

**ASIAN DEVELOPMENT BANK**

**TAR:IND 32253**

**TECHNICAL ASSISTANCE**

**TO**

**INDIA**

**FOR PREPARING THE**

**NATIONAL HIGHWAY CORRIDOR**

**– PUBLIC-PRIVATE PARTNERSHIP – PROJECT**

**October 2001**

## **CURRENCY EQUIVALENTS**

(as of 14 September 2001)

Currency Unit	–	Rupee/s (Re/Rs)
Re1.00	=	\$0.0210
\$1.00	=	Rs47.54

## **ABBREVIATIONS**

ADB	–	Asian Development Bank
BOT	–	build-operate-transfer
MORTH	–	Ministry of Road Transport and Highways
NHAI	–	National Highways Authority of India
NHC	–	National Highway Corridor
PSI	–	private sector investment
TA	–	technical assistance
WTC	–	Western Transport Corridor

## **NOTES**

- (i) The fiscal year of the Government ends on 31 March.
- (ii) In this report, "\$" refers to US dollars.

## I. INTRODUCTION

1. During the 2001 Country Programming Mission, the Government of India requested technical assistance (TA) from the Asian Development Bank (ADB) for preparation of the National Highway Corridor – Public-Private Partnership – Project (the NHC Project) which is included in ADB's 2002-2004 lending program for India. An ADB TA Fact-Finding Mission visited India from 24 to 30 June 2001 and reached an understanding with the Government on the scope and other aspects of the TA for preparation of the NHC Project.<sup>1</sup>

## II. BACKGROUND AND RATIONALE

2. **Sector Background.** India has an extensive and diversified transport system, comprising 3,291,000 kilometers (km) of roads, 62,800 km of railways, and about 14,500 km of navigable inland waterways. The modal mix between road and rail transport<sup>2</sup> has been continuously shifting away from railway to road due to the former's lack of user oriented service provision. Consequently, road transport is now the dominant mode of transportation, accounting for 60 percent of freight movement and 80 percent of passenger traffic. This modal shift is likely to continue in the future as transport demands will shift from bulky to smaller lot size cargoes with more frequent delivery requirements. This will call for further improvement and expansion of the road network.

3. India's road network consists of three categories: (i) national highways (50,000 km), (ii) state highways/roads (119,000 km), and (iii) rural roads (3,122,000 km). While national highways account for only 2 percent of the total road network in terms of length, they carry about 40 percent of the total traffic. National highways are managed by two agencies: the National Highways Authority of India (NHAI) and the Ministry of Road Transport and Highways (MORTH). NHAI was established in 1988 and operationalized in 1995 as an operating arm of MORTH. NHAI is responsible for one fourth of the national highways, which carry around 25 percent of the nation's total traffic, while MORTH is responsible for the remaining three fourths of national highways which carry 15 percent of the total traffic.

4. India's economy has long suffered a chronic capacity shortage. Thirty-nine percent of the national highways system is still of single-lane standard; the majority (59 percent) is two-lane, while four-lane or higher standard highways account for only 2 percent. Faced with this capacity shortage, the Government has decided to launch a radical program of upgrading key national highways consisting of (i) the golden quadrilateral – 6,000 km; (ii) the north-south corridor (N-S Corridor) – 4,000 km; and (iii) east-west corridor (E-W Corridor) – 3,300 km. The program was announced in 1998 and is to be completed by the end of 2007. The total cost of the program is estimated at around \$13 billion.

5. **Programmatic Approach.** To finance its road program, the Government has requested ADB for a series of loans over the next few years. In response, ADB has decided to adopt a programmatic approach in extending loans to NHAI as the most effective way of maximizing the developmental impact of changes in the highway sector.

6. The Western Transport Corridor (WTC) Project<sup>3</sup> is the first project that has been processed under the programmatic approach. The proposed NHC Project is the second project

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<sup>1</sup> The TA first appeared in *ADB Business Opportunities* in June 2001.

<sup>2</sup> Inland waterways play a very minor role in India's transport system. According to the Inland Water Transport Policy (2000) of the Ministry of Shipping, they carry less than 1 percent of the total inland cargo in terms of ton-kilometers.

<sup>3</sup> Loan 1839-IND: *Western Transport Project*, for \$240 million, approved on 20 September 2001.

to be prepared and processed under this approach. This requires the NHC Project to be prepared in a manner significantly different from traditional investment projects.

7. **Policy and Institutional Reform.** The main thrust of the programmatic approach is policy and institutional reforms at NHAI. The principal reform agenda that ADB intends to pursue under the programmatic approach includes:

- (i) transforming NHAI into a financially and managerially autonomous body including a corporatized form of organization;
- (ii) enhancing the corporate finance capability of NHAI including that for capital mobilization, financial reporting, and treasury function enhancement;
- (iii) promoting and further elaborating the public-private partnership concept in highway development and maintenance;
- (iv) strengthening NHAI's project management capability, particularly in terms of environmental assessment, resettlement, procurement, and disbursement; and
- (v) enhancing corporate governance, particularly with regard to increased transparency in transactions, public procurement, and contract management.

8. Substantial parts of this agenda will be addressed in the recently approved WTC Project. Its accompanying TA would assist NHAI in developing necessary strategies for enhancing the corporate finance capability of NHAI and in exploring alternative forms of organization. Ongoing TAs<sup>4</sup> would also contribute to strengthening the project management capability of NHAI. A remaining area of work is to set out a medium- to long-term road map that would guide a variety of reform actions to be integrated to serve the eventual materialization of policy goals. Milestone actions that trigger the processing of the next project under the programmatic approach also need to be identified.

9. **Investment Strategy under the Public-Private Partnership.** The private sector is potentially a major player in infrastructure development. India has been ardently pursuing private development in the highway sector with strong policy support from the Central Government (e.g., the announcement of "Guideline for Private Sector Participation in the Road Infrastructure" in 1997 and the development of a model concession agreement for build-operate-transfer (BOT) schemes for highway development in 2000). However, the results so far are mixed. Short-section developments such as bypasses and bridges have been successful in introducing private sector investment (PSI) through BOT schemes. For longer and larger scale projects, NHAI has, however, been experiencing difficulties in attracting an adequate number of bidders. This has led NHAI to consider and apply less attractive "annuity-based BOT schemes"<sup>5</sup> by freeing the private sector from assuming a major commercial risk. Special purpose vehicles combined with later stage disinvestments or initial public offerings have now emerged as an alternative method of mobilizing private sector funds (where the construction risk is not borne by the private sector, but by NHAI). A new initiative has also been taken by the private sector in the area of infrastructure financing. A holding company specializing in toll road financing was established in 2000, which sponsors and invests in multiple toll road projects at various stages

<sup>4</sup> TA 3365-IND: *Capacity Building for Social Development*, for \$800,000, approved on 23 December 1999; and TA 3361-IND: *Capacity Building for Contract Supervision and Management*, for \$600,000, approved on 22 December 1999.

<sup>5</sup> A predetermined amount of the money will be paid annually to the concessionaire to cover the cost of development, operations, and maintenance.

of development with the intention of reducing the overall risk of toll road projects. With these developments, NHAI is now entering into the second stage of PSI development wherein a more practical approach will be pursued (i.e., fewer risks being borne by the private sector, but higher probability of success being pursued).

10. During the TA Fact-Finding Mission, NHAI and ADB agreed to take up 1,500 km of north-south and east-west corridors (hereinafter called the “program corridor”) and develop an investment strategy for the entire stretch of the program corridor in consideration of the recent experiences of NHAI. This program corridor, which extends from Porbandar (Gujarat) to Agra (Uttar Pradesh) via Jhansi (Madhya Pradesh), would present an appropriate sequence of investments that may be supported through ADB loans to be developed under the programmatic approach.

11. To identify possible PSI opportunities along the program corridor, a screening survey would be carried out. Specific modalities of investment are to be developed for each section of the program corridor. For those sections identified suitable for the PSI, specific investment packages would be developed, together with tender documents and bid evaluation criteria. The TA will be provided for these tasks.

12. **Project Concept.** During the TA Fact-Finding Mission, ADB was requested to extend support to NHAI in its specific project preparation activities for the NHC Project. NHAI identified priority sections of approximately 300 km to be included in the proposed NHC Project. These sections, located primarily in Gujarat and Madhya Pradesh, will be upgraded from the current two-lane to four-lane highways under the public-private partnership concept. It was agreed to explore the possibility of ADB’s financing a portion of NHAI’s grant to be extended to the concessionaires. While the feasibility study, preliminary design, and detailed engineering design for these sections will be conducted by NHAI’s consultants, ADB’s TA will focus on assistance to ensure that NHAI’s project preparation efforts will meet ADB’s requirements for project processing, particularly in the areas of social assessment, environment, resettlement, poverty impact assessment, economic and financial analysis, design standards, and procurement.

### III. TECHNICAL ASSISTANCE

#### A. Objectives

13. The objectives of the TA are to (i) set out an overall road map to be followed under the programmatic approach for India’s road subsector, and (ii) provide expert advice to NHAI to facilitate the preparation of the proposed NHC Project.

#### B. Scope

14. Consulting services will be provided to carry out the following three groups of activities:

**Component A:** Development of a road map for policy and institutional reforms to be followed under the programmatic approach, together with identification of milestone actions that would trigger ADB’s processing of the next project

**Component B:** Implementation of a screening test for identifying PSI opportunities for the program corridor of 1,500 km, and recommendation of modalities of investments for each section of the corridor; and, for those sections identified for possible PSI development, design of specific investment packages and, if it is decided to pursue PSI, tender documents

**Component C:** Project preparation support for the selected highway sections to be rehabilitated and upgraded under the proposed NHC Project covering (i) environmental and social assessment, (ii) engineering and procurement support, and (iii) economic and financial analysis and governance assessment

### **C. Cost Estimates**

15. The total cost of the TA is estimated at \$900,000 equivalent, consisting of \$608,585 in foreign exchange and \$291,415 equivalent in local currency cost. ADB will finance \$700,000 equivalent from the ADB's Technical Assistance Special Fund. NHAI will finance \$200,000 equivalent by providing office accommodation, support facilities, counterpart staff, vehicles, and other logistical support. The detailed cost estimates and financing plan are provided in Appendix 1.

### **D. Implementation Arrangements**

16. The executing agency will be NHAI, which will establish the project preparation unit headed by a chief general manager (corridors).

17. The TA consultants will be recruited by ADB in accordance with its *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB on the engagement of domestic consultants. For Components A and C(iii), individual consultants will be engaged; 2.8 person-months of international and 1.4 person-months of domestic consultant inputs are estimated to be required. For Components B, C(i), and C(ii), a consulting firm will be engaged in accordance with ADB's simplified technical proposal selection procedures; 12.3 person-months of international and 7.7 person-months of domestic consultants are estimated to be required.

18. The individual consultants in charge of Components A and C(iii) are expected to commence their services in January 2002 and to complete such services by June 2002. The consulting firm in charge of Components B, C(i), and C(ii) is expected to commence its services in December 2001, and to complete such services by August 2002. The TA will commence on 1 December 2001 and be closed on 31 October 2002. Terms of reference for the consultants are outlined in Appendix 2.

## **IV. THE PRESIDENT'S DECISION**

19. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance to the Government of India in an amount not exceeding the equivalent of \$700,000 for the purpose of preparing the National Highway Corridor – Public-Private Partnership – Project, and hereby reports such action to the Board. This technical assistance will be financed initially as a grant, but will be subject to the reimbursement arrangements set forth in the Board papers on *Technical Assistance Operations* (Doc. R51-77, dated 20 May 1977) and *Streamlining of Technical Assistance Operations* (Doc. R44-88, dated 21 March 1988), including the provision that, in the event of the technical assistance resulting in a loan from ADB, ADB may charge against such loan, and recover from it, the portion of the initial grant that exceeds \$250,000 equivalent.

**COST ESTIMATES AND FINANCING PLAN**  
(\$)

Item	Foreign Exchange	Local Currency	Total Cost
<b>A. Asian Development Bank Financing</b>			
1. Consultants			
a. Remuneration			
i. International Consultants	418,000	-	418,000
ii. Domestic Consultants	-	44,600	44,600
b. International and Local Travel	109,000	4,700	113,700
c. Reports and Communications	-	10,000	10,000
2. Training, Seminars, and Conferences	-	12,000	12,000
3. Surveys	-	9,000	9,000
4. Miscellaneous Administration and Support Costs	1,000	500	1,500
5. Participation in Contract Negotiations (Government)	6,000	-	6,000
6. Contingencies	74,585	10,615	85,200
<b>Subtotal (A)</b>	<b>608,585</b>	<b>91,415</b>	<b>700,000</b>
<b>B. Government Financing</b>			
1. Office Accommodation and Transport	-	32,000	32,000
2. Remuneration and Per Diem of Counterpart Staff	-	102,400	102,400
3. Studies, Surveys, and Reports	-	18,000	18,000
4. Communications	-	22,600	22,600
5. Administrative Support	-	25,000	25,000
<b>Subtotal (B)</b>	<b>-</b>	<b>200,000</b>	<b>200,000</b>
<b>Total</b>	<b>608,585</b>	<b>291,415</b>	<b>900,000</b>

- = magnitude zero

(Reference in text: page 4, para. 15)

## TERMS OF REFERENCE FOR CONSULTING SERVICES

### A. Components A and C(iii)

1. A team of two individual consultants, one international and one domestic will be engaged to carry out two tasks: Component A (development of road maps for institutional reforms of National Highways Authority of India [NHAI]) and Component C(iii) (economic and financial analyses). The major qualifications of the international consultant will include extensive knowledge of transport sector policies and institutional reforms, particularly enterprise reform, and expertise on and experience with economic and financial analyses. A major qualification of the domestic consultant will be extensive knowledge of India's transport sector. The task will require 2.8 person-months of input by the international consultant, and 2.8 person-months from the domestic consultant. Specifically, the consultants will

- (i) Update the sector background information incorporated in the Report and Recommendation of the President on the Western Transport Corridor Project (WTC-RRP) (Technical Report A-1 on sector background and government policies).
- (ii) Review the Government's policies on (a) enterprise reform, and (b) private sector participation in infrastructure (Technical Report A-2 on enterprise reform and the private sector development in infrastructure).
- (iii) Refine, update, and amplify the current policy reform matrix (Appendix 4) of the WTC-RRP, together with the current status of the implementation of these reforms (Technical Report A-3 on policy reform matrix).
- (iv) Develop a road map showing how the policy reform agenda is to be developed, together with the identification of milestone actions that will trigger processing of the next Asian Development Bank (ADB) projects (Technical Report A-4 on a policy road map and milestone actions).
- (v) Organize a workshop to facilitate policy dialogue among ADB, the World Bank, and relevant ministries/authorities of the Government of India.
- (vi) Review and comment on the economic analysis done by NHAI's consultants to ensure that all key elements are adequately covered in accordance with ADB's *Guidelines for the Economic Analysis of Projects*; provide the necessary assistance to the NHAI consultants to complete their economic analysis.
- (vii) Prepare a short technical report on the economic analysis (Technical Report C-3-1 on economic analysis).
- (viii) Review and comment on the financial analysis done by the NHAI's consultants to ensure that all key elements are adequately covered in accordance with ADB's forthcoming *Guidelines on the Financial Management of Investment Projects*; provide the necessary assistance to the NHAI consultants to ensure these recommendations are incorporated in their reports.

(Reference in text: page 4, para. 18)

- (ix) Prepare a short technical report on financial analysis of the National Highway Corridor Project (Technical Report C-3-2 on financial analysis).
- (x) Conduct a quick financial analysis of NHAI by projecting its cash flow for the next five years, together with income statements and balance sheets for the same period of time (Technical Report C-3-3 on financial projection).

## **B. Components B, C(i), and C(ii)**

2. The consultants should form three teams for (i) the public-private partnership investment strategy, (ii) environmental and social assessment, and (iii) engineering and procurement support. Among the various specialists, one should be assigned as the task manager.

### **1. Development of the Public-Private Partnership Investment Strategy**

3. A team of consultants consisting of international and domestic experts will be engaged for carrying out the tasks listed below. The team will consist of (i) an international transport economist who is familiar with toll road operations, (ii) an international financial analyst who is familiar with project finance and credit enhancement mechanisms, (iii) a domestic financial analyst who is well versed in computer modeling, and (iv) a domestic traffic engineer who will manage the traffic count survey. The team will be supported by local researchers to conduct traffic counts on key spots along the program corridor. The task will require 6.0 person-months of input by the two international consultants and 7.0 person-months from the two domestic consultants. The consultants will do the following:

- (i) Review (a) India's past experiences with infrastructure development through private sector investment (PSI) schemes, and (b) those of NHAI with highway development/rehabilitation, and, based on these reviews, develop possible types of PSI to be applied to the program corridor (Technical Report B-1 on PSI schemes and possible types of PSIs for the program corridor). Possible types of PSIs include, among others, build-operate-transfer or rehabilitate-operate-transfer schemes, annuity-based toll concessioning schemes, and special purpose vehicle schemes combined with later state disinvestment or initial public offering. The review should include the possible use of credit enhancement mechanisms such as the partial credit/risk guarantee. The consultant should also look into the appropriate size of PSI projects that may enable NHAI to reduce transaction costs or avoid excessively long negotiations.
- (ii) Develop a financial model that would enable NHAI to compare a variety of investment packages, and determine the extent of required financial support. This will require determination of the criteria or parameters (such as equity financial rate of return) that would be used to determine the attractiveness of specific investment projects from the viewpoint of PSI investors. The model should use Excel or another similar spreadsheet program so that NHAI can use it by itself (Technical Report B-2 briefly describing main features of the model).
- (iii) Screen PSI opportunities for the program corridor, and develop recommendations on the modalities of investment for each of its sections (Technical Report B-3 on investment strategy). This will require supplemental traffic surveys at key points of the project corridor (Technical Report B-4 on the

findings of traffic survey). While preliminary traffic data are available from NHAI's prioritization studies conducted in 2000/2001 for the entire east-west and north-south corridors, those traffic data may not be sufficient. It will be necessary to supplement these data by additional traffic surveys to be conducted in key spots of the program corridor.

- (iv) For those sections identified as suited for PSI, design more specific investment packages including grant and credit enhancement mechanisms to be considered by NHAI (Technical Report B-5 on specific investment packages and credit enhancement mechanism).
- (v) For those sections decided upon to be developed through PSI, develop tender documents including concession agreements and selection criteria for proposals (Technical Report B-6).

## 2. Environmental and Social Assessment

4. A team of experts consisting of international and domestic consultants will be engaged for carrying out the tasks listed below. The team will consist of (i) an international environment specialist, (ii) an international resettlement specialist, (iii) an international economist who is familiar with distribution analysis with particular focus on poverty impact analysis, and (iv) three domestic consultants covering the same three areas. The task will require 4.2 person-months of input by the three international consultants and 2.1 person-months by the three domestic consultants. The consultants will

- (i) Undertake a social assessment of the proposed Project to determine the range of social impacts, addressing key social issues such as land acquisition and resettlement; poverty; indigenous people; communicable diseases, particularly HIV/AIDS; gender; and labor, including child labor (Technical Report C-1-1).
- (ii) Review the results of feasibility studies and preliminary designs (to be prepared by NHAI consultants) with regard to environmental assessment to ensure that all relevant environmental issues are adequately covered in accordance with ADB's *Environmental Assessment Requirements of ADB, 1998*, and *Environmental Guidelines for Selected Infrastructure Projects, 1993*, as amended from time to time.
- (iii) Prepare summary reports for an initial environmental examination (IEE) or, if required, an environmental impact assessment (EIA) (Technical Report C-1-2 on summary IEE/EIA).
- (iv) Review the results of feasibility studies and preliminary designs with regard to land acquisition and resettlement to examine that all relevant resettlement issues are adequately covered in accordance with ADB's *Handbook on Resettlement, A Guide to a Good Practice, 1998*, as amended from time to time.
- (v) Prepare a resettlement plan (Technical Report C-1-3) and summary resettlement plan report according to the above *Handbook on Resettlement* (Technical Report C-1-4).

- (vi) Assist NHAI with the formalization of a resettlement policy, operationalization of a social development unit, and the development of training programs.
- (vii) Assess potential poverty reduction in the project areas, which should include (a) poverty profile, (b) an analysis of transport and poverty, (c) impacts of toll roads on the poor community, (d) quantitative impact of the Project on the poor, (e) qualitative impact on the Project to the poor, and (f) conclusion (Technical Report C-1-5).

5. The consultants will liaise closely with the project preparation team of NHAI, particularly during the design stage, so that environment and social concerns are accommodated by design modifications.

### **3. Engineering and Procurement Support**

6. A team of international consultants consisting of a highway engineer and a procurement specialist will be engaged to carry out the tasks listed below, which will require 2.1 person-months of input.

- (i) Review the results of feasibility studies and preliminary designs to be prepared by NHAI consultants with regard to engineering aspects. Ensure that alignment, cost estimates, design standards, pavement structure, drawings for bridges and interchange structures, and toll booths are of standards and quality appropriate to national highways and to the anticipated level of traffic. Ensure that (a) road safety measures are adequately considered in the design; (b) an adequate number of underpasses or overpasses are planned to be constructed so as to minimize the adverse effects of the Project on local communities; (c) service roads are adequately constructed for the same reason; and (d) there are adequate standard operating practices regarding proper drainage and slope stabilization, selection, and rehabilitation of materials, quarry sites, proper disposals of spoils, limitation or mitigation of dust, and sound construction impact. Prepare a report (Technical Report C-2-1) summarizing the findings of the examination, together with issue-by-issue recommendations to be incorporated in the feasibility study and preliminary design reports summarizing findings of the examination with regard to these key issues, together with issue-by-issue recommendations to be incorporated in the feasibility study and preliminary design reports.
- (ii) Provide advice on implementation arrangements and prepare a project implementation schedule.
- (iii) Provide NHAI with necessary support on procurement (Technical Report C-2-2).

### **C. Reporting Requirements**

7. For Component A and Component C(iii), the consultants will prepare

- (i) an inception report setting out the detailed work schedule and plan including the date of the submission of technical reports; the inception report should be submitted to ADB within two weeks of the commencement of services;

- (ii) technical reports, to be submitted by the deadlines set out in the inception report and agreed upon with ADB;
- (iii) a draft final report compiling all technical reports, to be submitted by the time set out in the inception report and agreed upon with ADB; and
- (iv) a final report to be submitted within two weeks after the receipt of ADB's comments.

8. For Components B, C(i), and (C(ii)), a consulting firm should assign one of the international expert to be a task manager to oversee and make necessary coordination of the entire works. The consulting firm should submit to ADB and NHA1 the following reports:

- (i) an inception report that sets out the detailed work schedule and plan, including the date of the submission of technical reports, within three weeks of the commencement of the consulting services;
- (ii) technical reports, to be submitted by the time set out in the inception report and agreed upon with ADB;
- (iii) a draft final report compiling all technical reports to be submitted by the time set out in the inception report and agreed upon with ADB; and
- (iv) a final report to be submitted within two weeks after the receipt of ADB's comments.