



Technical Assistance Report

Project Number: 40006
September 2006

India: Urban Transport Strategy

CURRENCY EQUIVALENTS

(as of 13 July 2006)

Currency Unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	\$0.0216
\$1.00	=	Rs46.2388

ABBREVIATIONS

ADB	–	Asian Development Bank
ITS	–	intelligent transportation systems
LRT	–	light rail transit
MOUD	–	Ministry of Urban Development
MRT	–	mass rapid transit
NURM	–	National Urban Renewal Mission
NUTP	–	National Urban Transport Policy
TA	–	technical assistance

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Transport and communications
Subsector	–	Multimodal transport and sector development
Theme	–	Sustainable economic growth
Subthemes	–	Promoting economic efficiency and enabling markets, fostering physical infrastructure development, developing urban area

NOTE

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

Vice President	L. Jin, Operations Group 1
Director General	K. Senga, South Asia Department (SARD)
Director	K. Higuchi, Transport and Communications Division, SARD
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I. INTRODUCTION

1. The Government of India (the Government) has requested technical assistance (TA) from the Asian Development Bank (ADB) to prepare a strategy for effective and efficient Government investment in the urban transport sector.¹ The ADB Mission, which visited India from 26 June to 5 July 2006 to prepare the TA, reached an understanding with the Government on the goal, purpose, scope, implementation arrangements, and terms of reference. The TA is included in the country strategy and program update, 2006–2008.² The project design and monitoring framework is in Appendix 1.

II. ISSUES

2. Economic activities in the industrial and service sectors primarily take place in urban areas. As such, the state of India's towns and cities is crucial to economy's future growth. The urban sector contributes an estimated 50–52% of the country's net domestic product. More than 285 million people, or 28% of the population, live in urban areas, according to India's 2001 census. Based on the current trends in population growth and migration, the United Nations estimates that India's urban population will reach 575 million by 2030.³ Hence, cities must meet the mobility needs of the current population, as well as provide for the needs of those who will join the urban population in the near future.

3. The easy and sustainable flow of goods and people in India's urban areas is facing several problems. The explosive growth in the number of motor vehicles, coupled with limitations on the amount of road space available, has made accessing jobs, education, recreation, and similar activities increasingly time-consuming, expensive, and dangerous. The cost of travel, especially for the poor, has increased considerably as the use of cheaper non-motorized modes that share the same right of way with motorized modes has become extremely risky. Sprawling cities have increased travel distances, making non-motorized modes impossible to use. As a result, access to livelihoods, particularly for the poor, has become far more difficult. Travel in the cities also has become more dangerous, as demonstrated by the increase in accidents from 160,000 in 1981 to more than 390,000 in 2001. The number of persons killed in road accidents nearly tripled from 28,400 to more than 80,000 during the same period. Again, this has tended to impact the poor more severely, as many of those killed or injured are cyclists, pedestrians, or pavement dwellers. Increased use of personal vehicles also has increased air pollution.

4. The National Urban Transport Policy (NUTP) was established in May 2005 to address these rapidly growing problems, and to offer a clear direction and framework for future actions. Major policy approaches in the NUTP are (i) integration of transport planning with land use; (ii) equitable allocation of road space; (iii) greater use of public transport and non-motorized transport; (iv) quality-focused, multimodal public transport systems; (v) effective regulatory and enforcement mechanisms for competition among transport operators, and enhanced safety for the users; (vi) enhanced coordination in the planning and management of transport systems; (vii) intelligent transport systems for traffic management; (viii) improved road safety; (ix) lower pollution levels through changes in traveling practices, better enforcement, cleaner technologies, etc.; (x) capacity building in urban transport planning and management; (xi) innovative financing mechanisms; and (xii) private sector participation.

¹ The TA first appeared in *ADB Business Opportunities* on 26 July 2006.

² ADB. 2005. *Country Strategy and Program Update (2006–2008): India*. Manila.

³ United Nations. 2002. *World Urbanization Prospects: The 2001 Revision*. New York.

5. State governments are responsible for the management of urban areas, and by extension urban transport. The Ministry of Urban Development (MOUD) guides state governments on action plans within the NUTP framework. MOUD is also the executing agency for the infrastructure and governance component of the National Urban Renewal Mission (NURM), which seeks, among other things, comprehensive improvements in urban infrastructure. NURM commits substantial funds for this purpose, and requires a series of reforms to make the investments sustainable.⁴ The urban transport sector is eligible for NURM assistance. MOUD also assists state governments by providing grants covering 40% of the cost of preparing comprehensive traffic system management plans, feasibility studies, and detailed project reports for urban transportation projects. The NURM has provided significant financial support from the central Government for investments in urban transport infrastructure, and has coordinated planning work in urban transport. MOUD promotes these specific initiatives, especially with responsibility for critically evaluating city-specific projects and demands from a strategic perspective under the NUTP.

6. The investment required to address urban transport problems, such as congestion, air pollution, accidents, and so on, is massive. State governments have prepared many urban transport project proposals. Policy measures including mass rapid transport system in a city need to take into account the city form, travel demand and so on. To invest a limited budget effectively and efficiently, an urban transport strategy is required to achieve the objectives under the NUTP. This strategy will provide consistent and objective criteria for the central Government, state governments, and local authorities to appraise urban transport projects.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

7. The purpose of the TA is to ensure safe, affordable, quick, comfortable, reliable, and sustainable access for the growing number of city residents to jobs, education, recreation, and other needs within India's cities in accordance with the NUTP. The urban transport strategy will guide the central Government, state governments, and local authorities in determining alternative policy measures to achieve the NUTP objective. It will focus on India's medium-sized metropolitan areas with populations of 1 million–4 million.

8. The TA will have two components: (i) the integral urban transport strategy component, which will prepare criteria and guidelines for appraising packages of urban transport measures; and (ii) the subsector measures component, which will prepare guidelines and requirements to implement subsector-specific transport measures, including (a) road traffic management, and (b) urban rail and bus safety certificate and requirements.

B. Methodology and Key Activities

9. **Integral Urban Transport Strategy Component.** The component will be prepared in three phases:

⁴ ADB. 2006. *Technical Assistance to India for Support for the Jawaharlal Nehru National Urban Renewal Mission Project*. Manila. (TA-4775, approved in February). ADB provides this TA to implement the NURM.

1. Phase I: Initial Appraisal Criteria (within 2.5 months)

10. Through a review of literature and case studies, the TA will identify the physical and non-physical measures of urban transport available to achieve the policy objective. At the same time, critical factors that determine appropriate alternative measures of urban transport will be identified, also through literature and case studies. Based on these findings, the relationship between quantified critical factors and appropriate urban transport measures will be established. This relationship will provide the criteria for appraising what measures are appropriate, given certain trip and city characteristics. Brainstorming among urban transport experts will be used to calibrate the relationship and/or criteria in the context of India's metropolitan areas.

2. Phase II: Final Appraisal Criteria With Guidelines and Toolkits (within 4 months)

11. The relationship and/or criteria will be verified and calibrated further by applying them to defined zones in selected metropolitan areas where urban transport measures have been implemented. Data before and after implementation of the urban transport measures will be collected or estimated for this verification and calibration exercise. Urban transport project proposals submitted by states and/or local governments may be used for this assessment, as the proposals include data. The validity of the data will be checked, and/or a supplementary survey will be conducted. Limits to the use of the relationship and/or criteria also will be identified. A guideline and toolkit will be prepared for central Government, state governments, and local authorities on how to use the relationship and/or criteria for appraising urban transport development measures. The output of the subsector-specific measures component will be incorporated into this Phase II output.

3. Phase III: Alternative Packages of Urban Transport Measures for Selected Metropolitan Areas (within 6 months)

12. The TA will prepare alternative packages of urban transport measures for selected metropolitan areas by applying the strategy and criteria developed in Phases I and II. For specific metropolitan areas, the performance indicators will be set to represent policy objectives. Alternative policy packages then will be prepared with short-term and long-term projects to realize the target indicators effectively and efficiently. The optimal policy package will be identified from among alternatives based on the overall evaluation. A brief implementation arrangement will be discussed, taking into account milestones and stakeholders.

13. **Subsector Measures Component.** Road traffic management guidelines and manuals for India's metropolitan areas will be prepared with reference to guidelines and manuals adopted in other countries. Training on the use of the proposed guidelines and manuals will be provided to state and local governments, using selected metropolitan areas as case studies. In addition, safety requirements of urban rail systems, such as mass rapid transit (MRT) and light rail transit (LRT), and rapid bus systems will be prepared with reference to those adopted in other countries. A guideline and manual for inspecting urban rail and rapid bus systems, and for issuing safety certificates, will be prepared with reference to guidelines and manuals in other countries. Appropriate institutions and mechanisms will be proposed for safety certificate issuance by state governments in the context of India's government systems. Training on safety inspection and certificate issuance will be provided to state and local governments, using selected urban rail and rapid bus systems. The output will be incorporated into the Phase II output of the integral urban transport component (para. 11).

C. Cost and Financing

14. The TA is estimated to cost the equivalent of \$1.25 million. ADB will provide a grant for the equivalent of \$1.0 million from its TA funding program. The Government will finance the remaining cost, the equivalent of \$250,000, through in-kind contributions of the Executing Agency. The cost estimates and the financing plan are in Appendix 2.

D. Implementation Arrangements

15. MOUD will be the Executing Agency of the TA. As such, MOUD will nominate a core group of counterpart staff, headed by a TA director, to work closely with the consultants on day-to-day implementation and reporting of the TA's progress to ADB. The consultants, who will be stationed in the project office of MOUD, will work as a team with the core group of counterpart staff. Workshops will be held to discuss and disseminate the progress and outputs of the TA to the relevant government agencies, such as the Department of Economic Affairs.

16. The TA will engage three individual consultants and one consultant team. Under the integral urban transport strategy component, the individual consultants will comprise an urban transport planner, an urban transport policy and regulation specialist, and an urban transport engineer-cum-traffic modeler. The three specialists will provide 15 person-months of international consulting inputs during the 6-month TA implementation period. Under the subsector measures component, a consultant team will be engaged to provide about 12 person-months of international consulting services over 4 months. The experts on the consultant team for this component will include an urban transport engineer as team leader, an urban rail safety engineer, and a rapid bus safety engineer, who will be supported by technical inputs of structural engineering, signal engineering, and operation engineering, as required.

17. Individual consultants will be engaged in accordance with ADB's *Guidelines on the Use of Consultants*. ADB will select and engage a team of consultants from an international consulting firm using ADB's quality- and cost-based selection procedures, and in accordance with its *Guidelines on the Use of Consultants* (using the biodata technical proposal procedure). Equipment will be procured in accordance with ADB's *Procurement Guidelines*. The outline terms of reference for the consultants are in Appendix 3.

18. For the integral urban transport component, the consultants will submit (i) an inception report within 3 weeks of the start of consulting services, (ii) an interim report within 2.5 months, (iii) a draft final report within 4 months, and (iv) a final report within 6 months. The inception report will include the detailed methodology and methods to be used to establish the relationship and/or criteria for appraising urban transport projects. The interim report will include the initial relationship between quantified critical factors and appropriate measures, and hence the criteria for appraising what urban transport measures are appropriate under given conditions. The draft final report will include the final criteria for appraising urban transport projects, in the form of a guideline and toolkit, after further verification and application. The final report will present a complete urban transport strategy in selected metropolitan areas, applying the guideline and toolkit. Four major meetings and/or workshops are envisaged: the first to discuss the inception report, the second to discuss the interim report, the third to consider the draft final report, and the fourth to demonstrate the final outputs. In addition to these major meetings, the consultants will meet with relevant ministries, development partners, and financiers to brief and update them on the progress to develop government's ownership of the strategy. The consultants will conduct intensive discussions with stakeholders, including relevant ministries, development partners, nongovernment organizations, and private sector entities.

19. For the subsector measures component, the consultants will submit (i) an inception report within 3 weeks of the start of the consulting services, (ii) a draft final report within 2.5 months, and (iii) a final report within 4 months. The inception report will include draft structure of guidelines and manuals for each subsector measure. The draft final report will include draft guidelines and manuals for each subsector measure, as well as the proposed institution and mechanisms for safety certificate issuance by states. The final report will present the guideline and manuals, and the institution and mechanisms, to implement these measures, endorsed by the Government. Training will be conducted, as appropriate, to enable government officials to use the guidelines and manuals effectively. The consultants will meet with relevant ministries to confirm the appropriate institution and mechanism for implementing these subsector-specific measures (e.g., safety certificates).

20. The TA will be implemented over 6 months, starting in September 2006 and ending in March 2007.

IV. THE PRESIDENT'S DECISION

21. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$1,000,000 on a grant basis to the Government of India for the Urban Transport Strategy, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>Impact Ensure safe, affordable, quick, comfortable, reliable, and sustainable access for the growing number of city residents to jobs, education, recreation, and other needs within India's cities.</p>	<ul style="list-style-type: none"> • Fewer traffic accidents in urban areas. • Increased availability of intermodal transport options. • Increased competition of transport services. • Improved financing for urban transport projects and subsidy to public transport operators. • Less pollution. 	<ul style="list-style-type: none"> • Traffic police data. • Transport network map. • User survey on service level, such as frequency, cleanliness, and conformability. • Public transport operators' data on fares and operation costs and profits. • Statistics on traffic data • Environmental agencies data. 	<p>Assumptions</p> <ul style="list-style-type: none"> • Continued central Government assistance to urban development, such as the National Urban Renewal Mission. • Enhanced discipline in driving; and compliance with, and enforcement of, traffic rules and regulations. • Government commitment and capabilities to implement policy measures, such as subsidy, cleaner technologies, and support for innovative financing mechanisms.
<p>Outcome Provide guidance for central, state, and local governments to determine alternative policy measures to achieve the National Urban Transport Policy (NUTP) objective.</p>	<ul style="list-style-type: none"> • Consistent preparation of urban transport projects. • Consistent and logical appraisal of urban transport projects. • Efficient and effective investment program and implementation of urban transport projects. 	<ul style="list-style-type: none"> • Investment program of urban transport in state and local governments. • Quality of comprehensive transport and traffic plans, feasibility studies and detailed project, reports of urban transport. • Capacity of state and local governments in urban transport, in terms of staff number and quality. 	<p>Assumptions</p> <ul style="list-style-type: none"> • Comprehensive consultation with government agencies and other stakeholders. • Government's commitment to the NUTP and the ownership of the strategy. • Government's continued commitment to capacity building of state and local governments in urban transport. • Government's continued commitment to quality improvement in urban transport proposals.
<p>Outputs 1. An integral urban transport strategy. 2. Subsector-specific urban transport measures.</p>	<ul style="list-style-type: none"> • Alternative measures of urban transport development. • Appraisal criteria for urban transport projects. • Road traffic measures. • Safety certificate mechanisms in urban rail and rapid bus. 	<ul style="list-style-type: none"> • Timely submission of the appraisal criteria. • Consultants progress reports. • Asian Development Bank (ADB) review missions. 	<p>Assumptions</p> <ul style="list-style-type: none"> • Engagement of capable consultants with required skills. • Effective coordination of the two components. • Close follow-up of consultants' work by the Ministry of Urban Development and ADB. • Timely collection and availability of data and information for demand forecast. • Cooperation of concerned central Government agencies, and state and local governments in providing information and opinions.

Activities with Milestones	Inputs
<p>1. Integral urban transport strategy component</p> <p>1.1 Prepare initial appraisal criteria (within 2.5 months).</p> <p>1.2 Prepare the final appraisal criteria with guidelines and toolkits (within 4 months).</p> <p>1.3 Prepare alternative packages of urban transport measures for selected metropolitan areas (within 6 months).</p> <p>2. Subsector-specific measures component</p> <p>2.1 Prepare road traffic management measures, and provide training to state and local governments (within 4 months).</p> <p>2.2. Prepare technical and institutional safety certificate systems for urban rail and rapid bus systems, and provide training to state and local governments (within 4 months).</p>	<ul style="list-style-type: none">• ADB: \$1 million.• Government: \$250,000 (in kind).• International consulting services of 15 person-months for the integral urban transport strategy component , and 12 person-months for the subsector-specific measures component

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Total Cost
A. Asian Development Bank (ADB) Financing^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	605.0
b. International and Local Travel	65.0
c. Reports and Communications	25.0
2. Equipment ^b	20.0
3. Training, Seminars and Conferences	55.0
4. Surveys	105.0
5. Miscellaneous Administration and Support Costs	15.0
6. Representative for Contact Negotiations	20.0
7. Contingencies	90.0
Subtotal (A)	1,000.0
B. Government Financing	
1. Office Accommodation and Transport	100.0
2. Remuneration and Per Diem of Counterpart Staff	70.0
3. Others	80.0
Subtotal (B)	250.0
Total	1,250.0

^a Financed by ADB's technical assistance funding program.

^b The consultants will purchase equipment for office, survey, training, and workshops in accordance with ADB's *Procurement Guidelines*. The equipment will be handed over to the Ministry of Urban Development on completion of the technical assistance.

Source: ADB estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Scope

1. The consultants will help the Government of India implement the technical assistance (TA) with two components: (i) the integral urban transport strategy component, which will prepare criteria and guidelines for appraising packages of urban transport measures; and (ii) the subsector measures component, which will prepare guidelines and requirements to implement subsector-specific transport measures, including (a) road traffic management, and (b) urban rail and bus safety certificate and requirements. It will focus on India's medium-sized metropolitan areas with populations of 1 million–4 million. The integral urban transport strategy and subsector-specific measures will take into account environmental, social and resettlement aspects in preparing guidelines.

1. Integral Urban Transport Strategy (15 person-months international consultants for 6 months)

2. The integral urban transport strategy will guide the central Government, state governments, and local authorities in determining the most appropriate package of transport measures in metropolitan areas under a multimodal transport framework. The criteria for appraising urban transport measures or projects will be prepared, which will be tantamount to the integral urban transport strategy. Proper considerations will be given to traffic density, as well as the characteristics of the trip and metropolitan area.

3. In a phased manner, the consultant will

a. Phase I: Initial Appraisal Criteria

- (i) Identify the physical urban transport measures available to achieve the National Urban Transport Policy (NUTP) objective, such as mass rapid transit (MRT); light rail transit (LRT); rapid bus; and road traffic management, including pedestrian paths; exclusive lanes for two-wheelers, buses, and paratransit and non-motorized transport (NMT); and other means to achieve smooth car movement. These other means could include appropriate road design, intelligent transportation systems (ITS), and transport-related facilities, such as terminals for trucks and buses, parking, etc. Actual application of these physical measures in the world will be presented.
- (ii) Identify non-physical urban transport measures available to achieve the NUTP objective, such as legal and financial setups (e.g., fare regulation), traffic rules, safety measures, level of service, etc. Actual application of these non-physical measures in the world will be presented.
- (iii) Identify critical factors that determine appropriate alternative measures of urban transport. Such quantifiable critical factors might include traffic density, trip length, combination of these, etc.
- (iv) Establish the relationship between quantified critical factors and appropriate measures. For example, the MRT could be appropriate when a trip is long and traffic density is medium, or when the trip not long but the traffic density is very high. The

relationship will provide the criteria for appraising what measures are appropriate, given certain trip and city characteristics.

- (v) Calibrate the relationship and/or criteria in the context of India's metropolitan areas. Brainstorming among urban transport experts might help the initial calibration.

b. Phase II: Final Appraisal Criteria with Guidelines and Toolkits

- (i) Verify the relationship and/or criteria, calibrate further the relationship and/or criteria as required, and identify the limits to the use of the relationship and/or criteria by applying the relationship and/or criteria to defined zones in selected metropolitan areas where urban transport measures have been implemented. Data will be collected before and after implementation or estimated for this verification and calibration exercise. Urban transport project proposals submitted by states and local governments may be used for this assessment, as the proposals include data. The validity of the data will be checked, and/or a supplementary survey will be conducted.
- (ii) Prepare a guideline and toolkit for the central Government, state governments, and local authorities on how to use the relationship and/or criteria for appraising measures of urban transport development. This will incorporate the outputs of the subsector measure component.

c. Phase III: Alternative Packages of Urban Transport Measures for Selected Metropolitan Areas

- (i) Prepare alternative packages of urban transport measures for selected metropolitan areas by applying the strategy and criteria developed in Phases I and II. The focus will be on India's medium-sized metropolitan areas with populations of 1 million–4 million. This also will demonstrate how the relationship and/or criteria can be applied to appraise actual cases and provide alternative measures.
- (ii) Identify metropolitan areas in workshops based on a certain selection criteria, e.g., the reform commitment of the National Urban Renewal Mission (NURM), the high commitment of implementation, etc.
- (iii) Set performance indicators that represent policy objectives.
- (iv) Prepare alternative policy packages with short-term and long-term projects to realize the target indicators effectively and efficiently.
- (v) Identify the optimal policy package among alternatives based on an overall evaluation.
- (vi) Discuss a brief implementation arrangement, taking into account milestones and stakeholders.

4. Individual consultants with expertise in urban transport planning, urban transport policy and regulation, and urban transport engineering will be engaged to complete all the tasks. Specific tasks of each expert will be as follows:

i. Urban Transport Planner (6 person-months)

5. The specialist will conduct and finalize all the tasks in Phases I, II and III by utilizing inputs of the urban transport policy and regulation specialist and the urban transport engineer-cum-traffic modeler as required in specific areas. The specialist will schedule and coordinate all the required tasks, and be responsible for the quality of the TA outputs.

ii. Urban Transport Policy and Regulation Specialist (4 person-months)

6. The specialist will provide the urban transport planner with inputs relating to policy and regulation, starting with task (ii) in Phase I. The specialist also will provide inputs to develop, calibrate, and verify the relationship and/or criteria in all the other tasks, especially to reflect the effects of policy and regulation on the relationship and/or criteria. Some initial inputs for task (ii) in Phase II will also be prepared. The specialist will prepare relevant parts of the guideline and toolkit.

iii. Urban Transport Engineer-Cum-Traffic Modeler (5 person-months)

7. The specialist will provide the urban transport planner with inputs relating to engineering, starting with task (i) in Phase I. The specialist also will provide inputs to develop, calibrate, and verify the relationship and/or criteria in all the other tasks, especially in traffic assessment and forecast, to reflect the effects of traffic engineering measures. Supplementary surveys and assessment will be conducted as required to verify the traffic data and models. Models will be calibrated if necessary by conducting appropriate surveys. The specialist will prepare relevant parts of the guideline and toolkit. Inputs for Phase III, especially on the intermodal traffic assessment, will be prepared.

2. Subsector-Specific Measures (12 person-months, international consultants)

8. The consultants will

a. Road Traffic Management

- (i) Prepare road traffic management guidelines and manuals in the context of India's metropolitan areas.
- (ii) Provide training to state and local governments, using selected metropolitan areas as case studies.

b. Safety Certificate Systems of Urban Rail and Rapid Bus

- (i) Prepare safety requirements of urban rails (e.g., MRT, LRT) and rapid bus.
- (ii) Prepare a guideline and manual to inspect the urban rail and rapid bus, and issue a safety certificate.
- (iii) Propose appropriate institutions and mechanisms to issue safety certificate by state governments.
- (iv) Train state and local governments, using selected urban rails and rapid bus systems.

9. The output of the component will be incorporated into the guideline and toolkits prepared under Phase II of the integrated urban transport strategy component.

B. Required Expertise

10. Three individual international consultants for the integral urban transport strategy component will be engaged for a combined 15 person-months over the 6-month implementation period. The urban transport planner must have strong experience as a team leader and with a wide variety of urban transport planning issues, including traffic management and engineering, public transport planning and ITS, in developed countries for more than 15 years or with equivalent experience. The urban transport policy and regulation specialist must have strong experience with urban transport policy and regulation measures, including public transport systems, in developed countries for more than 15 years or with equivalent experience. The urban transport engineer-cum-traffic modeler must have strong experience and knowledge of urban transport management and engineering measures, including ITS and modeling of urban traffic, in developed countries for more than 10 years or with equivalent experience. For these experts, experience in urban transport projects in Asia also would help, but is not required.

11. The consultant team for the subsector-specific measure component will comprise an urban transport engineer as team leader with experience in applying road traffic management measures in developed countries and in urban projects in Asia, an urban rail safety engineer with experience in safety certification of urban rail systems, and an rapid bus safety engineer with experience in safety certification of urban rail systems. A structural engineer, signal engineer, and operation engineer also will be required for a combined 1–2 person months of inputs in these specialized fields. The consultant team will be engaged for about 12 international person-months.

C. Reporting Requirements

1. Integral Urban Transport Strategy Component

12. The urban transport planner will consolidate other specialists' inputs and submit the following reports to the Government and Asian Development Bank (ADB):

- (i) **Inception report.** Within 3 weeks of the commencement of consulting services, the inception report will be submitted, highlighting any recommendations and proposed changes to the tasks, initial findings, and the work program for the component. The report will describe the detailed methodology and methods to be used to establish the relationship/criteria for appraising urban transport projects.
- (ii) **Interim report.** Within 2.5 months of commencement, the interim report will be submitted, including the initial relationship between quantified critical factors and appropriate measures, and hence the criteria of appraising what measures are appropriate (Phase I outputs).
- (iii) **Draft final report.** Within 4 months of commencement, the draft final report will be submitted, presenting criteria for appraising urban transport projects, in the form of the guideline and toolkit, after further verification and application (Phase II outputs).
- (iv) **Final report.** Within 6 months of commencement, the final report will be prepared after due consideration of comments made by the Government and ADB, presenting alternative packages of urban transport measures for selected metropolitan areas by applying the strategy and criteria developed.

- (v) **Progress and working reports.** Upon the request of the Government and/or ADB, a brief progress report will be provided to ADB by e-mail or fax, indicating the administrative and technical accomplishments.

2. Subsector-Specific Measures Component

13. The following reports will be submitted to the Government and ADB:

- (i) **Inception report.** Within 3 weeks of the commencement of consulting services, the inception report will be submitted, highlighting the progress made, as well as any recommendations and proposed changes to the work program for the component. The inception report will include draft structure of guidelines/manuals for each subsector measure.
- (ii) **Draft final report.** Within 2.5 months of commencement, the draft final report will be submitted, including draft guidelines and manuals for each subsector measure. The institution and mechanisms for the issuance of safety certificates by states also will be proposed.
- (iii) **Final report.** Within 4 months of commencement, the final report will be submitted, including guidelines and manuals for each subsector measure and a report on training. The institution and mechanisms for the issuance of safety certificates by states also will be confirmed.
- (vi) **Progress and working reports.** Upon the request of the Government and/or ADB, a brief progress report will be provided to ADB by e-mail or fax, indicating the administrative and technical accomplishments.

14. Except for the progress reports, 20 copies of each of these documents will be submitted (five copies for ADB and 15 copies for the Government). For each component, 30 copies of the final report will be submitted (five copies for ADB, 15 copies for the Government, and 10 copies for other aid agencies).