

ASIAN DEVELOPMENT BANK

TAR: IND 37142

TECHNICAL ASSISTANCE

TO

INDIA

FOR PREPARING THE

HIGH PRIORITY NATIONAL HIGHWAYS PROJECT

July 2004

CURRENCY EQUIVALENTS

(as of 15 June 2004)

Currency Unit	–	rupee/s (Re/Rs)
Re1.00	=	\$0.02215
\$1.00	=	Rs45.145

ABBREVIATIONS

ADB	–	Asian Development Bank
ADTA	–	advisory technical assistance
BOT	–	build-operate-transfer
km	–	kilometer
MORTH	–	Ministry of Roads Transport and Highways
NH	–	national highway
NHAI	–	National Highway Authority of India
NHDP	–	National Highway Development Program
PMBJP	–	<i>Pradhan Mantri Bharat Jodo Pariyojana</i> (national highway for integrating India)
PPP	–	public private partnership
PSP	–	private sector participation
TA	–	technical assistance

TA CLASSIFICATION

Poverty Classification	–	Other
Sector	–	Transport and Communications
Subsector	–	Roads and Road Transport
Thematic	–	Sustainable economic growth and Private sector development

NOTES

- (i) The fiscal year (FY) of the Government ends on 31 March FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2000 ends on 31 March 2000.
- (ii) In this report, "\$" refers to US dollars.

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I. INTRODUCTION

1. The Government of India requested the Asian Development Bank (ADB) to provide technical assistance (TA) for preparing ADB-financed projects under the *Pradhan Mantri Bharat Jodo Pariyojana* (PMBJP), or the Prime Minister's national highway (NH) program for integrating India, a plan to upgrade 10,000 km of NHs. The Government and ADB reached an agreement on the revision of the original TAs, included in the 2003 Country Strategy and Program for 2004 and 2005, under the titles of High Priority National Highways I and II. The original TAs were combined to a single TA for preparing a series of projects in order to ensure adequate project preparation in advance of loan processing. Subsequently, the Fact-Finding Mission visited India from 23 February to 5 March 2004 and met with responsible officials of the concerned agencies, including the Department of Economic Affairs, Ministry of Road Transport and Highways (MORTH), and National Highway Authority of India (NHAI). This TA was developed on the basis of the understanding reached during the mission on the scope, cost, implementation arrangements, and terms of reference for consultants.¹

II. ISSUES

2. India's economic reforms have resulted in a real gross domestic product growth of around 6% through the 1990s, with an average growth rate of about 8% in the latter half of the 1990s. Although the growth rate was much less during the last 2 years, the demand for transport is expected to grow at about 10% per year. The transport sector is multimodal, comprising a road network, railway, ports, airports, and inland waterways. The road transport is the dominant mode of transport, accounting for 70% of freight movement and 85% of passenger traffic. The road network totals some 3.4 million kilometers (km), of which 65,569 km are NHs.² The network has grown 8.5 times, from 400,000 km in 1951. The NH network contributes to about 1.9% of the country's road network, but carries about 40% of total traffic. Over the last decade, the numbers of automobiles and heavy vehicles have increased at about 9% and 7.6%, respectively. In 2002, India had 59 million vehicles.

3. India's road density is now 1 km per square km of land, which compares favorably with many developing countries. However, the standards and condition of the road network are inadequate to meet the rapidly growing demand for freight and passenger traffic. In early 2004, about 31% of the network was single-lane, 63% two-lane, and only 6% four-lane or more. More than 25% of NHs have poor surfaces, and many NHs are seriously congested. Internationally, a goods vehicle travels on average 600–800 km a day, while on Indian roads, until recently, the average distance covered is only 250–300 km a day. Poor road conditions have negative consequences for road user costs, road safety, and the quality and frequency of transport services. They also limit the contribution of roads to national development, economic growth, and poverty reduction.

4. Faced with the highway system's chronic capacity shortage, the Government has initiated radical action, including (i) launching ambitious national highway programs; (ii) establishing the NHAI; (iii) creating a central road fund; and (iv) promoting private sector participation (PSP) in financing and executing upgrading, operation, and maintenance of NHs.

5. In 1998, the Government launched the National Highway Development Program (NHDP), aiming to rehabilitate and widen about 13,300 km of the (i) Golden Quadrilateral,

¹ The TA first appeared in *ADB Business Opportunities* (Internet edition) on 22 March 2004.

² The network of national highways totaled 58,112 km until February 2004 when 7,457 km were added.

connecting the four major cities of Chennai, Delhi, Kolkata, and Mumbai; (ii) North-South Corridor; and (iii) East-West Corridor. About 6,000 km of roads have been substantially completed. In 2003, the Prime Minister announced the PMBJP, covering about 10,000 km, and consisting of (i) high traffic density corridors, (ii) state capitals connectivity to the NHDP network, and (iii) access to tourist and economic centers.

6. MORTH is responsible for developing and maintaining NHs; formulating road transport policies; coordinating state roads; and issuing guidelines on highway planning, design, and construction. In 1988, the Government established NHA, a statutory body under the NHA Act, with initial responsibility for the construction and maintenance of the NH network and expressways relating to externally aided projects and PSP. In 1998, implementation of NHDP became NHA's core responsibility. Recently, NHA was also designated to execute the PMBJP.

7. To develop the road network, a dedicated central road fund was established. Its major source of funds are additional excise duties (the "cess") of petrol and diesel, which initially was Rs1.0 per liter and increased to Rs1.5 per liter in 2003. About one-third of the funds are allocated for NHs. These funds have been committed until 2018 to implement the NHDP and pay debt service. The PMBJP will be implemented under PSP schemes to the extent possible.

8. Successful implementation of PSP schemes requires the establishment of a policy and institutional framework conducive to PSP. In 1997, MORTH issued guidelines for PSP in road infrastructure and took a series of policy actions, including (i) according tax exemption status to built-operate-transfer investors; (ii) indicating government commitment in preparatory activities, including land acquisition and removal of utilities; (iii) enabling the Government to provide grants of up to 40% of the project cost; (iv) allowing foreign direct investments up to 100% equity participation; (v) allowing duty free import of modern high performance construction equipment; and (vi) amending the National Highway Act to authorize private sector investors to operate a part of the NH system and collect tolls under Government regulation. Also, NHA was empowered to form joint ventures with private sector investors, form special purpose vehicles, invest and lend the funds for such ventures, and raise funds through issuing debentures in the capital markets. In December 2000, the cabinet decided that all four-lane highways under responsibility of NHA would be tolled, and that NHA would retain the toll revenues for operation and maintenance purposes and for payment of debt services.

9. While NHA has employed PSP schemes for highway development in a number of projects under NHDP, the additional works of the PMBJP require additional resources. ADB is providing an advisory TA, to be completed in November 2004, for developing an overall PMBJP implementation arrangement including prioritization, scheduling, and institutional arrangements; developing PSP schemes and their financing mechanisms; and initial screening of environmental and social impacts of the program.³ The findings of the ongoing toll system study carried out under the ADB-financed Surat-Manor Project will be taken into account in deciding suitability of individual subprojects for public private partnership (PPP).⁴

10. Some of the roads under the PMBJP may not have acceptable financial returns to the private sector without substantially enhanced conditions and tolls may not be sufficient for full cost recovery. The Government, therefore, indicated its willingness to provide a lump-sum grant

³ ADB. 2003. *Technical Assistance to India for Development of High Density Corridors under Public-Private Partnership*. Manila.

⁴ ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to India for the National Highway Authority of India for the Surat-Manor Tollway Project in India*. Manila.

or annuity to cover a part of construction costs to attract PSP. The constraints of the current PSP guidelines will be examined under the advisory TA and recommendations will be provided to induce more PSP to achieve the development goal of PMBJP.

11. Since 2000, ADB has provided NHAI with four loans to support the implementation of the NHDP, and is currently preparing a new loan that will be the final assistance for the NHDP. The overall lesson to be learned from involvement in the sector is that adequate project preparation in advance of loan processing is critical to facilitate the delivery of projects in ensuring project quality and compliance with ADB's safeguard policies in a timely manner. Although NHAI has built its project development capacity, particularly in engineering aspects, proper and timely project appraisal by ADB is necessary to ensure the feasibility and viability of the projects and compliance with ADB's safeguard policies. Given the magnitude of the program, this cannot be accommodated on project-by-project basis. This TA will assist NHAI in advance preparation of a series of projects possible for ADB financing.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

12. Efficient transport is a key to economic development leading to poverty reduction. Investment in essential highway network is part of ADB's continuing program to support development of an integrated and balanced highway network in India. The TA will help the Government implement the PMBJP by preparing a series of projects under the PMBJP that aim to promote domestic and international trade by improving strategic highway network. The output will consist of the preparation of at least two investment packages to be financed by ADB that are economically and financially viable, and socially and environmentally responsible, in accordance with the ADB-related policies, guidelines, procedures, and handbooks. The hybrid framework for Loan and TA is provided in Appendix 1.

B. Methodology and Key Activities

13. The advisory TA, to be completed in November 2004, will recommend, among other things, the scope and the implementation schedule of ADB assistance. The PMBJP project development plan and its linkage to ADB's TAs is indicated in a supplementary appendix. Based on the findings of the advisory TA, in consultation with ADB and NHAI, the TA consultant will propose at least two investment packages, each covering about 1,000 km, to be processed and implemented separately, most likely under the ADB's sector loan modality.

14. NHAI, through its consultants, is currently preparing preliminary studies and design of all PMBJP subproject. A technical review team within NHAI will ensure the quality of consultant works in accordance with the guidelines for project preparatory and appraisal prepared under ADB previous assistance.⁵ The TA will therefore (i) select roads to be included in the ensuing ADB-funded projects; (ii) review the technical, economical, and financial viability; and (iii) ensure compliance with environmental and social safeguard policy.

15. **Screening Study.** NHAI will propose a long list of possible candidate roads to be financed by ADB, each package with about 1,500 km of roads. The TA will review the preliminary studies relating to these roads prepared by NHAI. The subprojects will be selected taking into consideration the role in promoting economic development and reducing poverty. For

⁵ ADB. 2002. *Technical Assistance to India for Preparing the National Highway Sector Project*. Manila.

the state capital connectivity, the poorer states will be given priority. The TA will review existing surveys and data relating to these roads, taking into account traffic volume, pavement conditions, social and environmental considerations, and the costs and benefits of the road upgrading. The output of the screening will be a list of roads that need to be further reviewed, consisting of about 1,000 km per package. The list will be considered by ADB, NHAI, and the consultants at tripartite meetings held during the inception stage and the mid-term stage of the TA. The final list will become the basis for the subsequent studies.

16. **Engineering Study.** The TA will review engineering aspects of the preliminary study and design prepared by NHAI's consultants. The consultant will ensure that the studies are based on uniform design methodologies and design standards with allowable variations on account of specific site conditions. Sites will be visited as necessary. The aspects to be reviewed will include topographic surveys, design standards, traffic studies, proposed improvements and alignment, soil and material investigations, pavement options, toll plaza and wayside amenities, drainage and bridge structures, road safety measures, and cost estimates.

17. **Economic and Financial Analyses.** Assistance will be provided to supplement NHAI efforts in ensuring that the economic and financial analyses are carried out in accordance with ADB's *Guidelines for the Economic Analysis of Projects*. The TA will review and improve as necessary (i) NHAI's economic and financial analyses of the candidate roads; and (ii) the traffic forecast, cost estimates, and benefits. Additional surveys will be carried out as necessary. The revised calculation of the economic and financial internal rates of return then will be prepared. Sensitivity analyses will be carried out in accordance with the project's risk assessment. The TA will also analyze the poverty reduction impact of subproject roads in accordance with the ADB's *Handbook for Integrating Poverty Impact Assessment in the Economic Analysis of Projects*. The consultant will conduct additional surveys as necessary, prepare the benefits distribution analysis, and estimate the poverty impact ratio of the subprojects.

18. **Public Private Partnership Scheme Development.** The TA will design a PPP investment package, including financial evaluation in accordance with ADB's *Guidelines for the Financial Governance and Management of Investment Projects*. Financial models and PPP options will be developed taking into account the current PPP policy, preference to transfer the commercial and revenue risks to the private sector as much as possible, and best PPP practices in India and international projects. Financial and sensitivity analyses will be carried out, investment packages will be designed, and a framework of concession arrangements covering construction and operation and maintenance will be developed. The consultant will also develop tender documents including concession agreements and selection criteria of bidders, and may assist in the process of evaluating proposals and selecting successful bidders.

19. **Environmental Impact Study.** The TA will assist NHAI in complying with ADB's environmental safeguard policies, by ensuring that environmental assessments are prepared in accordance with the Government's environmental requirements and ADB's *Environmental Assessment Guidelines (2003)*. The consultant will review, verify, and recommend any revision to the environmental impact screening prepared by NHAI's consultants, and guide the preparation of the environmental impact assessment to ensure that all key elements are adequately covered in accordance with the applicable requirements. Additional surveys will be conducted as necessary. The consultant will then prepare initial environmental examination (and/or environmental impact assessment as required) and its summary. As necessary, the consultant will also undertake strategic environmental assessment to address environmental issues and the sector's development needs and to identify potentially beneficial policy interventions that can be included in the ensuing projects.

20. **Social Impact Study.** The TA will assist NHAI in complying with ADB's social safeguard policies, by ensuring that social analyses are carried out in accordance with ADB's *Guidelines for the Incorporation of Social Dimensions in ADB Operations*. The summary initial poverty and social analysis is in Appendix 2. The consultant will review, verify, and revise (as necessary) the social impact assessments, resettlement plans and indigenous people development plans, prepared by NHAI, to ensure the compliance with relevant ADB policies, guidelines, and handbooks. Additional surveys will be conducted as necessary. The social assessment will include poverty assessment, gender issues, women and children labor issues, and others. The consultant then will prepare summary resettlement plans, and indigenous peoples development plans as necessary. A resettlement and indigenous peoples development framework will also be developed as required by ADB for preparing sector loans, and as guidance for NHAI in preparing subsequent subprojects.

C. Cost and Financing

21. The total cost of the TA is estimated at \$1.25 million equivalent, consisting of \$784,000 in foreign exchange and \$466,000 equivalent in local currency costs (Appendix 3). ADB will finance \$1.00 million equivalent on a grant basis from ADB's TA funding program. The Government will finance \$250,000 equivalent by providing office accommodation, support facilities, counterpart staff, local transportation, maps, reports, and other logistical support. The Government has been informed that approval of the TA does not commit ADB to finance any ensuing project.

D. Implementation Arrangements

22. NHAI will be the Executing Agency through its PMBJP unit headed by a chief general manager, who will be responsible for day-to-day implementation of the TA, including coordinating with concerned line ministries, agencies, and external funding agencies. The Government has assured the Mission that all required counterpart staff, office space, furniture, equipment, support facilities for surveys, maps, reports, and other support services will be made available to the consultants in a timely manner.

23. The TA will be implemented in two packages; each covers one investment package. It will commence in January 2005 and be completed in June 2006. All consultants will be engaged by ADB in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for engaging domestic consultants. An international consulting firm associated with local consulting firms will be recruited for package 1, using the quality- and cost-based selection method. Subject to satisfactory performance the same consultant team may be directly engaged for package 2; otherwise the same consultant selection procedures of package 1 will be repeated. Each package will require expertise of a transport economist, highway engineer, PPP adviser, environmental specialist, social development specialist, and resettlement specialist. Individual consultants may also be recruited as necessary. The TA will require about 28 person-months of international and 20 person-months of domestic inputs. Outline terms of reference for the consultants are in Appendix 4.

IV. THE PRESIDENT'S DECISION

24. 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 preparing the High Priority National Highways Project, and hereby reports this action to the Board.

HYBRID LOAN AND TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal of the Resulting Loan Support economic growth and reduce regional discrepancies in the project target areas through improving national highway network efficiency</p>	<ul style="list-style-type: none"> • Increased traffic flow in the project corridor • Increased per capita income in the project states 	<ul style="list-style-type: none"> • National and local statistics • Project performance audit report 	
<p>Purpose of the Resulting Loan</p> <ul style="list-style-type: none"> • Increasing capacity of strategic national highway network • Increasing private sector participation in developing and managing national highways. 	<ul style="list-style-type: none"> • Reduce travel time by 30% and improved transport services in project areas • Reduce the international roughness index • Increase proportion of private sector participation to 15% 	<ul style="list-style-type: none"> • Road development strategies, plans, and programs • Surveys • Progress reports • Review missions 	<ul style="list-style-type: none"> • Project to be implemented on schedule • Private sector has access to commercial sources of financing
<p>Output of Technical Assistance Preparation of 2 investment package to be partly financed by Asian Development Bank</p>	<ul style="list-style-type: none"> • Each package will consist about 1,000 km of roads • Package I will be ready for appraisal in 2005 • Package II will be ready for appraisal in 2007 	<ul style="list-style-type: none"> • Tripartite meeting • Progress reports • Final reports 	
<p>Activities of Technical Assistance</p> <ul style="list-style-type: none"> • Screening study • Engineering study • Economic and financial analyses • PPP scheme development • Environmental impact study • Social impact study 	<ul style="list-style-type: none"> • List of candidate roads • Design standard, cost estimates, and contract packaging • Economic and financial analyses, distribution analysis • PPP financial model, concession agreement • Initial environmental examination, and environmental impact assessment and strategic environmental assessment as required • Initial social impact assessment, poverty analysis, resettlement plan, and indigenous people development plan as required 	<ul style="list-style-type: none"> • Tripartite meeting • Progress reports • Final reports • Review missions • Claims and Disbursement 	<p>Poor performance of consultants</p>
<p>Inputs of Technical Assistance Consulting services inputs</p>	<p>About 28 and 20 person-months of international and domestic consultant inputs, respectively, costing about \$1.0 million.</p>	<ul style="list-style-type: none"> • Contract awarded by December 2005 • Phase I: June-January 2005 • Phase II: June-January 2006 	<p>Timely TA approval, signing of TA letter agreement, and consultant selection process</p>

INITIAL POVERTY AND SOCIAL ANALYSIS

A. Linkages to the Country Poverty Analysis

Is the sector identified as a national priority in country poverty analysis? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the sector identified as a national priority in country poverty partnership agreement? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>Contribution of the sector or subsector to reduce poverty in India:</p> <p>The Government has highly prioritized improvement of the national highway system to develop the economy and contribute to overall poverty reduction. The absence of adequate road infrastructure, including connectivity between states and economic centers, has been considered an impediment to development, particularly for transport of goods between states. High-density corridors development encourages other development initiatives, which together considerably stimulate economic growth, providing more job opportunities, leading to poverty reduction.</p>	

B. Poverty Analysis

Poverty Classification: Other

<p>What type of poverty analysis is needed?</p> <p>Poverty assessment will be conducted to (i) identify the poverty profile of the population affected by the Project (including users); (ii) assess the relevant market structure and estimate the likely distributive impacts of the project; (iii) where appropriate, incorporate the needs of the poor, and minimize or compensate for adverse impacts on the poor; (iv) identify more systematic integration of the Project with other sectoral interventions (health, education, rural development, etc.) so as to strengthen poverty reduction strategies; and (iv) develop low-cost mechanisms for monitoring to contribute to the understanding of the links between the Project and poverty reduction.</p>

C. Participation Process

<p>Is there a stakeholder analysis? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Is there a participation strategy? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Social impact assessment and poverty assessment will be carried out with community consultation and participation. The project design is being influenced by stakeholder discussions and consultations. Service roads, severance impacts, safety considerations, and designing bypasses, rest areas, and truck stops are based on technical and social considerations. Consultations regarding land acquisition and resettlement are ongoing among all affected people.</p>
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D. Gender Development

<p>Strategy to maximize impacts on women:</p> <p>The Project will ensure that women and men will have similar opportunities to participate in designing and implementing the Project, and similar wages for similar work.</p> <p>Has an output been prepared? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>

E. Social Safeguards and other Social Risks

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
Resettlement	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	Full resettlement plan will be prepared, and a resettlement framework, as required.	<input checked="" type="checkbox"/> Full <input type="checkbox"/> Short <input type="checkbox"/> None
Affordability	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	Tolls were set at a level to cover the cost of highway operation and maintenance, but not the entire construction cost. More than 1,000 km of national highways have been placed in services with this level of tolls and no major objections from major users have been encountered.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Labor	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Indigenous Peoples	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	An indigenous peoples development framework, and as necessary, indigenous peoples development plans, will be prepared.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other Risks and/or Vulnerabilities	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	The TA will identify any ethnic group along the project roads and identify the likely project impact on indigenous people and/or ethnic minority. The issue of HIV/AIDS, gender trafficking, and road safety will be studied during Project Preparatory TA stage.	<input type="checkbox"/> Yes <input type="checkbox"/> No

COST ESTIMATES AND FINANCING PLAN^a
(\$)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank (ADB) Financing^b			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants (28 person-months)	560,000	0	560,000
ii. Domestic Consultants (20 person-months)	0	100,000	100,000
b. International and Local Travel	140,000	5,000	145,000
c. Reports and Communication	0	10,000	10,000
2. Surveys ^c	0	75,000	75,000
3. Miscellaneous Administration and Support Costs	0	5,000	5,000
4. Representative for Contract Negotiations	5,000	0	5,000
5. Contingencies	79,000	21,000	100,000
Subtotal (A)	784,000	216,000	1,000,000
B. Government Financing			
1. Office Accommodation and Transport	0	40,000	40,000
2. Remuneration and Per Diem of Counterpart Staff	0	60,000	60,000
3. Studies, Surveys, and Reports	0	100,000	100,000
4. Communication	0	10,000	10,000
5. Administrative Support	0	15,000	15,000
6. Contingencies (Others)	0	25,000	25,000
Subtotal (B)	0	250,000	250,000
Total	784,000	466,000	1,250,000

^a The cost estimates are for the TA as a whole, each phase (Phase 1 and Phase 2) will require about a half of them.

^b The TA will be financed on a grant basis by the ADB's TA funding program.

^c Including research assistants.

Source: ADB staff estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Screening Study

1. The consultants' scope of services includes but will not be limited to:
 - (i) reviewing the feasibility studies prepared the National Highway Authority of India (NHAI), relating to the long list of 1,500 km of roads proposed by NHAI; and
 - (ii) selecting about 1,000 kilometer (km) of roads for the list for more detail review: the selection will take into consideration (a) traffic volume, (b) pavement conditions, (c) social impact, (d) environmental impact, (e) costs and benefits of the road upgrading; and (f) role of the subprojects in promoting economic development and reducing poverty; and for the state capital connectivity, the poorer states will be given priority.

2. The output of the screening will be a list of roads that needs to be further reviewed, consisting about 1,000 km each package. The list will be considered by the Asian Development Bank (ADB), NHAI, and the consultants at tripartite meetings held during inception stage and midterm stage of the proposed technical assistance (TA). The final list will become the basis for the subsequent studies.

B. Engineering Study

3. The consultants' scope of services includes but will not be limited to:
 - (i) reviewing existing traffic data, traffic counts, origin-destination, axle load surveys, and traffic forecasts for each candidate road prepared by NHAI's consultants; and doing surveys necessary to collect additional information and to verify the data and analysis;
 - (ii) reviewing the engineering aspects (road and bridges) contained in the feasibility study and preliminary design prepared by NHAI's consultants; and doing surveys necessary to collect additional information and to verify the data and analysis the review should include: topographic surveys, design standards, soil and material investigations, proposed improvements and alignments including widening and bypassing, geometric alignments, pavement options, taking into account traffic forecasts, road safety measures, environmental mitigation measures, and wherever possible seeking to avoid land acquisition and involuntary resettlement; and suggest improvements if necessary;
 - (iii) preparing technical approaches and design standards, ensuring that the feasibility study and engineering design are based on uniform design methodologies and standards with allowable variations on account of specific field/site conditions;
 - (iv) Reviewing cost estimates for the proposed improvements for each candidate road, separating out foreign exchange, local currency, and tax and duty elements; and recommending revisions as necessary;
 - (v) reviewing drawing and civil works bid documents, and recommending revisions and improvements as necessary (the civil works contract will include long-term performance-based maintenance after construction, minimum 5-year period); and

- (vi) establishing selection criteria of bidders, and providing assistance in the process of evaluating proposals and selecting successful bidders as required.

C. Economic and Financial Analyses

4. Assistance will be provided to supplement NHA's efforts in ensuring that the economic and financial analyses are carried out in accordance with ADB's *Guidelines for the Economic Analysis of Projects*. The consultants will also analyze the poverty reduction impact of subproject roads in accordance with ADB's *Handbook for Integrating Poverty Impact Assessment in the Economic Analysis of Projects*. The consultants' scope of services includes but will not be limited to:

- (i) Review the NHA's economic and financial analyses, comparing the with- and without-project scenarios. Based on the engineering study findings on traffic and costs, prepare revised calculations of the economic and the financial internal rates of return. Carry out sensitivity analyses for changes underlying cost-and-benefit parameters in accordance with the project's risk assessment. Determine traffic diversion due to imposition of tolls at various ranges of toll levels for each vehicle type. Prepare the summary of economic analysis and financial analysis.
- (ii) Based on a review of existing studies and surveys in the representative road section, prepare a socioeconomic and poverty profile of the area of influence of the proposed project road, including the patterns of economic activity and employment, agricultural activity and related employment, trade industries and trade related employment, unemployment, and poverty levels and causes.
- (iii) Review the historical constraints to expansion of economic and social activity in the project area of influence, and causes/reasons for poverty and unemployment.
- (iv) Conduct a semi-structured interview program with road users and prospective beneficiaries to obtain evidence of existing transport-related constraints. Identify how improved transport access and other related facilities through the Project will help alleviate these constraints, and quantify the likely impact of the project in terms of improved socioeconomic level.
- (v) Provide a qualitative analysis of the impact of the Project in terms of reduction of unemployment and poverty.
- (vi) Specify the gender impacts of the Project.
- (vii) Assess the competitiveness in the road transport industry and assess the likelihood of vehicle cost savings being passed onto the general community.
- (viii) Prepare and supervise a short traffic survey to provide assumptions necessary to prepare a distribution analysis and poverty impact analysis of the quantified of benefits of the Project.
- (ix) Prepare the distribution and poverty impact analyses including sensitivity analysis, and prepare a short report describing the assumptions, analyses, and findings.

D. Public Private Partnership Investment Package Development

5. The TA will design a public private partnership investment package including financial evaluation in accordance with ADB's *Guidelines for the Financial Governance and Management of Investment Projects*. The scope of services includes but will not be limited to the following:

- (i) Review policy related to PPP and best practice PPP schemes in India and other countries. In consultation with ADB and NHAI, confirm and specify financial modeling assumptions and implementable PPP options with transfer of the commercial and revenue risks to the private sector as much as possible. The options include (a) annuity based built-operate-transfer (BOT) concession, (b) modified version of the annuity-based BOT scheme with partial transfer of commercial risk to the private sector within the framework of the current annuity-based BOT model agreement, (c) special purpose vehicle, (d) combination of new and old types of BOT concession, (e) toll-based BOT with grant being to the concessionaire to cover a substantial part of the initial capital cost, and (f) toll-based BOT with no or little grant being provided.
- (ii) Develop financial models for financial viability analysis of each of the subprojects in the project corridor on a PPP basis.
- (iii) Estimate the financial market for PPP financing terms and the interest of PPP finance providers (local debt and equity).
- (iv) Based on the financial models, carry out financial and sensitivity analyses for PPP options of each subproject.
- (v) Finalize the recommendation regarding the PPP schemes in a workshop with participation of NHAI and ADB.
- (vi) Prepare the structure of bidding documents (request for proposals or concession) and outline of the bid process based on the selected PPP subprojects.
- (vii) Review the existing concession agreement model developed by NHAI and recommend necessary modifications.
- (viii) Establish selection criteria of bidders, and assist in the process of evaluating proposals and selecting successful bidders as required.
- (ix) Review the existing operation and maintenance concession agreement model developed by NHAI and recommend necessary modifications.
- (x) Prepare and submit the final report and its summary to ADB and NHAI.

E. Environmental Impact Study

6. The TA will assist NHAI in complying with the ADB environmental safeguard policies, by ensuring that environmental assessments are prepared in accordance with the Government's environmental requirements, ADB's *Environmental Policy (2002)* and ADB's *Environmental Assessment Guidelines (2003)*. The scope includes but will not be limited to the following:

- (i) Review, verify, and recommend any revision of the environmental impact screening prepared by NHAI's consultants, and guide the preparation of the environmental impact assessment to ensure that all key elements are adequately covered in accordance with ADB's *Environment Policy (2002)* and *Environmental Assessment Guidelines (2003)*.
- (ii) For the sample road, do surveys necessary, and prepare the initial environmental examination (and/or environmental impact assessment) and its summary.
- (iii) For the remaining subprojects to be approved during implementation, prepare (a) specific environmental criteria and concerns that need to be examined carefully during subproject selection, design, appraisal, and implementation; and (b) format

and a manual on environmental assessment, compiling relevant parts of ADB's guidelines and checklists applicable for national highway upgrading.

- (iv) Examine any policy and institutional restructuring introduced under the proposed Project, determine their environmental implications, and propose environmental interventions that need to be introduced.
- (v) Undertake strategic environmental assessment to address environmental issues and the sector's development needs and to identify potentially beneficial policy interventions that can be included in the Project.

F. Social Impact Study

7. The TA will assist NHAI in complying with ADB's social safeguard policies, by ensuring that social analyses are carried out in accordance with ADB's *Guidelines for the Incorporation of Social Dimensions in ADB Operations*. The consultants' scope of services includes but will not be limited to the following:

- (i) Undertake a social assessment in accordance with ADB's *Handbook for Poverty Reduction and Social Assessment*, addressing key social issues such as land acquisition, resettlement, poverty, indigenous people, communicable diseases e.g. HIV/AIDS, gender issues, labor including children and women labor, and stakeholders' participation. If found necessary, carry out surveys necessary on indigenous peoples along project-influenced areas, and develop an indigenous peoples development plan in accordance with ADB's *Policy on Indigenous People*.
- (ii) Prepare socioeconomic and poverty profiles of the project area. Include population, income levels, occupation, unemployment, education levels, health conditions, poverty incidence, and other relevant socioeconomic data. Conduct surveys to develop a profile of transport services and costs currently available in the project areas, and assess whether accessibility is affordable for low-income groups.
- (iii) Assess how the Project may help improve people's livelihoods. Estimate the number of project beneficiaries by area, occupation, and income level, and the number of adversely affected people by type of impact. Specify how the Project will improve benefits (market access, employment opportunities, lower transport costs, reduced travel time, etc.) for local people by income group. Recommend innovative measures to enhance benefits and minimize adverse impacts for the poor.
- (iv) Prepare summary poverty reduction and social strategy, including a completed form from the *Handbook on Poverty and Social Analysis – page 27*.
- (v) Carry out a study for assessing the potential impact of the Project on trafficking of women and children, and an HIV/AIDS epidemic in the project-influenced areas. Carry out rapid assessments at selected communities to assess (a) the level of vulnerability of the communities to external changes (e.g., whether or not the project will be in an area particularly prone to trafficking or out-migration during periods of environmental disaster [flood, erosion, drought, or hungry seasons]); (b) current trends and/or qualitative information on HIV/AIDS and trafficking in the project areas; and (c) the current pattern of migration in the project areas.
- (vi) Based on the findings of these field surveys, assess whether the Project can address the women and children trafficking and HIV/AIDS issues, and, if so,

recommend specific measures activities to be taken as part of project implementation.

G. Land Acquisition, Resettlement, and Indigenous Peoples Development

8. The consultants' scope of services includes, but will not be limited to, the following:
- (i) Review, verify, and/or recommend any revision to the land acquisition plans prepared by NHAI's consultants, and guide the preparation of resettlement plans to ensure that all requirements are adequately incorporated in accordance with ADB's *Policy on Involuntary Resettlement*, and its *Handbook on Resettlement*. Conduct surveys as necessary.
 - (ii) Based on the land acquisition plans for the sample roads, do necessary surveys, and prepare resettlement plans and their summary, outlining the nature, extent, and magnitude of impacts, and measures to address these impacts.
 - (iii) If necessary, prepare an indigenous peoples development plan (IPDP) and its summary in accordance with ADB's *Policy on Indigenous People*, particularly for the corridor passing through pockets with a significant tribal population. Conduct surveys as necessary.
 - (iv) Prepare a resettlement and indigenous peoples development framework as guidance for NHAI in preparing resettlement plans and IPDPs for subsequent subprojects.
 - (v) Review the NHAI organizational structure and capacity for implementing the resettlement plans and IPDPs, and recommend improvement and actions as required.

H. Implementation Arrangement and Reporting

9. There will be two consulting service packages, each covering one investment package. The screening study, engineering study, and economic and financial analyses will be carried out by an international consulting firm associated with domestic consulting firm(s), while the PPP investment scheme, environmental study, and social impact study will be carried out by international and domestic individual consultants.

10. For each package, the consultants are required to submit two copies each to ADB and to NHAI of the following reports:

- (i) screening study: to be submitted within a month from commencement;
- (ii) technical, economic, and financial feasibility study: to be submitted within 3 months after commencement of the services;
- (iii) PPP study: to be submitted within 4 months after commencement;
- (iv) environmental study: to be submitted within 4 months after commencement;
- (v) social impact study: to be submitted within 4 months after commencement; and
- (vi) land acquisition, resettlement, and indigenous peoples development plan: to be submitted within 5 months after commencement.