

**ASIAN DEVELOPMENT BANK**

**TPA:IND 2000-21  
TPA:PRC 2000-21  
TPA:STU 2000-21**

**TECHNICAL ASSISTANCE  
PERFORMANCE AUDIT REPORT  
ON SELECTED TECHNICAL ASSISTANCE  
IN ROAD SAFETY**

**January 2001**

## ABBREVIATIONS

ADB	–	Asian Development Bank
DMC	–	developing member country
EA	–	Executing Agency
ESCAP	–	Economic and Social Commission for Asia and the Pacific
GRSP	–	Global Road Safety Partnership
HHEC	–	Heilongjiang Hatong Expressway Corporation
HPSB	–	Heilongjiang Public Security Bureau
IRC	–	Indian Roads Congress
JBIC	–	Japan Bank for International Cooperation
JICA	–	Japan International Cooperation Agency
MAAP	–	Microcomputer Accident Analysis Package
MOST	–	Ministry of Surface Transport
NHAI	–	National Highways Authority of India
OECD	–	Organisation for Economic Co-operation and Development
PRC	–	People's Republic of China
PWD	–	public works department
RETA	–	regional technical assistance
RRP	–	report and recommendation of the President
RRSI	–	Regional Road Safety Initiative
TA	–	technical assistance
TOR	–	terms of reference

## NOTES

- (i) The fiscal year (FY) of the Government of India ends on 31 March.
- (ii) The fiscal year (FY) of the Government of the People's Republic of China ends on 31 December.
- (iii) In this report, "\$" refers to US dollars.

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**BASIC DATA**  
**Regional Initiatives in Road Safety (TA 5620-REG)**

Type	Implementing Division/Office
Study	Transport and Communications Division East (IETC)

<b>Total TA Cost (\$'000)</b>			
Item	Estimated	Revised	Actual
Consultants	492.00	492.00	492.00
Remuneration	360.00	360.00	—
Accommodation and Per Diem	48.00	48.00	—
International Travel	65.00	65.00	—
In-country Travel	2.00	2.00	—
Communications	5.00	5.00	—
Reports	12.00	12.00	—
Seminar-Workshop	45.75	45.75	45.75
Air fares	30.00	30.00	—
Accommodation and Per Diem	15.75	15.75	—
Steering Committee	5.00	5.00	5.00
Editing Documents	0.00	20.75	12.73
Printing	0.00	36.00	31.17
Distribution	0.00	3.25	0.00
Contingency	57.25	57.25	57.25
<b>Total</b>	<b>600.00</b>	<b>660.00<sup>a</sup></b>	<b>643.90</b>

<b>Key Dates</b>	Expected	Actual
TA Approval		4 January 1995
TA Agreement		4 January 1995
TA Effectiveness		4 January 1995
TA Completion	October 1996	April 2000 <sup>b</sup>
TA Evaluation	—	August-September 2000 <sup>c</sup>

<b>Consultant Person-Months</b>		
Expertise	Expected	Actual
Engineer/Project Director/Team Leader	—	10.5
Road Safety Policy Adviser	—	1.3
Road Safety Researchers	—	4.9
Safety Engineer	—	1.1
Statistician	—	2.7
Traffic and Road Safety Engineer	—	4.0
Traffic and Cycling Facilities Engineer	—	2.9
Education and Publicity Adviser	—	1.8
<b>Total</b>	<b>20</b>	<b>29.2</b>

Executing Agency Asian Development Bank

— = not available.

<sup>a</sup> A supplementary TA for \$60,000 was approved on 12 September 1997.

<sup>b</sup> Financial completion.

<sup>c</sup> Intermittent

## Mission Data

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Type	No. of Missions	Mission Dates
Fact-Finding	1	30 September-7 October 1994
TA Review	2	17 August 1995
Operations Evaluation	2	30 January-10 February 1996
		27-31 August 2000 <sup>a</sup>
		14-16 September 2000

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<sup>a</sup> The Operations Evaluation Mission also evaluated TA 2177-PRC: *Preparation of a Road Safety Program*.

**BASIC DATA**  
**Preparation of a Road Safety Program (TA 2177-PRC)**

Type	Implementing Division/Office
Advisory and Operational <sup>a</sup>	Transport and Communications Division East (IETC)

<b>Total TA Cost (\$'000)</b>			
Item	Estimated	Revised	Actual
Consultants	<b>490.00</b>	<b>459.97</b>	<b>437.44</b>
Remuneration	320.00	320.00	—
Per Diem	70.00	70.00	—
International and Local Travel	37.00	37.00	—
Reports and Office Supplies	10.00	10.00	—
Contingencies	53.00	22.98	—
Training and Cost of Seminars	90.00	116.82	120.51
Equipment and Software	20.00	20.00	8.15
Government Observers	0.00	3.20	3.18
<b>Total</b>	<b>600.00</b>	<b>600.00</b>	<b>569.28</b>

<b>Key Dates</b>		
	Expected	Actual
TA Approval		29 September 1994
TA Agreement		2 March 1995
TA Effectiveness		2 March 1995
TA Completion	—	April 1997 <sup>b</sup>
TA Evaluation		August 2000

<b>Consultant Person-Months</b>		
Expertise	Expected	Actual
Team Leader/Accident Black Spot Specialist	—	4.0
Accident Systems Specialist	—	3.7
Traffic Education	—	3.3
Traffic Police Specialist	—	1.7
Technical Interpreter/Road Safety Engineer	0	5.0
<b>Total</b>	<b>17</b>	<b>17.7</b>

**Executing Agency** Heilongjiang Public Security Bureau

— = not available.

<sup>a</sup> Attached to Loan 1324-PRC: *Heilongjiang Expressway Project*.

<sup>b</sup> Submission of consultants' final report to ADB.

## Mission Data

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Type	No. of Missions	Mission Dates
Fact-Finding	1	1-21 March 1994 <sup>a</sup>
TA Inception	1	30 January-5 February 1996
TA Review	2	24 October-1 November 1996 <sup>b</sup>
		27 August-4 September 1997 <sup>c</sup>
Operations Evaluation	1	27-31 August 2000 <sup>d</sup>

<sup>a</sup> In conjunction with the fact-finding mission for Loan 1324-PRC: *Heilongjiang Expressway Project*, Loan 1325-PRC: *Yunnan Expressway Project*, and TA 2178-PRC: *Provincial Highways Network Study*.

<sup>b</sup> In conjunction with the review of Loan 1262-PRC: *Jilin Expressway Project*, Loan 1324-PRC: *Heilongjiang Expressway Project*, and TA 2178-PRC: *Provincial Highways Network Study*.

<sup>c</sup> In conjunction with the review of Loan 1324-PRC: *Heilongjiang Expressway Project* and the country projects review mission.

<sup>d</sup> The Operations Evaluation Mission also evaluated TA 5620-REG: *Regional Initiatives in Road Safety*.

**BASIC DATA**  
**Road Safety (TA 2001-IND)**

Type	Implementing Division/Office
Advisory and Operational <sup>a</sup>	Transport and Communications Division West (IWTC)

<b>Total TA Cost (\$'000)</b>			
Item	Estimated	Revised	Actual
Remuneration and Per Diem	160.00	166.72	166.58
Travel	17.00	28.08	29.96
Computer Equipment	0.00	10.84	10.84
Communications	1.00	—	—
Report Reproduction, Office Supplies, and Printing of Manuals	2.00	—	—
Seminar Facilities	7.00	—	—
Support Staff	2.00	—	—
Government Participant	3.00	—	—
Contingencies	18.00	4.36	—
<b>Total</b>	<b>210.00</b>	<b>210.00</b>	<b>207.38</b>

<b>Key Dates</b>		
	Expected	Actual
TA Approval		29 November 1993
TA Agreement		12 July 1994
TA Effectiveness		12 July 1994
TA Completion	September 1994	July 1997
TA Evaluation		October 2000

<b>Contracted Consultant Person-Months</b>		
Expertise	Expected	Actual
Road Safety Specialist	—	4.5
Accident Systems Specialist	—	4.5
<b>Total</b>	<b>8</b>	<b>9.0</b>

**Executing Agency** Ministry of Surface Transport

**Mission Data**

Type	No. of Missions	Mission Dates
Fact-Finding	1	21 April-4 May 1993 <sup>b</sup>
TA Review	1	11-15 September 1995
Operations Evaluation	1	9-19 October 2000

— = not available.

<sup>a</sup> Attached to Loan 1274-IND: *National Highways Project*.

<sup>b</sup> In conjunction with the fact-finding mission for Loan 1274-IND: *National Highways Project*.

## EXECUTIVE SUMMARY

Road safety is a major issue affecting the road sector. Road accidents remain a serious impediment to sustainable human development in many of the developing member countries (DMCs) of the Asian Development Bank (ADB).<sup>a</sup> The economic losses from road accidents and fatalities amount to a high 2-4 percent of gross domestic product in many DMCs. For example, fatality rates were at a high 80,000 per year in 1998 in India. This technical assistance performance audit report is the first operations evaluation report on selected technical assistance (TA) interventions on road safety. As of October 2000, ADB had provided a total of \$5.16 million for 10 TAs. The evaluation includes three of seven completed TAs: TA 5620-REG: *Regional Initiatives in Road Safety*,<sup>b</sup> which was the only TA with a regional scope; TA 2177-PRC: *Preparation of a Road Safety Program*,<sup>c</sup> and TA 2001-IND: *Road Safety*.<sup>d</sup> The latter two were attached to ADB loans in the People's Republic of China (PRC) and India, respectively.

TA 5620-REG was intended to review road safety problems in DMCs, provide guidelines for policymakers in the region, and assist ADB in identifying initiatives that could be implemented throughout the region. The TA also included two regional workshops, the first in Bangkok, Thailand and the second in Beijing, PRC. In addition, the TA aimed to review the previous implementation experience and identify lessons for new projects. The entire TA amount of \$600,000 was financed by ADB on a grant basis. TA 2177-PRC was attached to Loan 1324-PRC<sup>e</sup> (*Heilongjiang Expressway*). It aimed to help Heilongjiang Province formulate a comprehensive highway safety program that would serve as a model for similar programs in other provinces. TA 2001-IND, which was attached to Loan 1274-IND<sup>f</sup> (*National Highways*), aimed to assist personnel in the Ministry of Surface Transport (MOST) in training and capacity-building activities in the fields of accident analysis, traffic engineering, and design of low-cost countermeasures for road accidents.

The three ADB TAs on road safety were highly relevant and timely. The Operations Evaluation Mission found that the terms of reference in all the TAs were fully consistent with the needs of the executing agencies. The executing agencies actively interacted with the TA consultants during implementation. The TA reports were generally of a high quality. The benefits of the TAs were significant and generally visible.

TA 5620-REG significantly contributed to increasing awareness among DMC officials of road safety. Over 110 officials from more than 20 DMCs<sup>g</sup> participated in the workshop in Bangkok and over 450 attended the conference in Beijing,<sup>h</sup> and benefited very much. All participants and DMC officials considered the ADB *Guidelines on Road Safety* prepared under this TA highly useful and applied them in their work. TA 2177-PRC substantially improved

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<sup>a</sup> Source: Economic and Social Commission for Asia and the Pacific, *Road Safety in Asia and the Pacific*, 1998.

<sup>b</sup> TA 5620-REG: *Regional Initiatives in Road Safety*, for \$600,000, approved on 4 January 1995, and a supplementary TA for \$60,000, approved on 12 September 1997.

<sup>c</sup> TA 2177-PRC: *Preparation of a Road Safety Program*, for \$600,000, approved on 29 September 1994.

<sup>d</sup> TA 2001-IND: *Road Safety*, for \$210,000, approved on 29 November 1993.

<sup>e</sup> Loan 1324-PRC: *Heilongjiang Expressway*, for \$142 million, approved on 29 September 1994.

<sup>f</sup> Loan 1274-IND: *National Highways*, for \$245 million, approved on 29 November 1993.

<sup>g</sup> The DMCs included Bangladesh, PRC, Fiji, India, Indonesia, Republic of Korea, Malaysia, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, and Viet Nam.

<sup>h</sup> The Second Conference on Asian Road Safety (CARS2), jointly organized by the PRC Road Traffic Safety Association and the Organisation for Economic Co-operation and Development, on 28-31 October 1996, in Beijing, included a workshop titled "Asian Road Safety-Institutional Framework," and was attended by over 450 participants, mainly from DMCs.

capacities of the Heilongjiang Public Security Bureau in reducing accident rates along an ADB road project route (Heilongjiang Expressway) and in improving road safety in the whole of Heilongjiang Province. Likewise, TA 2001-IND provided useful training to officials from the Karnataka police and MOST, and developed pilot programs on accident analysis and black spot identification.

TA 5620-REG fully achieved its intended objectives and is rated **highly successful**. Likewise, TA 2177-PRC is rated **highly successful**. The Heilongjiang Public Security Bureau is advised to implement the recommendations of TA 2177-PRC in Heilongjiang Province, with additional support from an ongoing ADB TA (TA 3341-PRC: *Capacity Building in Traffic Safety, Planning and Management*); the Government is advised to widely disseminate the experience to other provinces.

TA 2001-IND is rated **successful**. As Loan 1274-IND is ongoing, the rating is contingent on the National Highways Authority of India and MOST successfully implementing the TA recommendations and particularly adopting the safety requirements in the highway safety manual prepared under the TA. ADB should consider providing additional support in this regard.

The main message from this evaluation is that road safety has not been accorded the priority it deserves in the DMCs, including that under earlier ADB-funded projects. The DMCs should work to reduce accidents by identifying black spots, and more importantly, institute measures such as safety audits and safety education, which would help prevent these accidents in the first place.

The Operations Evaluation Mission conducted extensive consultations with ADB projects staff, DMC officials, and representatives of other funding agencies (World Bank, Japan International Cooperation Agency, and Japan Bank for International Cooperation) and identified several recommendations for improving road safety in ongoing and future ADB projects. The most important ones that can be implemented as soon as possible are listed below.

- (i) ADB should actively encourage regional and local activities on road safety in all DMCs, involving the private sector and nongovernment organizations.
- (ii) Specifically, ADB's *Guidelines on Road Safety* should be widely adopted in all ongoing and future ADB road projects. Particularly, ongoing and future ADB TA and loan projects in the road sector should require a road safety expert to conduct a safety audit of designs and construction works.
- (iii) ADB should formulate standalone advisory and operational TAs and regional TAs and assist DMCs in improving capacities and implementing programs on (a) safety audits, (b) safety education campaigns, (c) accident analysis, and (d) engineering improvements at black spots.

## I. BACKGROUND

### A. Introduction

1. In many developing member countries (DMCs), motorization and vehicle fleet ownership grew at 15-18 percent annually in the 1980s and 1990s. In the last decade, 30 percent of the total number of road accidents were fatal in several countries in the region. Economic losses from road accidents commonly exceed 2 percent of gross domestic product for many DMCs (para. 8). Thus, road safety is rapidly emerging as a major sector issue. Acknowledging the importance of road safety, the Asian Development Bank (ADB) has been assisting DMCs through technical assistance (TA), which was either attached to individual loans or was regional in scope.

2. As of October 2000, ADB had provided a total of \$5.16 million for 10 TA projects, one of which was regional in scope (TA 5620-REG). Eight others were attached to loans. A recent TA was a standalone advisory TA (ADTA).<sup>a</sup> Of the seven completed TAs, the Operations Evaluation Mission (OEM) selected TA 5620-REG: *Regional Initiatives in Road Safety*,<sup>b</sup> together with TA 2177-PRC: *Preparation of a Road Safety Program*,<sup>c</sup> and TA 2001-IND: *Road Safety*,<sup>d</sup> in the People's Republic of China (PRC) and India, respectively.<sup>e</sup>

3. TA 5620-REG was intended to review road safety problems in DMCs, increase awareness among DMC officials, provide guidelines for policymakers in the region, and assist ADB in identifying initiatives that can be implemented throughout the region. The TA also included two regional workshops, the first in Bangkok, Thailand for over 110 participants from more than 20 DMCs<sup>f</sup> and the second in Beijing, PRC. In addition, the TA aimed to review the previous implementation experience and identify lessons for new projects. The entire TA amount of \$600,000 was financed by ADB on a grant basis. TA 2177-PRC was attached to Loan 1324-PRC<sup>g</sup> (*Heilongjiang Expressway*). It aimed to help Heilongjiang Province formulate a comprehensive highway safety program that would serve as a model for similar programs in other provinces and to improve capacities within the Heilongjiang Public Security Bureau (HPSB) to approach road safety in a systematic manner. TA 2001-IND, which was attached to Loan 1274-IND<sup>h</sup> (*National Highways*), aimed to assist personnel in the Ministry of Surface Transport (MOST) in training and capacity-building activities in the fields of accident analysis, traffic engineering, and design of low-cost countermeasures for road accidents, and prepare a highway safety manual to be used by design engineers. The basic information on the objectives, scope of activities, implementation schedule, and outputs is in Appendix 1.

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<sup>a</sup> TA 3341-PRC: *Capacity Building in Traffic Safety, Planning and Management*, for \$600,000, approved on 14 December 1999.

<sup>b</sup> TA 5620-REG: *Regional Initiatives in Road Safety*, for \$600,000, approved on 4 January 1995, and a supplementary TA for \$60,000, approved on 12 September 1997.

<sup>c</sup> TA 2177-PRC: *Preparation of a Road Safety Program*, for \$600,000, approved on 29 September 1994.

<sup>d</sup> TA 2001-IND: *Road Safety*, for \$210,000, approved on 29 November 1993.

<sup>e</sup> The TAs in Fiji, Papua New Guinea, and Sri Lanka were not reviewed in detail in this evaluation as the countries could not be visited given the prevailing situations.

<sup>f</sup> The DMCs included were Bangladesh, PRC, Fiji, India, Indonesia, Republic of Korea, Malaysia, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, and Viet Nam.

<sup>g</sup> Loan 1324-PRC: *Heilongjiang Expressway*, for \$142 million, approved on 29 September 1994.

<sup>h</sup> Loan 1274-IND: *National Highways*, for \$245 million, approved on 29 November 1993.

## B. Rationale, Objectives, Approach, and Scope of Activities

4. The main objective of this evaluation was to review and assess for all TAs (i) the relevance and efficiency in terms of objectives and scope of activities; (ii) their efficacy, in terms of consultants' performance and quality of outputs; (iii) the sustainability of the outputs; and (iv) impacts on institutional capacity and policy development. The evaluation also reviewed data in the various DMCs and analyzed current trends in road traffic accidents, and identified actions that can be taken, with ADB assistance, to improve road safety.

5. With regard to TA 5620-REG, the OEM undertook a survey to assess the impact and sustainability of the major outputs of this TA, i.e., the ADB *Guidelines on Road Safety* and the Regional Road Safety Initiative (RRSI). Questionnaires were sent to the (i) participants in the workshops; (ii) DMC governments; (iii) representatives of executing agencies (EAs) for ongoing ADB projects with road safety components in PRC, India, Philippines, and Thailand; and (iii) other international organizations such as the World Bank, Economic and Social Commission for Asia and the Pacific (ESCAP), and Japan Bank for International Cooperation (JBIC).

6. In addition, the OEM visited the PRC from 27 to 31 August 2000 to review TA 5620-REG and TA 2177-PRC. It met with government officials and other representatives from road-related agencies (such as the Heilongjiang Hatong Expressway Corporation [HHEC] and the Heilongjiang Traffic Safety Management Organization), and inspected the road safety arrangements under Loan 1324-PRC: *Heilongjiang Expressway*. The preliminary findings of the OEM were presented to the relevant operations department of ADB during a workshop on 11 September 2000.<sup>i</sup> In addition, in the Philippines (from 6 to 12 September 2000), the OEM interviewed government officials from the Department of Public Works and Highways, Department of Transportation and Communications, and mayors and representatives from the traffic safety division in the cities in Metro Manila to review the road initiatives under ongoing ADB projects in the country and evaluate the impact of TA 5620-REG. The OEM also visited Thailand (14-16 September 2000) and India (9-19 October 2000) to review TA 5620-REG and TA 2001-IND, respectively. In Thailand, the OEM met with (i) representatives from ESCAP to discuss regional initiatives after TA 5620-REG, (ii) government officials dealing with the road sector in Thailand to review road safety arrangements under ongoing ADB projects, and (iii) participants in the workshop under TA 5620-REG to follow up on their responses to the questionnaire. In India, the OEM (i) met with government representatives in the road sector to review the implementation and impact of TA 2001-IND, (ii) inspected road safety along ADB road project routes, and (iii) held discussions with participants from India in the workshop under TA 5620-REG, and representatives from the World Bank, JBIC, and state level agencies concerned with road safety. The OEM also visited Singapore (20-23 October 2000) to (i) meet with officials from the National Safety Council of Singapore and the Land Transport Authority; and (ii) visit the Integrated Traffic Management Center, Safe Driver Testing Center, and the Safety Park.

7. **Report Organization.** The OEM's assessment of the three TAs, in terms of implementation performance, outputs, and sustainability of impacts, as well as the impact of the TAs on road safety in the DMCs and on ADB operations, is presented in Section II (with more detailed information in Appendixes 1-4). Section III contains the key issues and lessons learned, and an overall assessment of the three TAs (see also Appendixes 5-8). Copies of the draft report were sent to the DMC governments and ADB staff concerned for comments. All comments received were considered in finalizing the report.

<sup>i</sup> Ongoing TA 3341-PRC was also reviewed in the discussions in ADB headquarters.

### C. Road Safety in Selected DMCs

8. Road safety is a serious problem in many DMCs. For example, road accident fatalities were at an alarming 80,000 per year in India in 1998 and over 16,000 per year in Thailand in 1995. In many DMCs, accidents are not reported nor recorded properly. Except in countries like Fiji and Singapore, conscious efforts at traffic engineering, education, and enforcement are not working effectively to reduce road accidents due to various problems.<sup>j</sup> Nevertheless, some improvements are visible in Thailand (Appendix 2) and Malaysia, where accidents have been declining since 1997.

9. The OEM reviewed road safety-related data on 16 DMCs (Bangladesh, PRC, Fiji, India, Indonesia, Kazakhstan, Republic of Korea, Malaysia, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, and Viet Nam).<sup>k</sup> The main observations pertaining to this review are as follows:

- (i) In many DMCs, road safety is the joint responsibility of different agencies and government departments. Therefore, a coordinated multidisciplinary approach is more effective than individual efforts by line agencies (such as, the police or department of public works).
- (ii) In many DMCs, a national road safety committee exists. The coordination among related agencies is highly effective in DMCs like Fiji and Singapore but is less successful in other countries. Bangladesh and the Philippines reported the least effective coordination. A common problem in many DMCs is the lack of sufficient funds and the credibility of the national committee itself.
- (iii) Accident data systems were operating practically in many DMCs but generally underreported the actual accident situation. Except in Singapore, accident locations are not accurately identified. The analysis and dissemination of accident information needs significant improvement in many DMCs. There are many discrepancies between what was reported and what actually happened on the road.
- (iv) Fiji, Korea, Malaysia, Singapore, and Thailand undertake safety audits on road engineering works and remedial works at accident locations. Regular monitoring networks were lacking in many DMCs, notably Bangladesh and India.
- (v) South Asian DMCs are lagging behind other DMCs in the area of children's education on road safety. In Singapore, road safety is a compulsory activity in primary schools and citizens' groups take an active part in monitoring traffic safety.
- (vi) Driver training and testing are strictly followed in the PRC and Singapore, but are weaker in many other DMCs, and weakest in India and the Philippines. Nationwide road safety campaigns targeted at road-users at risk are needed in many DMCs. The Philippines and Sri Lanka have recently introduced seat belt

<sup>j</sup> Lack of funds, poor institutional capabilities, and insufficient data are among the common problems.

<sup>k</sup> Source: Economic and Social Commission for Asia and the Pacific, *Road Safety in Asia and the Pacific*, 1998.

laws. The use of seat belts and helmets for motorcyclists, is still not mandatory in Bangladesh, India, or Nepal.

- (vii) Few DMCs regularly monitor motor cars and motorcycles for road safety. Buses and trucks are inspected only in Fiji, Singapore, and Thailand. Appropriate procedures to prevent corruption in traffic enforcement are lacking in all DMCs except Singapore. Traffic police lack highway patrols and modern equipment, especially in the South Asian DMCs. In all DMCs, speed limits are not strictly enforced for motor vehicles. Only in Singapore were trucks limited to a speed of 50 kph on highways and were monitored, with a lamp on top of the vehicles that would signal when the trucks went too fast.
- (viii) Emergency assistance at accident sites is not readily available in many DMCs. Effective first aid and professional rescue services were reported only in Malaysia, Singapore, and Thailand.
- (ix) Although road safety research is undertaken in all DMCs, sufficient funds are not always available.

#### **D. Activities of ADB and Other Funding Agencies**

10. As of 1999, ADB had included road safety initiatives in over 30 projects in 15 DMCs. Road safety activity, including technical inputs, rarely exceeded 2 percent of the total cost of the projects. Recent projects (in Bangladesh, Sri Lanka, and Uzbekistan) have allocated large amounts (39 percent, 9 percent, and 5-6 percent of the loan amount, respectively [Appendix 3]) to road safety. The experiences of the World Bank and JBIC in the region were reported to be similar to ADB's. Until recently, the projects funded by these agencies did not invest substantially in road safety. After ADB TA 5620-REG, the World Bank established the Global Road Safety Partnership (GRSP) and has been investing in many DMCs to help develop national road safety action plans. ESCAP established a regional database on road safety, the most significant among several activities on road safety undertaken with support of ADB TA 5620-REG. Subsequently, ESCAP published reports (Appendix 5).

11. Safety audits were not undertaken in many projects funded by ADB, JBIC, or the World Bank. While the externally funded projects improved the road surface, other inadequacies (such as bends, poor alignment, and small communities straddling the road and intersections) were not addressed. The end result has been that much higher speeds were possible, and more accidents occurred (as seen in the PRC, India, and Thailand).<sup>1</sup> On a positive note, newer projects have required safety audits and establishment of safety wings in highway authorities prior to commissioning the road for traffic (Appendix 3).

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<sup>1</sup> The absence of knowledge of the true monetary costs of accidents is a common problem in many DMCs. Additional research reflecting local conditions on accident costs and economic losses would be highly useful for policymakers and in raising public awareness. But these were not supported under externally funded projects (para. 50).

## II. ASSESSMENT OF ADB TECHNICAL ASSISTANCE

### A. Implementation Performance

12. **Design of the TAs.** The objectives of TA 5620-REG were and remain highly relevant to ADB operations in the road sector in all DMCs. Likewise, TA 2177-PRC and TA 2001-IND were relevant to the immediate and short-term priorities in the road sector and ADB operations in the PRC and India, respectively. The OEM reviewed the terms of reference (TORs) for the consultants and found them clear in all TAs. The respective TORs were sufficient to enable achievement of the intended outputs. The TORs were not modified; implementation schedules were adjusted in TA 2001-IND due to delays in the loan effectiveness.

13. The OEM reviewed the resources provided under these TAs, in terms of person-months, skills mix for consulting services, and counterpart facilities (details on the evaluation of inputs are presented in Appendix 1). TA 5620-REG was overambitious as regards impact in that the main output, ADB's *Guidelines on Road Safety* were expected to be adopted, and an action plan for five years was expected to be implemented, after one seminar in Bangkok. Except for another seminar in Beijing, ADB did not formulate other activities. In fact in hindsight, the TA should have included several annual follow-up events (under new TAs or ongoing ADB projects). This need is echoed in the responses from the participants (para. 56). The TA provided 20 person-months of international consulting services, which were effectively utilized. In hindsight, domestic consultants should have been engaged additionally in many DMCs, to collect data and to conduct national level discussions. The international consultants could have been more effective, with the support of domestic consultants, in disseminating the ADB *Guidelines on Road Safety* and the resolutions of the workshops.

14. TA 2177-PRC was provided with adequate resources, in terms of consulting services. The TA provided for 17 person-months of international consultants and 20 person-months of overseas training and both these resources were fully utilized. The TA supported the review of road safety in Heilongjiang Province, and the preparation of an action plan and a five-year master plan (Phase I of the works). However, ADB did not provide additional resources to implement the most urgent safety improvements or to implement the action plans in the two pilot cities (Phase II of the works), but merely covenanted HPSB to implement these. In hindsight, ADB should have provided additional support to HPSB.<sup>m</sup> Moreover, ongoing TAs reported that the dissemination of the TA findings to other provinces could not take place immediately, due to lack of resources. Additional ADB support would have been helpful.

15. TA 2001-IND received limited input. The OEM observed that the eight person-months for international consultants were insufficient. The consultants conducted one case study in Karnataka state (actually there was no road section under Loan 1274-IND in this state), but MOST has not actively disseminated the findings to other states. The international consultants were assigned to assist MOST and selected public works departments (PWDs) to develop accident analysis procedures and design low-cost remedial measures for highways. MOST independently recruited a firm of domestic consultants to collect accident data for 18 types of 100-kilometer (km) stretches of national highway. The international consultants were also tasked to assist the domestic consultants in establishing the methodology for black spot

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<sup>m</sup> Considering the existing practice in the PRC, in which ADB lends to the expressway authorities through the Ministry of Finance and the provincial communication bureaus, ADB should consider innovative ways to support budget-dependent organizations like HPSB, which are responsible for road safety among other matters.

identification. As time and resources were insufficient, these tasks were not fully achieved (para. 31).

16. In TA 2177-PRC and TA 2001-IND, the participation of the recipient agencies in the design (scope of activities, role of the counterpart staff, TORs for consultants, implementation schedule) was effective. TA 5620-REG was also designed in close coordination with ESCAP, the World Bank, Japan International Cooperation Agency (JICA), and other resource persons in the seminar.

17. **Engagement of Consultants.** The EAs (HPSB for TA 2177-PRC and MOST—later National Highways Authority of India [NHAI]—for TA 2001-IND) were fully satisfied with the engagement and services of the respective consultants. ADB, ESCAP, the World Bank, and JICA were fully satisfied with the engagement of consultants for TA 5620-REG.

18. **Organization and Management.** The OEM observed that the approaches and methods adopted by the respective consultants were efficient in all three TAs. Likewise, the respective EAs were actively involved in TA implementation. HPSB demonstrated full ownership of and commitment to TA 2177-PRC. The EA reported a transfer of technology and knowledge from the consultants. TA 5620-REG benefited ADB, ESCAP, and the World Bank substantially. The World Bank developed GRSP.<sup>n</sup> In ADB, project officers followed up on TA 5620-REG and the implementation of the ADB *Guidelines on Road Safety* under TAs and projects (Appendix 5 gives examples in the PRC and Thailand). However in India, TA 2001-IND was less effective in that only the counterpart staff from NHAI, and the Karnataka police officials who worked with the consultants, actively interacted with the consultants, and benefited from the TA's outputs and services in their jobs.

19. **Implementation Schedule and Financing Arrangements.** The three TAs had no major problems with implementation schedules. TA 5620-REG started eight months late, and was completed six months behind the original schedule. TA 2177-PRC was implemented according to the original schedule. TA 2001-IND started eight months late, because the effectiveness of Loan 1274-IND was delayed. The final report was submitted 12 months behind the original schedule. This delay was due to delays in data collection and other activities by the domestic consultants separately engaged by MOST. The international consultants required the database for the accident analysis. The financing arrangements also followed the ADB *Guidelines*. ADB fully contributed to TA 5620-REG.<sup>o</sup> TA 2001-IND and TA 2177-PRC were attached to ADB loans. The governments contributed \$15,000 and \$200,000, respectively, to these TAs.

20. **Activities.** The OEM reviewed the training, hardware, and software provided under each TA. TA 5620-REG did not provide hardware or software to the DMCs. Over 110 officials from more than 20 DMCs<sup>p</sup> participated in the workshop in Bangkok, Thailand and over 450 attended

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<sup>n</sup> GRSP is a partnership of private sector, civil society, and government organizations dedicated to the sustainable reduction of road accidents, fatalities, and injuries in developing and transition countries. GRSP aims to identify innovative ways to improve road safety by applying the business partnership approach in selected countries. It hopes to produce solid evidence that partnerships between business, civil society, and government offer benefits for all three parties and that this approach can be widely used throughout the world. In this connection, GRSP is developing and implementing new demonstration projects with its partners in selected developing and transition countries.

<sup>o</sup> At appraisal, \$600,000 was provided; another \$60,000 was approved on 12 September 1997 for preparing manuals in Chinese. The actual amount was \$643,904.

<sup>p</sup> The DMCs included Bangladesh, PRC, Fiji, India, Indonesia, Republic of Korea, Malaysia, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, and Viet Nam.

the conference in Beijing, PRC.<sup>q</sup> The responses of the participants are summarized in Table 1. TA 2177-PRC provided training for 36 person-months. The consultants also provided software for creating an accident database and conducting analysis of accidents. These were well utilized by HPSB. TA 2001-IND provided on-the-job training to the Karnataka police and the domestic consultants, and installed Microcomputer Accident Analysis Package (MAAP) software in these offices. In addition, the consultants organized a seminar for 18 participants in October 1996 in New Delhi. The OEM observed that these inputs have been satisfactorily utilized and the accident database has been expanded by the Karnataka police. However, there has been no dissemination of this knowledge to other states, as originally envisaged (para. 15).

21. **Supervision.** ADB supervision and guidance during implementation were fully satisfactory in all TAs. Nevertheless, in TA 2177-PRC ADB has not followed up on the implementation of the action plan.<sup>r</sup> In TA 5620-REG, ADB has not yet published the *Guidelines on Road Safety* in Russian (as reported in the TA completion report) nor widely distributed the *Guidelines* under ongoing projects.<sup>s</sup> In TA 2001-IND, ADB needs to pursue the dissemination of the experience in the pilot programs to other states. In these follow-up activities, the OEM notes that the ADB resident missions, particularly in the PRC and India, can usefully assist.

## B. Outputs and Sustainability of Impacts

22. The major output of TA 2177-PRC was a final report which also included a comprehensive highway safety action plan in two model towns, Datong and Jiamsui, in Heilongjiang Province. TA 2001-IND produced two main outputs: (i) a final report on accident data collection and identification of black spots, and (ii) a highway safety manual. TA 5620-REG had four major outputs: (i) a final report that summarized the methodology used for data collection, safety trends, and the major findings and conclusions; (ii) the ADB *Guidelines on Road Safety*; (iii) a report on vulnerable road users; and (iv) RRSI.<sup>t</sup>

23. **Adequacy and Quality of Reports and Services Provided.** The OEM reviewed all the reports prepared by the consultants. The reports were well prepared in all the three TAs; they were well written and the recommendations were clear. The EAs (in TA 2177-PRC and TA 2001-IND) were fully satisfied with the technical information and recommendations made by the consultants. The OEM found that the ADB *Guidelines* prepared under TA 5620-REG were of high quality and had been well received in all DMCs. RRSI proposed under the TA was expanded by the World Bank as GRSP.<sup>u</sup>

<sup>q</sup> The Second Conference on Asian Road Safety (CARS2), jointly organized by the PRC Road Traffic Safety Association and the Organisation for Economic Co-operation and Development, on 28-31 October 1996, in Beijing, included a workshop titled "Asian Road Safety: Institutional Framework," and was attended by over 450 participants, mainly from DMCs.

<sup>r</sup> Although the PCR reported that ADB and the EA agreed upon further actions to meet the unfulfilled covenants, the OEM observed that ADB failed to follow up on the EA's accomplishments. ADB projects divisions sent a confirmation letter after the project completion review mission but did not obtain information until the evaluation mission visited the PRC. Another institutional bottleneck in ADB is the lack of a facility to revisit completed projects (after the operations evaluation) to observe the operation and maintenance of facilities, and in this context the road safety in the road projects.

<sup>s</sup> The Russian translation was delayed because the resources for this activity were included under a TA grant attached to the loans for the Almaty-Bishkek Regional Road Rehabilitation Project, the approval of which was substantially delayed. It was eventually approved on 31 October 2000.

<sup>t</sup> RRSI identified priority actions that should be considered by DMCs, in a five-year term from 1997 to 2002, to improve road safety.

<sup>u</sup> ADB could have been more diligent in bringing in Japanese knowledge resources in its conduct of TA 5620-REG and sought closer cooperation with Japanese institutions such as JICA, JBIC, and International Association of

24. **Training and Technology Transfer.** TA 2177-PRC and TA 2001-IND assisted the respective EAs improve their capacities for improving road safety. In TA 2177-PRC concerned officers from HPSB gained useful knowledge and applied them in their daily work. In India, the Karnataka police fully utilized the skills received from TA 2001-IND and have been actively involved in preparing “Road Safety Drive 2000” for the Bangalore Action Task Force (para. 30). In many DMCs, participants positively responded regarding the knowledge gained in the seminar under TA 5620-REG. Many apply the knowledge gained in their current work.

25. **Institution Building.** TA 2177-PRC and TA 2001-IND generally achieved capacity building in the respective EAs. However, in TA 2177-PRC, HPSB was expected to develop capacity by implementing the action plan. Similarly, TA 2001-IND was limited in its impact only to the Karnataka police. In both TAs, the wide dissemination of the TA outputs and training activities, which was key to the capacity building, was overambitiously assumed, not acknowledging the corresponding need for additional activities and resources.

26. TA 5620-REG increased the awareness of DMCs on road safety. In the absence of any follow-up activities (which were not present in the TA), the TA was unable to make a significant impact on the capacities within DMCs to implement RRSI. Some countries like Fiji and Thailand have been able to develop capacities through other externally funded projects, for example, ADB projects (in Fiji) and ADB and World Bank projects (in Thailand).

27. **Performance of Consultants.** The performance of consultants in the three TAs was generally satisfactory. The OEM noted that they completed their assignments and delivered the outputs in accordance with the respective TORs. The OEM confirmed the satisfactory performance of all consultants from the back-to-office reports of ADB review missions and the responses from EAs.

## C. Impact of TAs on Road Safety in DMCs

### 1. TA 2177-PRC

28. TA 2177-PRC was successful in promoting various road safety measures in the Heilongjiang expressway project and in general in the whole Heilongjiang Province. HPSB confirmed that the action plans for the two model cities (Datong and Jiamsui) were useful as pilot projects. The TA contributed to the substantial reduction in the number of accidents/casualties along the highway and made a significant impact on the province-wide road safety situation (Appendix 5). However, according to the project completion report (PCR), HPSB did not take timely follow-up steps to meet the loan covenants. The OEM observed though, that the EA has implemented various measures in a proactive manner showing ownership for the TA’s follow-up actions. Overall, the timing of TA 2177-PRC and the ongoing TA 3341-PRC is very appropriate. The PRC is now accelerating efforts to complete 35,000 km of national highway network.

29. The OEM observed that safety audit and checking were not undertaken before the commissioning of the Heilongjiang expressway project. It also inspected portions of the

expressway and provided feedback to HHEC.<sup>v</sup> HHEC agreed to incorporate such safety concerns under an ongoing ADB project (Loan 1641-PRC).<sup>w</sup>

## 2. TA 2001-IND

30. TA 2001-IND successfully helped the Karnataka police to establish a database on accidents along national highways NH4 and NH7 using the MAAP software. The database has been expanded to cover another 300 km of national highways in Karnataka. The Additional Traffic Commissioner participated in the seminar in Bangkok (under TA 5620-REG) and introduced the ADB *Guidelines on Road Safety* in Karnataka. The Karnataka police actively participated in the Bangalore Agenda Task Force and launched the “Road Safety Drive 2000”, with support from the World Bank’s GRSP (Appendix 5).

31. The TA, however, was not successful in assisting the domestic consultants, in identifying black spots using a statistically sound database and computer-based system. The data collection suffered delays and the database was incomplete. Consequently, the computer models prepared by the international consultants could not be calibrated reliably. The TA also could not finish the pilot study for improving the capacities of the domestic consultants to carry out a safety audit on the six road sections.<sup>x</sup>

32. NHAI has been mandated to implement the National Highways Development Project which entails widening to four lanes and strengthening of 12,000 km of roads within 10 years. NHAI had completed only 509 km of four-laning as of April 1999. Along the 6,000 km of the “Golden Quadrilateral” roads connecting Mumbai, Chennai, Calcutta, and New Delhi, another 716 km are under implementation. The remaining 4,000 km are under preparation and are expected to be completed by FY2008. The OEM reviewed road safety along roads in all three categories. The roads reviewed were (i) completed roads with a total length of 111.13 km along NH2 (Delhi—Mathura—Agra, with ADB, JBIC, and World Bank funding); (ii) 78 km of roads under construction along NH5 (Vijayawada—Eluru, with ADB funding); and (iii) 19 km of bypasses, bridges, and road improvements under implementation along NH45 (with NHAI funding).

33. The OEM observed that the completed roads are well constructed and generally in good condition. The road surfaces in new construction are also of high quality. The designs have followed the Indian Roads Congress (IRC) guidelines.<sup>y</sup> Nonetheless, road safety is a serious

<sup>v</sup> The technical observations include: (i) wire ropes were used for protective measures at roadside and median, but they did not seem to be strong enough for heavy vehicles, which accounted for most of the traffic volume; (ii) the length of guard rails at bridges was not enough to prevent vehicles from falling off; (iii) width of shoulders was too narrow, particularly at sections where protective guard ropes were installed; (iv) the ends of guard rail and rope sections were not properly tapered; (v) roadside drainage ditches were too close to carriage way and no barriers nor covers were installed to protect vehicles from falling; and (vi) guard rails or other protective measures were not installed at many piers of the bridges flying over the expressway that would prevent the collapse of flyovers and reduce damage to vehicles in a collision.

<sup>w</sup> Loan 1641-PRC: *Changchun-Harbin Expressway: Hashuang Expressway*, for \$170 million, approved on 27 November 1998.

<sup>x</sup> The domestic consultants misunderstood “safety audit” as a data collection activity at accident sites; the original objectives were not achieved. The international TA consultants could not evolve the low-cost engineering remedial measures for the worst sections, as the accident data collection and analysis were neither fully accomplished nor possible. The remedial measures were made for hypothetical cases. The highway safety manual was well prepared but it made little impact on potential users. The consultants distributed 75 copies within MOST and to other participants at the training course in New Delhi.

<sup>y</sup> The OEM separately met with IRC, which is a joint commission of various state level public works departments. IRC prepared another highway safety manual in 1999. It has conducted several seminars on road safety. The

concern in India along all national highways. The enforcement of traffic regulations is very poor and the responsibility is divided among many district level police wings from different states for various sections of one highway. There is no highway patrol. The roads do not have access control. Especially in the rural areas, there are no underpasses for local village traffic. Education for drivers and other road users is ineffective. Trucks and tractors are driven without the drivers receiving any proper training in traffic rules. In many road sections, the OEM observed unauthorized counter-flow traffic along the fast lane. Several fatal accidents happen every day.<sup>z</sup> Roadside drainage has been constructed by NHAI but the state PWDs or municipalities have not been maintaining it, as observed along NH45. Traffic signs and lane marking were lacking. No lighting has been provided along highways in rural areas. In city areas where lighting has been provided, it is not bright enough.

### 3. TA 5620-REG

34. To evaluate the overall outcome and impact of this TA, the OEM conducted a survey of the different stakeholders, i.e., participants, DMC governments, EAs, and other international organizations.<sup>aa</sup>

35. Participants from Indonesia, Republic of Korea, Philippines, and Thailand generally found the workshop to be relevant not only to their own work but also to their respective countries. Fifty percent of the participants who responded found the workshop to be well organized, and of the appropriate duration. They also found seminar materials to be of high quality. However, of the four countries, only Thailand reported major road safety activities undertaken after the workshop; specifically, a committee on road safety and a road traffic accident information system were set up, and a road safety master plan was developed.

36. Fourteen respondents<sup>bb</sup> believed that the *ADB Guidelines on Road Safety* were very relevant to their work as well as to their respective countries. The report was of high quality and a good reference source. In some DMCs, the *Guidelines* served as a basis for improving road safety conditions. In Pakistan and Thailand, however, the *Guidelines* had limited use either because of the lack of awareness of their existence due to the rapid changes at the decision-making level, or because it was not translated into the local language (as it was translated into Chinese in the PRC).

37. To assess the impact of TA 5620-REG, the OEM classified the responses into three categories, i.e., level of awareness, existence of road accident statistics, and the number of actions taken. The existence of a national road safety center was used to indicate the respondent's level of awareness of the importance of road safety. A rating of "A" was given when a national center has been established and is fully functioning; "B", when the national center has been established but not fully functioning; and "C", when the national center does not

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guidelines are not legal and IRC does not have any oversight function. Operation and maintenance and safety along national highways are major concerns for IRC.

<sup>z</sup> The Mission Leader had an accident along NH2 when a truck approached in the fast lane, but in the counter-flow direction. The OEM car swerved to the left (the slow lane) and collided with a bus, which had suddenly stopped without any signal (to drop off a passenger).

<sup>aa</sup> A questionnaire, which differed slightly depending on the targeted respondent, was sent to 68 persons (14 participants, 35 DMC governments, 16 EAs, and 3 international organizations). A total of 22 senior officials from 13 countries responded to the survey, 27 percent of whom were workshop participants. The responses were received from more than 50 percent of the DMC governments. EAs in PRC, India, and Thailand, JICA, ESCAP, and the World Bank also participated in this survey.

<sup>bb</sup> Although the Operations Evaluation Office (OEO) received 22 responses, only 16 gave an indication as to the relevance of the workshop.

exist. Under the second category, a rating of “A” was given when road accident statistics are systematically collected and used for safety analysis purposes; “B”, when the data system is still being developed; and “C”, when there is no road accident data system. The impact of the TA was also assessed through the actions taken by the respondents. A rating of “A” is given when many concrete actions have already been taken; “B”, some concrete actions; and “C”, few concrete actions. Table 1 summarizes the ratings and classification of responses received from 22 senior officials representing 13 DMCs.

**Table 1: Summary of Responses on TA 5620-REG: Regional Initiatives in Road Safety**

No.	Respondent Type <sup>a</sup>	Country	Rating		
			Awareness <sup>b</sup>	Statistics <sup>c</sup>	Actions <sup>d</sup>
1.	P	Thailand	A	—	A
2.	P	Thailand	—	—	—
3.	P	Thailand	A	A	A
4.	D	Thailand	A	B	B
5.	EA	Thailand	A	B	B
6.	EA	Thailand	—	—	—
7.	P	Philippines	C	—	C
8.	P	Korea	—	—	—
9.	P	Indonesia	C	—	—
10.	D	Singapore	A	A	A
11.	D	Malaysia	—	B	—
12.	D	Lao PDR	B	C	B
13.	D	Pakistan	C	C	C
14.	D	India	B	B	B
15.	D	India	A	C	B
16.	D	Fiji	A	A	A
17.	D	Fiji	—	A	A
18.	EA	PRC	A	—	B
19.	EA	PRC	A	B	B
20.	D	PRC	—	B	C
21.	D	Nepal	A	A	A
22.	O	Armenia	C	C	—

— = Data not available.

<sup>a</sup> P = Participant, EA = Executing Agency for ADB project, D = other Developing member country officials, O = Others.

<sup>b</sup> A = National center established and functioning well.

B = National center established but not fully functioning.

C = National center not established.

<sup>c</sup> A = Road accident statistics systematically collected and used in safety analysis.

B = Road accident statistics system under development.

C = Road accident statistics system not yet developed.

<sup>d</sup> A = Many concrete actions already taken.

B = Some concrete actions being taken.

C = Few concrete actions taken.

38. Road safety awareness has improved as 12 out of 16<sup>cc</sup> respondents stated the establishment of national road safety committees or centers. However, only in six DMCs are the national centers functioning well. With regard to road safety statistics, only five respondents stated that road accident statistics have substantially improved. Road accident statistics are systematically collected and used in safety analysis according to these five respondents. Nonetheless, an overall improvement in monitoring of road accidents could be expected as this is gradually being systematized, with another six respondents stating that a system for monitoring road accidents is being developed. The status of road accident data collection and the bottlenecks affecting the implementation of actions are listed in Appendix 6. The activities conducted under this TA have also resulted in other concrete actions being undertaken in nine<sup>dd</sup> out of 13 countries. Although the number of actions in each DMC varied from just a few to many, they included the formulation of a road safety master plan; fund-raising activities for road

<sup>cc</sup> Although OEO received 22 responses, only 16 gave an indication as to the establishment of a national center.

<sup>dd</sup> PRC, Fiji, India, Lao PDR, Nepal, Pakistan, Philippines, Singapore, and Thailand.

accident victims and future road safety projects; identification of accident black spots and corresponding countermeasures; and adoption of road safety measures such as improved road and traffic signs, and safer facilities for crossing of pedestrians.

#### **D. Impact of TAs on ADB In-House Operations**

39. **TA 5620-REG.** At the workshop on preliminary findings on 11 September 2000, the OEM confirmed that ADB management and staff recognize that road safety is an essential issue to be addressed in all ADB-funded road projects. TA 5620-REG played an important role in raising the awareness of the importance of road safety among ADB staff by holding several seminars presented by the TA consultants. The ADB *Guidelines on Road Safety* were widely distributed to ADB staff who are applying them for enhancing safety features in their road projects.<sup>ee</sup> However, ADB has not publicized its policy on road safety yet and thus has not further institutionalized its activities in this area. Also, a systematic approach for maintaining proficiency in road safety among the ADB projects divisions is lacking due to frequent movement of staff members.

40. **TA 2177-PRC.** The TA impacted ADB operations in the PRC significantly. In the PRC, all ADB-funded road projects approved since 1999 have had a road safety component. Appendix 3 presents information on two of the more recent road projects in the country.<sup>ff</sup> In particular, safety audits and checking at design and construction stages have been undertaken in all recent road projects. Among other things, the ongoing TA 3341-PRC will specifically undertake the wide dissemination of TA 2177-PRC findings in other provinces.

41. **TA 2001-IND.** Loan 1274-IND is ongoing. The impact of the TA on ADB operations in India has been minimal. The OEM made specific recommendations to address road safety concerns in ongoing projects (paras. 58-60).

### **III. CONCLUSIONS**

#### **A. Key Issues**

42. **Engineering Aspects for Improving Road Safety.** ADB staff<sup>gg</sup> acknowledged that road safety is a design concern and has been given due attention only in recently prepared projects. Consequently, several completed projects that did not require safety audits needed engineering improvements (for example, curves, crash guards, etc.) to prevent accidents. The awareness of the need for a safety audit aiming at accident prevention, by engineering improvements, is lacking. ADB projects have generally concentrated on accident reduction by black spot identification and engineering improvements. As demonstrated by the proactive measures by

<sup>ee</sup> Ongoing TA 3341-PRC will distribute Chinese versions of the ADB *Guidelines on Road Safety* during the training sessions, planned to take place from the first quarter of 2001.

<sup>ff</sup> For example, under Loan 1691-PRC: *Southern Yunnan Road Development*, an expert in traffic engineering is to (i) review the safety audit of the expressway design carried out by domestic consultants, and (ii) conduct a safety audit prior to the start of expressway operations. Under Loan 1701-PRC: *Shanxi Road Development*, an expert in traffic safety engineering is to (i) review the expressway design and facilities before opening, and (ii) provide advice on safe operations and assistance in establishing an accident statistics system.

<sup>gg</sup> The workshop on preliminary findings on 11 September 2000 was attended by Messrs. P. Giraud, J. Lacombe, and C. Melhuish. A note-to-file on the workshop has been prepared. The OEM also interviewed Messrs. Y. Ishikawa, M. Mizutani, P. Nielsen, R. Ostermiller, and P. Poinson.

the Land Transport Authority in Singapore, minor improvements such as no-swerve lanes and a yellow rectangle at intersections, help significantly in preventing accidents.

43. **Enforcement of Traffic Rules.** The traffic police, who are generally responsible in all DMCs for managing traffic and enforcing traffic rules, have a bad reputation for their poor accountability and ability to enforce rules. The problem is further exacerbated by the lack of proper equipment for objectively monitoring speeding and other violations of traffic rules. In addition, many police departments do not have a traffic-engineering cell to suggest modifications on the engineering aspects, nor any budget to undertake the minor improvements needed; this further limits their ability to enforce traffic rules (particularly in India).

44. Along highways, proper collection of accident data and data analysis (accident reconstruction and simulation) are not undertaken in many DMCs. Moreover, highway patrols do not exist for many highways (including ADB projects) in India. The responsibility for a long stretch of a road is divided among several police stations from different states, thus preventing concerted efforts to enforce traffic rules.

45. **Education on Traffic Safety.** Road safety education has been fairly ineffective in many DMCs, except Fiji and Singapore. Driver education has not been strictly enforced (in India and the Philippines) for truck drivers and tractor drivers. Road user education for pedestrians and for villagers (using animal-drawn vehicles and farming vehicles) has been sparingly implemented in all South Asian DMCs. Consequently, fatal accidents occur daily due to human errors—and these are avoidable in many cases. In addition, in many rural areas, the roads do not have proper enforcement of right-of-way and access control; roadside encroachment is prevalent; roadside residents are not aware of the vulnerability to accidents, and open shops along road shoulders, cross four-lane roads, etc.; some ride bicycles and farm vehicles against the traffic flow. All these cause fatal accidents, which are totally avoidable. In urban areas, safety education in schools, and safety campaigns in public areas and hospitals are lacking. The nongovernment organizations could play an important role in such traffic education and enforcement of traffic rules.<sup>hh</sup>

## B. Overall Assessment

46. The summary evaluation of the TAs is given in Table 2. Details on the assessment of input and outputs are in Appendix 7. TA 5620-REG is considered highly successful. The TA's main output, the ADB *Guidelines on Road Safety* was a significant contribution. The *Guidelines* could be widely utilized in ongoing and future ADB projects. TA 2177-PRC is also rated highly successful. The TA developed action plans for two cities in Heilongjiang Province, which can be effectively applied in other cities in the PRC. The impact and sustainability of the outputs could be ensured under ongoing ADB TA 3341-PRC. TA 2001-IND is rated successful; Loan 1274-IND is ongoing and the TA completion report has not been prepared yet.<sup>ii</sup>

<sup>hh</sup> In New Delhi, for example, the traffic police are focusing on safety education and traffic engineering. In 1999, the police established the "zero tolerance zones" for traffic safety. With support from nongovernment organizations, they monitor speeding cars using radar cameras. They have recruited more than 1,000 public and student volunteers, to report on traffic violations and to manage traffic at school zones, respectively.

<sup>ii</sup> The rating is contingent on implementing recommendations in paras. 58-60. The loan review mission reported that TA 2001-IND did not successfully achieve all objectives. NHAI was not proactive in implementing the recommendation (back-to-office report, 22 September 1999, page 3). The systematic black spot identification process could not be operationalized.

**Table 2: Summary Evaluation**

<b>Item</b>	<b>TA 5620-REG</b>	<b>TA 2177-PRC</b>	<b>TA 2001-IND</b>
TA Rationale	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory
TA Design	Highly Satisfactory	Satisfactory	Satisfactory
Implementation Performance	Highly Satisfactory	Highly Satisfactory	Less than Satisfactory
Consultant Performance	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory
Technology Transfer	—	Satisfactory	Less than Satisfactory
TA Effectiveness	Highly Satisfactory	Highly Satisfactory	Less than Satisfactory
<b>Overall Assessment</b>	<b>HS</b>	<b>HS</b>	<b>S</b>

— = not applicable, TA = technical assistance.

Overall Assessment: HS = Highly Successful; S = Successful; LS = Less than Successful; US = Unsuccessful.

### **C. Lessons Learned**

47. ADB's *Guidelines on Road Safety* and ESCAP's similar guidelines were timely contributions to road safety initiatives in the DMCs. However, these two sets of guidelines need to be used in all ongoing projects.

48. The lack of safety education for drivers and road users is one of the main causes of road accidents in many DMCs. In this regard, notwithstanding the impact of seminars and consultants' reports under ADB TAs, an enormous need for systematically undertaking such education remains.

49. Concerned agencies in many DMCs lack the capacities and resources to undertake systematic data collection and compile reliable statistics on accidents, road conditions, and black spots.

50. Another wider lesson identified in this evaluation is that road safety has not been accorded the priority it deserves in various DMCs. The economic losses from road accidents amount to 2-4 percent of GDP in many DMCs. Projects funded by multilateral development institutions have not invested sufficiently in road safety. In the earlier ADB projects, road safety activities amounted to less than 1 percent of total project costs. Safety audits have not been systematically undertaken after completion of road designs and before commissioning of road projects, mainly due to lack of awareness.

### **D. Follow-Up Actions and Recommendations**

51. **TA 2177-PRC.** The PCR recommended a road safety improvement program and advised HHEC and HPSB to implement the program by the end of December 2001. HHEC and HPSB are advised to submit an update of the implementation as soon as possible. ADB (Transport and Communications Division East [IETC]) is advised to monitor the implementation of the program.

52. Geometric design standards pertaining to safety features should be reviewed by ADB (IETC) as soon as possible in ongoing expressway projects in the PRC<sup>jj</sup> with particular emphasis on guard rails and roadside drainage ditches. Also, further actions should be taken in introducing and disseminating good practice in safety audits and checking in these projects.

53. ADB (IETC, in consultation with the PRC Resident Mission) is advised to formulate further TA on road safety for the PRC by December 2001, to consolidate the experience of the pilot action plans in the model cities in Heilongjiang Province and to facilitate its dissemination on a nationwide basis, after incorporating lessons learned from the ongoing TA 3341-PRC.

54. **TA 5620-REG.** ADB, for its part, recognizes that road safety is an essential issue to be addressed in all ADB-funded road projects. Nonetheless, ADB should play a more active role in its capacity as a member of the GRSP steering committee to emphasize the importance of the public sector in improving road safety conditions in DMCs. It is most important to establish an inter-agency authority or road safety council to coordinate the efforts of different government agencies and the private sector for road safety.<sup>kk</sup>

55. In parallel to this, ADB should seek the revitalization of RRSI for enhancing the capabilities of DMC governments in coping with deteriorating road safety conditions due to very rapid economic growth and associated modernization. Through this initiative and other individual TAs, ADB should assist DMCs, together with ESCAP and other international and bilateral aid organizations, in organizing regional seminars to share experiences among safety experts from different countries through networking them, and in conducting national training courses to increase the number of safety specialists in each country.<sup>ll</sup> Using ADB road safety guidelines and outputs of ongoing TAs<sup>mmm</sup> on road safety, effective training materials should be developed and efficient schemes for conducting many training courses should be established involving regional training institutions (such as the Asian Institute of Technology).

56. The respondents in the survey for TA 5620-REG posed several recommendations (Appendix 8), which the OEM found relevant for improving the impact of this TA. Table 3 presents the more common recommendations.

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<sup>jj</sup> For example, Loan 1641-PRC: *Changchun-Harbin Expressway: Hashuang Expressway*.

<sup>kk</sup> The mechanism should also provide an annual budget to develop and implement road safety action plans in each country. Other aspects that need to be tackled on a priority basis are accident data systems and analysis, awareness raising, and capacity building.

<sup>ll</sup> ADB's Transport and Communications Division East is currently discussing the possibility of providing resources to undertake a regional road safety study of ASEAN through the ASEAN Secretariat which would support the Government of Japan's initiative of an annual seminar. The objective of the regional TA would be to prepare road safety action plans for each of the ASEAN countries and provide an adequate basis for further developing road safety through future ADB lending operations.

<sup>mmm</sup> For example, TA 3341-PRC: *Capacity Building in Traffic Safety, Planning and Management*; TA 2850-FIJ: *Road Sector Reform and Safety Improvement*; TA 2152-SRI: *Road Safety Study*; and TA 2113-TON: *Road Cost Recovery and Safety Strategies*.

**Table 3: Recommendations from TA 5620-REG Questionnaire Respondents**

No.	Recommendation	Countries Covered
1.	Conduct a follow-on workshop <sup>a</sup>	Armenia, Fiji, India, Indonesia, Republic of Korea, Nepal, and Thailand
2.	Provide additional funding and technical assistance for road safety-related activities	Armenia, People's Republic of China, Fiji, India, Lao PDR, Pakistan, Singapore, and Thailand
3.	Coordinate with DMC governments and other agencies related to road safety	Fiji, India, Indonesia, Lao PDR, Pakistan, Singapore, and Thailand
4.	Increase publicity and awareness of the recommendations of the TA as well as the importance of road safety by issuing newsletters, among others	Indonesia, Korea, Philippines, and Thailand
5.	Increased dissemination of ADB <i>Guidelines on Road Safety</i> and other reports produced under TA 5620-REG	Nepal and Thailand
6.	Conduct an accident cost study	Fiji and Malaysia
7.	Include road safety in all ADB-funded projects in the road sector	Nepal and Pakistan

ADB = Asian Development Bank, DMC = developing member country, and Lao PDR = Lao People's Democratic Republic, TA = technical assistance.

<sup>a</sup> This follow-on workshop is aimed at (i) accelerating the process of establishing effective institutional arrangements in each of the DMCs, (ii) providing a venue for an effective exchange of ideas, (iii) updating the participants on road safety developments, and (iv) charting renewed direction for the challenges ahead.

57. The respondents also proposed specific activities that need external funding and TAs. These include: sponsoring an international road safety seminar in Singapore; providing equipment, training, and short-term experts in the Lao PDR; and establishing a system of road accident data collection, maintenance and analysis, and undertaking a safety audit of road projects in India.

58. **TA 2001-IND.** The OEM recommends implementing immediately the road safety recommendations of TA 2001-IND, especially under Loan 1274-IND. ADB is advised to assist and monitor MOST in this regard. For all ongoing and future projects, the OEM suggests including all "safety measures" as a specific item and introducing an independent safety audit by a road safety expert after construction. The OEM also recommends a review of the legislative and regulatory framework for traffic enforcement. Future ADB missions for road sector projects (for ongoing Loan 1274-IND and other projects) could invite the Office of the General Counsel to participate to assist in this review.

59. The OEM also suggested to NHAI to use loan savings under ongoing ADB road projects for a safety campaign for at least one year for all newly constructed national highways. The campaign could include highway patrolling, ambulance services, accident data collection, and black spot identification and improvement. In the meeting with the OEM, JBIC (in New Delhi) agreed to disseminate ADB's *Guidelines on Road Safety* in all ongoing and future JBIC projects. JBIC also agreed to conduct a safety audit of completed roads and consider providing grant assistance for improvements using the special assistance funds. The OEM advised NHAI to write formally to JBIC requesting the safety audit and grant assistance.

60. The Government wished to have a TA in FY2001 to review the road safety situation in major cities and along major national highways. The TA would highlight problems and recommend solutions which could be implemented with external funding; the TA could be implemented using domestic consultants. The OEM fully supports this request.

61. **For ADB—General.** ADB (Strategy and Policy Department) needs to devise a mechanism for monitoring and ensuring the implementation of actions to be taken by EAs and the compliance with unfulfilled covenants at the completion of TA and loan projects. It is recommended that a small number of staff be assigned (at each projects division or at OEO) who are responsible for monitoring EAs' implementation of actions agreed at the completion of projects or TAs and for aptly advising EAs and relevant ADB staff to take necessary actions. The same team should also be responsible for monitoring and advising the implementation of actions recommended in operations evaluation reports.

62. ADB should include a clear policy statement on road safety in its new road sector policy paper that is being prepared.<sup>nn</sup> In addition, a more structured program of seminars and training courses for ADB staff should be developed to familiarize them with and refresh them on various aspects of road safety improvement and to disseminate good practices.

63. ADB should prepare ADTAs on capacity building in road safety in all major DMCs, as implemented in the PRC by TA 3341-PRC. The lessons learned from this evaluation and the response from the participants (Table 3) support the justification for such ADTAs.

64. Another general suggestion is for OEO to consider monitoring the sustainability of selected completed projects and TAs financed by ADB at regular intervals, say in the third, fifth, and seventh years after completion. (It could be called the "Sustainability Survey of Completed Projects and TAs").<sup>oo</sup> In this regard, a special grant facility should be established for enhancing the sustainability of completed projects and TAs. The facility may be utilized to mobilize consultants for conducting an in-depth study of causes and recommend countermeasures to solve the problems.<sup>pp</sup> The ADB resident missions can also usefully assist in these surveys (para. 21).

65. The National Safety Council of Singapore provided valuable inputs to TA 5620-REG, especially in the preparation of the ADB *Guidelines on Road Safety*. The National Safety Council would be an important resource center in the region for training DMC officials and EA staff under ADB projects. ADB is advised to consider such training under ongoing and future projects as soon as possible.<sup>qq</sup> Moreover, the traffic safety park in Singapore operated by the Traffic Police provides mandatory practical lessons to primary-school children (about 500 a day). Senior school children volunteer to manage traffic in the school zones. The park is

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<sup>nn</sup> Internal guidelines are needed for operational reasons to indicate that management sees road safety as important and to assist staff to incorporate road safety into road projects. Staff would be happy to see a management directive stating that road safety should be incorporated in every road project as safety is often as much an issue as the environment, social, and other issues, which are incorporated as standard practice. At the present time staff guidelines for road safety audits are under preparation.

<sup>oo</sup> The sustainability survey may identify projects or TAs that are suffering from problems hindering the sustainability. Presently, these problems are often addressed in subsequent projects or TAs or ongoing ones if there are such. However, in cases where there are no such projects or TAs, or the problems require immediate attention, quick action is the key to ensure sustainability.

<sup>pp</sup> This could be highly useful for projects rated "less than successful" and "unsuccessful" during operations evaluation. JBIC has a similar grant facility, called Special Assistance for Project Sustainability (SAPS), that has been used with success for more than 10 years.

<sup>qq</sup> The Singapore-ADB Cooperation Facility (SACOP) could be used for this purpose.

supported by grants from many private companies. ADB is advised to review the experience in Singapore and consider supporting the establishment of such safety parks in PRC, India, Philippines, and Thailand as soon as possible.

## APPENDIXES

Number	Title	Page	Cited on (page, para.)
1	<a href="#">Technical Assistance Objectives, Targets, and Actual Outcome</a>	20	1,3
2	<a href="#">Road Safety in Selected Developing Member Countries</a>	23	2,7
3	<a href="#">Analysis of Asian Development Bank Projects: Focus on Road Safety</a>	27	2,7
4	<a href="#">Findings of the Asian Development Bank Workshop</a>	31	2,7
5	<a href="#">Ongoing Initiatives in Selected Developing Member Countries</a>	34	2,7
6	<a href="#">Summary of Responses on TA 5620-REG</a>	40	2,7
7	<a href="#">Summary Evaluation of Technical Assistance</a>	45	2,7
8	<a href="#">Follow-Up Actions and Recommendations</a>	47	2,7

## TECHNICAL ASSISTANCE OBJECTIVES, TARGETS, AND ACTUAL OUTCOME

	TA 5620-REG Regional Initiatives in Road Safety	TA 2177-PRC Preparation of a Road Safety Program	TA 2001-IND Road Safety
<b>Technical Assistance (TA) Project Objectives</b>	<ul style="list-style-type: none"> <li>• Increase understanding of the interrelationships and underlying factors contributing to the growth of road safety problems in the Asian and Pacific region and in individual developing member countries (DMCs).</li> <li>• Identify the strengths, weaknesses, policies, and training needs in the road safety sector of about 15 DMCs so that appropriate training and other regional initiatives can be devised by the Asian Development Bank (ADB).</li> <li>• Significantly increase the knowledge and capability of senior government officials in DMCs to develop and implement more effective road safety action plans focused on the concerns, road user groups, vehicle types, and issues of particular relevance in the Asian and Pacific region.</li> <li>• Demonstrate to DMC governments that investment in road safety is cost effective at the national level and that resources allocated to promote road safety generate economic returns.</li> <li>• Consolidate ADB and other aid agency experiences in implementing road safety components so lessons can be learned for the design of such components in the future.</li> </ul>	<ul style="list-style-type: none"> <li>• Quantify the scale and nature of the road accident problem in Heilongjiang Province.</li> <li>• Review existing activities in the key agencies with road safety responsibilities to identify areas for improvement.</li> <li>• Develop a comprehensive master plan for the gradual and systematic improvement of road safety.</li> <li>• Liaise with the key agencies to develop and implement pilot or demonstration projects to provide opportunities for practical training of local specialists.</li> <li>• Develop key institutions, procedures and systems such that a provincial capability to tackle and improve road safety effectively will be established.</li> </ul>	<ul style="list-style-type: none"> <li>• Assist the Government in improving the knowledge, capability and training of personnel, primarily from the Ministry of Surface Transport (MOST) and relevant state agencies, in the fields of accident analysis, traffic engineering and the design of low-cost road accident countermeasures.</li> </ul>

	TA 5620-REG Regional Initiatives in Road Safety	TA 2177-PRC Preparation of a Road Safety Program	TA 2001-IND Road Safety
<b>TA Project Targets</b>			
• Reports	<ul style="list-style-type: none"> <li>• Inception report.</li> <li>• Technical working papers on each of the subcomponents related to road safety.</li> <li>• Road safety guidelines for policymakers in DMCs.</li> <li>• Final report.</li> <li>• Brief monthly progress reports summarizing the administrative aspects of the study.</li> </ul>	<ul style="list-style-type: none"> <li>• Interim and final reports.</li> </ul>	<ul style="list-style-type: none"> <li>• Inception, interim, and final reports.</li> <li>• Highway safety manual.</li> </ul>
• Training/ Seminar- Workshop	<ul style="list-style-type: none"> <li>• Regional seminar-workshop for about 25 participants from DMCs.</li> </ul>	<ul style="list-style-type: none"> <li>• 20 person-months of overseas training.</li> </ul>	<ul style="list-style-type: none"> <li>• Practical, on-the-job training for MOST officers and selected staff from relevant agencies.</li> <li>• Contribution to a short course covering accident investigations, problem diagnosis, traffic engineering and management solutions, and the design of low-cost accident countermeasures.</li> </ul>
<b>TA Project Inputs</b>			
• Consulting Services	<ul style="list-style-type: none"> <li>• 20 person-months (international). Steering Committee of 5 to 6 persons from the region with suitable expertise in road safety activities.</li> </ul>	<ul style="list-style-type: none"> <li>• 17 person-months (international).</li> </ul>	<ul style="list-style-type: none"> <li>• Eight person-months of two international specialists.</li> </ul>
• TA Cost and Financing	<ul style="list-style-type: none"> <li>• \$600,000 (ADB).</li> <li>• \$60,000 (supplementary TA amount).</li> </ul>	<ul style="list-style-type: none"> <li>• \$600,000 (ADB).</li> <li>• \$200,000 (Government).</li> </ul>	<ul style="list-style-type: none"> <li>• \$210,000 (ADB).</li> <li>• \$15,000 (Government).</li> </ul>

	TA 5620-REG Regional Initiatives in Road Safety	TA 2177-PRC Preparation of a Road Safety Program	TA 2001-IND Road Safety
<b>Actual TA Outcome</b>			
• Reports	<ul style="list-style-type: none"> <li>• Inception Report.</li> <li>• Road safety guidelines for policymakers in DMCs.</li> <li>• Final Report.</li> <li>• Regional Road Safety Initiative.</li> <li>• Report on Vulnerable Road Users.</li> </ul>	<ul style="list-style-type: none"> <li>• Interim report and final reports.</li> </ul>	<ul style="list-style-type: none"> <li>• Inception, interim, and final reports.</li> <li>• Highway safety manual.</li> </ul>
• Seminar-Workshop	<ul style="list-style-type: none"> <li>• Two seminars (one in Bangkok attended by over 110 participants, and the other in Beijing attended by more than 450 participants).</li> </ul>	<ul style="list-style-type: none"> <li>• Training for 36 person-months.</li> </ul>	<ul style="list-style-type: none"> <li>• On-the-job training for Karnataka police.</li> <li>• Short course on accident investigation and designing low-cost solutions for improving road safety in New Delhi.</li> </ul>
• TA Cost	<ul style="list-style-type: none"> <li>• \$643,900</li> </ul>	<ul style="list-style-type: none"> <li>• \$569,280</li> </ul>	<ul style="list-style-type: none"> <li>• \$207,380</li> </ul>
• Consulting Services	<ul style="list-style-type: none"> <li>• 29.2 person-months</li> </ul>	<ul style="list-style-type: none"> <li>• 17.7 person-months</li> </ul>	<ul style="list-style-type: none"> <li>• 9.0 person-months</li> </ul>

## ROAD SAFETY IN SELECTED DEVELOPING MEMBER COUNTRIES

**Table A2.1: Technical Assistance in Road Safety**

TA No.	Country/Region	Project	Type	Amount (\$)	Approval Date	Expected Completion	Actual Financial Completion	Loan Attached To	TA Paper	TCR/PCR
1716	FIJ	Road Safety and Traffic Management	A&O	150,000	18-Jun-92	15-Aug-97	May-98	1164	■	■
1716	FIJ	Road Safety and Traffic Management (Supplementary)	A&O	70,000	18-Jun-97	15-Aug-97	May-98	1164	■	■
2850	FIJ	Road Sector Reform and Safety Improvement	A&O	#####	26-Aug-97	30-Jun-04	ongoing	1530	■	ongoing
2001	IND	Road Safety	A&O	210,000	29-Nov-93	30-Jun-96	Aug-98	1274	■	ongoing
910	KOR	Road Safety Program and Preparation of Highway Capacity Mar	A&O	350,000	27-Oct-87	31-Dec-93	Dec-93	847	■	■
624	PNG	Studies on Road Safety, Revenues and Expenditures	A&O	150,000	4-Sep-84	31-Dec-87	Dec-87	690/691	■	■ <sup>a</sup>
2177	PRC	Preparation of a Road Safety Program	A&O	600,000	29-Sep-94	—	Jun-98	1324/1325	■	■
3341	PRC	Capacity Building in Traffic Safety, Planning and Management	A&O	600,000	14-Dec-99	30-Nov-01	ongoing	standalone	■	ongoing
5620	REG	Regional Initiatives on Road Safety	Study	600,000	4-Jan-95	30-Jun-97	Apr-00	standalone	■	■
5620	REG	Regional Initiatives on Road Safety (Supplementary)	Study	60,000	12-Sep-97	30-Jun-97	Apr-00	standalone	■	■
2152	SRI	Road Safety Study	A&O	800,000	15-Sep-94	—	Apr-98	1312	■	ongoing
2113	TON	Road Cost Recovery and Safety Strategies	A&O	170,000	28-Jun-94	30-Jun-99 <sup>b</sup>	ongoing	1303	■	ongoing

■ = available, — = not available, A&O = advisory and operational, PCR = project completion report, TCR = technical assistance completion report.

<sup>a</sup> Project performance audit report for Loans 690/691-PNG(SF): *Fourth Road Improvement (Sector) Project* is available.

<sup>b</sup> Revised completion date is June 2000.

Table A2.2: ADB Road Projects Reviewed by OEM<sup>a</sup>

Loan No.	Country	Title	Amount (US\$ million)	Approval Date
56	PHI	Cotabato-General Santos Road	10.60	23-Dec-70
106	PHI	Iligan-Cagayan de Oro-Butuan Road	22.25	09-Nov-72
136	PHI	Tarlac-Santa Rosa and Feeder Roads	3.60	28-Jun-73
227	PHI	Mindanao Secondary and Feeder Roads	0.50	14-Aug-75
308	PHI	Road Improvement	45.00	29-Sep-77
379	PHI	Mindanao Secondary and Feeder Roads	24.00	12-Dec-78
477	PHI	Second Road Improvement	30.00	30-Oct-80
597	PHI	Third Road Improvement	68.00	11-Nov-82
801	PHI	Fourth Road Improvement	82.00	25-Nov-86
1046	PHI	Road and Road Transport Sector Program	50.00	08-Nov-90
1047	PHI	Road and Road Transport Sector Program	50.00	08-Nov-90
1058	PHI	Fifth Road Improvement	150.00	29-Nov-90
1322	PHI	Fourth Road Improvement (Supplementary)	23.50	29-Sep-94
1473	PHI	Sixth Road	167.00	30-Sep-96
1325	PRC	Yunnan Expressway	150.00	29-Sep-94
1387	PRC	Hebei Expressway	220.00	28-Sep-95
1470	PRC	Chongqing Expressway	150.00	27-Sep-96
1483	PRC	Shenyang-Jinzhou Expressway	200.00	19-Nov-96
1484	PRC	Jiangxi Expressway	150.00	19-Nov-96
1617	PRC	Hebei Roads Development	180.00	18-Jun-98
1638	PRC	Chengdu-Nanchong Expressway	250.00	10-Nov-98
1641	PRC	Hashuang Expressway	170.00	27-Nov-98
1642	PRC	Changyu Expressway	220.00	27-Nov-98
1691	PRC	Southern Yunnan Road Development	250.00	24-Jun-99
1701	PRC	Shanxi Road Development	250.00	30-Sep-99
1195	THA	Bangkok Urban Transport	70.30	24-Nov-92
1306	THA	Regional Roads (Sector)	170.00	19-Jul-94
1391	THA	Second Regional Roads (Sector)	180.00	29-Sep-95
1274	IND	National Highways	245.00	29-Nov-93
1747	IND	Surat-Manor Tollway	180.00	27-Jul-00

ADB = Asian Development Bank, DMC = developing member country, OEM = Operations Evaluation Mission.

<sup>a</sup> A partial list of ADB projects in the People's Republic of China, India, and Thailand, the DMCs visited by the OEM. Appendix 3 presents an analysis of the focus of selected projects on road safety.

**Table A2.3: Analysis of Road Accidents in the Philippines (1990-1998)**

<b>Year</b>	<b>Incidents</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Property Damage (₱ million)</b>	<b>Vehicle Registration (all types)</b>	<b>Accident Incidents Per 10,000 Registered Vehicles</b>	<b>Accident Deaths Per 10,000 Registered Vehicles</b>	<b>Accident Injuries Per 10,000 Registered Vehicles</b>	<b>Property Damage Per 10,000 Registered Vehicles (₱ million)</b>
1990	53,723	1,425	14,314	42,640	1,620,242	332	9	88	263
1991	10,147	626	5,197	7,011	814,163	125	8	64	86
1992	33,876	483	7,452	18,383	898,699	377	5	83	205
1993	13,292	581	4,234	8,477	1,016,680	131	6	42	83
1994	—	—	—	—	2,341,469	—	—	—	—
1995	—	—	—	—	2,581,354	—	—	—	—
1996	4,636	645	3,991	17,599	2,904,487	16	2	14	61
1997	4,613	854	3,759	10,922	3,193,549	14	3	12	34
1998	5,195	1,213	3,982	6,537	3,316,817	16	4	12	20

— = not available.

Notes: All information drawn from the *Philippine Statistical Yearbook* for years 1995-1999.

Vehicle registration information from the Philippine Constabulary Highway Patrol Group (1990-1993).

Accident information from the Department of Defense (1996-1998).

For 1991 to 1993, accident and vehicle registration information covers only NCR and Southern Tagalog Region (Region 4).

No information on accidents is available for years 1994 and 1995.

**Table A2.4: Road Accident Statistics in Thailand (1990-1999)**

Year	Bangkok			Provinces			Whole Kingdom			Estimated Property Damage (million baht)
	Accidents	Fatalities	Injuries	Accidents	Fatalities	Injuries	Accidents	Fatalities	Injuries	
1990	33,064	949	10,701	7,417	4,816	7,551	40,481	5,765	18,252	477.60
1991	38,355	1,057	10,778	7,946	5,276	8,777	46,301	6,333	19,555	639.62
1992	46,743	983	11,025	14,586	7,201	9,677	61,329	8,184	20,702	607.79
1993	64,006	1,011	11,031	20,886	8,485	14,299	84,892	9,496	25,330	1,021.79
1994	72,359	1,290	18,849	30,251	13,856	24,692	102,610	15,146	43,541	1,408.22
1995	64,469	1,284	21,697	24,898	15,443	29,021	94,362	16,727	50,718	1,631.12
1996	60,308	1,069	23,314	28,248	13,336	26,730	88,556	14,405	50,044	1,561.71
1997	54,324	903	20,933	28,012	12,933	27,828	82,336	13,836	48,761	1,571.79
1998	46,800	732	18,920	26,925	11,502	33,618	73,725	12,234	52,538	1,379.67
1999	37,854	549	17,104	29,932	11,446	30,666	67,786	12,040	47,770	1,345.99

Sources: Information System Center, Royal Police (1999); Traffic Engineering Division, Department of Highways (1998).

## ANALYSIS OF ASIAN DEVELOPMENT BANK PROJECTS: FOCUS ON ROAD SAFETY<sup>a</sup>

No./Item	Rating <sup>b</sup>	Description (Relevant Section)
1.		1657-UZB: Road Rehabilitation Project
Loan No./Title		1657-UZB: Road Rehabilitation Project
Loan Amount (\$)		50 million
Date of Approval		15 December 1998
Road Safety Rating	5	
Specific Objective Related to Road Safety	✓	The primary objective is to assist the development of road sector through ... (ii) rehabilitation of a high priority link, and improvement of road maintenance and safety systems for efficient transport services. Project scope includes, among others, the improvement of road maintenance and safety systems along the Samarkand-Bukhara-Turkmenistan border corridor.
Safety Component:	✓	
Amount (\$ million)		19.5
% of Loan		39
TA on Road Safety (\$'000)	X	Nil.
Expert Engaged for Road Safety-Related Activities	✓	35 person-months of international and 30 person-months of domestic consulting for routine road maintenance system and road safety program.
RRP with Paras. on Road Safety	✓	Yes (para. 48).
Others	✓	Under Specific Assurances, the Government has given the assurance that by 1 July 2000, with the assistance of the project implementation consultants, the Road Board will prepare a time-bound road safety program with a view to reducing the high accident rates.
2.		1711-SRI(SF): Southern Transport Development Project
Loan No./Title		1711-SRI(SF): Southern Transport Development Project
Loan Amount (\$)		20 million
Date of Approval		25 November 1999
Road Safety Rating	5	
Specific Objective Related to Road Safety	✓	The primary objectives of the Project are to ... (ii) produce a sustainable and quantifiable reduction in the country's very high road accident rates, a process commenced under the road safety component of the ADB-financed Third Road Improvement Project.
Safety Component:	✓	
Amount (\$ million)		8.1 <sup>c</sup>
% of Loan		9
TA on Road Safety (\$'000)	X	Nil.
Expert Engaged for Road Safety-Related Activities	✓	120 person-months of international consultants and about 130 person-months of senior domestic consultants.
RRP with Paras. on Road Safety	✓	Yes (para. 20 and Appendix 4).
Others	✓	<ul style="list-style-type: none"> <li>• The estimated economic benefits of the Project included accident cost savings.</li> <li>• The National Road Safety Secretariat and the road safety component consultant will monitor indicators defined in the project framework which include fatality and accident numbers, rates, etc.</li> </ul>
3.		1708-BAN: Southwest Road Network Development Project
Loan No./Title		1708-BAN: Southwest Road Network Development Project
Loan Amount (\$)		115 million
Date of Approval		16 November 1999
Road Safety Rating	5	

<sup>a</sup> This analysis is based on a desk review of reports and recommendations of the President (RRPs) of recently approved ADB projects in the road sector. The loans are sorted according to the importance given to road safety.

<sup>b</sup> Rating (out of six) reflects the importance attached to road safety, with respect to the six items.

<sup>c</sup> This amount includes only the ADB-financed road safety component.

No./Item	Rating <sup>b</sup>	Description (Relevant Section)
Specific Objective Related to Road Safety	✓	The objectives of the Project are to ... (ii) address poverty reduction and human development needs by providing access to income and employment opportunities, and by creating safer roads through technical improvements and public awareness...
Safety Component:	✓	
Amount (\$ million)		6.4
% of Loan		5.6
TA on Road Safety (\$'000)	X	Nil.
Expert Engaged for Road Safety-Related Activities	✓	Consulting services will be required for the implementation of the (i) Nordic Development Fund-financed road safety component, and (ii) the DANIDA-financed road safety component.
RRP with Paras. on Road Safety	✓	Yes (paras. 33 to 36; 50; 63 to 64; Appendix 5).
Others	✓	The Roads and Highways Department (RHD) will establish a Road Design and Safety Circle (RDSC) within three months after loan effectiveness. The RDSC will monitor road safety aspects throughout RHD, and prepare manuals for road safety and road design.
4. Loan No./Title		1691-PRC: Southern Yunnan Road Development Project
Loan Amount (\$)		250 million
Date of Approval		24 June 1999
Road Safety Rating	4	
Specific Objective Related to Road Safety	✓	Principal objective: to support the economic and social development in the southern part of Yunnan Province by reducing congestion and improving safety on a key section of the existing road.
Safety Component:	X	
Amount (\$ million)		Not available.
% of Loan		Not available.
TA on Road Safety (\$'000)	X	Nil.
Expert Engaged for Road Safety-Related Activities	✓	1 person-month of an expert in traffic engineering to review the safety audit of expressway design carried out by domestic consultants, and conduct a safety audit prior to the start of expressway operations.
RRP with Paras. on Road Safety	✓	Yes (paras. 44 and 45).
Others	✓	<ul style="list-style-type: none"> <li>• Under the BME activities, the number and severity of accidents will be monitored.</li> <li>• EIRR calculations considered the impact of improved road safety by comparing avoided road accident costs on the road network with/without the project.</li> </ul>
5. Loan No./Title		1701-PRC: Shanxi Road Development
Loan Amount (\$)		250 million
Date of Approval		30 September 1999
Road Safety Rating	4	
Specific Objective Related to Road Safety	✓	The Project will ... (iv) reduce congestion and accidents on existing roads. The Project will improve road safety standards ...
Safety Component:	X	
Amount (\$ million)		Not available.
% of Loan		Not available.
TA on Road Safety (\$'000)	X	Nil.
Expert Engaged for Road Safety-Related Activities	✓	<ul style="list-style-type: none"> <li>• 2 person-months for traffic safety engineering including a review of the expressway design, a review of the expressway facilities before opening, advice on safe operations, and assistance in establishing an accident statistics system.</li> <li>• 12 person-months of international training in road safety.</li> </ul>

No./Item	Rating <sup>b</sup>	Description (Relevant Section)
RRP with Paras. on Road Safety	✓	Yes (paras. 36, 37, and 74).
Others	✓	<ul style="list-style-type: none"> <li>A set of indicators for estimating project effects in relation to project goals, purposes, outputs, and conditions has been agreed to by the Shanxi Provincial Communications Department. The items include, among others, accident rates.</li> <li>The main economic benefits generated by the project expressway component included, among others, savings in physical damage as a result of reduced accidents.</li> </ul>
6. Loan No./Title		1747-IND: Surat-Manor Tollway Project
Loan Amount (\$)		180 million
Date of Approval		27 July 2000
Road Safety Rating	2	
Specific Objective Related to Road Safety	✓	The objectives of the Project are to remove capacity constraints and improve road safety on critical sections of the western transport corridor connecting Delhi to Mumbai.
Safety Component:	X	
Amount (\$ million)		Not available.
% of Loan		Not available.
TA on Road Safety (\$'000)	X	Nil.
Expert Engaged for Road Safety-Related Activities	X	None.
RRP with Paras. on Road Safety	✓	Yes (para. 16).
Others	X	
7. Loan No./Title		1700-MON(SF): Second Roads Development
Loan Amount (\$)		25 million
Date of Approval		30 September 1999
Road Safety Rating	1	
Specific Objective Related to Road Safety	X	None.
Safety Component:	X	
Amount (\$ million)		Nil.
% of Loan		Nil.
TA on Road Safety (\$'000)	X	Nil.
Expert Engaged for Road Safety-Related Activities	X	None.
RRP with Paras. on Road Safety	X	None.
Others	✓	The Project will also provide other benefits, which are difficult to quantify, including reduced number of accidents.
8. Loan No./Title		1653-VIE(SF): Third Road Improvement Project
Loan Amount (\$)		130 million
Date of Approval		10 December 1998
Road Safety Rating	1	
Specific Objective Related to Road Safety	X	None.
Safety Component:	X	
Amount (\$ million)		Nil.
% of Loan		Nil.
TA on Road Safety (\$'000)	X	Nil.

No./Item	Rating <sup>b</sup>	Description (Relevant Section)
Expert Engaged for Road Safety-Related Activities	X	None.
RRP with Paras. on Road Safety	✓	Yes (para. 60).
Others	X	
9. Loan No./Title		1709-PNG: Road Maintenance and Upgrading (Sector) Project
Loan Amount (\$)		63 million
Date of Approval		16 November 1999
Road Safety Rating	1	
Specific Objective Related to Road Safety	X	None.
Safety Component:	X	
Amount (\$ million)		Nil.
% of Loan		Nil.
TA on Road Safety (\$'000)	X	None.
Expert Engaged for Road Safety-Related Activities	X	None.
RRP with Paras. on Road Safety	X	None.
Others	✓	Project performance indicators to be monitored included the number of safety maintenance, construction, and minor safety project as well as subproject data on accidents and causes of accidents (classified by severity of injury to persons recorded annually).
10. Loan No./Title		1697-CAM(SF): Primary Roads Restoration Project
Loan Amount (\$)		68 million
Date of Approval		21 September 1999
Road Safety Rating	0	
Specific Objective Related to Road Safety	X	None.
Safety Component:	X	
Amount (\$ million)		Nil.
% of Loan		Nil.
TA on Road Safety (\$'000)	X	Nil.
Expert Engaged for Road Safety-Related Activities	X	None.
RRP with Paras. on Road Safety	X	None.
Others	X	

✓ = yes (score = 1), x = no (score = 0).

RRP = report and recommendation of the President.

## FINDINGS OF THE ASIAN DEVELOPMENT BANK WORKSHOP<sup>1</sup>

### A. Impact of TA 5620-REG: *Regional Initiatives in Road Safety*<sup>2</sup> on ADB Operations

1. At the workshop on the preliminary findings on 11 September 2000, the Operations Evaluation Mission (OEM) confirmed that the Asian Development Bank (ADB) management and staff recognize that road safety is an essential issue to be addressed in all ADB-financed road projects. The consultants for technical assistance (TA) 5620-REG conducted several seminars that raised the awareness of the importance of road safety among ADB staff. The ADB *Guidelines on Road Safety* were widely distributed to ADB staff who are applying them for enhancing safety features in their road projects. In particular, safety audit and checking at design and construction stages are now undertaken in many ADB financed road projects (e.g., in the People's Republic of China [PRC] and Sri Lanka). However, ADB has not publicized its policy on road safety yet and thus has not institutionalized its activities in this area. Also, a systematic approach for maintaining the proficiency in road safety among ADB projects divisions is lacking due to frequent movement of staff members.

2. There is still a strong need in many developing member countries for training road safety specialists and for developing and implementing their own road safety action plans, since road safety is a complex and multifaceted problem requiring a comprehensive approach tailored to the different conditions of each country.

3. The Regional Road Safety Initiative proposal prepared under TA 5620-REG was taken up by the World Bank that expanded the spatial coverage of the initiative to cover the whole developing world and renamed it as the Global Road Safety Partnership. In this process, the emphasis also shifted to the role of the private sector in road safety, although TA 5620-REG concentrated on the institutional strengthening of government agencies and developing country action plans, including a wide range of public-sector coordinated activities.

**Table A4: Summary of Responses from Asian Development Bank Staff<sup>3</sup>**

Question Based on the Recommendations in TA 5620-REG	Response from ADB Staff
<b>Specific Questions to ADB Staff Working in the Road Sector</b>	
1. What is the ratio of road projects that have road safety components, and what percentage of the project cost is devoted to road safety?	Road safety is a major issue in road projects. At present, all road projects have a road safety component. Specifically, in PRC, all of the road projects have a road safety component, while in Indonesia, road projects have a built-in safety component. For a sector loan, the road safety component should be part of the design criteria.
2. Are safety audits and safety checking required at the design and construction stages of road projects?	Yes. This was introduced as a requirement during negotiations with the Government and is done by an international consultant at three stages of the project. It could be said that TA 5620-REG contributed to the increase in the level of awareness on road safety.

<sup>1</sup> This is an incomplete summary of the major points discussed at the workshop on the preliminary findings of the Operations Evaluation Mission (OEM) on 11 September 2000, attended by Messrs. P. Darjes (Operations Evaluation Division East [OEED]), P. Giraud (Transport and Communications Division East [IETC]), J. Lacombe (IETC), C.M. Melhuish (IETC), K.E. Seetharam (Mission Leader, OEED), and K. Tsunokawa (Staff Consultant).

<sup>2</sup> TA 5620-REG: *Regional Initiatives in Road Safety*, for \$600,000, approved on 4 January 1995.

<sup>3</sup> At the workshop, the OEM received responses to specific recommendations in TA 5620-REG on ADB operations relating to road safety.

Question Based on the Recommendations in TA 5620-REG	Response from ADB Staff
3. Has enough effort been spent to adopt the ADB <i>Guidelines on Road Safety</i> in DMCs?	<p>The training component of the ongoing TA 3341-PRC was based on the problems identified by TA 5620-REG; it will widely disseminate the Guidelines.</p> <p>ADB should still continue its efforts in developing road safety. Under a proposed regional TA, an action plan will be developed for each of the developing member countries (DMCs). Another activity is to put the output of TA 5620-REG on the website.</p>
4. Is the training of safety professionals and their networking included in road safety components of road projects?	Not much in earlier projects. (See Appendix 3 for an assessment of recent RRP's by the OEM.)
5. Is ADB playing a role of a clearing house for the exchange of information and knowledge on road safety?	Not at the moment.
<b>What actions have been taken on these consultants' recommendations "Actions to Strengthen ADB In-House Capabilities"?</b>	
1. Road safety coordinator.	There is somebody who is playing this role but this is not official.
2. Small road safety technical library/resource center.	There are institutional constraints in setting up a library.
3. Internal guidelines for project officers to encourage inclusion of road safety component into projects.	ADB is about to recruit somebody to do this. A set of guidelines which staff could bring to the field is envisioned.
4. Country review/assessment of road safety.	This is done for each project.
5. Dissemination of country safety review reports to ESCAP and the World Bank.	Yes, this is being done. ESCAP is to do a database and put it on the website.
6. Standard statistics and tables on road safety to be included in all project appraisal reports.	Although not in table form, statistics on road safety are quoted in the RRP's.
7. High priority to be given to road safety by ADB management (policy statement).	No policy statement yet.
8. A policy decision to include safety component in the design of all ADB-funded road projects.	No policy statement yet.
9. Creation of a small team of road safety specialists to provide ongoing advice to ADB's activities.	This is not of high priority. The staff in the transport sector could do this.
10. Asia Pacific branch of International Road Safety Association to be established.	Nobody knows about this.
11. Road safety components to be designed as complete packages even if they are implemented in stages under several projects.	This is difficult.

Question Based on the Recommendations in TA 5620-REG	Response from ADB Staff
<b>What actions have been taken on these consultants' recommendations "Actions Required by ADB in its DMCs" in country/sector strategies?</b>	
<ol style="list-style-type: none"> <li>1. Wide distribution of <i>ADB Guidelines on Road Safety</i>.</li> <li>2. Systematic preparation of road safety reviews and development of country specific action plans.</li> <li>3. National Road Safety Seminars to be held in all DMCs.</li> <li>4. Key persons in road safety in each country to be trained to help them develop road safety.</li> <li>5. Support three-year action plans.</li> </ol>	<ol style="list-style-type: none"> <li>1. It depends on which country. For instance in Indonesia, the action plan is being revised after the economic crisis. The ongoing project in this country will monitor this. Transport staff have no idea if the DMCs used the ADB Guidelines.</li> <li>2. Also, these are part of each country operational strategy, which is discussed during the country programming mission.</li> <li>3. No action yet.</li> <li>4. No action yet.</li> <li>5. No action yet.</li> </ol>
<b>What actions have been taken on these consultants' recommendations "Actions Required to Promote and Focus Regional Efforts in Safety"?</b>	
<ol style="list-style-type: none"> <li>1. Bi-annual international conference on road safety in Asia Pacific Region and annual road safety conference in each country.</li> <li>2. Support adoption of ADB Road Safety Policy Guidelines and ESCAP Guidelines on Road Safety Action Plans and Programs by DMCs.</li> <li>3. Development of standard modules in each sector of road safety. Development of short specialized safety training courses for professionals and training materials and documentation.</li> <li>4. Support of a research program at selected research institutions that would eventually become technology transfer centers.</li> </ol>	<p>Not done. This is resource intensive. OECD had this then but was later abolished.</p> <p>Not done. This would have been appropriately worded as "support the <b>use</b> of ADB Road Safety..."</p> <p>Under the GRSP, the development of short training courses will be pilot tested. The ongoing TA 3341-PRC has a similar training component.</p> <p>In PRC, there is the research arm of the Public Security Department. In the Philippines, the interministerial committee is not working due to lack of funds. The accident data collection system in the Philippines which was done under a World Bank-financed project (which has been completed) is now falling apart.</p> <p>In Thailand, the Asian Institute of Technology has submitted a proposal for conducting research and training (see Appendix 5).</p>

## ONGOING INITIATIVES IN SELECTED DEVELOPING MEMBER COUNTRIES<sup>1</sup>

### A. Initiatives in India

#### 1. Bangalore Agenda Task Force Perspective

1. India has a major road accident problem with an estimated 80,000 people killed and at least 400,000 injured in 1999. The responsible government agencies are making every effort to reduce this carnage on the roads but they cannot do it alone. They need support from the public and concerned private organizations.

2. Bangalore has a serious road accident problem with hospital records indicating at least 800 deaths and 14,000 injuries every year. The majority of victims are young adults and the most vulnerable are pedestrians and riders or passengers of two-wheelers. With the planned growth of the city, action needs to be taken now to save Bangaloreans from this hidden and silent epidemic that is predicted to be the world's third major killer by 2020.

3. Bangalore has a proven leadership record with several initiatives promoted under the Bangalore Forward Movement. This Movement is unique in that it is managed by a trisectoral partnership of government, civil society, and the private sector under the Bangalore Agenda Task Force (BATF). Its mission is to make Bangalore India's leading city and at par with the world's best cities in five years. A key goal in driving Bangalore forward is to provide safe mobility for all. To achieve this, the BATF has combined with the Global Road Safety Partnership (GRSP) to launch its Road Safety Drive 2000. Substantial support is sought from the technology giants and leading businesses of Bangalore. These agencies are committed to sustainable growth of their industry and the successful development of Bangalore. With their social responsibility and their management and resource capacity, their partnership with the government and the citizens of Bangalore has tremendous potential to provide safe mobility for all and achieve benefits for all the city's stakeholders.

4. **Global Road Safety Partnership.** Good practices from GRSP projects will be disseminated to influence the quality and quantity of road safety initiatives. Bangalore is the first city to participate in this partnership approach to save precious human life. There are a number of agencies already committed to GRSP activities around the world. These include Volvo, 3M, DaimlerChrysler, Shell, Ford, Diageo, Red Cross/Red Crescent Societies, donor agencies, UN organizations and others.

#### 2. Traffic and Road Safety in Karnataka: Action Plan<sup>2</sup>

5. **Coordination.** The Motor Vehicles Act (M.V. Act) contemplates the constitution of a State Road Safety Council and District Road Safety Committees. This Council and these Committees are in existence except for the newly formed districts of Karnataka State. There is a need to revitalize these Committees to achieve coordinated thinking and action for reducing road accidents.<sup>3</sup>

<sup>1</sup> Based on the Operations Evaluation Mission's field interviews, observations, and reports received.

<sup>2</sup> Source: M.N. Reddi, IPS, DIGP and Commissioner for Traffic and Road Safety, Bangalore (October 2000).

<sup>3</sup> The State Road Safety Council has not been able to meet regularly although efforts have been made. This will be ensured in the coming few months. It is also evident that the District Road Safety Committees are active in certain districts while not so active in other areas. It is expected that the Unit Officers may pay special attention towards this.

6. **Information Systems.** The Motor Vehicles Department has embarked on an ambitious project to computerize vehicle and driver data for Karnataka, beginning with Bangalore City. Computerization of accident data has been taken up in earnest using the Microcomputer Accident Analysis Package (MAAP) in the state. In Bangalore City, it is an ongoing program; in the Central Range, all the national highways have been covered and accident data is now available for 1996, 1997, and 1998. This program will be spread to other ranges and districts in the coming six months. A comprehensive Geographic Information System involving all these elements such as vehicle/driver information, accident data, enforcement data, and information on the physical aspects of the road network, etc. will be created for the entire State during this year.

7. **Funding.** The Government has been requested to provide additional budgetary allocation for traffic improvement in Karnataka State as a whole and Bangalore City separately for 1999-2000. It is also proposed to seek funding from externally funded projects such as the Karnataka Integrated Health Systems Project (World Bank), Karnataka Urban Infrastructure Project (ADB), etc.

8. **Education and Publicity.** Comprehensive legislation is being prepared to form the state, city, district, and taluk level organization structures for the Traffic Warden Organization responsible for publicity and education on traffic safety in the state. It is also advisable to emulate the Students Association for Road Safety, as it exists in Bangalore City, and involve students in traffic safety campaigns/activities.

## **B. Initiatives in Thailand**

### **1. Thailand Global Road Safety Partnership**

9. To help address the mounting problem of road crashes in developing and transition countries, the GRSP was launched in February 1999 under the umbrella of the World Bank's "Business Partners for Development" program with the active participation of the Economic and Social Commission for Asia and the Pacific (ESCAP) representing the road safety concerns in the Asia-Pacific region. A related preliminary GRSP mission was undertaken in August 2000 to explore the possibilities for establishing a Thailand GRSP program.

### **2. Thailand Road Safety Partnership (TRSP)**

10. **Summary of First Roundtable Meeting Discussions on TRSP.**<sup>4</sup> Teams were identified in only eleven road safety priority action areas as indicated below during this first roundtable meeting. Other areas which were not discussed, as there were no interest groups, and the same areas will be presented again in the second roundtable meeting.

#### **Human Factor**

- Driver Training
  - Motorcycle/Bus/Truck
- Education
  - Children
  - Awareness Campaigns

<sup>4</sup> This meeting was organized on 11 October 2000 jointly by GRSP; ESCAP; World Bank; Asian Center for Transportation Studies, Asian Institute of Technology; and the Ministry of Transport and Communications, Thailand.

- Enforcement
  - Speed control
  - Drug and Alcohol Driving
  - Driving hours (not discussed)

#### **Vehicle**

- Vehicle inspection
- Helmet design standards (not discussed)
- Vehicle visibility
- Safer bus design (not discussed)
- Child Seat Safety

#### **Road**

- Road signs and markings
- Remedy of black spots (not discussed)
- Road safety audit

#### **Safety Management**

- Emergency Medical Service
- Accreditation of Transport Operators (not discussed)
- Effective Cooperation between public-private sector (not discussed)

### **C. TRSP Steering Group**

11. The TRSP Steering Group is composed of (i) Chairperson: Dr. Praparnak Buranaprapa (Inspector-General, Ministry of Transport and Communications); (ii) Vice Chairperson(s): First Vice Chairperson: Mr. Kantanit Sukontasap (General Manager, Public Relations, Area and Team Coordinator) and Second Vice Chairperson: Prof. Yordphol Tanaboriboon (Asian Center for Transportation Studies); (iii) Secretary General: Mr. Ponlerd Kositwongskul (General Manager, External Affairs, Shell Company of Thailand Ltd.); (iv) Steering Group Members: ESCAP and all team coordinators; and (v) TRSP Steering Group Secretariat at Shell Company of Thailand.

### **D. Initiatives at the Asian Institute of Technology (AIT): Capacity Building for Road Safety Improvement in the Developing Countries of the Asia-Pacific Region.<sup>5</sup>**

12. **Road Safety Capacity Building through Training Programs.** The training aims to assist any person engaged in road safety activities on various aspects relating to road safety. The training course would also provide an apt venue for technical experts and policymakers to thoroughly discuss the key issues in the area. The program includes (i) development of standard training modules in each identified area (to suit the developing country's priorities), (ii) training of trainers on a subregional basis (for example, Greater Mekong Subregion countries/South Asian Association for Regional Cooperation/Association of Southeast Asian Nations regions), and (iii) nationwide workshops-cum-training programs.

13. The Asian Center for Transportation Studies (Asian Institute of Technology) being a regional center has adequate resources and expertise for conducting effective training in the following important areas of road safety: (i) traffic police and law enforcement, (ii) driver training

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<sup>5</sup> Asian Center for Transportation Studies, School of Civil Engineering, Asian Institute of Technology, Bangkok, Thailand.

and testing, (iii) road safety education of children, (iv) road safety audit, (v) road accident data systems, (vi) road accident costing, (vii) safe planning and design, (viii) vehicle safety standards, and (ix) emergency assistance to road accident victims.

14. The training courses will enable all stakeholders in the field of road safety to be properly equipped, in terms of deep understanding and knowledge of the area, that would eventually help them craft adequate responses to mitigate the risks faced by all road users.

15. **Tentative Topics/Course Outlines.** The following areas comprise the training modules on road safety: (i) traffic police and law enforcement, (ii) driver training and testing, (iii) road safety education of children, (iv) road safety audit, (v) road accident data systems, (vi) road accident costing, (vii) safe planning and design, (viii) vehicle safety standards, and (ix) emergency assistance to road accident victims.

16. **Target Beneficiaries.** Road authorities and road safety administrators, policymakers, national road safety council, institutes dealing with road safety enforcement or driver training or vehicle testing, and all road users, in general.

## E. Initiatives of the Economic and Social Commission for Asia and the Pacific

17. According to ESCAP officials, TA 5620-REG contributed positively in increasing the awareness regarding road safety among developing member countries (DMCs). After the Bangkok seminar under TA 5620-REG, ESCAP published in 1997 seminar proceedings and guidelines on road safety. The publications were widely circulated in the DMCs and were reprinted in 1998. In 1999, the ESCAP Committee on Transport, Communications, Tourism and Infrastructure Development suggested to the ESCAP secretariat to declare “a UN decade of road safety.” ESCAP is now an active participant along with ADB and the World Bank, in preparing Thailand’s national agenda under the GRSP. ESCAP is also actively supporting the efforts of Organisation for Economic Co-operation and Development and Japan’s GRSP committee for organizing country level seminars in many DMCs. Another area of interest for ESCAP is to translate ADB’s *Guidelines on Road Safety* in the local languages in various DMCs. ESCAP also submitted proposals to establish a regional database on road safety<sup>6</sup> and an awareness program on road safety,<sup>7</sup> seeking possible ADB funding.

### 1. Asia-Pacific Road Accident Database (APRAD)

18. **Objectives.** The project aims to assist DMCs in improving road safety through the development, establishment, and maintenance of a standardized and computerized regional road safety database at ESCAP with an easy-to-use data storage, retrieval and analysis system.

19. **Planned Activities. Year I (2001):** (i) convert the existing statistics, compiled earlier from 25 countries and available in a spreadsheet form, into a computerized relational database using Microsoft Access database software; (ii) establish a computerized regional database at ESCAP; (iii) develop a user-friendly analysis software package and a user manual; (iv) organize a consultative meeting of representatives of relevant national agencies for approval of the draft database format, analysis package, and data supply procedures; (v) identify national level coordinating agencies for collecting data required for the regional database and disseminating information.

<sup>6</sup> Asia-Pacific Road Accident Database, amounting to \$600,000 for implementation in 2001 and 2002.

<sup>7</sup> *Increasing Awareness on Road Safety*, amounting to \$1.5 million for five years from 2001 to 2005.

20. **Year II:** (i) expand the coverage of the database to other DMCs; (ii) update the database, initially up to the years 1998/1999; and (iii) establish an ESCAP road safety website.

21. **Cost Estimate:** \$150,000

**2. Awareness Creation and Orchestration of Road Safety Improvement in the Asia-Pacific Region**

22. **Planned Activities.** The project is planned in two phases, focusing initially on activities at the regional level, to be complemented later by necessary national level actions. Proposed activities for each phase are as follows:

- (i) Phase I (1999-2001): Awareness creation to generate political commitment and to lay the groundwork for road safety improvement in the region.
- (ii) Phase II (2001-2004): Coordination and implementation of national road safety action plans on a pilot basis.

23. **Cost Estimates.** Phase I (1999-2001): \$560,000; Phase II (2001–2004): \$940,000; Total: \$1.5 million.

24. **Potential Follow-Up Activities.** The results of the pilot road safety action plans need to be reviewed and evaluated whether and how they can be transferred to other DMCs. The national priority action plans will need to be followed up with five-year road safety programs which in turn might require further external advice.

**F. Initiatives in the People's Republic of China<sup>8</sup>**

25. The ADB transportation safety TA 2177-PRC started on 15 October 1995, and was completed on 31 July 1996. The Australian firm ARRB carried out the technical assistance with its five experts coming to Heilongjiang. With the collaboration on the Heilongjiang Public Security Bureau (HPSB), the consultants completed the report on the Heilongjiang provincial road safety master plan. The report provided a detailed analysis on the road safety situation for *Heilongjiang Expressway Project* (Loan 1324-PRC) and proposed a five-year plan. HPSB has since strengthened the management efforts based on the experts' recommendations, and has partially halted the increasing trend of road accidents. Below are the statistics for the expressway.

<b>Year</b>	<b>Number of Deaths</b>	<b>Number of Accidents</b>
1997	97	117
1998	91	102
1999	64	91

26. The following are the actions taken by HPSB on the five-year plan proposed by the consultants:

<sup>8</sup> Based on the English translation of a presentation delivered by Mr. Sun of the Heilongjiang Public Security Bureau.

### **1. Awareness Education**

- (i) Worked with media including radio, television, and print media to increase the dissemination efforts on the new State Road Safety Management Act, as well as major traffic accidents. They also held exhibitions on such road accidents.
- (ii) Worked with schools along the highway on road safety curriculum, and conducted the “Yellow Hat Program”.
- (iii) Increased education efforts among villagers along the highway to increase their awareness.
- (iv) Printed and distributed information sheets to drivers.

### **2. Addressing Key Bottlenecks**

- (i) Specifically made an announcement that the safety belt rule will be rigorously enforced. Drivers and passengers must fasten their seatbelts, particularly for higher-class highways. Safety belts have been installed on all vehicles. This measure, it is believed, has contributed to decreased injuries and deaths caused by side friction (collisions) and tailgating.
- (ii) Over the last three years, 198 road safety-related signs have been set up.
- (iii) Increased 11 police patrol cars, 8-speed detector, one stationary radar speed detector, and video monitoring at four major exits in Harbin City.
- (iv) Completed and improved Road Safety Information Gathering System and provided 10 computers to traffic police branches along the expressway.

### **3. Strengthening Preventive Measures**

- (i) With strong government support, both Heilongjiang Provincial Government and the Ministry of Public Security have issued directives on transportation safety. Ministry of Public Security’s nationwide Safe Road Program has been implemented in Heilongjiang Province.
- (ii) Over the past three years, HPSB held 21 teleconferences on road safety, and distributed 41 instructions and 7 preventive measures on specific issues.
- (iii) Increasing patrol frequency.
- (iv) Integration of patrolling by all police department along the expressway.
- (v) Have a clear accountability system for traffic police to make sure police know exactly the scope of their responsibility.

### **3. Improving Supervision and Regulations**

- (i) Formation of 15-road patrol police groups to ensure 24-hour patrol.
- (ii) Job training for the police and tests after the training courses. Only those who passed the tests are qualified to join the force.
- (iii) Improving traffic regulations, and clarifying targets and responsibilities.
- (iv) Improving the supervisory system of the police force.

**SUMMARY OF RESPONSES ON TA 5620-REG<sup>a</sup>****Table A6.1: List of Respondents**

<b>Country/ Respondent No.</b>	<b>Classification</b>	<b>Details on Respondent</b>
<b>Thailand</b>		
1.	P/EA	Nara Khomnmool, OCMLT
2.	P/EA	Tophong Vachanasvasti, Deputy Secretary General, OCMLT
3.	P	Yordphol Tanaboriboon, Asian Institute of Technology
4.	D	Prachod Krynetr, Co-Team Leader/Transport Specialist, MOTC-ARS
5.	EA	Precha Chusap, Department of Highways, MOTC
6.	EA	Sun Vithepongse, Deputy Director General, Public Debt Management Office, MOF
<b>Philippines</b>		
7.	P	Delfin Justiniano, Director, Philippine Motor Association
<b>Republic of Korea</b>		
8.	P	Kyong-Soo Yoo, Senior Research Director, Korea Highway Corporation
<b>Indonesia</b>		
9.	P	Heru Sutomo, Master Program in Transport, Gadjah Mada Univesity
<b>Singapore</b>		
10.	D	Milton Tan, President, National Safety Council of Singapore
<b>Malaysia</b>		
11.	D	Aminuddin Yusof, Highway Planning Unit, Ministry of Works
<b>Lao PDR</b>		
12.	D	Thongsavath Bounsack, Deputy Director General, Department of Transport
<b>Pakistan</b>		
13.	D	M. Sadiq Swati, Senior Chief, National Transport Research Center, MOC
<b>India</b>		
14.	D	S.C. Saluja, Chief General Manager (Technical), NHAI
15.	D/EA	Aditya Prakash Bahadur, General Manager, NHAI
<b>Fiji</b>		
16.	D	Chandra Sekhar, Executive Director, National Road Safety Council
17.	D	Isao Tamani, General Manager Operations, Land Transport Authority
<b>PRC</b>		
18.	EA	Wang Xiaolin, Director, Shanxi Provincial Communications Department
19.	EA	Zhang Congming, Yunnan YuanMo Expressway Corporation
20.	D/EA	Hua Yong Hong, Traffic Management Research Institute, Ministry of Public Security
<b>Nepal</b>		
21.	D	Sunil Poudyal, Traffic Engineering and Safety Unit, Department of Roads
<b>Armenia</b>		
22.	O	K. Gevorkyan, Armenian Road Directorate

D = Developing member country, EA = Executing Agency, O = Others, P = Participant.

MOC = Ministry of Communications, MOF = Ministry of Finance, MOTC = Ministry of Transport and Communications, NHAI = National Highways Authority of India, OCMLT = Office of the Commission for the Management of Land Traffic, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

<sup>a</sup> Questionnaires were sent to 68 participants and DMC officials, and 22 responses were received. The respondents evaluated TA 5620-REG, provided information on road safety activities in their countries, and made recommendations.

Table A6.2: Road Accident Statistics

Country/ Respondent No.	Existing Status of Accident Statistics, Data Collection, and Related Activities <sup>a</sup>
<b>Thailand</b>	
1.	No answer.
2.	No answer.
3.	No answer.
4.	Not much improvement. Efforts are being made to develop the database system within Ministry of Transport and Communications (MOTC). Most executing agencies are still reluctant to cooperate with the Database Center. To improve the accident statistics of the country, the cooperation of the National Bureau Police, Ministry of Public Health, the Department of Highways, Department of Land Transport, private voluntary organization and MOTC is needed.
5.	MOTC lacks an accident database system. At present, accident data come from several sources such as the local police station, Land Transport Department, and hospitals.
6.	
<b>Philippines</b>	
7.	No answer.
<b>Rep. of Korea</b>	
8.	No answer.
<b>Indonesia</b>	
9.	No answer.
<b>Singapore</b>	
10.	Pedestrians' death rates have dropped after numerous campaigns on pedestrian safety. Motorcycle fatalities continue to be the highest as each year, around 100 motor cyclists and their pillion riders are killed. Yearly motorcycle safety campaigns are held but the casualties are still about the same. Last year, however, recorded the lowest number of fatal accidents—197 fatalities for all classes of road users.
<b>Malaysia</b>	
11.	No answer.
<b>Lao PDR</b>	
12.	Not improved. Road crash fatalities have risen sharply since 1991. In 1999, there were 362 deaths on the roads, a 345 percent increase since 1991. Main factors contributing to road accidents include (i) poor road condition, (ii) limited visibility at night, and (iii) increased number of vehicles on the road. Between 1991 and 1999, the number of vehicles increased by 134 percent. However in recent years, there has been a slight improvement in the fatality rate and number of road accidents.
<b>Pakistan</b>	
13.	Road accident statistics have improved slightly but this is more due to the "Smead Principle" rather than the result of implementation of RRSI and the Action Plan.
<b>India</b>	
14.	The accident rate and casualties are very high in India. Analysis of data on accidents in the country revealed that the driver of the motor vehicle is the single major factor responsible for the accidents. The driver's misjudgment or inattentiveness to the situation ahead could be due to his poor reflexes, fatigue, inexperience, or being under the influence of intoxicants.
15.	Road accident statistics have not improved.
<b>Fiji</b>	
16.	Road accident statistics have definitely improved: (i) reduction of fatalities from 111 in 1996 to 62 in 1999; (ii) annual decline in overall accident rate by 6 percent; and (iii) similar decline in serious injury, minor injury, and damage-only accidents.
17.	The number of road accidents in 2000 is somewhat lower compared to last year.

Lao PDR = Lao People's Democratic Republic, RRSI = Regional Road Safety Initiative.

<sup>a</sup> Participants were asked to comment on: Have accident statistics improved in recent years? Are data collected?

<b>Country/ Respondent No.</b>	<b>Existing Status of Accident Statistics, Data Collection, and Related Activities<sup>a</sup></b>
<b>PRC</b>	
18.	No answer.
19.	The Department of Public Security and the Communications Department are responsible for road safety statistics, where a computerized system is used.
20.	Road accident statistics have improved. A new type of computer database system and nationwide network is being used.
<b>Nepal</b>	
21.	It is still too early for the efforts to herald national level impacts. However, a before-and-after study of the accident prevention engineering measures have shown accident reductions of up to 95 percent.
<b>Armenia</b>	
22.	No answer.

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PRC = People's Republic of China.

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<sup>a</sup> Participants were asked to comment on: Have accident statistics improved in recent years? Are data collected?

Table A6.3: Bottlenecks

Country/ Respondent No.	Details <sup>a</sup>
<b>Thailand</b>	
1.	No answer.
2.	No answer.
3.	No answer.
4.	Use of the old form for accident reports. Some agencies claim that they use the existing reports because (i) these legally and practically facilitate their responsibilities and official duties, and (ii) of lack of personnel and financial support.
5.	Lack of government support to solve problem of road accidents.
6.	Lack of government support to solve problem of road accidents.
<b>Philippines</b>	
7.	No answer.
<b>Korea</b>	
8.	No answer.
<b>Indonesia</b>	
9.	No answer.
<b>Singapore</b>	
10.	No answer.
<b>Malaysia</b>	
11.	No answer.
<b>Lao PDR</b>	
12.	<p>(i) <b>Infrastructure.</b> Road safety was not incorporated in earlier road/transport projects. Thus, many unsafe roads had been built. During construction, safety measures and safety instruments are not enhanced, which leads to several road accidents.</p> <p>(ii) <b>Institutional capability.</b> The Lao National Road Safety Committee was established in 1996. However, this Committee is not active. Also, cooperation among competent authorities is not satisfactory. Enforcement of traffic regulations and recommendations on road safety is not effective.</p> <p>(iii) <b>Financial sources.</b> The shortage of funding is a major problem that delays and stagnates road safety activities in the country. Funds are urgently needed for (i) policy development, (ii) enforcement policy, (iii) capacity building, (iv) new infrastructure and equipment, and (v) an education campaign.</p>
<b>Pakistan</b>	
13.	<p>(i) Lack of national organization to coordinate road safety activities among all relevant agencies.</p> <p>(ii) Lack of adequate finances.</p> <p>(iii) Absence of institutional arrangement at the apex level in the highway agency.</p> <p>(iv) Lack of qualified highway safety experts.</p>
<b>India</b>	
14.	No answer.
15.	Since the data on road accidents are basically collected and maintained by local police, there is no institutional mechanism for its (i) transfer to highway authorities, and (ii) analysis to plan countermeasures.

Lao PDR = Lao People's Democratic Republic.

<sup>a</sup> Respondents listed various bottlenecks affecting the implementation of initiatives and programs. The types of bottlenecks varied in each DMC.

<b>Country/ Respondent No.</b>	<b>Details<sup>a</sup></b>
<b>Fiji</b>	
16.	(i) Police enforcement programs need to be expanded. (ii) Enforcement through the new Land Transport Authority is yet to be seen. (iii) Government contribution toward road safety via various departmental budgets has to be examined. (iv) Publicity and awareness programs have to be expanded. (v) Regional (local) road safety networks have to be expanded.
17.	No answer.
<b>PRC</b>	
18.	No answer.
19.	Most road accidents have taken place in low-grade highways, so the key factor to reducing road accidents is the improvement of highway conditions.
20.	Lack of awareness of the seriousness and urgency of the impact of road accidents on the development of the local economy.
<b>Nepal</b>	
21.	Among the many bottlenecks, some of the important ones are: (i) human resource development and retention of the trained manpower, (ii) frequent transfer of the personnel in the relevant government agencies, (iii) inadequate budget allocation, and (iv) lack of logistic support.
<b>Armenia</b>	
22.	No answer.

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PRC = People's Republic of China.

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<sup>a</sup> Respondents listed various bottlenecks affecting the implementation of initiatives and programs. The types of bottlenecks varied in each DMC.

## SUMMARY EVALUATION OF TECHNICAL ASSISTANCE

The Operations Evaluation Mission conducted an analysis of the three technical assistance (TA) interventions based on a desk review of consultant reports, relevant Asian Development Bank documents, and responses from executing agencies during the field trips. The analysis included factors relating to design, input, implementation, output, and the impact of the TAs.

**Table A7.1: Objectives**

TA No.	Title	EA	Capacity Building	Policy/Plan Development	Manual/ Action Plan Development
5620-REG	Regional Initiatives in Road Safety	ADB/ ESCAP	✓✓ 3	✓✓ 3	✓ 3
2177-PRC	Preparation of a Road Safety Program	HPSB	✓✓ 3	✓ 1	✓ 3
2001-IND	Road Safety	MOST	✓✓ 3	✓ 0	✓ 3

✓✓ = main objective, ✓ = secondary objective.

3 = fully achieved, 2 = generally achieved, 1 = partly achieved, 0 = not achieved.

ADB = Asian Development Bank, EA = Executing Agency, ESCAP = Economic and Social Commission for Asia and the Pacific, HPSB = Heilongjiang Public Security Bureau, MOST = Ministry of Surface Transport.

**Table A7.2: Scope of Activities**

TA No.	Title	EA	Training	Database Development	Recommendation
5620-REG	Regional Initiatives in Road Safety	ADB/ ESCAP	✓✓ 3	✓ 3	✓ 3
2177-PRC	Preparation of a Road Safety Program	HPSB	✓✓ 3	✓ 3	✓✓ 3
2001-IND	Road Safety	MOST	✓✓ 3	✓✓ 3	✓ 3

✓✓ = main objective, ✓ = secondary objective.

3 = fully satisfactory, 2 = generally satisfactory, 1 = partly satisfactory, 0 = unsatisfactory.

ADB = Asian Development Bank, EA = Executing Agency, ESCAP = Economic and Social Commission for Asia and the Pacific, HPSB = Heilongjiang Public Security Bureau, MOST = Ministry of Surface Transport.

**Table A7.3: Implementation Performance**

TA No.	Title	EA	EA's Participation in Design	Relevance of TOR	Implementation Schedule	ADB Supervision
5620-REG	Regional Initiatives in Road Safety	ADB/ ESCAP	3	3	3	3
2177-PRC	Preparation of a Road Safety Program	HPSB	2	3	3	2
2001-IND	Road Safety	MOST	1	3	2	na

3 = fully satisfactory, 2 = generally satisfactory, 1 = partly satisfactory, 0 = unsatisfactory, na = not assessed.  
 ADB = Asian Development Bank, EA = Executing Agency, ESCAP = Economic and Social Commission for Asia and the Pacific, HPSB = Heilongjiang Public Security Bureau, MOST = Ministry of Surface Transport, TOR = terms of reference.

**Table A7.4: TA Output**

TA No.	Title	EA	Consultant's Performance	Quality of Reports	Effectiveness of Training	Institution Building
5620-REG	Regional Initiatives in Road Safety	ADB/ ESCAP	3	3	3	1
2177-PRC	Preparation of a Road Safety Program	HPSB	3	3	2	1
2001-IND	Road Safety	MOST	3	3	na	na

3 = fully satisfactory, 2 = generally satisfactory, 1 = partly satisfactory, 0 = unsatisfactory, na = not assessed.  
 ADB = Asian Development Bank, EA = Executing Agency, ESCAP = Economic and Social Commission for Asia and the Pacific, HPSB = Heilongjiang Public Security Bureau, MOST = Ministry of Surface Transport.

**Table A7.5: TA Impact**

TA No.	Title	EA	Implementation of Recommendation	Sustainability of Impacts	Relevance of TA Contribution to Government's Priorities
5620-REG	Regional Initiatives in Road Safety	ADB/ ESCAP	2	1	A
2177-PRC	Preparation of a Road Safety Program	HPSB	1	1	A
2001-IND	Road Safety	MOST	na	na	A

3 = highly sustainable, 2 = likely sustainable but needs monitoring, 1 = needs ADB support for sustainability, 0 = unsustainable, na = not assessed.

A = fully relevant, B = generally relevant, C = partly relevant, D = irrelevant.

ADB = Asian Development Bank, EA = Executing Agency, ESCAP = Economic and Social Commission for Asia and the Pacific, HPSB = Heilongjiang Public Security Bureau, MOST = Ministry of Surface Transport.

## FOLLOW-UP ACTIONS AND RECOMMENDATIONS<sup>a</sup>

### A. From Survey Respondents

Respondent No.	Country	Suggestion
1-6.	<b>Thailand</b>	<p>(i) High level coordination on road safety has to take place at various national and local committees.</p> <p>(ii) Additional funding and technical assistance (TA) are needed for the implementation of the recommendations of TA 5620-REG. This will complement the series of publications on road safety produced by the Economic and Social Commission for Asia and the Pacific (ESCAP). More publicity is also required.</p> <p>(iii) To increase the impact of TA 5620-REG, further TA, national seminars, and workshops could be undertaken in cooperation with executing agencies, academic institutions, and nongovernment organizations in Thailand. A more practical approach is important for the successful dissemination of technical information on the implementation of the measures.</p> <p>(iv) Continued access and communication among participants should be improved by using a mailing list or web pages. Also, dissemination of reports should be increased. The end users could easily access the reports if they are distributed to libraries and made available on the Internet.</p>
7.	<b>Philippines</b>	It is suggested that Asian Development Bank (ADB) distribute newsletters calling attention to the "Executive Summaries and the Priority Action Needed" which are apparently being neglected due to budgetary constraints, absence of a coordinating agency to manage road safety, or lack of appreciation of the seriousness of road safety problems in the country.
8.	<b>Korea, Republic of</b>	To improve the impact of the seminar and TA 5620-REG, more publicity activities are necessary. Distributing newsletters and creating a regional body will be good measures to achieve these goals. Future workshops could be more successful if appropriate government officials are invited to attend, and they implement the resolutions after the workshops.
9.	<b>Indonesia</b>	ADB could advise and support the Government to promote coordination because this is the weakest part in road safety management. It will be a good idea to set up a national road safety research council focusing on road safety data, role of police in driving license issuance and driver education, and vehicle testing. The council could organize workshops, distribute newsletters, and provide organizational support on road safety to other agencies.
10.	<b>Singapore</b>	(i) The traffic police has been strict in enforcing speed limits, drink-and-drive, no use of handphones, etc. However, many of the drivers and motorcyclists cut in from lane to lane. The National Safety Council of Singapore feels that this is a campaign that is long overdue.

<sup>a</sup> Respondents were asked what specific actions ADB could take to sustain the impact of TA 5620-REG and the follow-up activities in their own countries.

Respondent No.	Country	Suggestion
11.	Malaysia	<p>(ii) A road safety seminar is proposed for Singapore. Participants will come from Singapore and other countries in the region. The Ministry of Foreign Affairs has not yet approved this. ADB could consider supporting this seminar.</p> <p>It is suggested that ADB undertake an up-to-date accident cost study for selected countries in the region. This study will help authorities involved in road safety in bidding for a higher budget for road safety activities from their respective governments.</p>
12.	Lao PDR	<p>(i) The following road safety activities will be undertaken: (a) create a road accident data system; (b) issue a vehicle safety standard regulation; (c) issue guidelines on safety planning and design; (d) improve hazardous locations; (e) set up emergency assistance teams to assist road accident victims; (f) create a road safety research agency; (g) organize a responsible authority for funding of road safety activities; (h) initiate road accident costing; (i) improve driving skills by training drivers and introduce a graduated licensing scheme; (j) require the use of helmets for motorcycle riders and passengers; (k) strengthen the legislation, enforcement, and education of prohibiting driving while under the influence of alcohol; (l) control speed through enforcement and education; (m) improve traffic management; (n) enforce the use of seatbelts for front seat passengers and encourage it for back seat passengers; and (o) set up the Highway Police Department.</p> <p>(ii) ADB assistance could be in the form of financial support for equipment and training, or provision of short-term experts in these activities.</p> <p>(iii) ADB should closely cooperate with key organizations involved in road safety in each country and assist them regularly in the implementation of their action plans.</p>
13.	Pakistan	<p>(i) ADB should emphasize the development of institutional capability both at the national as well as the highway agency level.</p> <p>(ii) Highway safety improvements should be included in all future assistance in the road sector in Pakistan.</p> <p>(iii) ADB could include the ADB Guidelines in their country review and all review missions visiting Pakistan must touch on this.</p> <p>(iv) ADB should get the commitment of the Government to organize seminars in all major cities of the country to disseminate the contents of the ADB Guidelines.</p> <p>(v) Implementation of the ADB Guidelines could be made one of the covenants in all ADB-funded road projects in Pakistan.</p> <p>(vi) ADB TA grant could be provided as an incentive for the implementation of the Guidelines.</p>

Respondent No.	Country	Suggestion
14-15.	India	<p>(i) The mixed character of traffic in India (fast moving passenger cars to slow-moving animal carts, hand carts, etc.) requires well thought-out regulations and control measures to control the movement of vehicles, drivers, other road users. ADB could assist in (a) undertaking legislative and engineering measures, and (b) providing traffic control devices.</p> <p>(ii) ADB may provide a regional TA to have a dialogue with developing member countries (DMCs), and review the actions taken and draw up further action plans.</p> <p>(iii) Accident data systems, road user education, vehicle road-worthiness inspection and provision of emergency medical services need to be tackled more effectively. These require adequate coordination among the different agencies involved and funds for various programs. Dedicated teams with representatives from different agencies involved in road safety need to be formed all over the region with dedicated funds for organizing various road safety programs. These teams need to be given the proper authority, responsibilities, facilities, incentives, etc. in order to produce good results. ADB could assist through a TA in this regard.</p> <p>(iv) The lack of awareness among policy/decision makers has been a constraint in treating road safety in a focused manner. ADB may consider holding national seminars in each of the DMCs so that apart from bringing out the awareness of this important issue, the process of establishing effective institutional arrangements is also accelerated.</p>
16-17.	Fiji	<p>(i) ADB could initiate some traffic accident costing for the country.</p> <p>(ii) As ADB has helped produce the Fiji Road Safety Action Plan II, Fiji would need to have its implementation monitored and evaluated. ADB's support through the availability of a Road Safety Adviser would be preferred.</p> <p>(iii) More consultations with ADB staff is required at the implementation level to ensure that every agency involved in road safety (whether directly or indirectly) is taken into account prior to each stage of the program.</p> <p>(iv) ADB should hold another seminar where DMCs could present country papers on road safety developments since 1996 and discuss further to chart new initiatives for road safety.</p> <p>(v) People who are directly involved in operational matters should be given the opportunity to visit other DMCs in the region to compare and learn road safety programs. This will also enable them to develop programs appropriate for Fiji that could be submitted to ADB for future funding.</p>

Respondent No.	Country	Suggestion
18-20.	PRC	<p>(i) ADB can select one region to be financed and technology-aided.</p> <p>(ii) The following were pointed out in the Final Report of TA 3303-PRC and the Memorandum of Understanding reached between the Government and the ADB fact-finding mission for Loan 1701-PRC: (<i>Shanxi Road Development</i>) (a) improvement of road safety design, (b) installation of weighing equipment, (c) provision of a team of traffic police to carry out patrols, and (d) provision of two person-months of international consulting services for road safety and 12 person-months of overseas training.</p> <p>(iii) ADB can keep abreast with the latest developments in each country since TA 5620-REG through follow-up investigations.</p>
21.	Nepal	<p>(i) It is suggested that ADB (a) require road projects to address safety aspects (such as construction of footpath, safety barriers, improvement of road intersections, etc.); (b) require project consultants to work in close coordination with the Traffic Engineering and Safety Unit for road safety audits, accident and traffic analysis, and campaigns to create awareness among road users; (c) sponsor short-term training for professionals working exclusively on road safety; and (d) facilitate the exchange of professionals on road safety among the DMCs.</p> <p>(ii) For many people, it is not necessary to go through the whole of the ADB <i>Guidelines on Road Safety</i>. For instance, road engineers do not have much interest in the enforcement aspects of road safety. It would be much more useful if, based on the Guidelines, separate documents could be developed to cater to the needs of specific groups of professionals.</p> <p>(iii) In Nepal, road safety is still not part of the engineering education curriculum. If copies of the Guidelines could be sent to university libraries, the would-be engineers will have the chance to get acquainted with the subject matter.</p> <p>(iv) The Department of Roads, through its Traffic Engineering and Safety Unit, plans the following activities: (a) seminars on road safety for its engineers and the engineers from the consulting agencies, (b) seminars on road safety and traffic management with participants from other agencies, (c) develop guidelines and leaflets, (d) special training of traffic police personnel, (e) a road safety campaign, (f) develop a school level curriculum, (g) include accident rates as one of the planning and designing tools, (h) include in the contract documents road safety audit at various stages of the development of road systems, (i) execute demonstration construction works for accident reduction, and (j) strengthen the National Road Safety Committee.</p>
22.	Armenia	<p>ADB should (a) continue financing road safety programs, and (b) arrange a workshop twice a year.</p>

**B. From Field Interviews**

Respondent No.	Country	Suggestion
India	<p>(i) The Government requested a TA for the year 2001 to review the road safety situation in major cities and along major national highways. The TA would highlight problems and present solutions that could be implemented with external funding; domestic consultants could do this work. DEA also requested additional copies of the ADB <i>Guidelines on Road Safety</i>.</p> <p>(ii) In the rural areas, strict access control should be built in so that people as well as animals will not enter nor cross the road. It is important to put signs at least one kilometer before approaching the villages to expect counterflow traffic. It is also important to put signs at least one kilometer before every intersection or U-turn cut at the meridian to expect crossing traffic. Similarly at intersections, blinking red lights are needed to caution the through traffic to slow down. Wide publicity campaigns, community education and information dissemination to highway drivers are urgently needed. Accident spots should be marked and monitored regularly.</p> <p>(iii) The Tamil Nadu state government wants to prepare a master plan on road safety measures and seeks ADB assistance to improve road safety in the state.</p>	
Singapore	<p>ADB could seek the Singapore Government's cooperation and grant assistance (as in the training on water supply) to conduct regular training for the project management unit officials in ongoing ADB road projects. Future ADB TAs in the road sector could include similar capacity building training for DMC officials. The training can be conducted at no additional cost to the ADB project.</p>	