputs include review of engineering aspects in the feasibility study including design methodologies and standards and road safety measures.	0.56	Cost of consulting services
IND: Road Safety (TA 2001)	29 Nov 1993	The TA will help the Government improve knowledge, capability, and train personnel in accident analysis, traffic engineering, and the design of low-cost road accident countermeasures.	AO	0.23	About 8 person-months of consultancy inputs for developing accident analysis procedures, including identification of black spots and establishment of monitoring system and countermeasures.	0.21	Entire cost of ADB financing

Project Name/ Loan No.	Approval Date	Project Description	Technical Assistance Type	Total Technical Assistance Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
IND: Preparing the Chhattisgarh State Roads Sector Development (TA3995)	21 Nov 2002	The TA has two components: (i) project preparation component and (ii) institutional strengthening and policy reform component	PP	1.00	About 6 person-months of consultancy inputs for the institutional strengthening component involving formulating an action plan to improve road safety and establishment of a road safety secretariat.	0.80	Entire cost of ADB financing
IND: Preparing the High Priority National Highways Project (TA4355)	8 Jul 2004	The TA will prepare two ADB-funded projects to be provided for the period of 2005–2006, each project would cover about 1,000–1,200 km or 10–25 subprojects, covering both public private partnership (PPP) and non-PPP subprojects.	PP	1.0	Consultancy inputs include review design standards and road safety measures contained in the feasibility study and preliminary design.	0.82	Cost of consulting services
IND: Preparing the North Eastern State Roads Project (TA4378)	23 Aug 2004	The TA will help prepare the North Eastern State Roads Project and will also build the capacity of road sector institutions at state level.	PP	1.0	Consultancy inputs include assessment of road legislation, regulations, and other legal provisions to check overloading of trucks and enforcement of good driving standards.	0.60	Cost of consulting services and equipment component
NEP: Preparing the Transport Connectivity Sector Project (TA4347)	4 Jun 2004	The TA will prepare a medium-term transport connectivity program and a road investment sector project.	PP	0.72	Consultancy inputs include assessment of road safety standards and formulation of a community-oriented road safety program.	0.50	Cost of consulting services
MLD: Transport Master Plan (TA3922)	6 Sep 2002	The TA supports the development of a transport master plan that will direct transport sector	AO	0.27	About 3 person-months of international and 3 person-months domestic consultancy inputs for the	0.23	Entire cost of ADB financing

Project Name/ Loan No.	Approval Date	Project Description	Technical Assistance Type	Total Technical Assistance Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		development in the next 10 years.			development of a transport sector regulatory framework, including measures to improve traffic management and safety.		
SRI: Road Safety Study (TA 2152)	15 Sep 1994	The TA will help prepare a road safety action plan that is supported by an effective road safety program and data acquisition and analysis.	AO	0.84	About 25 person-months of consultancy inputs in road safety management, accident analysis, vehicle inspection, and road safety-oriented education campaigns.	0.21	Entire cost of ADB financing
<b>Southeast Asia</b> CAM: Engineering Design Update for the GMS: Cambodia Road Improvement Project (TA 3868)	21 May 2002	The TA will update the existing project design to assure compliance with ADB's policies and to facilitate rapid deployment upon approval.	PP	0.50	Key activities include updating the design, taking into account the objective of improving road safety, and minimizing adverse social and environmental impacts.	0.40	Entire cost of ADB financing
CAM: Preparing the Transport Infrastructure Development and Maintenance Project (TA4691)	14 Nov 2005	The TA will help prepare the ensuing project, develop a proposal for medium-term ADB funding of secondary road rehabilitation, identify supplementary funding for road maintenance, assist in implementing a road safety action plan, and undertake a study to investigate the causes of road pavement defects.	PP	1.18	Consultancy inputs include a road safety study to prepare the road safety improvement component of the ensuing project.	0.80	Cost of consulting services



Project Name/ Loan No.	Approval Date	Project Description	Technical Assistance Type	Total Technical Assistance Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
INO: Preparing the Second Road Rehabilitation Project (TA 3989)	15 Nov 2002	The TA will help the Government formulate an investment project for strategic road rehabilitation and upgrading in Kalimantan and Sumatra islands.	PP	1.13	Consultancy inputs include reviewing sector issues, such as vehicle overloading, road safety and vehicle emissions, and identification of training needs.	0.90	Entire cost of ADB financing
LAO: Preparing the Northern Greater Mekong Subregion Transport Network Improvement (TA4742)	19 Dec 2005	The TA will prepare a project design and feasibility study for a project to rehabilitate and upgrade transport links and facilities.	PP	0.95	Consultancy inputs include road safety audits for all improvement works.	0.57	Cost of consulting services
<b>Pacific</b> TON: Road Cost Recovery and Safety Strategies (TA2113)	28 Jun 1994	The TA will help prepare road recovery and safety strategies to ensure the sustainability of the government's road upgrading program.	AO	0.18	About 2 person-months of consultancy inputs for the preparation of road safety legislations, initiating measures to adopt safety audits, improving accident black spots, preparing proposals for manpower training, and preparing the implementation of the road safety strategy.	0.17	Cost of consulting services
FIJ: Road Sector Reform and Safety Improvement (TA 2850)	26 Aug 1997	The TA will support road sector reforms and safety improvements,	AO	1.60	About 39 person-months consultancy inputs for development of institutional capacity.	1.40	Cost of consulting services
FIJ: Preparing the Fourth Road Upgrading (Sector) Project (TA4540)	23 Dec 2004	The TA will prepare feasibility study for the Fourth Road Upgrading Project to upgrade about 100 km of national and rural roads, and rehabilitate a similar length of roads on the	PP	0.60	Consultancy inputs include review of road safety reform and improvements under the Third Fiji Road Upgrading Project.	0.50	Cost of consulting services

Project Name/ Loan No.	Approval Date	Project Description	Technical Assistance Type	Total Technical Assistance Cost (\$ million)	Road Safety Component Description	Total ADB Financing (\$ million)	Remarks
		islands of Taveuni, Vanua Levu, and Viti Levu.					
<b>Regional</b> REG: Regional Initiatives on Road Safety (TA5620)	4 Jan 1995	The TA will review road safety problems in the Asia and Pacific region, provide an overview of current road safety initiatives and training needs in developing member countries, and provide road safety guidelines for policymakers in the region.	Study	0.60	About 20 person-months of consultancy inputs for review and analyses of road safety experience of other agencies, road safety trends in the Asia and Pacific region, develop a framework for assessing road safety activities and training needs in developing member countries, develop guidelines for senior policymakers, and develop other initiatives to promote road safety in the region.	0.60	Entire cost of ADB financing.
REG: Road Safety in the ASEAN (TA6077)	18 Dec 2002	The TA will help develop institutional capacity in relevant agencies in the Association of Southeast Asian Nations members to enable them to address road safety issues more effectively.	Study	0.56	About 29 person-months of consultancy inputs development of national road safety action plans and regional road safety strategy, including support for the conduct of in-country workshops and regional road safety workshop	0.50	Entire cost of ADB financing. Supplementary financing of \$422,000 obtained from Swedish International Development Cooperation Agency and other private partners.

### **ADB BASIC ROAD SAFETY DATA COLLECTION FORM**

To collect basic road safety-related information that Asian Development Bank (ADB) sections can collate and publish, basic data must be collected from each developing member country (DMC). Vehicle registration departments, economic ministries, and police forces in each country compile annual reports and the data collected could easily be extracted from such reports by ADB resident missions in each country. In the first instance, historic information will need to be collected to build the database. The following table provides a convenient means of collecting basic road safety-related data, and each ADB resident mission should be asked to complete and return the form to headquarters. In future years, resident missions will only need to provide data from the previous year to update the information held at headquarters. This will allow the basic magnitude, trends, and characteristics of the problem to be assessed for each country, so that those countries showing a rapid deterioration in road safety can be targeted for further attention.

**Basic Road Safety Data and Statistics Over 10 Years (1997–2006)**

(please complete as much as available even if only for most recent years)

Country	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
<b>General Data</b>											
Total vehicle fleet (x1,000)											
Motorcycles (x1,000)											
Motorcycles as percentage of total fleet											
Driver's licences issued per year											
Total driver's licences in use											
Population (x1000)											
Percentage of population under age 15											
Kilometers of paved road											
Kilometers of unpaved road											
Annual gross domestic product (US\$ millions)											
<b>Police-Reported Accidents</b>											
Road accidents (cases)											
Deaths											
Serious injuries											
Slight injuries											
<b>For office use</b>											
Completed by ..... Organization/Office .....											
E-mail ..... Telephone ..... Fax .....											

Note: Please indicate when death occurred (e.g., upon arrival, within 24 hours, within 7 days, or within 30 days)

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